



VALIDATION REPORT

AES CARBON EXCHANGE LTD.

**CHONGQING CHENGKOU COUNTY
BASHAN HYDROPOWER STATION
PROJECT**

REPORT NO. : 10011040

REPORT DATE: 25/04/2011

China Environmental United Certification Center Co., Ltd
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China Environmental United Certification Center Co., Ltd (CEC)	AES CARBON EXCHANGE LTD.		
Project Title:	Country:		
Chongqing Chengkou County Bashan Hydropower Station Project	China		
Methodology and Version	Sectoral Scope:		
ACM0002 (Version 12.1.0)	1		
First PDD Version	Final PDD Version		
Date:23/03/2010 Version:2.0 Starting Date of GSP:17/04/2010	Date:15/04/2011 Version:6.0		
GHG Reducing Measure/Technology	ER Estimate:		
Renewable Power Generation from Hydro Sources	382,839 tCO ₂ e per year during the first crediting period.		
China Environmental United Certification Center Co., Ltd. (CEC) has performed the validation of the Chongqing Chengkou County Bashan Hydropower Station Project of AES CARBON EXCHANGE LTD. on the basis of all applicable CDM requirements. The CDM requirements include the CDM modalities and procedures and subsequent decisions by the CMP and documents released by the CDM Executive Board and available on the UNFCCC CDM website. The validation scope is defined as an independent and objective review of the Project design document, the Project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the Project design and the baseline and monitoring plan; ii) follow-up interviews with Project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from contract review to validation report & opinion, was conducted using CEC internal procedures. The first output of the validation process is a list of Clarification and Corrective Actions Requests (CLs and CARs), presented in Appendix A. Taking into account this output, the Project participant took corrections and revised the project design document. All CARs and CLs are successfully closed. In summary, it is CEC's opinion that Chongqing Chengkou County Bashan Hydropower Station Project, as described in the PDD version 6.0 dated 15/04/2011, meets all relevant UNFCCC requirements for the CDM and all relevant Host Parties criteria and correctly applied the baseline and monitoring methodology ACM0002 ver.12.1.0. CEC thus requests the registration of the Project as a CDM Project activity.			
Work Carried out by:	Date of this version	Version	Pages:
ZHANG Ruizhi, QIN Boya, WANG Yanping, MA Xiao	25/04/2011	2	87
Work Reviewed by:	☐ Draft Validation Report ☒ Final Validation Report ☒ No Distribution (without permission from the client responsible organizational unit) ☐ Limited Distribution ☐ Unrestricted Distribution		
XU Linghua, ZHANG Xiaohong			
Approved by:			
TANG Dingding, Chairman of Board			



Abbreviations

ACM	Approved Consolidated Methodology
BM	Build Margin
CAR	Corrective Action Request
CCPG	China Central Power Grid
CER	Certified Emission Reduction
CL	Clarification Request
CO ₂	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
ERPA	Emission Reduction Purchase Agreement
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GSP	Global Stakeholders Process
GWh	Giga Watt Hours
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
kW	Kilo Watt
kWh	Kilo Watt Hours
LoA	Letter of Approval
MoV	Means of Verification
MW	Mega Watt
MWh	Mega Watt Hours
N/A	Not Applicable
NDRC	National Development and Reform Commission
NGO	Non Government Organization
ERPA	Emission Reduction Purchasing Agreement
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual



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1 INTRODUCTION

AES Carbon Exchange Ltd. has commissioned CEC to perform the validation of the Chongqing Chengkou County Bashan Hydropower Station Project (hereafter called “the project”) with regard to the relevant requirements for CDM project activities. This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The purpose of validation is to ensure a thorough, independent assessment of proposed CDM project activities submitted for registration as proposed CDM project activity against the applicable CDM requirements. Validation is part of the CDM project cycle and will finally result in a conclusion by CEC whether a project activity is valid and should be submitted for registration of a proposed project activity rests at the CDM Executive Board and the Parties involved.

The project activity discussed by this validation report has been submitted under the project title: Chongqing Chengkou County Bashan Hydropower Station Project.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against all applicable CDM requirements..

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

2 VALIDATION METHODS

The overall validation, from Contract Review to Validation Report and Opinion, was conducted according to CEC’s internal procedures to assess the correctness of the information provided



by the project participants:

I Document review, involving:

- 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 sources other than that used, if available, and if necessary independent background investigations.

II Follow-up actions (e.g., on site visit and telephone or email interviews), including:

- Interviews with relevant stakeholders in the host country, personnel with knowledge of the project design and implementation;
- Cross-check of information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted from the validation;

III Reference to available information relating to projects or technologies similar to the proposed CDM project activity under validation; and

IV Review, based on the approved methodology being applied, of the appropriateness of formulae and correctness of calculations.

V The resolution of outstanding issues and the issuance of final validation report and opinion.

In order to ensure transparency, a validation protocol was customized for the project in accordance with Version 01.2 of the Clean Development Mechanism Validation and Verification Manual (VVM). The protocol shows in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements that a CDM project is expected to meet.



- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the results of the validation.

During the validation of the proposed project activity, issues that need to be further elaborated upon, researched or added are identified in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, the issues are correctly identified, discussed and concluded in the validation report.

Corrective Action Requests (CARs) shall be raised, where:

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

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

Forward action request (FAR) are raised to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not be related to the CDM requirements for registration.

The validation protocol consists of two tables. The content in these tables are described in below. The findings are the essential part of this validation report and the completed validation protocol is enclosed in Appendix A to this report.

Table 1: Requirements checklist

Checklist Question	Reference	Means of Verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to	Give reference to documents	Explain how conformance with the checklist	The section is used to elaborate and	This is either acceptable based on evidence provided(OK), or a



checklist questions the project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	where the answer to the checklist question or item is found.	question is investigated. Examples of means of verification are document review (DR), interview (I) or observation (O), N/A means not applicable.	discuss the checklist question and /or the conformance to the question. It is further used to explain the conclusions reached.	Corrective Action Request (CAR) due to non-compliance with the checklist question.(See below).Clarification Request(CL) is used when the validation team has identified a need for further clarification. Forward Action Request (FAR) is used to highlight issues related to project implementation that require review during the first verification of the project activity.
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To guarantee the transparency of the validation process, the CARs, CLs and FARs raised and responses that have been given are documented in more detail in table 2 of Appendix A.

Table 2: Resolution of Corrective Action and Clarification Requests

Report clarifications and corrective action requests	Ref. to checklist question in table 1	Summary of project participant response	Validation conclusion
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The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	The responses given by the project participants during the communications with the validation team should be summarized in this section.	This section should summarize the validation team's responses and final conclusions. The conclusions should also be reflected in Table 1, "Final conclusion"
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2.1 Validation Team

According to the designation requirements on the validation team in the CDM accreditation standards of Executive Board, and following the requirements of the technical aspects of the sectoral scopes, CEC designated a validation team. It is required that the validation team collectively has the required competencies in the technical, methodological and sectoral aspects of specific CDM project activities.

The validation team constitution is shown in below table 3, the qualification of each validation team member and technical reviewer is shown in Appendix B.

Table 3: List of validation Team

Name	Role	Qualification	Specific Scope
ZHANG Ruizhi	Team Leader	Auditor	√
QIN Boya	Team Member	Auditor trainee	-
WANG Yanping	Team Member	Auditor	√
MA Xiao	Team Member	Auditor trainee	-

2.2 Document Review

CEC received the Project Design Document (PDD) ver.2.0/1/ date 23/03/2010 submitted by the PP, it was made publicly available on the internet on the UNFCCC CDM web pages for



starting a 30 days global stakeholder consultation process (GSP).

To address the validation team's corrective action and clarification requests, the PP revised the PDD. The PDD version 6.0 dated 15/04/2011 forms the basis for the final evaluation as presented by this report. The information on the PDD version is presented in page 1 of the PDD.

2.3 Follow-up Interviews

The validation team performed on-site interviews with the project stakeholders. Representatives of the PP, the consultant and local stakeholders were interviewed on 18/05/2010 and 19/05/2010 (See Section 7: People Interviewed). The main topics of the interview are summarized in Table 4.

Table 4 Interview topics and organization

Interview topics	Interview Organization
✓ Project background information and CDM consideration. ✓ Project technology, operation, maintenance and monitoring capability. ✓ Project monitoring and management plan. ✓ Stakeholder consultation process and sustainable development.	Chongqing Bashan Hydropower Development Co., Ltd. and AES Carbon Exchange Ltd. (the PPs)
✓ Project background in details ✓ Project approval status (incl. EIA approval, CDM project approval status) ✓ Realistic and credible baseline scenario alternatives ✓ Hydropower development in the area ✓ Government policies related to hydropower projects	Local Stakeholders. (local officials and affected residents)



✓ Applicability of selected methodology.	Caspervandertak
✓ Baseline determination	Consulting and Gansu
✓ Emission reductions calculation.	Tonghe Investment Project
✓ Emission reduction monitoring plan.	Consulting Co., Ltd.
	(the Consultant)

2.4 Resolution of CARs and CLs

All CARs, CLs and FARs shall be documented in the validation report. The report shall be undertaken in a transparent and unambiguous manner that allows the reader to understand the nature of the issue raised, the nature of the responses provided by the project participants, the means of validation of such responses and clear reference to any resulting changes in the PDD or supporting annexes. The CARs and CLs could only be closed if the project participants modify the project design, rectify the PDD or provide adequate additional explanations or evidence. If this is not done, the proposed project activity shall not be recommended for registration to the CDM Executive Board.

The PDD version 6.0 dated 15/04/2011 serves as the basis for the final assessment and conclusion.

2.5 Internal Quality Control

As a final step of a validation, the validation report and the validation protocol shall be reviewed by the technical reviewers, and then finally approved by Chairman of Board according to the regulations on technical review of CEC; the technical reviewers have to be independent from the validation team. The validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform.

3 VALIDATION SUMMARY

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



The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in **4 Corrective Action Requests** and **8 Clarification Requests**.

3.1 Participation and Approval

The project participants are Chongqing Bashan Hydropower Development Co. Ltd. (P.R. China) and AES Carbon Exchange Limited (The Netherlands).

The Letter of Approval (LoA) of the host Party was issued by the DNA of China (National Development and Reform Commission, NDRC) on 29/10/2009, confirming the project is a bilateral CDM project, with Chongqing Bashan Hydropower Development Co. Ltd. and AES Carbon Exchange Limited as project participants. The LoA also confirmed the voluntary participation of the proposed project, in compliance with permission requirements and assisting China in achieving sustainable development. The LoA of the DNA of China was provided by the project participant. CEC confirmed its authenticity by cross-checking the Announcement of newly approved projects issued by DNA of China on 14/10/2009. The information of Project Participants and project title is consistent with the PDD.

The LoA of the DNA of the Netherlands was issued on 07/04/2011, confirming that it approves the participation of AES Carbon Exchange Limited in the proposed project “Chongqing Chengkou County Bashan Hydropower Station Project”. The LoA also confirms the voluntary participation of the proposed project, the approval is not conditional. The LoA of the DNA of the Netherlands was provided by the project participant. CEC confirmed its authenticity by cross-checking other LoAs of the Netherlands published on UNFCCC website.

Both LoAs do not refer to any specific version of the PDD or validation report. The information in the LoAs are consistent with the PDD and MOC, such as project title, project participants, etc.

The host party China meets the requirement to participate in the CDM. China is a non Annex I party to the Kyoto Protocol. China has established a DNA as per the participating requirements for CDM under the Kyoto Protocol. The Netherlands has ratified the Kyoto Protocol on 31 May 2002. The host Party China and the participating Annex I Party the Netherlands both meet the



requirements to participate in the CDM.

Non-Annex 1 Country: <http://maindb.unfccc.int/public/country.pl?country=CN>

And Annex 1 Country: <http://maindb.unfccc.int/public/country.pl?country=NL>

CAR01 was raised for the name of the Annex I party Holland should be modified to Netherlands according to the list of DNAs on the UNFCCC website. The information was corrected in the updated PDD. CAR01 was closed.

CAR02 was raised for the LoA from Annex I Party was not provided. The LoA was provided later and checked to be valid by the DOE. Detailed validation procedure is in the above paragraphs. CAR02 was closed.

Complying with Para. 49, 50, 54 and 127 of VVM, the validation team concluded that the participation and approval are in fully complying with the requirements of the CDM.

3.2 Project Design Document

The PDD is compliant with relevant form and guidance as provided by UNFCCC. The most recent version of the PDD form was used.

No CARs, CLs or FARs were raised.

Complying with Para. 57 of VVM, the validation team considers that the guidelines for the completion of the PDD in their most recent version have been followed. Relevant information has been provided by the participants in the corresponding PDD sections. By employing the validation protocol checklist included in Appendix A of the validation report, the project description is assessed to be accurate and complete.

3.3 Project Description

Chongqing Chengkou County Bashan Hydropower Station Project is a newly built hydro electric power project at the main stream of Ren River near Bashan town of Chengkou County, Chongqing Municipality, China. The coordinates of dam is 108°27'44" east longitude and 32°06'11" north latitude, the coordinates of powerhouse is 108°26'20" east longitude and 32°06'12" north latitude.



The proposed project has a total installed capacity of 140 MW, with two sets of turbine and generator units, each has individual installed capacity of 70 MW. The detailed technical parameters were listed in Table A.2 of the PDD. The information was cross-checked against the technical agreement of equipment and the nameplates to be correct. The project is a diversion type hydropower station which involves the construction of a dam and a water intake connected to two headrace tunnels leading the water into the power house downstream. The total surface area of reservoir will be 5,720,000 m². So the power density will be 24.5 W/m², greater than 4 W/m².

The main objective of the project is to generate power from clean renewable hydropower and supply electricity to the Chongqing Municipality Grid and contributing to the sustainability of power generation of the Central China Power Grid. The project is expected to operate for a total of 3,213 hours per year. The expected annual total power generation is 449,820 MWh and expected net annual power supply to the grid is 448,920 MWh, thereby resulting in an estimated annual emission reduction of 382,839 tCO₂e in the first 7-year crediting period.

Based on the document review and on site visit, CEC confirmed that the description of the proposed project activity as contained in the PDD is accurate and complete that outlines the nature and technical aspects of the project activity.

CAR03 was raised: The coordinates of the project location in the PDD version 2.0 are estimated. Please provide the actual coordinates of the dam and power house of the proposed project activity. The coordinates are corrected according to the actual mobile GSP measurement. CAR03 was closed.

The detailed information of the proposed project and the description in the PDD was verified through document review, on-site visit and interview with the project participants, the reference list and interviewee list are available in Section 6 and 7 of the validation report.

Complying with Para. 64 of VVM, through above mentioned validation methods, it has been validated that the information provided in the PDD version 6.0 is consistent with the actual situation and planning. The description in PDD is complete, sufficiently accurate and therefore complies with CDM requirements.



3.4 Baseline and Monitoring Methodology

3.4.1 Applicability of the Selected Methodology to the Project activity

The project applies approved methodology ACM0002. This methodology is applicable to grid-connected renewable power generation project activities that install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity. The assessment of the relevant information contained in the PDD against each applicability condition is described below:

- The proposed project involves the installation of a new grid-connected renewable power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).
- The project activity is the installation of a hydro power plant.
- The project activity has a new reservoir with power density of 24.5W/m^2 which is greater than 10W/m^2 . (See Section B.6.1. for detailed calculations).
- The project does not involve an on-site switch from fossil fuels to a renewable source.

The PDD correctly identifies the referred tools as per the methodology:

“Tool to calculate the emission factor for an electricity system” (version 02);

“Tool for the demonstration and assessment of additionality” (version 05.2).

“Combined tool to identify the baseline scenario and demonstrate additionality” (version 02.2);

“Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” (version 02);

The PDD for global stakeholder publication started on 17/04/2010, at which time the ACM0002 ver.11 was the applicable version. After 16/09/2010, version 11 of ACM0002 was not valid, so the PP updated the PDD applying the most updated version, i.e. version 12.1.0. The project meets all the applicability conditions and is in line with the requirements and stipulations mentioned in all sections in ACM0002 version 12.1.0. The explanation of the choice of the applied methodology is elaborated in Section B.2 of the PDD and verified to be correct.



CAR04 was raised: The approved baseline and monitoring methodology ACM0002 version 11 is not valid after 16/09/2010, please apply the most updated version of the methodology. The applied methodology is updated to be version 12.1.0 in PDD. The applied methodology is updated to be version 12.1.0 in PDD version 6.0. The modification is correct. CAR04 was closed.

Based on the on-site assessment, the validation team noticed that there has been established a back-up selfuse diesel power generator, thus CL 01 was raised: Please analyze whether the CO₂ emission of diesel generator will contribute to more than 1% of the overall expected average annual emissions reduction. The project owner explained that the project will install one on-site diesel generator with total capacity of 300kW which will be maintained for emergency purpose in case the power line which sends the power from the grid to the dam is cut off. For the emission factor of the diesel generator we refer to the AMS-I.F (version 01) methodology which provides emission factors for diesel generator systems. Even apply the highest value listed in the methodology which is 2.4kgCO₂e/kWh (generator below 15kW), which is conservative considering the size of the generator used on-site, 1% of annual emission reductions of the proposed project is estimated to be 3,828.39tCO₂e, which means the diesel generator would run 5,317 hours per year. The load factor is over 60%, which is impossible. Therefore, the emission from back diesel generator is negligible. The explanation is reasonable and satisfying. CL01 was closed.

Complying with Para. 76 of VVM, the validation team confirms that by checking the requirements of methodology ACM0002 version 12.1.0 and the above mentioned documents and also the on-site visit, it could be confirmed that the selected methodology is applicable to the project activity, and has been correctly quoted and applied.

The project emission and leakage is also correctly identified and calculated in Section B.6 of the PDD in accordance with the applied methodology. Complying with Para. 77 of VVM, the validation team confirms that no other source not addressed by the applied methodology ACM0002 version 12.1.0 contribute more than 1% of the emission reductions is found.



3.4.2 Project Boundary

The project boundary was assessed in the context of physical site visit, interviews and based on the secondary evidences received on the design of the project.

The spatial extent of the project boundary includes the project power plant and all power plants connected physically to CCPG, which is in accordance with the methodology.

No CARs, CLs or FARs were raised.

Complying with Para. 80 of VVM, the validation team confirms that the identification of Project Boundary and the selected sources and gases is in compliance with the applied methodology. There are no other emission sources that will be affected by the project activity and are not addressed by the applied methodology.

3.4.3 Baseline Identification

As the project is the installation of the new grid-connected renewable power plant that delivers the generated electricity to the Grid (CCPG), According to ACM0002 version 12.1.0, the baseline scenario is determined properly 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" version 2.0 dated 16/10/2009 .

The information presented in the PDD has been validated by a first document review of all the data, further confirmation based on the on-site visit and a final step by cross-checking the information with similar relevant projects and/or technologies. The sources referenced in the PDD have been quoted correctly.

No CARs, CLs or FARs were raised.

Complying with Para 87 and 88 of VVM, by validating the assumptions, calculations and rationales used, as described in the PDD, and cross checking with official approvals, the validation team is able to confirm that the baseline scenario identified is reasonable, and that:

- All documents and sources referred to in the PDD are correctly quoted and interpreted;



- All the assumptions and data used by the project participants 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 ACM0002 version 12.1.0 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.

All plausible alternative scenarios listed in the approved methodology have been considered. No other alternatives which supply comparable outputs and / or services are to be taken into consideration. The exclusion of alternatives is reasonable and well evidenced. No plausible scenario has been omitted.

3.5 Additionality of the Project Activity

The validation team assessed the additionality of the project activity with the following steps as below. The demonstration of additionality is in accordance with the tool for demonstration and assessment of additionality version 5.2.

3.5.1 Project Starting Date

The starting date of a CDM project activity is defined as 25/03/2006, which is the signing of the construction contract. The documentations and evidences of the following key events of the proposed project activity were checked by the validation team, the signing of turbine/generator purchase contract and technical agreement was Jun. 2006; the construction start order was 19/05/2006; the signing of resettlement compensation agreements was May 2008. So the validation team confirms that the start date of project activity is 25/03/2006 as the signing of



the construction contract, which is the first real action of the project activity. The determination of starting date is in line with the CDM glossary.

3.5.2 Prior and continuing real action taken to secure CDM

The starting date of the proposed project was before 02/08/2008. Thus, the proposed project activity is defined as an “Existing project activity” according to the Annex 22 of EB 49 “Guidelines on the demonstration and assessment of prior consideration of the CDM (version 03)”.

Overview of key events and timeline of CDM consideration was provided in Table B.8. The relative documented evidences were provided, major activities are:

- On 12/11/2005, the board decided to develop the project as a CDM project activity;
- On 25/07/2006, a CDM team was set up in the project owner company;
- On 22/01/2007, a potential buyer visited the parent company and the ERPA negotiation of several projects including the proposed project began;
- On 28/09/2007, the CDM engagement agreement was signed;
- On 01/03/2008, stakeholder consultation meeting was held;
- On 21/11/2008, the Emission Reduction Purchase Agreement was signed;
- On 29/10/2009, LOA of host country was received;
- On 17/04/2010, GSP of PDD was started.

The validation team checked the original copies of documents and evidences of all events mentioned in Table B.8 of the PDD, and confirmed that the information is correctly presented and that real and continual actions were taken during the implementation of the project since the start date. The interval between the above major events is less than one year, the continuing and real actions taken to secure CDM status is sufficient and properly demonstrated.

CL02 was raised: Please clarify the relationship of Chongqing Bashan Hydropower Development Co., Ltd. with Chongqing Municipality Construction Investment Corporation and



Chongqing Energy Investment Group, as some evidence documents including these companies. At the very beginning, the project entity, Chongqing Bashan Hydropower Development Co., Ltd. (hereafter referred to as “Bashan Hydropower Company”) was co-invested by Chongqing Municipality Construction Investment Corporation who took up the 51% of the total shares and Chongqing Dingtai Group Co., Ltd., who took up the rest 49% shares. Both companies are shareholders of the project entity at that time. On 11 January 2006, Chongqing Dingtai Group transferred the shares in Bashan Hydropower Company to Chongqing Municipality Construction Investment Corporation. On 15 June 2006, Chongqing Municipality Construction Investment Corporation was changed to Chongqing Energy Investment Group after acquisition of Chongqing Gas Group. Therefore, at present, Chongqing Energy Investment Group is the sole shareholder of the project entity, Bashan Hydropower Company. The relationship between Bashan Hydropower Company, Chongqing Municipality Construction Investment Corporation, Chongqing Dingtai Group Co., Ltd. and Chongqing Energy Investment Group was cross-checked by document review [1.3, 1.4, 2.1-2.4] and interview with PP and local officials. This information is transparently stated in the updated PDD. The clarification is sufficient. CL02 was closed.

CL03 was raised: The demonstration of early and continued CDM consideration and the content of “Table B.8 Overview of key events in the development of the project” need to be re-elaborated in the PDD. The logic of Table B.8 is not clear enough, some listed evidences are not sufficient to support the description of events and there are some mistakes in the dates of events. The table is reorganized and date mistakes are corrected. The information in table B.8 is re-organized and corrected in the updated PDD. The validation team checked related evidences and confirmed the authenticity of each listed event. CL03 was closed.

Complying with Para. 104 of VVM, the validation team confirm that:

- The definition of starting date is in accordance with the Glossary of CDM terms and VVM;
- The project complies with the requirements of the latest version of the Guidance on prior consideration of CDM version 3.0;
- The information listed in the PDD is checked to be correct;

The interval between the above major events is less than one year, the continuing and real



actions taken to secure CDM status is sufficient and properly demonstrated.

3.5.3 Identification of Alternatives

According to ACM0002 ver.12.1.0, the additionality of the project activity shall be demonstrated and assessed using the latest version of the “Tool for demonstration and assessment of addtionality” (version 5.2) approved by the CDM EB. In PDD the Benchmark Analysis was applied in the investment analysis as per the Sub-step 2b of Step 2 of “Tool for the demonstration and assessment of addtionality” (Version 5.2).

Four alternatives to the project activity are identified in the PDD .The non-feasible alternatives have been excluded reasonably.

- Scenario 1: Fossil fuel-fired power generation
- Scenario 2: Power generation from wind or other renewable energies
- Scenario 3: The proposed hydropower activity, without the support of CDM
- Scenario 4: The same service of power supply provided from grid (i.e. continuation of the present situation)

Scenario 1 is not in compliance with the Guidance on Industrial Structural Adjustment [4.26], which forbids the construction of conventional fossil fuel power units with a single capacity below 300MW for all regions except Tibet, Xinjiang and Hainan where connection to the larger power grid is not available, while all other alternatives are in compliance. The evidence was checked and the exclusion is confirmed.

Scenario 2 is not realistic because of lack of resources and power generation techniques at that time. The demonstration is cross-checked with China Electrical Power Statistical Yearbook 2007 and 2008 [3.3]. The installed capacity of different power sources mainly comes from coal-fired power stations and hydro power stations. Detailed figures are shown in Table B.2 of the PDD. The installed capacity of the proposed project is 140MW, which is more than the actual installed capacity of 41MW from other sources in Central China Grid in 2007, so scenario 2 is not realistic.



Scenario 3: The proposed hydropower activity, without the support of CDM, is eliminated by investment analysis in later sections.

Scenario 4: The same service of power supply provided from grid (i.e. continuation of the present situation), this is the baseline situation.

Based on the above means, the validation team confirms that all relevant CDM requirements, including relevant and/or sectoral policies and circumstances, have been identified correctly taking into account the definition of the baseline scenario. No other reasonable alternatives are excluded.

The validation team can therefore confirm that all the assumptions and data used by the project participants are listed in the PDD including their references and sources; and all documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD; and relevant national and/or sectoral policies and circumstances are considered and listed in the PDD and the approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.5.4 Investment Analysis

- Benchmark Analysis

Since the Project generates financial and economic benefits through the sales of electricity other than CDM related income, and the project entity is not considering investing in the construction of other identified alternatives, benchmark analysis is correctly applied for conducting the investment analysis in the PDD.

CL05 was raised requesting PP to justify the reasonability of the applied benchmark by the proposed project, and whether it is used for national published assessment code or similar requirement. The reason is demonstrated in the updated PDD. The applied benchmark of post tax project IRR 8% is from FSR, which quoted 8% from the *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects*. This document is applicable to retrofit projects in the power industry and also can be applied to power projects for which no relevant



benchmark is available. It is therefore applicable to the projects in the wind power, fossil-fuel fired power and large hydro power (>50MW) sectors as no existing relevant benchmark for these kinds of project. The application is checked to be correct. The project is a power generation plant, thus this financial benchmark internal rate of return of 8% can be applied by the proposed project. Therefore it could be confirmed that the applied benchmark is suitable for the financial analysis of the proposed project. The validation team checked the *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects* and FSR, the clarification was confirmed. CL05 was closed.

- Suitability of the source of input values to the investment analysis

As required by the paragraph 113 (c) of VVM ver.1.2, the CDM Executive Board clarified that in cases where project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed CDM project activities, DOEs are required to ensure that: (c) On the basis of its specific local and sectoral expertise, confirmation is provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision. As per the requirement, in order to validate the suitability of the source of input values to the investment analysis, the following conclusions were made by the validation team:

- The FSR was the basis of making investment decision for the proposed project. This was confirmed by document review and interview with the project owner. Considering the designed engineering, financial situation and CDM possibility of the proposed project, the Board of the project entity decided to make investment together with applying for CDM project activity. This was confirmed by checking the *Board meeting resolution on CDM consideration* on 12/11/2005 [4.2].
- The period of time between the FSR (October 2005) [2.1] and investment decision (12/11/2005) [4.2] was short enough to confirm that it is unlikely that the input values would have materially changed. It was confirmed that the input values in the FSR were valid and applicable for making investment decision.
- The FSR was compiled by a qualified third party. The East China Investigation and Design Institute under China Hydropower Engineering Consulting Group Corporation has



- design qualification Class A. The validation team confirmed its qualification by checking its certification.
- The FSR was prepared following applicable national and industrial guidance, and was approved by the official authority. This was confirmed by checking the approval of FSR issued by local government Chongqing Municipality Development and Reform Commission [2.2].
 - All the input values to the investment analysis except tariff and fair value are sourced from the FSR. This was confirmed by checking the information and data in the FSR.
 - The proposed project applies the highest available tariff issued to hydropower project in Chongqing at the time of investment decision (0.284RMB/kWh including VAT). This tariff was confirmed by checking the official publication of Chongqing Price Bureau The Notice on Chongqing Price Bureau's *Implementation of the Grid Tariff Adjustment Issued by NDRC* [5.8], in which the highest tariff issued to hydropower project in Chongqing was 0.284RMB/kWh (incl. VAT). Thus the application of this tariff is valid and conservative.
 - The fixed assets value is fully depreciated during operation period in the FSR. But a 5% residual rate was applied in the IRR calculation of the PDD for conservative. This is the most conservative value required in Para. 31 of the Detailed Rules for the Implementation of the Interim Regulation of the People's Republic of China on Enterprises Income Tax [5.10].
 - Suitability of input value for the parameters for financial analysis

The parameter values applied to the IRR calculation of the PDD are listed in Table B.3 of the PDD. Beside the above validation means, the input value for each parameter was validated through cross-checking with relevant laws and regulations and public information. The validation conclusion is as follows:

Table 6 Validation of input values of financial analysis

Parameter	Value Applied in the	Verified Data Source	Validation Method and Opinions



	PDD		
Installed capacity (MW)	140	FSR	The applied value is also cross-checked with the approval of FSR [2.2], water turbine/ generator purchase contract [4.13] and the nameplate of the equipments, in which the installed capacity of 140 MW was clearly mentioned.
Annual power supplied to the Grid (kWh)	448,920,000	FSR	In FSR it is stated that the annual power generation is 449,820,000 kWh, deducting self-use rate 0.2%, the annual power supplied to the grid is 448,920,000 kWh. The amount of annual power generation is calculated basing on available water flow. The hydrology analysis is calculated based on 44 years of historical data by a qualified third party and approved by local government. Thus this value is considered to be valid. So the PLF of $36.68\%(449,820\text{MWh}/140\text{MW}/8760\text{hrs})$ is justified to be appropriate. The validation team checked the Briefing on National Electricity Generation in 1st Quarter of 2010 [4.25], the average self-use rate of hydropower projects is 0.65% in 1st Quarter of 2010, as power generation technology is improving through the years, the



			self-use rate of the proposed project is considered to be conservative.
Total static investment (RMB)	1,119,294,400	FSR	In FSR it is stated that the total static investment includes construction, equipment and installation, immigration, etc. The FSR was prepared following applicable national and industrial guidance, and was approved by the official authority. This was confirmed by cross-checking the approval of FSR issued by local government Chongqing Municipality Development and Reform Commission [2.2] and other official documents. So the applied value is valid. The value of unit cost (total static investment divided by installed capacity) of the proposed project activity are compared with the registered CDM hydropower projects from 70MW to 210MW in Chongqing Municipality of China. The projects used for comparison is sourced from the information on UNFCCC website. The range of unit cost for these projects is from 7.26 to 8.69 million RMB/MW. The unit cost for the proposed project of 7.99 million RMB/MW is within normal range. Thus the total static investment for the



			proposed project is reasonable. The comparison is shown in the below table. Furthermore, the validation team checked the Audit Report 2009 published by Chongqing Wulian Certified Public Accountant [4.19], the total investment cost incurred by the end of 2009 is 1,228,782,118.74 RMB, already higher than the estimated value in FSR. So the applied value is conservative.
Tariff including VAT (RMB/kWh)	0.284	Notice of Chongqing Price Bureau on Implement ation of the Grid Tariff Adjustment Made by the NDRC	According to the official document <i>Notice of Chongqing Price Bureau on Implementation of the Grid Tariff Adjustment Made by the NDRC</i> [5.8] and the statistical table made by the Regulatory Authority of Central China Grid in 2006, the highest tariff issued to hydropower projects at the time of investment decision (12/11/2005) in Chongqing is 0.284RMB/kWh (incl. VAT). This tariff is the highest of all the registered CDM projects locate in Chongqing Province in UNFCCC website. So the applied tariff of 0.284 RMB/kWh in IRR calculation is valid and conservative.
Annual operation	23,270,00	FSR	In FSR it is stated that the annual



and maintenance cost (RMB)	0		operation and maintenance cost includes repair expense, staff income, water resource fee, etc. The validation team cross-checked the calculation in FSR and found it in accordance with Para. 2.2.1 of Interim provisions concerning hydropower construction project financial assessment [5.4]. therefor, the applied value is considered valid and applicable. Even if the annual O&M costs become zero, the project IRR will be 7.46%, still below the benchmark.
Fair value (%)	5	Detailed Rules for the Implementation of the Interim Regulation of the People's Republic of China on Enterprises Income Tax	The fair value in the FSR was 0, but the PP applied a 5% rate at the end of the assessment period in order to be conservative. As per the Para. 31 of the Detailed Rules for the Implementation of the Interim Regulation of the People's Republic of China on Enterprises Income Tax, a company can set its own residual value within 5% of total fixed assets. So the applied value of 5% is the most conservative value. As the fair value is not a sensitive factor to IRR, even if the fair value at the end of the assessment period is 100% of total fixed assets, the IRR will become



			6.55%, less than the 8% benchmark.
Depreciation rate (%)	4.5	FSR	The depreciation rate in the FSR is in accordance with Para. 60 of the Detailed Rules for the Implementation of the Interim Regulation of the People's Republic of China on Enterprises Income Tax [5.13] and Para. 25 of the Enterprise Income Tax Pre-tax Deduction Method [5.14]. The determination is also in accordance with Interim Regulations of Hydropower Construction Project Financial Evaluation [5.4]. So the input value is valid.
VAT (%)	17	FSR	The value is in accordance with <i>Provisional Regulations of the People's Republic of China On Value Added Tax</i> , where the applicable VAT of 17% is clearly required.
Income Tax (%)	33	FSR	The value is in accordance with <i>Provisional Regulations of the People's Republic of China On Enterprises Income Tax</i> [5.10] which is applicable when investment decision was made in 2005. In 2008, the updated income tax of 25% for enterprises was put into affect. Even if applying 25% of income tax, the project IRR will be 5.41%, still below



			benchmark.
Period of operation (year)	30	FSR	According to the design in the FSR, the operation period of the proposed project is 30 years. This was checked to be consistent with the approval of the proposed project by Chongqing Development and Reform Commission on 05/01/2006 and is in line with Para. 1.0.4 of the official guidance Interim provisions concerning hydropower construction project financial assessment.
CER price (€/tCO ₂)	8	Market price	The expected CER price was decided according to the market CER price at the time of investment decision. The validation team checked the report by Point Carbon which concludes that the volume-weighted unit price in 2006 was €8.32/tonne. So the application of this value is reasonable.
Loan interest rate (%)	6.12	FSR	The loan interest rate of 6.12% in FSR is referenced from local bank loan interest rate when FSR was finalized. This value is consistent with the bank loan contract signed with China Agricultural Bank on 31/08/2006.
Urban construction and maintain fees (%)	5	FSR	The applied value is in accordance with <i>Provisional Regulations of the People's Republic of China on City Maintenance</i>



			<i>and Construction Tax.</i>
Educational surtax (%)	3	FSR	The applied value is in accordance with <i>Provisional Regulations of the People's Republic of China on Education Associate Tax.</i>

Table 7 Comparison with similar Hydro projects in Chongqing

UNFCCC Reference No.	Project name	Installed capacity (MW)	Unit cost (million RMB/MW)
1226	Youshuishiti Hydroelectric Project	120.0	7.26
3961	Chongqing Youyang County Youchou Hydropower Station Project	120.0	7.39
2960	Chongqing Jinjiaba HydroElectric Project	75.0	7.81
3524	Caojie Hydropower Project on Jiangling River in Chongqing City	500.0	7.98
	The proposed project	140.0	7.99
2847	Chongqing Zhongliang Hydroelectric Project	96	8.69

The validation team checked the consistency of the parameter values as required by the guideline of EB 38 para.54 (a), (b) and (c), and confirms that the period of time between FSR (October 2005) and investment decision (12/11/2005) was short enough to confirm that it is unlikely the input values would have materially changed, so the applied input values in the PDD are valid and applicable at the time of making investment decision.

With the result of benchmark analysis, the PDD concluded that the project activity would not be implemented without CDM application, as the project IRR without CERs revenue is 5.26%, lower than the benchmark of 8%. The IRR value with CERs revenue is 8.13%, exceeds the benchmark. So the project activity is not financially attractive without CDM application.

CL04 was raised: Please demonstrate the appropriateness of input values for investment analysis, such as statistic total investment, tariff, depreciation rate, residual value and expected CER price. The justification of the appropriateness of input values for investment analysis, especially statistic total investment, tariff, depreciation and residual value are added in the updated PDD. The expected CER price at the time of making investment decision is



changed to 8 euro, the evidence of this market price was checked to be applicable [4.24]. Detailed justification is also listed in Table 2: Table2 Resolution of Corrective Action and Clarification Requests of Annex 1. The explanation and values are cross-checked to be correct and valid. Please refer to Table 6 for detailed validation process and conclusion. CL04 was closed.

- Sensitivity Analysis

A sensitivity analysis is presented in the PDD which demonstrates that the project activity is unlikely to be financially viable under reasonable variations in the critical assumption, i.e. fluctuation range of $\pm 10\%$, in four selected financial parameters, incl. (i) Total investment; (ii) annual O&M cost, (iii) tariff and (iv) annual power supply.

The selection of the sensitivity test parameters is accord with the "Guidance on the Assessment of Investment Analysis (Version 03.1)". The fluctuation range of $\pm 10\%$ is also consistent to the statement of the guideline.

Considering the $\pm 10\%$ alternations of the identified 4 parameters, the IRR without CDM revenues of the proposed project remains below the 8% benchmark.

CL06 was raised: The demonstration of sensitivity analysis is not sufficient. The sensitivity analysis is substantiated in the PDD. It is not considered likely that the project's return will exceed the benchmark due to the following reasons:

- *Static total investment*: According to the data published by the National Bureau of Statistics of China in 2008, it indicates that there is an increasing trend of the Producer Price Indices for Manufactured Goods from 2000 to 2007. According to the statistics published by the National Bureau of Statistics of China, the PPI for Manufactured Goods increased by 6.9% in 2008. So the total investment of the project is impossible to decrease over 10%. For conservativeness, we also made the cross calculation, when the total static investment decreases by 31%, the project IRR can reach the benchmark. As the actual investment cost incurred by the end of 2009 (Audit Report 2009) has already been higher than the value applied in the investment analysis, this is impossible to happen.



- *Power price*: The expected tariff in the Table B.3, 0.284RMB/kWh (incl. VAT) is the actual highest price at the time of investment decision for Bashan project, which is in accordance with the official document “*The Notice of Chongqing Price Bureau on Implementation of the Grid Tariff Adjustment Made by the NDRC*” and the statistical table made by the Regulatory Authority of Central China Grid as well as the actual price prescribed in the power purchase contract of Bashan project with the grid company. We make below assumption in the PDD to calculate the cross point on power price. Assuming the power price is increased to 0.386RMB/kWh (incl. VAT), or in other words, goes up by 36%, the project IRR after tax can reach the 8% benchmark. Furthermore, the assumed price is an ideal one based on the current financial situation, inflation or increase of all the costs is ideally and optimistically ignored. It is clear that there is no probability for tariff to be increased by 36% within the near future.

- *Annual operation and maintenance cost*: Variations in the annual O&M costs have an insignificant impact on the return of the project. Even if the O&M cost becomes zero, the project IRR is still below the benchmark, but it is impossible to happen at all.

- *Annual power supply*: Annual power supply is determined by the annual power generation, which is linked directly to the available water flow. Only if the annual power supply increases by 36%, the IRR would reach the benchmark. The projected power generation is designed based on 44 years of water flow statistics (1959-2002) in the FSR which was approved by the government authority on 5 January 2006, so the value derived from this long-run data should be stable over the lifetime of the project activity and it is impossible for it to change by such a great variation. Moreover, the annual power supply estimated in the FSR is conservative as it only takes 0.2% auxiliary consumption into account but not considers effective coefficient and transmission losses.

In summary, the substantiated sensitivity analysis in the updated PDD was cross-checked to be reasonable. The demonstration is sufficient. CL06 was closed.

CL07 was raised: Please justify the applied Plant Load Factor by the proposed project as per EB 48 Annex 11. The PP explained that the PLF is calculated as annual operational



hours/8760hrs. The operational hours actually results from the ratio of the annual power generation and the installed capacity, while in the case of the proposed project activity, the power generation is calculated based on the 36 years hydrological data (1967-2002) by an independent qualified body in the FSR, including the designed operating hours was provided to the government for project approval and approved by the authority on 5 January 2006. Therefore, we conclude that the PLF 36.68% (449,820MWh/140MW/8760hrs) is appropriate. The justification of PLF of Bashan project was added in Section A.4.3 of the PDD. The validation team checked the FSR and its governmental approval, which states that the expected annual power generation of the proposed project is 449,820MWh, the scale is 140 MW. The FSR is calculated based on 36 years of historical hydrological data by East China Investigation and Design Institute under China Hydropower Engineering Consulting Group Corporation, a qualified independent body. Therefore the annual power generation is reasonable. So the PLF of 36.68% (449,820MWh/140MW/8760hrs) is valid and in compliance with EB 48 Annex 11 Reporting and Validating of Plant Load Factors (Version 01). The clarification and justification was added in Section A.4.3 of the updated PDD. CL07 was closed.

Complying with Para.114 of VVM, through above mentioned validation method, the validation team is able to confirm that the parameters used in the financial calculations for the proposed project have been validated, the suitability of applied benchmark has been assessed, the underlying assumptions are appropriate and the financial calculations of IRR are correct.

3.5.5 Barrier Analysis

The project does not face other barriers besides the low economic returns. Therefore step 3 of the additionality tool is not applicable.

3.5.6 Common Practice Analysis

- First, Chongqing Municipality is defined as the region for common practice analysis, which is appropriate for the proposed project activity because of comparable environment regarding to regulatory framework, investment climate, access to technology, access to financing, etc.



- Second, hydropower projects with a capacity between 50 MW and 300 MW is also selected in accordance with the *SL252-2000 Standard for Classification and Flood Control of Water Resources and Hydroelectric Project* which classifies projects between 50-300MW as middle-scale.
- Third, projects started construction before the 29 December 2002 reforms restructuring the power sector are not taken into account, since they did not benefit from comparable environment with regard to regulatory framework. Before the reforms, tariffs were determined either by the Ministry of Electric Power (prior to 1998), or by the State Economic and Trade Commission (after 1998) through provincial governments, and guaranteed investors with a sufficient return, according to cost-compensation principles.
- Fourth, the similar projects also developed under CDM support are excluded as well.

The above four criteria of choosing similar projects are verified to be correct. Besides checking projects listed the Yearbook of China Water Resources 2006, all hydropower projects in the same river basin were also analyzed.

As shown in Table B.7a, Yujiankou Hydropower Station is the only project that can be considered similar to the proposed project in accordance with the “Tool for the demonstration and assessment of additionality”. The distinction between the proposed project and Yujiankou project are: (1) It was invested by a Singapore based company named Asia Power Corporation Limited, so the access to investment is different with the proposed project. (2) Its construction was started before 2002; (3) Its unit investment per kW is lower than the proposed project. As shown in Table B.7b, Xiangshuigou Hydropower Station is the only project that can be considered similar to the proposed project in the same river basin. However the project locates in Shaanxi province, so it faces different investment environment with the proposed project. The validation team verified the information of both projects and confirmed that the exclusion of these projects is appropriate. Therefore there is no similar project to the Bashan project have been implemented without the support of CDM. The common practice analysis confirms the conclusions of the additionality tests. Therefore, the project is additional.

Complying with Para.121 of VVM, through above mentioned validation method, the validation



team confirms that the common practice analysis has been verified and the proposed project is not common practice.

Based on assessment of CDM serious consideration, Comparison of economic attractiveness of the remaining alternatives, Sensitivity analysis, Common practice analysis, which are demonstrated in above sections, the project can be concluded as additional.

3.6 Emission Reductions

The calculations of project emissions, baseline emissions and leakage and emission reductions have been checked by the validation team. The calculations were carried out based on the calculation Excel spreadsheets. The parameters and equations presented in the PDD and further documentation have been compared with the information and requirements presented in applied methodology and respective tools.

● Baseline Emission

The calculations are correctly applied according to the tool to calculate the emission factor for an electricity system as the following steps:

Step 1: Identify the relevant electric power system. The power to be generated from the Project will be delivered to the CCPG. There is net imported power from China Northwestern Power Grid to CCPG, so it is considered as part of the relevant electric power system. The ex-ante calculation method with fixed emission factors (for OM and BM) is selected.

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

Step 3: Select an operating margin (OM) method. The share of the low-cost/must run resources in CCPG is less than 50% in 2003-2007, therefore simple OM is used.

Step 4: Calculate the operating margin emission factor according to the selected method. Option 3 is selected.

Step 5: Identify the cohort of power units to be included in the build margin (BM). Option 2 is selected.

Step 6: Calculate the build margin emission factor. The project uses the share of different type



capacity in capacity addition as weight, the weighted average of emission factors of different type capacity is calculated as the Build Margin emission factor.

Step 7: Calculate the combined margin (CM) emission factor. The weight of EF_{OM} is 0.5 and the weight of EF_{BM} is 0.5 by default.

Step 8: Calculate the baseline emission (BEy).

The PDD refers to the Operating Margin (OM) Emission Factor and the Build Margin (BM) Emission Factor published by the Chinese DNA on 02/07/2009. The BM is 1.1255 tCO₂e/MWh, the OM is 0.5802 tCO₂e/MWh. And the CM is 0.8528 tCO₂e/MWh.

The equations for calculation are transparently presented in a spreadsheet provided to DOE, and verified to be correct.

- **Project Emissions**

Description of Project Emission:

As per the applied methodology ACM0002 ver.12.1.0, for hydropower project activities that result in new reservoirs, project proponents shall account for CH₄ and CO₂ emissions from the reservoir.

Description of power density:

The power density of the project is 24.5 W/m², greater than 10W/m², so the project emission is zero according to the applied methodology ACM0002 ver.12.1.0.

The baseline scenario has identified according to methodology ACM0002, no alternative for choice. Based on document review and on-site visit, the project emission is validated to be correct.

- **Leakage**

Description of Leakage:

As per the methodology, the project does not need to consider leakage.

- **Emission Reductions**

Description of Emission Reductions:



Detailed descriptions are given and conservative values are adopted. The equations for calculation are transparently presented in a spreadsheet provided to DOE, and verified to be correct. The ex-ante estimate of annual emission reductions due to the project is 382,839 tCO₂e for the first 7 year crediting period.

The calculations of project emissions, baseline emissions and leakage and emission reductions have been checked by the validation team. The calculations were transparently indicated in the ER spreadsheet. The parameters and equations presented in the PDD and further documentation have been compared with the information and requirements presented in applied methodology and respective tools.

Detailed descriptions are given and conservative values are adopted. The equations for calculation are transparently presented in a spreadsheet provided to DOE, and verified to be correct. The ex-ante estimate of emission reductions due to the project is 382,839 tCO₂e annually in the first 7 year crediting period. The latest available data at the time of validation commencing are used for calculation. Therefore, the GHG emission reduction calculation is assessed to be correct.

The calculations of project emissions, baseline emissions and leakage and emission reductions have been checked by the validation team. The calculations were carried in accordance with the requirement of the applied methodology. No mistakes have been observed after the validation team has recalculated the baseline emission input provided. The parameters and equations presented in the PDD have been checked with the information and requirements presented in applied methodology and respective tools to be correct.

Complying with Para 92 and 93 of VVM, by validating the assumptions, calculations and rationales used, as described in the PDD, and cross checking with official approvals, the validation team is able to confirm that the baseline scenario identified is reasonable, and that:

- (a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source



of data is correctly quoted and interpreted in the PDD;

(c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;

(d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;

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

3.7 Monitoring

3.7.1 Parameters determined ex-ante

The following monitored parameters are presented with regard to the requirement of the applied methodology ACM0002.

$EG_{\text{facility},y}$: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y ;

Cap_{PJ} : Installed capacity of the hydro power plant after the implementation of the project activity;

A_{PJ} : Area of the reservoir measured in the surface of water, after the implementation of the project activity, when the reservoir is full.

3.7.2 Monitoring plan

The monitoring plan includes information of monitoring organization, monitoring equipment and program, data collection, calibration, data management and monitoring report.

The validation team has reviewed the documents and performed the on-site interview with PPs and stakeholders, and confirms that the proposed monitoring plan is feasible. The major monitoring information has been interviewed with the PP, regarding the location of electrical meters, data management and QA/QC procedures to be implemented in the context of the project. The power supplied to the grid will be monitored by M1. The power downloaded from the grid will be monitored by M1 and M2.

The grid company will issue ETNs (Electricity Transaction Notes, hereinafter ETNs) regularly



to the project entity where the monthly amount of electricity supply to the grid is mentioned. The measurement results of ESy by M1 will be cross-checked against the values on ETNs. The measurement results of power received through M1 and M2 recorded monthly by the project entity will be cross-checked against values on the ETNs. In case of discrepancies between measured power supply and that on ETNs the lower value will be taken into account for emission reductions calculation. Calibrations of M1 and M2 will be carried out annually by a certified company. If there are any substantial discrepancies between the readings of the metering instrument and the ETNs throughout the year, the metering instrument will be recalibrated.

In addition to the above, the installed capacity of the hydropower plant will be monitored yearly according to the applied methodology. The project entity will prepare photographic evidence of the installed equipment on the basis of the nameplates, which will be in accordance with domestic and international standards, or statements/documents by the manufacturer of the technology or the project entity.

The project entity will appoint qualified entity to carry out the measurement of the surface area of the reservoir when the project becomes operational. A measurement report of the reservoir surface area will be issued by this third party.

All monitored data records will be kept until 2 years after the end of the crediting period.

The monitoring officer is responsible for verification of the measurement, collection of sales records, collection of grid statements of the power supplied by the grid to the hydropower plant and the calculation of the emissions reductions. the measurement of the electrical energy supplied to the grid and reporting of daily operations, which will be carried out by the operational staff on duty. The monitoring reports will be reviewed by the manager of the company. The selection procedure of monitoring officer and its task and responsibility is elaborated. Base on the above, CEC confirmed that the PP has the ability to implement the monitoring plan.

During document review and on-site visit, the validation team is able to verify that necessary procedures related to data handling, quality assurance, and monitoring personnel have been



appropriately implemented.

Complying with Para. 124 of VVM, the validation team confirms that monitoring plan complies with the requirements of the methodology; the monitoring arrangements described in the monitoring plan are feasible; the project participants are able to implement the monitoring plan.

3.8 Sustainable Development

The proposed project activity will contribute to sustainable development in the following ways:

- Reducing the dependence on exhaustible fossil fuels for power generation by using renewable hydropower;
- Reducing air pollution by displacing fossil fuel power plants;
- Reducing the adverse health impacts from air pollution;
- Reducing the emissions of greenhouse gases to combat climate change;
- Contributing to local economic development in many ways.

No CARs, CLs or FARs were raised in this section.

Complying with Para. 127 of VVM, the validation team confirms that the host Party's DNA formally confirmed the contribution of the project to the sustainable development of China in the issued LoA, which is also elaborated in Section 3.1: Participation and Approval

3.9 Environmental Impacts

The environmental impacts of the project activity have been clearly described in Section D.1 of the PDD as per the EIA and its approval, the major aspects are: Environment impact caused by construction works, Impact on water quality due to the creation of the reservoir, Ecological impact, Resettlement and Soil and water loss.

The EIA is a must in China for new hydropower projects. The EIA of the proposed project was approved by Chongqing Municipality Environment Protection Bureau on 13/04/2006. The EIA report and its approval have been reviewed by the validation team. Other relative evidences such as EIA approval, resettlement standard, contracts and evidence of compensation to



immigrants have been reviewed by the validation team.

As described in the PDD, the project will follow the environmental protection measures to mitigate the negative impacts and make sure that the project activity will have a little negative environmental impact. There is no trans-boundary impact described in the EIA reports or approvals of EIA of the proposed project.

No CARs, CLs or FARs are raised in this section.

Complying with Para. 133 of VVM, by means of document review and on-site interview with local officials and stakeholders, the validation team confirms that the Local Stakeholder Consultation is adequately carried out.

3.10 Local Stakeholder Consultation

The stakeholders were consulted from 18/02/2008 to 18/03/2008, and a stakeholder consultation meeting was held on 01/03/2008. 60 people participated in the meeting and took questionnaire survey at the meeting; besides, the PO also distributed questionnaires to 240 people who did not attend the meeting. All 291 received questionnaires were reviewed by validation team. These activities are prior to the publication of PDD in UNFCCC website from 16/04/2010.

The announcements of the stakeholder consultation meeting and website were made through a newspaper announcement on 18/02/2008 of Chengkou News and an online announcement was published in Chengkou County Public Information Site on 17/02/2008. In addition to the above announcements, important stakeholders received personal invitations to attend the meeting. Based on the above, the validation team hereby confirmed that the local stakeholder consultation was adequately performed.

CL08 were raised. Please provide a summary on the comments of the stakeholders in section E.2 of the PDD, demonstrate how due account was taken, and provide evidence that the concerns were solved.

The PP explained that the questionnaire survey clearly shows that almost all attendees supported the construction of the project. Majority of the attendees believed the project construction wouldn't cause negative impacts on society, economy, and personal lives. Few



villagers expressed their concerns on the impacts of noise and dust. At the meeting, the PO promised they would ask the builder to strictly follow the measures put forward in the EIA to minimize the impacts. These concerns were also expressed in the questionnaires that were distributed outside the meeting, and the PO made same explanation. Expressed at the meeting as well as shown in the questionnaires, the main concerns focused on the compensation for land and buildings, the PO and the local government officer made detailed and patient explanation that the compensation standard of the project was approved by the government and the actual compensation would strictly abide by the approved standard, and promised compensation would be paid on time and in full amount and effective measures would be taken to recover the environmental impact caused by the project construction to minimize its influence on irrigating and living conditions of local residents. Considering the concerns about compensation to relocation and land expropriation, the government of Chengkou County agreed on adjusting the compensation standard of Bashan project by following the latest national provisions on 16 Aug. 2008. The balance between old and new compensation standards was paid. The statement from the government confirmed that compensation contracts were accepted and signed by all affected people, and the compensation was also paid completely. For the concerns about other aspects, after on-site validation, as validator required, some villagers with typical concerns in the questionnaires including the villager who chose “do not support” were visited again, and they expressed they were happy with the PO’s efforts in solving their concerns about the project and having known more about the project in detail, they believed that the project construction and operation is a good thing to local residents, which will raise their life quality and make local economy prosperous. They unanimously support the project.

Related description of concerns was added in the updated PDD. The description of concerns was cross-checked with the survey questionnaires [4.10] by the validation team.

The evidences of how due account had been taken and how the concern was solved were also checked by the validation team. As the compensation process was not finished during the survey, most concerns raised were regarding standard and payment of compensation. The compensation standard of the proposed project was approved by the local government in 2005



[2.9], the project was approved in 05/01/2006 [2.2] and the land occupation and compensation process was started. In 2007, a new compensation standard [5.6] was published in Chongqing, according to the requirement by the government and local stakeholders, the PP increased the compensation standard as per the new requirement, an adjusted compensation plan [2.10] was approved by local government in 2008. The affected residences were satisfied with the new compensation standard, resettlement compensation agreements were signed by each household and the PP [4.22], the payment of compensation for land and buildings were made to each households [4.21], a survey was conducted again to the people who expressed concerns in the first stakeholder consultation meeting in Mar. 2010 [4.11], the questionnaires showed that the people do not have concerns any more, the validation team confirmed that this type of concern was properly solved.

Other concerns were about the impact to household income, transportation, air quality and living quality. During the on-site interview with local government officials and affected residents, it was learned by the validation team that the compensation helped the household income, several roads and wharfs were built to facilitate local transportation, the official from Chengkou Environmental Protection Bureau also confirmed that the project abided by all applicable environmental requirements during the construction and operation period, there were no environmental complain received, together with the above means and other measures such as cleaning the living environment, the living quality of local people was also improved. After on-site observation and checking the questionnaires conducted to the people who expressed concerns in the first stakeholder consultation meeting in Mar. 2010 [4.11], the validation team confirmed that these types of concern was properly solved. CL08 was closed.

Complying with Para. 130 of VVM, by means of document review and on-site interview with local officials and stakeholders, the validation team confirms that the Local Stakeholder Consultation is adequately carried out.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD was made publicly available from 16/04/2010 in accordance with paragraph 40(b) of the modalities and procedures for the CDM and receive, within 30 days, comments from



Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. No comments were received during the process.

No CARs, CLs or FARs were raised.



5 VALIDATION OPINION

China Environmental United Center Co., Ltd (CEC) has performed a validation of Chongqing Chengkou County Bashan Hydropower Station Project in China based on UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation, the subsequent on-site interviews and the further cross-check of references have provided CEC with sufficient evidences to determine the fulfillment of stated criteria in the protocol. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence, CEC will recommend the project for registration by the CDM EB.

An analysis as provided by the applied methodology demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions as specified within the final PDD version 6.0.

The total emission reductions from the project are estimated to be an annually average of 382,839 tCO₂e per year over the first 7-year renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

It is CEC's opinion that Chongqing Chengkou County Bashan Hydropower Station Project, as described in the PDD version 6.0, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria, and correctly applied the baseline and monitoring methodology ACM0002 version 12.1.0. CEC thus requests the registration of the project as a CDM project activity.

Beijing, 25/04/2011

A handwritten signature in black ink, appearing to read 'ZHANG Ruizhi'.

ZHANG Ruizhi

Validation Team Leader

Beijing, 25/04/2011

A handwritten signature in black ink, appearing to read 'TANG Dingding'.

TANG Dingding

Chairman of Board



6 REFERENCES

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 - 1.3 Letter of Approval, DNA of China , 09/10/2009
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- 3 Baseline and Monitoring Methodology



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 - 4.2 Board meeting resolution on CDM consideration, 12/11/2005
 - 4.3 Notice on CDM team establishment, 19/12/2006
 - 4.4 Meeting Minutes of Potential Buyer On-site Visit, 22/01/2007
 - 4.5 Draft ERPA with tract change, with potential buyer, 30/06/2007
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6. Tools

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6.2 ACM0002 version 12.1.0

6.3 Tool to calculate the emission factor for an electricity system version 2.0

6.4 Tool for demonstration and assessment of additionality version 5.2

6.5 Guidance on the demonstration and assessment of prior consideration of the CDM
version 03

6.6 Guidelines for the Reporting and Validation of Plant Load Factors, 17/07/2009

7 PEOPLE INTERVIEWED

Name	Organization / Function
LIAO Changhui	Chongqing Bashan Hydropower Development Co. Ltd. /Office.
LI Chengming	Chengkou Agriculture Bank/Office.
DU Zhonghua	Chengkou Land Resource and House Bureau/Engineer
TAN Lei	Chengkou Immigrant Office.
ZHANG Weisu	Chengkou County Government/Office
WU	Chengkou Water Resources Bureau
XIE Chengsan	Chengkou Development and Reform committee
LUO Xian	Chengkou Environmental Protection Bureau
ZHOU Xiaobo	Chengkou Forest Bureau
RAN Wen	Yuanba village
RAN Kangding	Yuanba village
RAN Hongjiang	Yuanba village
RAN Hongwang	Yuanba village
CHEN Bangwen	Longwang village
RAN Mingyou	Longwang village
NIE Dafa	Yuanba village
RAN Shuyuan	Pingshang village
RAN Guoyuan	Pingshang village
RAN Yuangang	Xingling village



HE Mingtang	Lianming village
DUAN Qijiang	Pingshang village
HE Mingquan	Fenfa village
REN Yebin	YUAN Ba
CHEN Xingcai	Huangxi village
NIE Daguo	Xingling village
NIE Dayou	Cangfang village
LIAO Ninggang	Zhongan village
HE Shuanglan	Yuanba village
CHEN Guoping	Yuanba village
RAN Zhengyuan	Yuanba village
LI Liangwen	Huangxi village
CHEN Xiyan	Yuanba village
RAN Honglan	Yuanba village
CHEN Xincal	Yuanba village
XIONG Weiping	Yuanba village
CHEN Qiming	Longwang village
RAN Weiyun	Yuanba village
CHEN Qiming	Longwang village
RAN Huayuan	Yuanba village
RAN Mingkun	Yuanba village
RAN Xiaolin	Yuanba village
RAN Junyuan	Yuanba village
RAN Hongping	Lianming village
XIE Piaowen	Yuanba village
RAN Mingxiao	Yuanba village
RAN Mingyi	Yuanba village
CHEN Mingliang	Yuanba village
NIE Shaobin	Nuli village



APPENDIX A VALIDATION PROTOCOL

Table 1 Requirement Checklist

Checklist Question	MoV	Comments MoV=Means of Validation, DR=Document Review, I=Interview, O=Observation	Draft Conclu sion	Final Conclu sion
A. General Description of Project Activity				
A.1. Title of the Project Activity				
A.1.1 Does the project title clearly identify the unique CDM activity?	DR	Yes. The project title is “Chongqing Chengkou County Bashan Hydropower Station Project”, it identifies the unique CDM activity clearly. The project title is consistent with LoA and MoC. The title of the project and version number of the document and data is complete and correct.	OK	OK
A.1.2 Are there any indication concerning the history of the versions?	DR	Yes. The version 1.0 was compiled to apply the China LoA. The PDD version 2.0 was completed on 23/03/2010, and was submitted for validation and global stakeholder comments. The revised and final PDD version 6.0 dated 15/04/2011.	OK	OK
A.1.3 Does the PDD apply the latest UNFCCC template?	DR	Yes. The PDD correctly applies CDM PDD template version 03, in effect from: 28 July 2006.	OK	OK
A.2. Description of the Project Activity				



A.2.1 Is the description delivering a transparent overview of the project activities?	DR O	Yes. The proposed project involves the construction of a new hydro electric power project at the main stream of Ren River near Bashan town of Chengkou County, Chongqing Municipality, China. The main objective of the project is to generate power from clean renewable hydro power in Chongqing and contribute to the sustainability of power generation of the Central China Grid. The hydropower station will have a total installed capacity of 140 MW with two sets of individual 70MW turbine / generator units. The proposed project involves the construction of a 155 meters dam, a water intake, a tunnel of 2181.48 meters and a power house. The expected annual operational hour for the proposed project is 3,213 hours. The annual power generation is 449,820 MWh and expected net annual power supply to the grid is 448,920 MWh. The ratio of net annual power supply compare with annual power generation is 99.8%, which is within normal range.	OK	OK
A.2.2 What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	DR I	The following documents are major evidence documents available and checked against the information in PDD by the validation team: ● Feasibility Study Report and its Approval ● EIA and its Approval	OK	OK
A.2.3 Is the information provided by the PDD consistent with the information provided by proofs?	DR	Yes. The information provided in PDD is cross checked with the information provided by proofs, major description and data are consistent and correct.	OK	OK



A.2.4 Is the project a large scale project, a small scale project with average annual emission reductions above 15,000 t or a bundled small scale project? Has on-site visit been carried out?	DR I	Yes. The project activity is a large scale project activity (total installed capacity is 140 MW) with estimated annual emission reductions of 382,839t CO ₂ e per year, above 15,000t CO ₂ e per year. During 15 May 2010 to 19 May 2010, the validation team performed an on-site visit and interviews with project proponents, local officials and stakeholders to confirm the provided information and to resolve the issues identified during the desk review.	OK	OK
A.2.5 Does the project activity involve alternation of existing installation? If so, have the differences between pre-project and post-project activity been clearly described in the PDD?	DR I O	The proposed project does not involve alteration of existing installations.	OK	OK
A.3. Project Participation				
A.3.1 Is the form required for the indication of project participants correctly applied?	DR	Yes. The form is correctly applied.	OK	OK
A.3.2 Does it clearly specify all the Parties and project participants?	DR	The project participants are: Chongqing Bashan Hydropower Development Co., Ltd. and AES Carbon Exchange Ltd. CAR01 The name of the Annex I party Holland should be modified to Netherlands according to the list of DNAs on the UNFCCC website.	~~CAR01~~	OK



A.3.3 Has the project provided written approvals of all parties involved?	DR	The host party China meets the requirement to participate in the CDM. China is a non Annex I party to the Kyoto Protocol. China has established a DNA (National Development and Reform Committee, NDRC) as per the participating requirements for CDM under the Kyoto Protocol. The Letter of Approval /1/ of the host Party was issued by the DNA of China on 29/10/2009, confirming the project is a bilateral CDM project, with Chongqing Bashan Hydropower Development Co., Ltd. and AES Carbon Exchange Ltd. recognized as the project participants. The LoA of the DNA of China was provided by the project participant. CEC confirmed its authenticity from the Announcement of newly approved projects issued by DNA of China on 14/10/2009/37/ and relative documents of local government. The information of project title and Project Participants in the PDD is consistent with the LoA. CAR02 LoA from Annex I Party has not been provided.	CAR02	OK
A.3.4 Does the written approval from the host country confirm that the project contributes to the sustainable development in the country?	DR	Yes. The LoA of China confirmed the voluntary participation of the proposed project, in compliance with permission requirements and assisting China in achieving sustainable development.	OK	OK



A.3.5 Will the project create other environmental or social benefits than GHG emission reductions?	DR O	Yes. Besides GHG emission reduction, the proposed project activity will also help meeting electricity demand and downgrading the rely on fossil fuel, contributes to the abatement of other pollutants brought by thermal power plants, contributes to local economic development, etc. More project specific information about its contribution to sustainable development has been provided, including contribution to the province's economic development, improving of the infrastructure of local villages and providing employment opportunities in operation period.	OK	OK
A.4. Technical Description of the Project activity				
A.4.1 Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	DR I O	CAR03 The coordinates of the project location in the PDD version 2.0 were estimated. Please provide the actual coordinates of the dam and power house of the proposed project activity.	~~CAR03~~	OK
A.4.2 To which category(ies) does the project activity belonging to? Is the category correctly identified and indicated?	DR	The project falls under scope 1 Energy Industries (renewable/non-renewable sources). The category is correctly identified in Section A 4.2 of the PDD.	OK	OK
A.4.3 Technology to be employed by the project activity				
A.4.3.1. Does the technical design of the project activity reflect current good practices?	DR I	Yes. After document review and on-site visit, the project uses well established hydropower generation technology for electricity generation and transmission and hence reflects the current good practices to use renewable resources to generate electricity.	OK	OK



A.4.3.2. Does the description of the technology to be applied provide sufficient and transparent input/information to evaluate its impact on the greenhouse gas balance?	DR	The description of the technology is complete, relative document evidences have been provided and checked. The project activity comprises the use of hydropower for the substitution of grid supplied electricity mainly from coal fired plants. The structure consists of a dam with a maximum height of 155 meters including a water intake, two headrace tunnels, a powerhouse and tailrace. The project will install two water turbine and generator sets with an individual capacity of 70MW. The reservoir will have a total surface area of 5,720,000 m². The power density of the project is 24.5 W/m². Technical data of the turbine / generator units including rated discharge, rated output, average efficiency, etc. are listed in Table A.2.	OK	OK
A.4.3.3. Does the implementation of the project activity require any technology transfer from Annex I countries to the host country(ies)?	DR I	No. The equipments of the power plant are made in China. Therefore no technology transfer is required.	OK	OK
A.4.3.4. Is the technology implemented by the project activity environmentally safe?	DR I	Yes. As the project is a hydro power project, the technology implemented by the project activity is environmentally safe.	OK	OK
A.4.3.5. Is the information provided in compliance with actual situation or planning?	DR I O	The dam and power plants layout is consistent with the plans in FSR and other documents. The turbines and generators are in position and in operation, relative purchase contract and technical document have been reviewed by the validation team.	OK	OK
A.4.4 Is estimation of the emission reductions in first crediting period correct?	DR	Yes. The calculation is correct.	OK	OK



A.4.5 Is any public funding from Annex I countries available to the proposed project?	DR	No. According to the document review of FSR, financial auditing report and PDD and on-site auditing, there is no public funding for the project activity.	OK	OK
B. Application of a Baseline and Monitoring Methodology				
B.1. Does the project correctly apply the latest approved methodology and its tools?	DR	The project applies approved methodology ACM0002. This methodology is applicable to grid-connected renewable power generation project activities that install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity. The application is justified as follows: The proposed project involves the installation of a new grid-connected renewable power plant at a site where no renewable power plant was operated prior to the implementation of the project activity; The project activity is the installation of a hydro power plant; The project activity has a new reservoir with power density of $24.5\text{W}/\text{m}^2$ which is greater than $4\text{W}/\text{m}^2$. The methodology applies the following tools: Tool for the demonstration and assessment of additionality (version 05.2) Tool to calculate the emission factor for an electricity system (version 02). The PDD for global stakeholder publication started on 17/04/2010, at which time the ACM0002 ver.11 was the applicable version. CAR04 The approved baseline and monitoring methodology ACM0002 version 11 is not valid after 16/09/2010, please apply the most updated version of the methodology.	CAR04	OK



B.2. Does the information regarding greenhouse gas emissions occurring within the proposed project boundary as a result of the implementation of the proposed project which are expected to contribute more than 1% of the overall expected average annual emissions reductions, including those not addressed by the applied methodology?	DR O	Since the power density of the proposed project exceeds 10 W/m^2, the project emission and leakage is considered to be zero by the methodology. Another source that might contribute to the emission reductions is found during the on-site visit, which is a diesel generator that might supply electricity for the project internal usage in case the hydro generators are not working, and the project will not download power from the grid. CL01 Please analyse whether the CO_2 emission of diesel generator will contribute to more than 1% of the overall expected average annual emissions reduction.	CL01	OK
B.3. Are the project's spatial boundaries (geographical) clearly defined?	DR	Yes. The boundary of the proposed project is selected to be the geographical and physical boundaries of the proposed project and covers all the power plants connected with the Central China Power Grid. According to latest the guidance of China's DNA issued on 02/07/2009, the Central China Power Grid covers provinces and areas of Henan, Hubei, Hunan, Jiangxi, Sichuan and Chongqing.	OK	OK
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario (Baseline Scenario Determination) The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.				



B.4.1 What is the baseline scenario?	DR	According to the methodology, the baseline scenario is the 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". The baseline scenario of the proposed project activity is the continued operation of the existing power plants and the addition of new generation sources in the CCPG to meet electricity demand. The baseline defined in the PDD is correct.	OK	OK
B.4.2 What other alternative scenarios have been considered and why is the selected scenario the most likely one?	DR	Four alternative baseline scenarios to the project have been identified and discussed: Scenario 1: Fossil fuel-fired power generation Scenario 2: Power generation from wind or other renewable energies Scenario 3: The proposed hydropower activity, without the support of CDM Scenario 4: The same service of power supply provided from grid (i.e. continuation of the present situation) The baseline is identified as follows: Scenario 3: if not undertaken as a CDM project activity, is unlikely to be the baseline scenario due to the project not being financially attractive Scenario 1: conflicts with current Chinese regulation. Scenario 2: Renewable energy is strongly depended on local natural resources and natural circumstances, Yunnan Province, is located in the inner land of China and is far away from the seaside. In addition, limited by development technology and high cost, other renewable energy will be financially unattractive, therefore, this alternative is not considered as baseline scenario. Scenario 4: The continuation of the current situation is a likely baseline scenario and is a real alternative consistent with current laws and regulations.	OK	OK
B.5. Demonstration and Assessment of Additionality				



B.5.1 Does the additionality justification follow the requirements of the applied methodology and/or methodological tools?	DR	Yes. According to ACM0002 ver.12.1.0, the additionality of the project activity shall be demonstrated and assessed using the latest version of the “Tool for demonstration and assessment of addtionality” agreed by the CDM EB. In PDD the Tool for the Demonstration and Assessment of Additionality (ver.5.2) is applied.	OK	OK
B.5.2 Prior consideration of CDM				
B.5.2.1. Is the project starting date in accordance with the CDM glossary of terms?	DR I	Yes. The start date of the proposed project activity is 15/03/2006, when the construction contract was signed. The validation team cross-checked related documents. Other major activities were after the signing of construction contract, the construction start order was on 19 May 2006; the signing of the equipment purchase contract and bank loan contract were in June, 2006. So the construction contract is the earliest activity of either the implementation and construction or real action of the proposed project activity.	OK	OK
B.5.2.2. Is the prior consideration of CDM correctly demonstrated in the PDD?	DR I	CL02 Please clarify the relationship of Chongqing Bashan Hydropower Development Co., Ltd. with Chongqing Municipality Construction Investment Corporation and Chongqing Energy Investment Group, as some evidence documents including these companies. CL03 The demonstration of early and continued CDM consideration and the content of “Table B.7 Overview of key events in the development of the project” need to be re-elaborated in the PDD. The logic of Table B.7 is not clear enough, some listed evidences are not sufficient to support the description of events and there are some mistakes in the dates of events.	~~CL02~~ ~~CL03~~	OK



B.5.2.3. Is decision to proceed with the project demonstrated in the PDD?	DR	Yes. The decision was made on the board meeting on 12/11/2005. The evidence document was checked by the validation team.	OK	OK
B.5.2.4. Was the decision to proceed with the project taken by a person which has the authority to do so?(Describe the steps taken to validate this issue)	DR I	Yes. The decision to proceed with the project was taken by the board, This was confirmed during document review and on-site visit.	OK	OK
B.5.3 Step 1: Identification of alternatives				
B.5.3.1. Have all realistic alternatives been identified to the project?	DR O	Yes. A complete list of four credible alternatives has been identified to the project activity in the PDD. Scenario 1: Fossil fuel-fired power generation Scenario 2: Power generation from wind or other renewable energies Scenario 3: The proposed hydropower activity, without the support of CDM Scenario 4: The same service of power supply provided from grid (i.e. continuation of the present situation)	OK	OK
B.5.3.2. Do all identified alternatives comply with applicable regulation?	DR	Alternative 1 is not in compliance with the applicable regulation; all other alternatives are in compliance. Finally it is concluded that the only credible alternative to the proposed project activity is Scenario 4.	OK	OK
B.5.4 Step 2: Investment analysis				
B.5.4.1. Is the financial analysis method appropriately chosen for the project?	DR	Yes. Since this specific project will only have revenue from sales of electricity and receives no other income. So benchmark analysis method is appropriate.	OK	OK



B.5.4.2. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation?	DR	Yes. The Excel Spreadsheet of the project finance indicators and IRR calculations is viewable and unprotected. All data and calculation is cross-checked to be correct.	OK	OK
B.5.4.3. Does the period chosen for the investment analysis reflect the technical lifetime of the project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included?	DR I	Yes. The technical lifetime in the FSR is 30 years and another construction period of 5 years. As per the FSR, the PDD chooses an operation period of 30 years with another 5 years of construction period, for the investment analysis.	OK	OK
B.5.4.4. Is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included?	DR I	CL04 Please demonstrate the appropriateness of input values for investment analysis, such as statistic total investment, tariff, depreciation rate, residual value and expected CER price.	CL04	OK
B.5.4.5. Are depreciation and other non-cash related items added back to net profits for the purpose to calculate the financial indicator?	DR	Yes. The depreciation and other non-cash related items are added back to net profits.	OK	OK
B.5.4.6. Is taxation excluded in the investment analysis or is the benchmark intended for post-tax comparison?	DR	Yes. The benchmark is intended for post-tax comparison. The IRR result of the proposed project is also applied post-tax calculation. This is as per the Guidance on the Assessment of Investment Analysis version 03.1.	OK	OK



B.5.4.7. Were the input values used in the investment analysis valid and applicable at the time of the investment decision?	DR	The input parameters used in the investment analysis are from the FSR. The FSR designing institute is Middle-South Survey and Design Institute of National Electrical Company, a third party professional designing institute with A level qualifications in engineering design, contracting, consulting, supervision, and construction cost consulting. The FSR was reviewed by local government, then the project owner received the official approval for using the FSR as the guideline for the implementation of the proposed project. All input parameters except electric tariff and CER price used in the investment analysis is derived from FSR. Please see CL04.	CL04	OK
B.5.4.8. In case of Project IRR, are the costs of financing expenditures (loan repayments and interests) included in the calculation of Project IRR?	DR	The investment analysis applies project IRR for the proposed project. The costs of financing expenditures (loan repayments and interests) are considered as an output when calculating income tax. This is in also compliance with national regulation.	OK	OK
B.5.4.9. In case of Equity IRR: is investment costs financed by equity considered as net cash outflow and is the part financed by debt excluded in net cash outflow?	DR	N/A	OK	OK



B.5.4.10. Is the applied benchmark appropriate for the type of IRR calculated (e.g. local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR)?	DR	CL05 Please justify the reasonability of the applied benchmark by the proposed project.	CL05	OK
B.5.4.11. In case of internal benchmark: Is it ensured that the project cannot be developed by other developers than the PP?	DR	The project IRR of the proposed project without CDM revenue is 5.26%, which is lower than the benchmark 8%. So the project is not financially attractive, even developed by any other developers other than the PP.	OK	OK
B.5.4.12. Is sensitivity analysis appropriately done by the project participants? Please assess and determine under what conditions variations in the result would accrue and likelihood of these conditions.	DR	Four parameters have been selected for sensitive analysis: total investment costs, grid tariff, annual power supply and annual O&M cost. Table B.6 and Figure B.2 in the PDD show that when the above four parameters fluctuate between the range of -10% and +10%, FIRR of the proposed project is still lower than the benchmark. CL06 The demonstration of sensitivity analysis is not sufficient.	CL06	OK
B.5.5 Step 3: Barrier analysis				
B.5.5.1. Are there any barriers given which have a clear and definable impact on the profitability of the project?	DR	N/A	OK	OK



B.5.5.2. How is it justified and evidenced that the barriers given in the PDD are real?	DR	N/A	OK	OK
B.5.5.3. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity?	DR	N/A	OK	OK
B.5.6 Step 4: Common practice analysis				
B.5.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type?	DR	Yes. Chongqing Municipality is defined as the region for common practice analysis, which is appropriate for similar investment conditions and natural conditions etc.	OK	OK
B.5.6.2. To what extent similar projects have been undertaken in the relevant region?	DR	Yes. Project of Chongqing Municipality with a capacity between 50 MW and 300MW which started construction activities since year 2002.	OK	OK
B.5.6.3. In case similar projects are identified, are there any key differences between the proposed project and existing or ongoing projects?	DR	Yes. After comparing and elimination, only one similar project is identified, which is invested by a foreign company. The evidence was checked by the validation team to be valid. The key difference of the proposed project with the identified similar project is the availability of investment.	OK	OK
B.6. Emission Reductions				



B.6.1.1. Are the equations applied correctly according to the applied approved methodology?	DR	The calculations are correctly applied according to ACM0002: Step 1: Identify the relevant electric power system. The power to be generated from the Project will be delivered to the CCPG, in addition, there is net imported power from CSPG to CCPG, so it is considered as part of the relevant electric power system. The ex-ante calculation method with fixed emission factors (for OM and BM) is selected. Step 2: Choose whether to include off-grid power plants in the project electricity system (optional). Step 3: Select an OM method. The share of the low-cost/must run resources in CCPG is less than 50%, therefore simple OM is used. Step 4: Calculate the operating margin emission factor according to the selected method. Option 3 is selected. Step 5: Identify the cohort of power units to be included in the build margin (BM). Option 2 is selected. Step 6: Calculate the build margin emission factor. The project uses the share of different type capacity in capacity addition as weight, the weighted average of emission factors of different type capacity is calculated as the BM emission factor. Step 7: Calculate the combined margin (CM) emission factor. The weight of EF_{OM} is 0.5 and the weight of EF_{BM} is 0.5 by default. Step 8: Calculate the baseline emission (BEy). The PDD refers to the Operating Margin (OM) Emission Factor and the Build Margin (BM) Emission Factor published by the Chinese DNA on 02/07/2009. The BM is 1.1255 tCO₂e/MWh, the OM is 0.5802 tCO₂e/MWh. And the CM is 0.8528 tCO₂e/MWh.	OK	OK
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B.6.1.2. In case the methodology allows for different methodology choices, are the equations applied properly justified and have they been used reflecting the other methodological choices(i.e. baseline identification)?	DR	The power density of the project is greater than 10W/m ² , so the project emission is 0 according to ACM0002 ver.12.1.0 The baseline scenario has identified according to methodology ACM0002, no alternative for choice.	OK	OK
B.6.1.3. Have conservative assumptions been used when calculating the emission reductions?	DR	Yes. Conservative assumptions have been used in the process of calculation. The BM is 1.1255 t CO ₂ e/MWh, the OM is 0.5802 t CO ₂ e/MWh, so the CM is 0.85285 t CO ₂ e/MWh, but the PDD applies 0.8528 t CO ₂ e/MWh, which is more conservative.	OK	OK
B.6.2 Data and parameters are available at validation				
B.6.2.1. Is the list of parameters presented in Chapter B6.2 considered to be complete and correct with regard to the requirements of the applied methodology?	DR	The list of parameters is complete in the revised PDD with regard to the requirements of the applied methodology. CL07 Please justify the applied Plant Load Factor by the proposed project as per EB 48 Annex 11.	CL07	OK
B.6.2.2. Is the choice of ex-ante or ex-post vintage of OM and BM factors clearly specified in the PDD?	DR	Yes. Ex-ante is clearly specified in the approved methodology.	OK	OK
B.6.3 Ex-ante calculation of emission reduction				



B.6.3.1. Are the GHG calculations documented in a complete and transparent manner?	DR	Yes. Detailed descriptions are given and conservative IPCC values are adopted.	OK	OK
B.6.3.2. Is the form required for the indication of ERs correctly applied?	DR	Yes. The table is complete. It includes emissions due to the project activity, baseline emissions, leakage emissions and the overall emission reductions.	OK	OK
B.6.3.3. Is the projection in line with the expected time schedule for the project's crediting period?	DR I	Yes. The ex-ante estimate of emission reductions due to the project is calculated for a first crediting period of 7 years, starting with the expected start of crediting date on 01/07/2011.	OK	OK
B.7. Application of the monitoring methodology and description of the monitoring plan				
B.7.1 Data and parameters monitored				
B.7.1.1. Are the parameters to be monitored in accordance with the requirement of the applied methodology?	DR	Yes. Three parameters will be monitored: The electricity supplied to the grid by the proposed project $EG_{\text{facility},y}$. The data will be electronically archived during the crediting period and two years afterwards. The data will be directly used for calculation of emission reductions. Measurement results of electricity supplied to the grid and delivered from the grid to the project will be cross-checked against ETNs. In case of discrepancy, the conservative value will prevail. Metering instruments will be calibrated annually. Data is monitored continuously. Installed capacity of the hydro power plant after implementation of the project activity Cap_{PJ} will be monitored, according to installed equipments' nameplates and will be monitored annually. The data is monitored yearly. Area of the reservoir measured in the surface of the water A_{PJ} . The project entity will commission a third party to conduct the measurement. A measurement report will be issued by this qualified party. The surface area will be calculated using the design schematics and area maps. The data is monitored yearly.	OK	OK



B.7.1.2. Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology? (such as name of the data/parameter, data unit, description, source of data, measurement equipment, monitoring frequency, QA/QC procedures)	DR	Yes. The information all parameters contained in the monitoring plan, including label, data unit, description, source of data are stated clearly and transparently.	OK	OK
B.7.2 Description of the monitoring plan				
B.7.2.1. Is the monitoring plan described and in compliance with methodology?	DR O	The description of monitoring plan in PDD is revised in compliance with the actual situation. Figure B.3 of the PDD which indicates grid connection of the project is revised to be in consistence with the future grid connection diagram provided to the validator. At present, there is one back-up emergency line. In case that more back-up emergency line(s) are installed in the future, measurement procedures will be the same as that of the present one back-up line described in the PDD. The description in the updated PDD is checked to be in accordance with the real situation as per the on-site visit.	OK	OK
B.7.2.2. Are the responsibilities and institutional arrangements for data collection and archiving clearly provided?	DR I	Yes. The project owner is responsible for recording the data collection and archiving data. The operational and management structure of monitoring is described in PDD. The roles of manager of the company, monitoring officer, operation staff on duty are listed.	OK	OK



B.7.2.3. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	DR I	Yes. All monitored data records will be kept until 2 years after the end of the crediting period.	OK	OK
B.8. Date of completion of the application of the baseline and monitoring methodology study				
B.8.1 Is there any indication of a date when the baseline was determined?	DR	OK. It is indicated in Section B.8 of the PDD that the date of completion of the baseline study and monitoring methodology is 11/03/2011, which is in accordance with the history of the PDD.	OK	OK
B.8.2 Is this consistent with the time line of the PDD history?	DR	Yes. It is consistent.	OK	OK
B.8.3 Is the information provided on the person(s)/entity (ies) responsible for the application of the baseline and monitoring methodology consistent with the actual situation?	DR	Yes. It is correct.	OK	OK
C. Duration of the Project Activity/Crediting Period				



C.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	DR	Yes. The starting date of the proposed project activity is defined as the day on which the construction contract was signed. The definition of the starting date of the project was in line with the "Glossary of CDM terms" because it is the earliest date on which the owner committed to expenditures related to the project activity. The expected operational lifetime of the project activity is 30 years, which is defined in the approved FSR.	OK	OK
C.2. Is the assumed crediting period clearly defined and reasonable (renewable crediting period of Max 7 years with potential for 2 renewals or fixed crediting period of Max 10 years)?	DR I	Yes The renewable crediting period of 7 years with potential for 2 renewable periods is reasonable considering the life time of the project is 30 years. Starting date of the first crediting period is estimated to be 01/07/2011.	OK	OK
D. Environmental Impacts				
D.1. Documentation on the analysis of the environmental impacts, including Trans- boundary impacts				
D.1.1 Has an analysis of the environmental impacts of the project activity been sufficiently described?	DR	The environmental impacts of the project activity have been clearly described in Section D.1 of the PDD. The contracts of the compensation have been reviewed by the auditor. The ecological water flux has been revised according to the EIA.	OK	OK
D.1.2 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	DR	Yes. The EIA is a must in P.R. China for new hydropower projects. The EIA of the proposed project was approved by local government Chongqing Environmental Protection Bureau on 13/04/2006. These documents have been reviewed by the validation team.	OK	OK



D.1.3 Will the project create any adverse environmental effects?	DR I	As described in the PDD and related documents, the project activity will not have major negative environmental impact.	OK	OK
D.1.4 Are there any transboundary environmental impacts considered in the analysis?	DR I	As described in the PDD and related documents, the project activity will not have major transboundary environmental impacts.	OK	OK
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions of the environmental impact assessment in accordance with the procedures as required by the host Party.				
D.2.1 Are the identified environmental impacts addressed in the PDD?	DR	Yes. To avoid negative impact on social environment, environment impact caused by resettlement, the project owner will protect the environment according to measures approved by the government, and ensure all emissions reach national standards. The environmental impacts and conclusions of the project have been described in the Section D of the PDD.	OK	OK
D.2.2 Does the project comply with environmental legislation in the host country?	DR	Yes. The EIA was finished and approved by the authorized organization.	OK	OK
E. Stakeholder Comments				
E.1. Brief description how comments by local stakeholders have been invited and compiled				
E.1.1 Have relevant local stakeholders been invited to consultation prior to the publication of the PDD?	DR I	Yes. The stakeholders were consulted through questionnaires from 18/02/2008 to 18/03/2008, and a stakeholder consultation meeting was held on 01/03/2008. These activities were prior to the publication of the PDD.	OK	OK
E.1.2 Have appropriate media been used to invite comments by local stakeholders?	DR I	Yes. The local residents were informed by the bulletin on the newspaper and via the website. This is confirmed and cross-checked with the evidence and confirmed during the on-site auditing.	OK	OK



E.1.3 If a stakeholder consultation process is required by regulation/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	DR I	The stakeholder consultation process is required in the EIA process in China. It has been carried out during the compiling of EIA report in accordance with national regulations and described in Section D of the PDD. The stakeholder consultation process regarding CDM application is not required in China. This consultation was carried out from Feb. to Mar. 2008 in accordance with the requirement of CDM-EB and described in Section E of the PDD.	Ok	Ok
E.2. Is a summary of the stakeholder comments received provided?	DR I	CL08 Please provide a summary on the comments of the stakeholders in section E.2 of the PDD, demonstrate how due account was taken, and provide evidence that the concerns were solved.	~~CL08~~	OK
E.3. Has due account been taken of any stakeholder comments received?	DR I	Please refer to CL08.	~~CL08~~	OK

Table2 Resolution of Corrective Action and Clarification Requests

CL/CAR/FAR Requests by Validation Team		Ref. to Table 1	Summary of PP's Response	Validation Team's Conclusion
CAR01	The name of the Annex I party Holland should be modified to Netherlands according to the list of DNAs on the UNFCCC website.	A.3.2	Corrected in the PDD	The information is corrected in the updated PDD.



CAR02	LoA from Annex I Party has not been provided.	A.3.3	LoA from Annex I Party has been provided.	The LoA was provided and checked to be valid by the DOE.
CAR03	The coordinates of the project location in the PDD version 2.0 are estimated. Please provide the actual coordinates of the dam and power house of the proposed project activity.	A.4.1	The coordinates are corrected according to the actual measurement.	The corrected coordinates in the PDD is checked to be valid by the DOE.
CAR04	The approved baseline and monitoring methodology ACM0002 version 11 is not valid after 16/09/2010, please apply the most updated version of the methodology.	B.1	The applied methodology is updated to be version 12.1.0 in PDD.	The applied methodology is updated to be version 12.1.0 in PDD version 6.0. The modification is correct.
CL01	Please analyse whether the CO ₂ emission of diesel generator will contribute to more than 1% of the overall expected average annual emissions reduction.	B.2	The diesel generator description is added in the PDD and less than 1% of the overall expected ERs is also presented in section B.6.1. The project will install one on-site diesel generator with total capacity of 300kW which will be maintained for emergency purpose in case the power line which sends the power from the grid to the dam is cut off. For the emission factor of the diesel generator we refer to the AMS-I.F (version 01) methodology which provides emission factors for diesel generator systems. We apply	The information of diesel is corrected in the updated PDD, the estimation calculation is acceptable. It is determined that no other source will contribute to more than 1% of the overall expected average annual emissions reduction.



			the highest value listed in the methodology which is 2.4kgCO ₂ e/kWh (generator below 15kW), which is conservative considering the size of the generator used on-site. 1% of annual emission reductions of the proposed project is estimated to be 3,828.39tCO ₂ e, which means the diesel generator would run 5,317 hours per year. The load factor is over 60%, which is impossible at all. Therefore, it can be negligible.	
CL02	Please clarify the relationship of Chongqing Bashan Hydropower Development Co., Ltd. with Chongqing Municipality Construction Investment Corporation and Chongqing Energy Investment Group, as some evidence documents including these companies.	B.5.2.2	At the very beginning, the project entity, Chongqing Bashan Hydropower Development Co., Ltd. (hereafter referred to as "Bashan Hydropower Company") was co-invested by Chongqing Municipality Construction Investment Corporation who took up the 51% of the total shares and Chongqing Dingtai Group Co., Ltd., who took up the rest 49% shares. Both companies are shareholders of the project entity at that time. On 11 January 2006, Chongqing Dingtai Group transferred the shares in Bashan Hydropower Company to Chongqing Municipality Construction Investment Corporation. On 15 June 2006, Chongqing Municipality Construction Investment Corporation was changed to Chongqing Energy Investment Group after acquisition of Chongqing Gas Group. Therefore, at present, Chongqing Energy Investment Group is the sole shareholder of the project entity, Bashan Hydropower Company.	The relationship between Bashan Hydropower Company, Chongqing Municipality Construction Investment Corporation, Chongqing Dingtai Group Co., Ltd. and Chongqing Energy Investment Group was cross-checked by document review [1.3, 1.4, 2.1-2.4] and interview with PP and local officials. This information is transparently stated in the updated PDD. The clarification is sufficient.
CL03	The demonstration of early and continued CDM	B.5.2.2	The table is reorganized and date mistakes are corrected. All evidences related to the events listed in the table were	The information in table B.8 is re-organized and corrected in the updated PDD. The



	consideration and the content of "Table B.7 Overview of key events in the development of the project" need to be re-elaborated in the PDD. The logic of Table B.7 is not clear enough, some listed evidences are not sufficient to support the description of events and there are some mistakes in the dates of events.		already provided.	validation team checked related evidences and confirmed the authenticity of each listed event.
CL04	Please demonstrate the appropriateness of input values for investment analysis, such as statistic total investment, tariff, depreciation rate, residual value and expected CER price.	B.5.4.4	The appropriateness of input values, such as statistic total investment, tariff, depreciation and residual value are added in the PDD as below. - <i>Static total investment:</i> The Feasibility Study report of the project was designed by East China Investigation and Design Institute under China Hydropower Engineering Consulting Group Corporation. All data used in IRR calculation are from the FSR which were prepared based on the <i>Economic Evaluation Method and Parameters for Project Construction, the Interim provisions concerning hydropower construction project financial assessment</i>, and the applicable national taxation regulations at the time, and approved by the Chongqing Municipality	The demonstration of the appropriateness of input values for investment analysis, especially statistic total investment, tariff, depreciation and residual value are added in the updated PDD. The expected CER price at the time of making investment decision is changed to 8 euro, the evidence of this market price was checked to be applicable [4.24]. The values are cross-checked to be correct and valid.



			Development and Reform Commission on January 5, 2006. As indicated in Audit Report 2009 published by Chongqing Wulian Certified Public Accountants, the total investment cost incurred by the end of 2009 is 1,228,782,118.74RMB, which is higher than the estimated value of 1,119,294,400 RMB in the FSR. Therefore, we consider the estimated total investment in the FSR is reasonable and conservative to be applied in IRR calculation. - <i>Power price:</i> The expected tariff in the Table B.3, 0.284RMB/kWh (incl. VAT) is the actual highest price at the time of investment decision for hydropower project, which is in accordance with the official document “<i>The Notice of Chongqing Price Bureau on Implementation of the Grid Tariff Adjustment Made by the NDRC</i>” and the statistical table made by the Regulatory Authority of Central China Grid. Therefore, this tariff applied in IRR calculation is conservative. - <i>Depreciation rate:</i> The depreciation value used in the IRR calculation is from the FSR, which strictly follows the depreciation calculation approach defined in the Interim provisions concerning hydropower construction project financial assessment as below: ✓ Depreciation value = fixed assets value * depreciation rate	
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			Where the depreciation rate is an average based on different depreciation periods of different categories of fixed assets, such as generally equipments (6-28 years), specialised equipments (6-25 years), and buildings (8-45 years except for dam of hydropower project, which is 45-55 years) prescribed in the <i>Financial Rules for Industrial Companies</i>. Therefore, we consider depreciation rate 4.5% in the FSR is appropriate and reliable. - <i>Residual value rate</i> The fixed assets value is fully depreciated during operation period in the FSR. To be conservative, we applied 5% residual rate in the IRR calculation of the PDD. - <i>Expected CER price</i> The expected CER price is changed to 8 euro sourced from market price at the time of making investment decision and evidence is provided.	
CL05	Please justify the reasonability of the applied benchmark by the proposed project.	B.5.4.10	The 8% benchmark is in accordance with the Feasibility Study as well as “<i>Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects</i>”. This benchmark document is primarily applicable to retrofit projects in the power industry but can be applied more generally to power projects for which no relevant benchmark is available. This benchmark has therefore been applied to projects in the wind power, fossil-fuel fired power and large hydro power (>50MW) sectors as no	The validation team checked the <i>Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects</i> and FSR, the clarification was confirmed.



			relevant benchmark exists. The reason why 8% benchmark is used is inserted in the PDD.	
CL06	The demonstration of sensitivity analysis is not sufficient.	B.5.4.12	The sensitivity analysis is substantiated in the PDD. It is not considered likely that the project's return will exceed the benchmark due to the following reasons: - <i>Static total investment:</i> According to the data published by the National Bureau of Statistics of China in 2008, it indicates that there is an increasing trend of the Producer Price Indices for Manufactured Goods from 2000 to 2007. According to the statistics published by the National Bureau of Statistics of China, the PPI for Manufactured Goods increased by 6.9% in 2008. So the total investment of the project is impossible to decrease over 10%. For conservativeness, we also made the cross calculation, when the total static investment decreases by 31%, the project IRR can reach the benchmark. But it is impossible for such a great decrease as the actual investment cost incurred by the end of 2009 (Audit Report 2009) has already been higher than the value sourced from the FSR and applied in the IRR calculation of the PDD - <i>Power price:</i> The expected tariff in the Table B.3, 0.284RMB/kWh (incl. VAT) is the actual highest price at the time of investment decision for hydropower project, which is in accordance with the official document "<i>The Notice of Chongqing Price Bureau on Implementation of the Grid Tariff Adjustment</i>"	The substantiated sensitivity analysis in the updated PDD was cross-checked to be reasonable.



			<i>Made by the NDRC</i>" and the statistical table made by the Regulatory Authority of Central China Grid. We make below assumption in the PDD to calculate the cross point on power price. Assuming the power price is increased to 0.386RMB/kWh (incl. VAT), or in other words, goes up by 36%, the project IRR after tax can reach the 8% benchmark. Furthermore, the assumed price is an ideal one based on the current financial situation, inflation or increase of all the costs is ideally and optimistically ignored. Hence, the assumption on power price is so unrealistic and unreasonable. It is clear that there is no probability for tariff to be increased by 36% within the near future. - <i>Annual operation and maintenance cost:</i> Variations in the annual O&M costs have an insignificant impact on the return of the project. Even if the O&M cost becomes zero, the project IRR is still below the benchmark, but it is impossible to happen at all. - <i>Annual power supply:</i> Annual power supply is determined by the annual power generation, which is linked directly to the available water flow. The projected power generation is based on 36 years of water flow statistics (1967-2002). The probability of a deviation of water flow statistics more than 10% over the lifetime of the project was excluded by the design institute when the FSR was prepared. Therefore, no chance exists for the project to get 36% more annual	
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			power supply to cross the benchmark.	
CL07	Please justify the applied Plant Load Factor by the proposed project as per EB 48 Annex 11.	B.6.2.1	The justification of PLF of Bashan project is added in Section A.4.3 of the PDD. The PLF is calculated as annual operational hours/8760hrs. The operational hours actually results from the ratio of the annual power generation and the installed capacity, while in the case of the proposed project activity, the power generation is calculated based on the 36 years hydrological data (1967-2002) by an independent qualified body in the FSR. Therefore, we conclude that the PLF 36.68% (449,820MWh/140MW/8760hrs) is appropriate.	The validation team checked the FSR, which states that the expected annual power generation of the proposed project is 449,820MWh, the scale is 140 MW. The FSR is calculated based on 36 years of historical hydrological data by East China Investigation and Design Institute under China Hydropower Engineering Consulting Group Corporation, a qualified independent body. Therefore the annual power generation is reasonable. So the PLF of 36.68% (449,820MWh/140MW/8760hrs) is valid. The clarification and justification was added in Section A.4.3 of the updated PDD.
CL08	Please provide a summary on the comments of the stakeholders in section E.2 of the PDD, demonstrate how due account was taken, and provide evidence that the concerns were solved.	E.2	The questionnaire survey clearly shows that almost all attendees supported the construction of the project. Majority of the attendees believed the project construction wouldn't cause negative impacts on society, economy, and personal lives. Few villagers expressed their concerns on the impacts of noise and dust. At the meeting, the PO promised they would ask the builder to strictly follow the measures put forward in the EIA to minimize the impacts. These concerns were also expressed in the questionnaires that were distributed outside the meeting, and the PO made same explanation. Expressed at the meeting as well as shown in the	Related description of concerns and was added in the updated PDD. The description of concerns was cross-checked with the survey questionnaires [4.10] by the validation team. The evidences of how due account had been taken and how the concern was solved were also checked by the validation team. As the compensation process was not finished during the survey, most concerns raised were regarding standard and payment of compensation. The



			questionnaires, the main concerns focused on the compensation for land and buildings, the PO and the local government officer made detailed and patient explanation that the compensation standard of the project was approved by the government and the actual compensation would strictly abide by the approved standard, and promised compensation would be paid on time and in full amount and effective measures would be taken to recover the environmental impact caused by the project construction to minimize its influence on irrigating and living conditions of local residents. Considering the concerns about compensation to relocation and land expropriation, the government of Chengkou County agreed on adjusting the compensation standard of Bashan project by following the latest national provisions on 16 Aug. 2008. The balance between old and new compensation standards was paid. The statement from the government confirmed that compensation contracts were accepted and signed by all affected people, and the compensation was also paid completely. For the concerns about other aspects, after on-site validation, as validator required, some villagers with typical concerns in the questionnaires including the villager who chose "do not support" were visited again, and they expressed they were happy with the PO's efforts in solving their concerns about the project and having known more about the project in detail, they believed that	compensation standard of the proposed project was approved by the local government in 2005 [2.9], the project was approved in 05/01/2006 [2.2] and the land occupation and compensation process was started. In 2007, a new compensation standard [5.6] was published in Chongqing, according to the requirement by the government and local stakeholders, the PP increased the compensation standard as per the new requirement, an adjusted compensation plan [2.10] was approved by local government in 2008. The affected residences were satisfied with the new compensation standard, resettlement compensation agreements were signed by each household and the PP [4.22], the payment of compensation for land and buildings were made to each households [4.21], a survey was conducted again to the people who expressed concerns in the first stakeholder consultation meeting in Mar. 2010 [4.11], the questionnaires showed that the people do not have concerns any more, the validation team confirmed that this type of concern was properly solved. Other concerns were about the impact to
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			the project construction and operation is a good thing to local residents, which will raise their life quality and make local economy prosperous. They unanimously support the project.	household income, transportation, air quality and living quality. During the on-site interview with local government officials and affected residents, it was learned by the validation team that the compensation helped the household income, several roads and wharfs were built to facilitate local transportation, the official from Chengkou Environmental Protection Bureau also confirmed that the project abided by all applicable environmental requirements during the construction and operation period, there were no environmental complain received, together with the above means and other measures such as cleaning the living environment, the living quality of local people was also improved. After on-site observation and checking the questionnaires conducted to the people who expressed concerns in the first stakeholder consultation meeting in Mar. 2010 [4.11], the validation team confirmed that these types of concern was properly solved.
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APPENDIX B CERTIFICATE OF COMPETENCE

ZHANG Ruizhi

Qualification in accordance with CEC-4001C-B/3 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2

Beijing, 25 Mar 2011

ZHANG Xiaodan

CDM Supervisor, Technical Director

XU Linghua

Quality Assurance Management Division

QIN Boya

Qualification in accordance with CEC-4001C-B/3 *Operation Instruction for Personal Competence Assessment* for CDM

CDM trainee Auditor: Yes

Industry Sector Expert for Technical Area(s):

Beijing, 25 Mar 2011

ZHANG Xiaodan

CDM Supervisor, Technical Director

XU Linghua

Quality Assurance Management Division



WANG Yanping

Qualification in accordance with CEC-4001C-B/3 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2, 15.1

Beijing, 25 Mar 2011

ZHANG Xiaodan

A handwritten signature in black ink, appearing to read 'Zhang Xiaodan', is positioned above the title.

CDM Supervisor, Technical Director

XU Linghua

A handwritten signature in black ink, appearing to read 'Xu Linghua', is positioned above the title.

Quality Assurance Management Division

MA Xiao

Qualification in accordance with CEC-4001C-B/3 *Operation Instruction for Personal Competence Assessment* for CDM

CDM trainee Auditor: Yes

Industry Sector Expert for Technical Area(s):

Beijing, 25 Mar 2011

ZHANG Xiaodan

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CDM Supervisor, Technical Director

XU Linghua

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Quality Assurance Management Division



XU Linghua

Qualification in accordance with CEC-4001C-B/3 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2, 5.1, 11.1, 12.1, 13.1

Beijing, 25 Mar 2011

ZHANG Xiaodan

A handwritten signature in black ink, appearing to read 'Zhang Xiaodan', is positioned below the name.

CDM Supervisor, Technical Director

ZHANG Ruizhi

A handwritten signature in black ink, appearing to read 'Zhang Ruizhi', is positioned below the name.

Project Implementation Management Division

ZHANG Xiaohong

Qualification in accordance with CEC-4001C-B/3 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2, 13.1

Beijing, 25 Mar 2011

ZHANG Xiaodan

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CDM Supervisor, Technical Director

XU Linghua

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Quality Assurance Management Division