



# **VALIDATION REPORT**

**AES Carbon Exchange Ltd.**

**Chongqing Youyang County Youchou  
Hydropower Station Project**

**REPORT NO. : 10011032**

**China Environmental United Certification Center Co., Ltd**

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| China Environmental United Certification Center Co., Ltd (CEC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | AES Carbon Exchange Ltd.                                                                                                                                                                                                                                                                                                                           |                 |                         |
| <b>Project Title:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Country:</b>                                                                                                                                                                                                                                                                                                                                    |                 |                         |
| Chongqing Youyang County Youchou Hydropower Station Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | China                                                                                                                                                                                                                                                                                                                                              |                 |                         |
| <b>Methodology and Version</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Sectoral Scope:</b>                                                                                                                                                                                                                                                                                                                             |                 |                         |
| ACM0002 (Version 10)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1                                                                                                                                                                                                                                                                                                                                                  |                 |                         |
| <b>PDD for GSP</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Final PDD Version</b>                                                                                                                                                                                                                                                                                                                           |                 |                         |
| Date:31/12/2009<br>Version:2.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Date:20/07/2010<br>Version: 3.0                                                                                                                                                                                                                                                                                                                    |                 |                         |
| <b>GHG Reducing Measure/Technology</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>ER Estimate:</b>                                                                                                                                                                                                                                                                                                                                |                 |                         |
| Renewable Power Generation from Hydro Sources                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 332,611 tCO <sub>2</sub> e per year during the first crediting period.                                                                                                                                                                                                                                                                             |                 |                         |
| <p>China Environmental United Certification Center Co., Ltd (CEC) has performed the validation of Chongqing Youyang County Youchou Hydropower Station Project 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.</p> <p>The validation scope is defined as an independent and objective review of the PDD, 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 &amp; opinion, was conducted using CEC internal procedures.</p> <p>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 its Project design document.</p> <p>In summary, it is CEC's opinion that Chongqing Youyang County Youchou Hydropower Station Project, as described in the PDD ver.3.0 dated 20/07/2010, meets all relevant UNFCCC requirements for the CDM and all relevant Host Parties criteria and correctly applied the baseline and monitoring methodology ACM0002 ver.10. CEC thus requests the registration of the Project as a CDM Project activity.</p> |                                                                                                                                                                                                                                                                                                                                                    |                 |                         |
| <b>Work Carried out by:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Date of this revision</b>                                                                                                                                                                                                                                                                                                                       | <b>Rev. No.</b> | <b>Number of Pages:</b> |
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## Abbreviations

|                 |                                                       |
|-----------------|-------------------------------------------------------|
| CAR             | Corrective Action Request                             |
| CSPG            | China Southern Power Grid                             |
| CER             | Certified Emission Reduction                          |
| CL              | Clarification Request                                 |
| CO <sub>2</sub> | 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                               |
| PDR             | Preliminary Design Report                             |
| 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 project: Chongqing Youyang County Youchou 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 a validation is to have an independent third party assess the project design. In particular, the project's baseline, additionality, the monitoring plan and the project's compliance with relevant UNFCCC and host country criteria validated in order to confirm that the project design, as documented, is sound and reasonable and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

### 1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project activities and relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002 Version 10. The validation team has also conducted the validation process basing on the recommendations in the Validation and Verification Manual (VVM).

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

### 1.3 Validation Team

According to the technical scopes and experiences in the sectoral or national business environment, CEC has composed a validation team, the composition is shown in the following table.

**Table 1 Validation team**



| Name         | Role        | Qualification | Specific Scope |
|--------------|-------------|---------------|----------------|
| ZHANG Ruizhi | Team Leader | Auditor       | √              |
| WANG Yanping | Team Member | Auditor       |                |

## 2. METHODOLOGIES

The validation consists of the following phases:

I A desk review of the project design documents:

- 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, conduct independent background investigations.
- Reference to available information relating to projects or technologies similar to the proposed project; and
- Review, based on the approved methodology being applied, of the appropriateness of the value and formulae applied and correctness of calculations.

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 the final validation report and opinion

### 2.1 Validation Protocol

In order to ensure transparency, a validation protocol was customized for the proposed project, according to the Validation and Verification Manual. The protocol shows in transparent manner criteria (requirements), means of verification and the



results from validating the identified criteria. The validation protocol serves the following purpose:

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

The validation protocol consists of two tables. The different columns in these tables are described in the figure below.

The completed validation protocol for the “Chongqing Youyang County Youchou Hydropower Station Project” is enclosed in Appendix A to this report.

Corrective action requests (CARs) are 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.

Request for clarifications (CLs) are 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 relate to the CDM requirements for registration.

| <b>Validation Protocol Table 1: Requirement checklist</b>                                                                          |                                                                                                  |                                                                                                                                                      |                                                                                                                          |                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Checklist question</b>                                                                                                          | <b>Reference</b>                                                                                 | <b>Means of Verification(MoV)</b>                                                                                                                    | <b>Comment</b>                                                                                                           | <b>Draft and/or Final Conclusion</b>                                                                                                        |
| <i>The various requirements in Table2 are linked to checklist questions the project should meet. The checklist is organized in</i> | <i>Gives reference to documents where the answer to the checklist question or item is found.</i> | <i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview</i> | <i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is</i> | <i>This is either acceptable based on evidence provided (OK), or a <b>corrective action request (CAR)</b> due to noncompliance with the</i> |



|                                                                                                                                                                |  |                                |                                                  |                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| different sections, following the logic of the large-scale PDD template, version 03 – in effect as of: 28 July 2006. Each section is then further sub-divided. |  | (I). N/A means not applicable. | further used to explain the conclusions reached. | checklist question (See below). A request for <b>clarification (CL)</b> is used when the validation team has identified a need for further clarification. A request for <b>forward action request (FAR)</b> is used for a need for review during the first verification. |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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

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

## 2.2 Document Review

Once CEC receives the Project Design Document (PDD) version 2.0, it is made



publicly available on the internet on the UNFCCC CDM web pages for starting a 30 days global stakeholder consultation process (GSP). The information of PDD versions is presented on Page 1.

To address the validation team's corrective action and clarification requests, the PP revised the PDD ver. 3.0 and resubmitted it on 20/07/2010 and the validation findings presented in this report related to the project are described in the PDD ver. 3.0 date 20/07/2010.

### 2.3 Follow-up Interviews

From 18 March 2010 to 20 March 2010, CEC performed on-site interviews with project proponent, project developer and stakeholders to confirm information and to resolve issues identified in the document review. Table 2 provides a list of all persons interviewed in the context of this on-site visit and summarizes the main topics of the interviews.

**Table 2 Interviewed persons and topics**

| <b>Name</b>                  | <b>Organization/Title</b>                                                      | <b>Topic</b>                                                                                                                                                                                                                                                                          |
|------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QIN Lin                      | Chongqing Youyang County Youchou Hydropower Station Project /Head of the Board | Project background information<br>Project design and status<br>Sustainable development issues<br>Stakeholder process<br>Approval by the local governments<br>Investment barriers<br>Application for CDM<br>Issues affecting the local community<br>Implementation of the compensation |
| FAN Hu                       | Chongqing Youyang County Youchou Hydropower Station Project /Vice President    | Technical issues during the project construction and operation<br>Technical equipment<br>Monitoring plan<br>Training history<br>Management system                                                                                                                                     |
| ZHAO Dianhui, LI Zhenlan and | Caspervandertak Consulting and Gansu Tonghe                                    | Pre-preparation and application for CDM<br>Project related legal issues<br>Sustainable development issues                                                                                                                                                                             |



|               |                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| YANG Hui      | Investment Project Consulting Co., Ltd./Consultant                   | Monitoring plan<br>Training history<br>Management system<br>Environmental impacts<br>Stakeholder process<br>Approval by the host country                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Stake holders | Several departments of local government and affected local residence | The approval process of the project<br>The status of economy in the local area<br>The development of hydropower projects in the local area<br>The policy and regulation related to hydropower projects<br>Land levy of the project<br>Compensation regulations for land levy and migration resettlement<br>The project's influence on local economy, environment and society<br>CDM projects development in local area<br>Status of water resource and its usage in local area<br>Environmental impact of the project<br>Sustainable development issues<br>Status of electricity generation in local area<br>Environmental impact of the project<br>The project's influence on local economy, environment and society |

## 2.4 Resolution of Corrective Action, Clarification and Forward Action Requests

According to the requirements of VVM, If during the validation of a project activity, the DOE identifies issues that need to be further elaborated upon, researched or added to in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, the DOE shall ensure that these issues are correctly identified, discussed and concluded in the validation report.



The CARs, CLs and FARs can only be resolved or closed out if the project participants modify the project design, rectify the PDD or provide adequate additional explanations or evidence that satisfies the DOE's concerns. If this is not done, the DOE shall not recommend the project activity for registration to the CDM Executive Board.

To guarantee the transparency of the verification process, the issues raised and how they were resolved are documented in more detail in part 3 of the report and the validation protocol in Appendix A.

**Table 3 Main Changes in the Content of the PDDs**

| <b>Subject and Section in the PDD</b>                             | <b>Main Changes in the Revised PDD</b>                                                                   |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Section A<br>General Description of Project Activity              | PDD version and revision history<br>Coordinates                                                          |
| Section B<br>Application of a Baseline and Monitoring Methodology | Investment, sensitivity and common practice assessments<br>Prior consideration of CDM<br>Monitoring plan |
| Section C<br>Duration of the Project Activity /Crediting Period   | Starting date                                                                                            |
| Section D<br>Environmental Impacts                                | N/A                                                                                                      |
| Section E<br>Stakeholders' Comments                               | Number of collected questioners                                                                          |

## 2.5 Internal Quality Control

As final step of a validation, the validation report and the validation protocol have to be reviewed by the technical reviewers, then verified by the CDM Supervisor and 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 FINDINGS

The findings from the document review, on-site visits and interviews are summarized in following sections of this chapter. The validation criteria (requirements), the means of validation and the results from validating the identified criteria are detailed in the validation protocol in Appendix A.

No FAR was found. The information of CARs and CLs are shown in table 4:

**Table 4 No. of CARs and CLs**

| <b>Validation Topic</b>                                | <b>No. of CARs</b> | <b>No. of CLs</b> |
|--------------------------------------------------------|--------------------|-------------------|
| General description of project activity (A)            | 1                  | 2                 |
| Application of baseline and monitoring methodology (B) | 4                  | 5                 |
| Duration of the Project / Crediting Period (C)         | 0                  | 0                 |
| Environmental impacts (D)                              | 0                  | 0                 |
| Stakeholder Comments (E)                               | 0                  | 1                 |
| SUM                                                    | 5                  | 8                 |

#### 3.1 Approval and Participation

The project participants are Chongqing Youshui Hydropower Development Co., Ltd. (China) and AES Carbon Exchange Ltd. (The Netherlands).

The Letter of Approval (LoA) of the host Party was issued by the DNA of China on 09/01/2009, confirming the project is a bilateral CDM project, with Chongqing Youshui Hydropower Development Co., Ltd. and AES Carbon Exchange Ltd. authorized as the project participant. 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 11/11/2008/5/ and relative documents of local government/2.2, 2.4/. The information of Project Participants and project title in these documents is consistent with the PDD.

The LoA of the DNA (Ministry of Housing, Spatial Planning and the Environment) of the Netherlands was issued on 25/08/2010, confirming that it authorizes AES Carbon Exchange, Ltd. as a project proponent in the proposed project. The approval is not



conditional, and the participation is voluntary.

Both LoAs do not refer to any specific version of the PDD or validation report. Both LoAs are valid for Chongqing Youyang County Youchou Hydropower Station Project. The related documents including PDD and MOC are consistent with the LoAs.

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 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 and closed. Please see details in Appendix A.

The validation team concluded that the participants and approvals are fully complying with the requirements of the CDM. According to Annex 2 of the PDD, the proposed project does not receive any public funding. The validation did not reveal any information that indicates that official development assistant (ODA) from Annex I Parties is involved in the proposed project.

### **3.2 Project Design Document**

In PDD version 02, the latest approved PDD template had been correctly applied. The validation team confirms that it is in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website. The final version of PDD dated 20/07/2010 was provided and reviewed by the validation team.

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**

The project is the construction of a grid-connected large-scale hydropower project located at the main stream of Youshui River near Youchou Township of Youyang County, Chongqing Municipality, China.

The total installed capacity of the Project is 120 MW, consists two sets of 60 MW water turbines and generators. The expected full load operating hours are 3,267 hours



annually, the power load factor is 0.3729, and the expected net annual power supply to the grid is 390,000 MWh. The power generated by the proposed project will be routed via an on-site step-up station to the 220 kV Youyang transformer station which is an integral part of the Chongqing Municipality Power Grid, and finally supply to the Central China Grid. The estimated annual GHG emission reduction is 332,611 tCO<sub>2</sub>e.

Through desk review, on-site view and interview with the project participants, it has been validated that the information provided in the PDD is consistent and in compliance with the actual situation and planning, the description is complete.

The validation team checked the parameters of water turbine and generator, the type and parameter in the PDD is consistent with the purchase contract. The rated flow of the two turbines is 161.3m<sup>3</sup>/s, and the rated output power is 61.86 MW. The rated power of the two generators is 60 MW, and the rated frequency is 50Hz. The construction of the dam, flood gates and sand sluices is as per the FSR. The powerhouse is integrated in the dam with the turbines installed at the basement per the FSR. 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 outlines the nature and technical aspects of the project activity.

The project activity does not involve any technology transfer. The technology applied is environmentally safe. The project is considered to contribute to sustainable development in the host country (P.R. China), by utilizing renewable water resources available in the project region, eliminating the environmental pollution caused by operation of fossil fuel-fired power plants and to achieve various social, economic and environmental benefits, such as the employment of the local people during the construction and operation period.

CL 02 was raised and closed. Please see details in Appendix A.

The validation team is able to confirm that the project description, as per the PDD, is sufficiently accurate and complete and therefore comply with CDM requirements.

### **3.4 Baseline and Monitoring Methodology**

#### **3.4.1 Applicability of the selected methodology to the project activity**

The approved consolidated baseline and monitoring methodology ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 10) is applicable to the proposed CDM project activity as it involves a newly built grid-connected renewable power generation using hydro energy. ACM0002 version 10 is valid from 11 Jun 09 to 25 Feb 10, which is valid at the time of PDD for global stakeholder publication on 12/02/2010, the requests for registration can be submitted until 25/10/2010 23:59 GMT, so the application of this



version is valid. 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. Thus application of the selected methodology and its version is deemed to be justified.

This methodology draws upon the following tools: Tool for the demonstration and assessment of additionality (version 05.2) and Tool to calculate the emission factor for an electricity system (version 02).

Based on the on-site assessment, the validation team hereby confirms that as a result of the implementation of the proposed CDM project activity, there are no greenhouse gas emissions occurring within the proposed project boundary, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.

The validation team hereby confirms that the chosen baseline and monitoring methodology is correctly applied to the proposed project.

#### 3.4.2 Project boundary

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. According to *China Electric Power Yearbook*, CCPG imports electricity from the Northwest China Power Grid, the NCPG is the connected electricity system. The PDD also take account of the emissions associated with the imports of power from the NCPG when choosing CCPG as the project boundary. The power generated by the proposed project is transmitted via on-site step-up stations to the 220 kV Youyang transformer station which is an integral part of the Chongqing Power Grid and finally to the CCPG. Through document review and on-site observation, the project is under normal generation and supplies electricity to CCPG. So the boundary and baseline selection of proposed project is correct.

The validation team confirms that the identification of project boundary is in compliance with the applied methodology and the identified boundary, the selected sources and gases as documented in the PDD are justified for the project activity.

#### 3.4.3 Baseline identification

According to the approved methodology, the emission baseline is the net kWh produced/displaced by the renewable generating unit multiplied by an emission coefficient of the grid. Thus the baseline emission of the proposed project is the



amount of net electricity (kWh) supplied to the grid multiplied by emission coefficient of CCPG.

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 power or other renewable energy

Scenario 3: The proposed hydropower Station, without the support of CDM

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

Scenario 1 is not in compliance with the applicable regulation; all other alternatives are in compliance.

Scenario 2 is not realistic because of lack of resources and power generation techniques. The demonstration is cross-checked with China Electric Power Yearbook 2006. The installed capacity of different power sources in Central China Power Grid mainly comes from stations and hydro power stations in 2005, which is the time when investment decision was made. The installed capacity from other resources in CCPG is only 24MW, less than the installed capacity of the proposed project.

**Table 5 Installed capacity of different power sources in Central China Power Grid in 2005**

| <b>Total</b> | <b>Coal-fired power</b> | <b>Hydro power</b> | <b>Nuclear power</b> | <b>Wind power</b> | <b>Others</b> |
|--------------|-------------------------|--------------------|----------------------|-------------------|---------------|
| 108,396.4MW  | 60,167.3MW              | 48,205.1MW         | 0                    | 0                 | 24MW          |

Scenario 3 is not realistic because of lack of financial attractive.

So Scenario 4 is the most applicable alternative.

### **3.5 Additionality**

In section B.5 of the PDD, additionality is justified with the investment barrier approach according to the Tool for the demonstration and assessment of additionality (version 05.2).

#### **3.5.1 Prior consideration and continued action to secure CDM status and start date**

The proposed project activity is a newly built project constructed before the start of the validation. The correlative timeline was given in section B.5 of the PDD. The validation team confirmed that the events and date are correct.



The project owner discovered that the tariff in FSR was not realistic and attainable, which made the proposed project financially unattractive in 2004. So the project owner did not start construction immediately after the receipt of government approval. In June 2005, the shareholder of project owner participated in a CDM training organized by NDRC and became aware of the CDM mechanism. In Sep. 2005, the investment decision was made by the Board of Director, based on the expectation that CDM revenue could increase the financial feasibility of Youchou project.

From 2005 to 2010, continuous actions had been adopted by the project owner of the proposed project. An internal CDM development team was established in July 2006; The emission reduction purchase engagement agreement was signed in Sep. 2007; ERPA was signed in Aug. 2008; LoA of host country was obtained in Jan. 2009; The PDD was published on UNFCCC website from 10/02/2010. The time intervals between these actions are less than one year.

The project start date is 14 Dec. 2005 when overall contracting agreement was signed. According to the above analysis, the validation team confirms that the earliest commitment of starting the proposed project is 14 Dec. 2005, which is also as per *CDM Glossary*.

CAR02 and CL03 were raised and closed. Please see Appendix A.

Related documents were cross-checked by the validation team, the information of related events was also checked during the on-site visit and interview. The validation team is able to confirm that: The prior consideration of CDM for the project activity complies with Guidelines on the demonstration and assessment of prior consideration of the CDM. The CDM was seriously considered in the decision to implement the project activity. The continuing and real actions taken to secure CDM status is sufficient and properly demonstrated.

### 3.5.2 Investment analysis: Choice of approach

The proposed project selects the Option III: benchmark analysis of Step 2 in Tool for the Demonstration and Analysis of Additionality for conducting the investment analysis. Through document review and on-site review, the validation team confirmed that proposed project can only receive financial benefit through supplying electricity generated by hydro power to the grid. Therefore the approach selected is appropriate.

### 3.5.3 Investment analysis: Benchmark selection

The proposed project applies the benchmark IRR of 8%, which is sourced from *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects* issued by State Power. According to which a project IRR of 8% for total investment is the benchmark for investing in hydropower projects over 50 MW hydropower plants.



This value has been checked by the validation team against the source. This document is applicable to retrofit projects in the power industry, as well as power projects for which no specific benchmark is available. Thus the benchmark of 8% can be applied to projects in wind power, fossil-fuel fired power and large hydro power (>50MW) sectors. According to on-site visit and interviews with the PP and local officials, this is the first project developed by the project owner company, so they apply this national benchmark, and the benchmark of project IRR 8% is widely applied by all large hydro power projects in local power sector. The installed capacity of the proposed project is 120 MW, so the benchmark IRR of 8% applied in the PDD is in accordance with the FSR, national regulation and also the Guidance on the Assessment of Investment Analysis. It is applicable and conservative.

#### 3.5.4 Investment analysis: Input parameters

In line with the EB's guidance, CEC confirms that:

a). All the input data of parameters except electric tariff, depreciation, VAT rate in the investment analysis to calculate project post tax IRR without CDM revenue is consistent with FSR. The sources of electric tariff are: *The Notice on Chongqing Price Bureau's Implementation of the Grid Tariff Adjustment Made by NDRC* and a statistical table from the Regulatory Authority of Centre China Grid, which showed the highest price in the region. These documents showed that the highest possible tariff of the proposed project activity at that time is 0.284 RMB/kWh (VAT incl.). The sources of depreciation and residue value are *Notice on deduction instruction on pre Entrepreneur Income Tax* and *Clarification of executing date on entrepreneur adjusting fixed asset residual rate* issued by State Tax Bureau. The source of VAT rate is the approval of Chongqing Price Bureau and invoice.

b). The FSR designing institute is Middle-South Survey and Design Institute of National Electrical Company, a third party professional designing institute with qualifications of level A in engineering design, contracting, consulting, supervision, and construction cost consulting. The FSR was also reviewed by local government, then it was officially approved to be used as the guideline for the implementation of the proposed project. Applied values are listed in Table B.2 of PDD: Main parameters used in the calculation of the project IRR after tax. All references and sources including the FSR and its approval were cross-checked by the validation team to be valid and applicable.

c). The FSR was approved in 30/06/2004; The investment decision was made in Sep. 2005; The starting date of the proposed project is 14/12/2005. So the time period between the events is sufficiently short for the validation team to confirm that it is unlikely in the context of the underlying project activity that the input values would



have material change. Thus it is reasonable to use the FSR as the basis of the investment analysis.

d). The input parameters used in the financial analysis of the proposed project were also compared with similar CDM projects in Chongqing. There are altogether 15 hydropower projects located in Chongqing requesting registration at the beginning of validation, only two projects are between 60 to 180 MW (between the range of -50% and +50%), which is the similar range of the proposed project. The validation team compared major parameters with these projects, such as investment cost per KW, operating hours, Operating costs, etc. The detailed data is shown in Table 4. Based on the information verified, CEC confirms that all compared parameters are in reasonable ranges. CEC is able to confirm that the input parameters used in the financial analysis are reasonable and valid, they adequately represent the economic situation of the project.

**Table 6 Input parameters used in similar CDM projects in Chongqing**

| UNFCCC Registrat ion No. | Capac ity (MW) | Total investment (RMB) | Total Investment per MW (RMB/MW) | Operati ng Hours (h/y) | Annual operating cost per MWh (RMB/MWh) |
|--------------------------|----------------|------------------------|----------------------------------|------------------------|-----------------------------------------|
| 2847                     | 96             | 834,030,000            | 8,687,813                        | 3,132                  | 41.61                                   |
| 2960                     | 75             | 585,650,000            | 7,808,667                        | 2,804                  | 41.39                                   |
| Youchou                  | 120            | 886,460,000            | 7,387,167                        | 3,267                  | 41.47                                   |

#### Total static investment

The designed total static investment per MW of the proposed project is 7,387,167 RMB, lower than 7,808,667RMB and 8,687,813RMB of the other two projects.

By cross-checking the Auditing Report by Chongqing Wulian Accounting Company, the validation team confirms that the actual cost until 10/02/2010 is over 1 billion, which is 13% higher than the FSR. So the application of 886,460,000 RMB is conservative.

CL05 was raised and closed. Please see Appendix A.

Based on the above information, it is CEC's opinion that the total investment of the proposed project is valid and applicable.

#### Electricity tariff

Due to differences of resource distribution and investing scales in Chongqing region, Chongqing municipality did not establish a bus-bar tariff for all hydropower projects. Different projects have different tariffs. According to the official document in



Chongqing Municipality *The Notice on Chongqing Price Bureau's Implementation of the Grid Tariff Adjustment Made by NDRC* for normal hydropower projects and a statistical table made by the Regulatory Authority of Centre China Grid, the highest tariff for hydropower project in Chongqing at the time of investment decision is 0.284 Yuan/kWh(VAT incl.). The PDD applies the highest tariff (0.284 Yuan/kWh) issued to hydropower projects in Chongqing at the time of investment decision (September 2005). So the input value of tariff is valid and conservative.

CL05 was raised and closed. Please see Appendix A.

As no higher tariffs have been observed for similar projects in the same region and as with the application of the so-far highest tariff of 0.284 Yuan/kWh(VAT incl.), the project IRR does not cross the benchmark, hence ANNEX 32 of EB53 requiring E+ policy or E- policy analysis is not applicable in this case.

#### Operating Hours (h) (used to calculate PLF)

The operating hours of the proposed project is 3267 per year, estimated by the FSR design institute based on historical hydrological condition and device technical information. This value is higher than the value used by the other two projects, which are 3,132 and 2,804 respectively, so the value is within an appropriate range. The FSR report was compiled by Central South Survey & Design Institute of State Grid Company, which has authorized design qualification Class A, in which the hydrology data of two water hydrologic stations were analyzed for hydrology calculation. The approval document of FSR report by Chongqing Development & Reform committee was also reviewed by the validation team, both documents clearly indicate that the estimated annual operating hours will be 3267.

In accordance with the guidance for the reporting and validation of Plant Load Factor, the ex-ante plant load factor is determined according to the data defined by FSR design institute.

So the Ex-ante Plant Load Factor=Operating hours/8760=3267/8760=0.3729.

Based on the above information and CEC's technical expertise, the operating hours and the PLF of the proposed project are applicable.

CL01 was raised and closed. Please see Appendix A.

#### Operating Cost (RMB)

According to the FSR, the annual O & M Cost of the proposed project is not exactly the same in all the operational years, for the 1st year: 2,180,000RMB, for the 2nd -10th year: 16,180,000RMB, for the 11th-30th year: 14,230,000RMB. For the 1st year, the power generation was expected to start from late in the second half of the year, so



the cost is much lower. For the 2nd -10th years, the annual O & M cost contains support fund for immigrants as per national and local regulations.

The annual operating cost per MWh of the proposed project activity is 41.47 RMB/MWh, between the 41.61RMB/MWh and 41.39 RMB/MWh used by the other two projects. So the value is within a normal range.

The justification of this amount is also provided in Table B.5 of the PDD, a breakdown of total costs recalculated according to official guidance is provided. Major breakdown items are: repair cost, salary package, material cost, maintenance costs, support fund for immigrant and others, the constitution is common compared with similar projects. By cross checking with the referenced official guidance document *Interim Regulations of Hydropower Construction Project Financial Evaluation*, CEC confirm that the recalculation process and result is correct. For each year, the applied costs in the investment analysis of the proposed project are slightly lower than the recalculation results. And the IRR will remain below the benchmark of 8% even the O&M cost is decreased by 50%.

Based on the above analysis, it is CEC's opinion that the input value of operating cost is conservative and applicable.

#### Loan (RMB)

In FSR, 80% of total investment will be sourced from bank loans, which is 709,168,000 RMB. By cross-checking bank loan contracts and the Auditing Report by Chongqing Wulian Accounting Company, the validation team is able to confirm that the actual bank loan is raised to 850,000,000 RMB, which is 71.84% of actual total investment cost.

The input value of interest of bank loan of 5.76% is from FSR, which is in accordance with the Guidance 6 of *Guideline of the Assessment of Investment Analysis*.

CAR03 and CL05 was raised and closed. Please see Appendix A.

The applied input value of loan amount is 709,168,000 RMB, which is from FSR. Considering the higher loan finance percentage leading to higher IRR, the loan calculation in investment analysis is conservative and suitable.

#### Other parameters

The 5% residual rate is applied in investment analysis according to national regulation *State Tax Bureau inform to clarify executing date on entrepreneur adjusting fixed asset residual rate*, Guoshuihan [2005]883.

The 20 years of depreciation period is according to Clause 25 of *State Tax bureau issuing notice on deduction instruction on pre Entrepreneur Income Tax*, Guoshuifa



[2000]84. In which the minimum depreciation rate is as below: 1) House and architecture are 20 years; 2) Train, ship, machine and other equipments are 10 years; 3) Other vehicles and instruments, tools and furniture related to productions are 5 years. Therefore, the applied 20 years of depreciation period is appropriate and conservative.

CL04 was raised and closed. Please see Appendix A.

Through the above validation method, the validation team is able to confirm that the input parameters used in the financial analysis are reasonable and is in accordance with the *Guidance on the Assessment of Investment Analysis*, they adequately represent the economic situation when the investment decision was made.

### 3.5.5 Investment analysis: Calculation and conclusion

The project FIRR of the proposed project without CDM revenue is 6.55%, lower than the project benchmark 8%, which indicates that the project in the absence of CDM benefits is not financially attractive. The project FIRR with CER revenue (8.88%) is higher than the benchmark.

All parameters for investment analysis are included in The IRR spreadsheet, with complete and correct calculating formulas. Based on the above reliable data sources, the validation team confirmed that the input values from the approved FSR are valid and applicable at the time of making investment decision. Therefore, the validation team confirmed that the input values used in the PDD meet the guideline of EB 38 Para.54 (a), (b), (c).

### 3.5.6 Investment analysis: Sensitivity analysis

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 was raised and closed. Please see Appendix A.

The validation team concludes that both of the variation range and relevant assumptions stated in the PDD are robust and the investment of the proposed project is finically unattractive.

### 3.5.7 Common practice analysis

The common practice analysis is addressed as per Step 4 of Tool for the Demonstration and Assessment of Additionality and latest rules issued by EB. The similar area is defined as Chongqing area according to the similar policy and investment environment. The similar scale is chosen to be between 50MW and



300MW according to the *Classification of Hydraulic and Hydropower Engineering*. The similar construction year is defined as from 10/02/2002, after the electric industry reform in host country. The selection is correct.

Common practice analysis was made through comparing with projects in Year Book of China Water Resources 2006 and all of the hydropower stations on Youshui River. Only two similar projects were identified, one is invested by a foreign company which enjoys different invest environment with the proposed project, the other had applied CDM support. The evidences of these projects are cross-checked and confirmed by the validation team to confirm that these two projects are also not similar as the proposed project.

CL07 was raised and closed. Please see Appendix A.

The validation team has reviewed the approach presented in the PDD and can confirm that relevant parameters such as location, infrastructure, economical situation and development have been taken into account in order to define the region to be used for the common practice. The correctness of the selected region for the common practice comes from the nature of the Chongqing in terms of investment conditions and water resources development.

So it can be confirmed that the proposed CDM project activity is not a common practice in the defined region. Based on above demonstration that in accordance with *Tool for the Demonstration and Assessment of Additionality* and supported by reliable data sources, it is the opinion of the validation team that the project is thus 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 parameters and equations presented in the PDD have been cross-checked with the information and requirements presented in applied methodology and respective tools.

#### **Baseline Emission**

The calculation of the baseline emissions followed the procedures described in the applied methodology ACM0002.

The grid emission coefficient is calculated by “combined margin method” consisting of the combination of “operating margin (OM)” and “build margin (BM)” according to the procedures prescribed in the “Tool to calculate the emission factor for an electricity system”. The operating margin as well as the build margin are determined ex-ante and remain fixed throughout the crediting period. The calculation of the OM is based on the simple OM method. Option C is adopted, the OM emission factor is calculated



based on the net electricity generation, the fuel type(s) and total fuel consumption of all the power plants in CCPG. The method to calculate BM is based on the method approved by CDM EB for the situation of China. First, calculate the newly added installed capacity and the various component technologies. Then calculate the weight of newly added installed capacity of each power generation technology. Finally the commercial and efficient level of each power generation technology is adopted to calculate BM emission factor.

The baseline calculation was based on the published  $EF_{OM}$  and  $EF_{BM}$  (0.5802 and 1.1255 tCO<sub>2</sub>e/MWh, respectively) calculation process issued by the NDRC on 02/07/2009. The values were the latest available at the time of the commencement of validation and therefore considered as correct. The value of  $EF_{CM}$  was determined using the weighted average of the  $EF_{OM}$  and  $EF_{BM}$  using the default values for the factors as described in the *Tool to calculate the emission factor for an electricity system* (Version 2.0) ( $\omega_{OM}=0.5$  and  $\omega_{BM}=0.5$  for hydropower projects). Therefore the combined baseline emission factor is determined ex-ante and will remain fixed during the first crediting period.

$$EF_{grid,CM,y}=0.5802 \times 0.5 + 1.1255 \times 0.5 = 0.85285 \text{ tCO}_2/\text{MWh}$$

$$BE_y = E_{Gy} * EF_{grid,CM,y} = 390,000 * 0.85285 = 332,611 \text{ tCO}_2$$

### Project Emission

As per the applied methodology ACM0002 ver. 10, for hydropower project activities that result in new reservoirs, project proponents shall only account for CH<sub>4</sub> and CO<sub>2</sub> emissions from the reservoir. The power density of the proposed project is 120MW/7.7 km<sup>2</sup>, which equals to 15.6W/m<sup>2</sup>. The power density of the proposed project is greater than 10W/m<sup>2</sup>, so the project emission is zero.

According to Article 77 of VVM ver. 1.2: "The validation report shall contain information regarding greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology." It is also assessed in the PDD about whether the on-site backup diesel generator might produce emissions more than 1% of the total emission reduction of the proposed project. The annual emission by the diesel generators is estimated to be about 0.003% of the annual emission reduction of the proposed project. Therefore it is negligible. The analysis of the PP was reviewed. According to the comparison with similar CDM projects and CEC's sectoral expertise, the estimation is reasonable. However, in order to be more accurate about whether the emission by the diesel



generators will reach 1% of emission reduction of the proposed project, the operational hours of emergency back-up diesel generator will still be monitored. If the emission will be more than 1% of emission reduction of the proposed project, the amount will be considered as project emissions.

Based on document review and on-site visit, the project emission is considered to be correct.

#### Leakage

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

#### Emission Reduction

The annual emission reductions equal to the annual baseline emissions. In summary, the calculation of the baseline emissions and the emission reductions can be considered as correct.

According to the estimated annual emission reduction is 332,611 tCO<sub>2</sub>. The estimated total emission reductions is 2,328,277 tCO<sub>2</sub>e during the first crediting period represents a reasonable estimation using the assumptions given by the project.

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. The validation team can hereby confirm that the emission reductions are appropriately worked out complying with relevant methodology and tools, and parameters and data for the calculations are sourced from proper data sources.

The expected operational lifetime of the project activity is 30 years which is evidenced in FSR and a renewable crediting period of seven years with the starting date of the crediting period of 01/01/2011 or the date of registration. The emission reductions are estimated to be 332,611 tCO<sub>2</sub>e per year, and 2,328,277 tCO<sub>2</sub>e over the seven-year renewable crediting period.

The calculation and estimation of emission reduction is validated to be correct.

### **3.7 Monitoring Plan**

The proposed project applies approved methodology ACM0002 (version 10).

The project will supply electricity to the grid through an on-site step up station connected to the Youyang 220 kV transformer station, which is part of the Chongqing Municipality Power Grid. The on-site step up station contains two transformers, and the electricity will be supplied Youyang 220 kV transformer station through two power



transmission lines. The project is also connected to one back-up power line to provide emergency power in case the project is not operational (indicated in dark yellow line in figure B.4). According to the document review and on-site visit, the description of transformer, transmission and meters in the PDD is in accordance with the actual situation.

According to the methodology, the following 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. These data will be directly used for calculation of emission reductions. Measurement results of electricity supplied to the grid and that delivered from the grid to the project will be cross-checked against Electricity Transaction Notes (hereinafter ETNs). In case of discrepancies the conservative value will prevail. The metering instruments will be calibrated annually. The data is monitored continuously.

The installed capacity of the hydro power plant after implementation of the project activity  $Cap_{PJ}$  will be monitored. The installed capacity of the project activity will be determined according to installed equipments' nameplates (which is 60MW of each generator) and will be monitored annually. The nameplate will be checked by DOE during verification. 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.

According to the analysis in the section of project emission in B.6, one additional parameter is also monitored:

Operational hours of emergency back-up diesel generator. The project entity will record the operational hours in the daily operation logs. It will be simultaneously measured and recorded during operation. The expected annual emissions associated with the operation of the emergency back-up diesel generator amount to about 0.003% of total emission reductions. If the monitoring record shows that the actual emissions by the operation of the diesel generator will be more than 1% of total emission reduction of the proposed project, emissions by the operation of the diesel generator will be considered as project emissions.

In normal condition, the power exchange with the grid is measured by meter M1 and M2, the meters are in compliance with "Technical Administrative Code of Electric Energy Metering (DL/T 448-2000). M1 and M2 are installed at the output side of the transformers. The monitored data will be compared with the Electricity Transaction



Notes provided by the Grid Company.

In abnormal condition, the power exchange with the grid is measured by meter M3, the meters are in compliance with *Technical Administrative Code of Electric Energy Metering (DL/T 448-2000)*. M3 is installed at the output side of the backup transformer of the backup line. The monitored data will be compared with the Electricity Transaction Notes provided by the Grid Company.

Section B.7.2 properly describes the operational management structure for monitoring of the proposed project activity.

The major parameters monitored have been discussed with the PP's especially regarding the location of the meters, the data management and the QA/QC procedures to be implemented in the context of the project, the validation team confirmed that the PP has ability to implement the monitoring plan.

CAR04 and CAR05 were raised and closed. Please see Appendix A.

The validation team confirms that the monitoring plan is in compliance with the requirements of the methodology

### **3.8 Sustainable Development**

The LoA of the Host Country clearly presents a statement that the project contributes to the sustainable development of the host party. See Section 3.1.

### **3.9 Stakeholders Consultation**

Relevant local stakeholders received consultation questionnaires and they were invited to participate in the consultation meeting hold on 27/02/2008 prior to the publication of PDD on the UNFCCC website from 10/02/2010. From March 18th to April 20th 2008, the project entity carried out a separate stakeholder consultation process to confirm the impacts of the project on the relevant stakeholders. The description and summery of the comments received by local stakeholders from the meeting and questionnaires was described in Section E of the PDD.

The meeting and survey was conducted by the PP and its CDM consultant, 422 questionnaires were distributed to local residents, 418 of them were collected. Including 82 questionnaires (79 collected) during the consultation meeting and 340 questionnaires (339 collected) distributed directly in the villages. The result showed that local residents support the construction of the project and expect that the operation of the proposed project will bring additional benefits such as economy growth and living condition improvement, and contribute to the development of local county. The information was cross-checked during the on-site visit and interview.



CL08 was raised was raised and closed. Please see Appendix A.

The PDD version 2 was made publicly available on UNFCCC's website. Parties, stakeholders and NGOs were invited to provide comments through the CDM website during a 30 days period from 10/02/2010 to 13/03/2010. No comment was received in this period.

Based on the above, the validation team is able to confirm that the local stakeholder consultation has been adequately performed.

### **3.10 Environmental Impacts**

The environmental impacts and conclusions of the project are described in the Section D of the PDD. The description is based on the officially approved EIA report.

In EIA report, major environmental impacts of the proposed project activity were assessed according to the China laws and regulations. The EIA report sufficiently assessed the predicted impact to local eco-environment caused by the proposed project activity, the spatial scale covers the project boundary and the river basin. The assessed aspects includes: local economy, social environment, submerge, resettlement, soil and water conservation, public participation, pollution prevention and control, risk analysis, etc. The impact on biodiversity and natural ecosystems are included in the section of eco-environment impact assessment. After analysis, the major predicted negative impacts were identified in the EIA report: impact on social environment, environment impact caused by resettlement and soil and water loss. These predicted negative impacts together with relative planned monitoring and remedial measures are accurately summarized in the PDD. Finally, it is concluded in the EIA report that the project activity is not expected to cause significant negative environmental impacts.

The EIA report is checked by the validation team to be valid. The validation team also cross-checked the approval of EIA report, in which the measures to prevent negative impacts were reviewed and approved. Through consulting with the officials from Environment Bureau of Youyang County, Chongqing, no environmental complaint on the proposed project was received. And to avoid negative impacts, the project owner will protect the environment according to measures approved by the government, and ensure all emissions reach national standards.

## **4. VALIDATION OPINION**

China Environmental United Center Co., Ltd (CEC) has performed a validation of the Chongqing Youyang County Youchou 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.

The total emission reductions from the project are estimated to be on the average of 332,611 tCO<sub>2</sub>e per year over the selected 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.

CEC's opinion is that Chongqing Youyang County Youchou Hydropower Station Project in China, as described in the project design document ver. 3.0, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria, and correctly applied the baseline and monitoring methodology ACM0002 ver.10, CEC thus requests the registration of the project as a CDM project activity.

Beijing, 31/08/2010

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

ZHANG Ruizhi

Validation Team Leader

China Environmental United Certification Center Co., Ltd (CEC)

Beijing, 31/08/2010

A handwritten signature in black ink, appearing to read 'Tang Dingding', is positioned above the name.

TANG Dingding

Chairman of Board



## 5. REFERENCES

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  - 3.4 China Water Resource Yearbook, 2006
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  - 4.4 Notice on CDM team establishment
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  - 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

## 6. PERSONS INTERVIEWED

List persons interviewed during the validation or persons that contributed in providing information that cross-checked by the validation team.

| Name           | Organization / Function or comment                                   |
|----------------|----------------------------------------------------------------------|
| QIN Lin        | Hydropower Development Co., Ltd. / GM                                |
| FAN Hu         | Hydropower Development Co., Ltd. / Project Manager                   |
| WENG Qin       | Youyang People's Government/Vice Director-General                    |
| LI Shifu       | Land and Resources Bureau of Youyang County / Director               |
| LU Bangquan    | Development and Reform Bureau of Youyang County / Director-General   |
| YAO Chuanjiang | Environmental Protection Bureau of Youyang County / Director-General |
| LIU Jun        | Youyang Electricity supply company / Director                        |
| YANG Xiujie    | Forestry Bureau of Youyang County / Director                         |
| XU Hongchuan   | Water Conservancy Bureau of Youyang County/Director                  |
| XIE Zhenwen    | Immigration Affairs Office of Daxi Town/Director                     |
| TIAN Rrenduo   | Youchou town/ villager/Miao nationality                              |
| LI Shuyuan     | Youchou town/ villager/ Miao nationality                             |
| TIAN Hongzhou  | Youchou town/ villager/ Miao nationality                             |



|                |                                              |
|----------------|----------------------------------------------|
| TIAN Ying      | Wufu country/ villager/ Tujia nationality    |
| LIN Zhixiang   | Wufu country/ villager/ Tujia nationality    |
| ZHANG Zhengguo | Wufu country/ villager/ Tujia nationality    |
| LIN Yiju       | Wufu country/ villager/ Tujia nationality    |
| ZHANG Rrencai  | Wufu country/ villager/ Tujia nationality    |
| HAN Mingqing   | Wufu country/ villager/ Tujia nationality    |
| TIAN Hongquan  | Keda country/ villager/ Tujia nationality    |
| CHEN Yuanfen   | Keda country/ villager/ Tujia nationality    |
| PENG Jianguo   | Keda country/ villager/ Tujia nationality    |
| TIAN Yibei     | Keda country/ villager/ Tujia nationality    |
| LIU Honglin    | Keda country/ villager/ Tujia nationality    |
| SONG Jiawan    | Keda country/ villager/ Tujia nationality    |
| SONG Chuanquan | Keda country/ villager/ Tujia nationality    |
| LIU Maohong    | Daxi country/ villager/ Tujia nationality    |
| WU Shengfu     | Daxi country/ villager/ Tujia nationality    |
| LI Zehua       | Daxi country/ villager/ Miao nationality     |
| ZHANG Jinxiang | Daxi country/ villager/ Tujia nationality    |
| LI Maoxiang    | Daxi country/ villager/ Tujia nationality    |
| WANG Xinghai   | Daxi country/ villager/ Miao nationality     |
| HUANG Fujiang  | Daxi country/ villager/ Tujia nationality    |
| LI Yulin       | Daxi country/ villager/ Miao nationality     |
| LI Maohua      | Daxi country/ villager/ Miao nationality     |
| TIAN Qinglin   | Daxi country/ villager/ Tujia nationality    |
| ZHANG Chang    | Pianbai country/ villager/ Tujia nationality |
| WANG Xuejun    | Pianbai country/ villager/ Miao nationality  |
| LEI Xichun     | Pianbai country/ villager/ Tujia nationality |



## APPENDIX A:

Table 1 Requirement Checklist

| CHECKLIST QUESTION                                                     | Ref. | MoV | comments                                                                                                                                                                                                                                                                                                               | Draft<br>Concl | Final<br>Concl |
|------------------------------------------------------------------------|------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|
| <b>A. General Description of Project Activity</b>                      |      |     |                                                                                                                                                                                                                                                                                                                        |                |                |
| A.1. Title of the Project Activity                                     |      |     |                                                                                                                                                                                                                                                                                                                        |                |                |
| A.1.1 Does the project title clearly identify the unique CDM activity? |      | DR  | Yes.<br>The project title is “Chongqing Youyang County Youchou Hydropower Station Project”, it is identifying the unique CDM activity clearly.                                                                                                                                                                         | OK             | OK             |
| A.1.2 Are there any indication concerning the history of the versions? |      | DR  | Yes.<br>The version 1.0 was compiled to apply the China LoA,<br>The GSP was started with version 2.0 on UNFCCC CDM website:<br><a href="http://cdm.unfccc.int/Projects/Validation/DB/2FCMQFYDRJJ7VN7TWVX2OFA7RBKCJ/view.html">http://cdm.unfccc.int/Projects/Validation/DB/2FCMQFYDRJJ7VN7TWVX2OFA7RBKCJ/view.html</a> | OK             | OK             |
| A.1.3 Does the PDD apply the latest UNFCCC template?                   |      | DR  | Yes.<br>The PDD correctly applies CDM PDD template version 03, in effect as of: 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      | <p>The project is the construction of a grid-connected large-scale hydropower project located at the main stream of Youshui River near Youchou Township of Youyang County, Chongqing Municipality, China. The total installed capacity of the Project is 120 MW, consists two sets of 60 MW water turbines and generators. The expected full load operating hours are 3,267 hours annually, the power load factor is 0.3729, the expected net annual power supply to the grid is 390,000 MWh. The power generated by the proposed project will be routed via an on-site step-up station to the 220 kV Youyang transformer station which is an integral part of the Chongqing Municipality Power Grid, and finally supply to the Central China Grid. The estimated annual GHG emission reduction is 332,611 tCO<sub>2</sub>e.</p> <p>CL01</p> <p>Please justify the applied Plant Load Factor as per EB 48 Annex 11.</p> | CL01 | OK |
| A.2.2                      | Is the information provided by proofs consistent with the information provided by the PDD?                                                                                           |  | DR      | <p>Yes.</p> <p>The information provided by these proofs is consistent with the information provided by the PDD.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | OK   | OK |
| A.2.3                      | 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<br>I | 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.<br>The form is correctly applied.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OK    | OK |
| A.3.2 | Does it clearly specifies all the Parties and project participants?                |  | DR | Yes.<br>The project participants are: Chongqing Youshui Hydropower Development Co., Ltd. (China) and AES Carbon Exchange Ltd. (The Netherlands).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OK    | OK |
| A.3.3 | Has the project provided written approvals of all parties involved?                |  | DR | <p>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.</p> <p>The Letter of Approval /1/ of the host Party was issued by the DNA of China on 09/01/2009, confirming the project is a bilateral CDM project, with Chongqing Youshui Hydropower Development Co., Ltd. and AES Carbon Exchange Ltd. authorized as the project participant.</p> <p>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 11/11/2008/37/ and relative documents of local government. The information of Project Participants in the PDD is consistent with the LoA.</p> <p>CAR01</p> <p>LoA from Annex I party is not provided.</p> | CAR01 | 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.<br>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      | Yes.<br>Besides GHG emission reduction, the proposed project activity also helps 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.<br>More project specific information about its contribution to sustainable development has been provided, including contribution to local 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<br>I | The project location's coordinates are east longitude of 109°08'44" and north latitude of 28°57'56" in the PDD. The power house is located under the dam.<br>CL02<br>Please provide evidence certifying the location of the proposed project.                                                                                                                                                                                                                                                                                                                        | CL02 | 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).<br>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<br>I | Yes.<br>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 implementation of the project activity require any technology transfer from Annex I countries to the host country? |  | DR<br>I | No.<br>The equipments of the power plant are made in China. Therefore no technology transfer is required.                                                                                                                                                         | OK | OK |
| A.4.3.3. Is the technology implemented by the project activity environmentally safe?                                                 |  | DR<br>I | Yes.<br>As the project is a hydro power project, the technology implemented by the project activity is environmentally safe.                                                                                                                                      | OK | OK |
| A.4.4 Is estimation of the emission reductions in first crediting period correct?                                                    |  | DR      | Yes.<br>The calculation is correct and consistent with the information in other parts of the PDD.                                                                                                                                                                 | OK | OK |
| A.4.5 Is any public funding from Annex I countries available to the proposed project?                                                |  | DR      | No.<br>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>B. Application of a Baseline and Monitoring Methodology</b>                                                                       |  |         |                                                                                                                                                                                                                                                                   |    |    |



|                                                                                                                                                                                                                              |  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|
| B.1. Does the project correctly apply the latest approved methodology and its tools?                                                                                                                                         |  | DR | <p>Yes.</p> <p>The project applies approved baseline and monitoring methodology ACM0002, version 10, which is Valid from 11 Jun 09 to 25 Feb 10, which is valid at the time of PDD for global stakeholder publication on 12/02/2010. 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. So the application is justified.</p> <p>This methodology draws upon 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).</p>                                                                                                                                                                                                                                                                                                                        | OK | OK |
| B.2. Does the methodology describe all project emission source for the project activity that contributes all 1% of the emission reductions? Sources that the methodology considers not to take into account are not relevant |  |    | <p>No.</p> <p>It is assessed in the PDD about whether the on-site backup diesel generator might produce emissions more than 1% of the total emission reduction of the proposed project. The annual emission by the diesel generators is estimated to be about 0.003% of the annual emission reduction of the proposed project. Therefore it is negligible. The analysis of the PP was reviewed. According to the comparison with similar CDM projects and CEC's sectoral expertise, the estimation is reasonable. However, in order to be more accurate about whether the emission by the diesel generators will reach 1% of emission reduction of the proposed project, the operational hours of emergency back-up diesel generator will still be monitored. If the emission will be more than 1% of emission reduction of the proposed project, the amount will be considered as project emissions.</p> <p>No other project emission or leakage sources contribute more than 1% and not mentioned by the methodology have been found at this stage.</p> | OK | OK |



|                                                                                                                            |  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |    |
|----------------------------------------------------------------------------------------------------------------------------|--|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|
| B.3. Are the project's spatial boundaries (geographical) clearly defined?                                                  |  | DR | Yes.<br>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. The Central China Power Grid covers provinces and areas of Henan, Hubei, Hunan, Jiangxi, Sichuan and Chongqing. The power generated by the proposed project is transmitted via on-site step-up stations to the 220 kV Youyang transformer station which is an integral part of the Chongqing Power Grid and finally to the CCPG. Through document review and observations of the physical site, the project follows the approval of grid connection design report and the design of FSR. So the boundary and baseline selection is valid and correct. | OK | OK |
| B.4. What is the baseline scenario?                                                                                        |  | DR | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | OK | OK |
| <b>B.5. Demonstration and Assessment of Additionality</b>                                                                  |  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |    |
| B.5.1 Does the additionality justification follow the requirements of the applied methodology and/or methodological tools? |  | DR | Yes.<br>According to ACM0002 ver.10, 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?                                |  | DR<br>I | CAR02<br>The project starting date identified in the PDD version 2.0 is April 2006, when the equipment purchase contract was signed. However the overall contracting agreement was signed in Dec. 2005, earlier than the equipment purchase contract. Please correct the project start date according to CDM glossary.                                                                                                                  | CAR02 | OK |
| B.5.2.2. Is the prior consideration of CDM correctly demonstrated in the PDD?                             |  | DR      | CL03<br>The demonstration of prior consideration of CDM is not sufficient in the PDD.                                                                                                                                                                                                                                                                                                                                                   | CL03  | OK |
| B.5.2.3. Is decision to proceed with the project demonstrated in the PDD?                                 |  | DR      | Yes.<br>The decision was made on the board meeting on 08/09/2005. The evidenced was provided and 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? |  | DR<br>I | Yes.<br>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      | Yes.<br>A complete list of four credible alternatives has been identified to the project activity in the PDD.<br>Scenario 1: Fossil fuel-fired power generation<br>Scenario 2: Power generation from wind power or other renewable energy<br>Scenario 3: The proposed hydropower Station, without the support of CDM<br>Scenario 4: The same service of power supply is provided from grid (i.e. continuation of the present situation) | OK    | OK |



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| B.5.3.2. Do all identified alternatives comply with applicable regulation?                                                            |  | DR      | <p>Scenario 1 is not in compliance with the applicable regulation; all other alternatives are in compliance.</p> <p>Scenario 2 is not realistic because of lack of resource.</p> <p>Scenario 3 is not realistic because of lack of financial attractive.</p> <p>So Scenario 4 is the most applicable alternative.</p> | OK   | OK |
| <b>B.5.4 Step 2: Investment analysis</b>                                                                                              |  |         |                                                                                                                                                                                                                                                                                                                       |      |    |
| B.5.4.1. Is the financial analysis method appropriately chosen for the project?                                                       |  | DR      | <p>Yes.</p> <p>Since this specific project will only have revenue from sales of electricity and receives no other income. So benchmark analysis method is appropriate.</p>                                                                                                                                            | OK   | OK |
| B.5.4.2. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation?                             |  | DR      | <p>Yes.</p> <p>The Excel Spreadsheets of the project finance indicators and IRR calculations are viewable and unprotected. The value and calculation is correct.</p>                                                                                                                                                  | OK   | OK |
| B.5.4.3. Is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included? |  | DR<br>I | <p>The project lifetime is 33 years, which reflects the technical lifetime of project activity as per the FSR. The depreciation period is 20 years, the depreciation rate is 5% annually.</p> <p>CL04</p> <p>Please explain the reason of applying the value of depreciation and residual value.</p>                  | CL04 | OK |
| B.5.4.4. Is the benchmark intended for post-tax comparison?                                                                           |  | DR      | <p>Yes.</p> <p>The applied benchmark 8% is post-tax. 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.</p>                                                                                                | OK   | OK |



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| B.5.4.5. Were the input values used in the investment analysis valid and applicable at the time of the investment decision?                          |  | DR | <p>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. All input values are cross-checked with FSR and other evidence documents.</p> <p>CL05<br/>Please further demonstrate the rationality of the input value of investment analysis, e.g. total investment, tariff and loan.</p> | CL05  | OK |
| B.5.4.6. Are depreciation and other non-cash related items added back to net profits for the purpose to calculate the financial indicator?           |  | DR | <p>The income of the proposed only includes power generation and CDM income. 100% of investment is depreciated during the project lifetime, so no residue value is added back to net profit. There are non-cash related items related to the IRR calculation of the proposed project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | OK    | OK |
| B.5.4.7. In case of Project IRR, are the costs of financing expenditures (loan repayments and interests) included in the calculation of Project IRR? |  | DR | <p>The costs of financing expenditures (loan repayments and interests) are considered as an output when calculating income tax. This is in compliance with national regulation. But it is not included from the cash flow out of the project IRRs</p> <p>CAR03<br/>The proposed applies post-tax benchmark, however the actual interest payable is not taken into account in the calculation of income tax, which is not consistent with the latest version of Guideline of the assessment of investment analysis.</p>                                                                                                                                                                                                                                                                                                                                                                    | CAR03 | OK |



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| B.5.4.8. 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.5.4.9. 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 | Yes.<br>According to Interim provisions concerning hydropower construction project financial assessment, a project-IRR of 8% for total investment is the benchmark for investing in hydropower projects over 50 MW hydropower plants. | OK | OK |
| B.5.4.10. In case of internal benchmark: Is it ensured that the project cannot be developed by other developers than the PP?                                                                                                 |  | DR | The project IRRs of the proposed project without CDM revenue is 6.59%, 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 |



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| B.5.4.11. 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.<br>CL06<br>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                                                                                                                                                                        |  |    |                                                                                                                                                                                                                                                                                                                                                                                                             |      |    |



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| B.5.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type?                                                                            |  | DR | Yes.<br>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.<br>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 and what kind of differences are observed? |  | DR | Only one similar project is identified, which is invested by a foreign company.<br>CL07<br>The selection and demonstration of similar projects is not sufficient. Please further demonstrate the common practice of the proposed project.                                                                                                                                                                                                                                                                                                 | CL07 | OK |
| B.6. Emission Reductions                                                                                                                                                                 |  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |    |
| B.6.1.1. Are the equations applied correctly according to the applied approved methodology?                                                                                              |  | DR | Yes.<br>According to ACM0002 ver. 10, $ER=BE-PE-L$ .<br>According to ACM0002 ver. 10, project emission and leakage of the proposed project is considered to be zero.<br>The emission of the diesel generator is estimated to be less than 1% of total emission reduction of the proposed project. However the actual emissions from the operation of the diesel generator will be monitored and calculated, if it becomes more than 1% of emission reduction of the proposed project, the amount will be calculated as project emissions. | 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 | N/A                                                                                                               | 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. | OK | 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.<br>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.<br>Detailed descriptions are given and conservative IPCC values are adopted.                                 | OK | OK |



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| B.6.3.2. Is the form/table required for the indication of projected emission reductions correctly applied?                              |  | DR      | Yes.<br>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 implementation and the indicated crediting period? |  | DR<br>I | Yes.<br>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 01/01/2011 or the date of registration, whichever is later, the project will still be in operation during that time. And the expected lifetime of the proposed project is 30 years, longer than 3 renewable crediting periods. | OK | OK |
| B.7. Application of the monitoring methodology and description of the monitoring plan                                                   |  |         |                                                                                                                                                                                                                                                                                                                                                                                                                    |    |    |
| B.7.1 Data and parameters monitored                                                                                                     |  |         |                                                                                                                                                                                                                                                                                                                                                                                                                    |    |    |



|                                                                                                            |  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |    |
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| B.7.1.1. Are the parameters to be monitored in accordance with the requirement of the applied methodology? |  | DR | <p>Yes.</p> <p>According to the methodology, the following three parameters will be monitored:</p> <p>The electricity supplied to the grid by the proposed project <math>EG_{\text{facility},y}</math>. The data will be electronically archived during the crediting period and two years afterwards. Measurement results of electricity supplied to the grid and that delivered from the grid to the project will be cross-checked against Electricity Transaction Notes (hereinafter ETNs). In case of discrepancies the conservative value will prevail. The metering instruments will be calibrated annually. The data is monitored continuously.</p> <p>Installed capacity of the hydro power plant after implementation of the project activity <math>Cap_{PJ}</math> will be monitored. Installed capacity of the project activity will be determined according to installed equipments' nameplates and will be monitored annually. The nameplate will be checked by DOE during verification. The data is monitored yearly.</p> <p>Area of the reservoir measured in the surface of the water <math>A_{PJ}</math>. A third party will conduct the measurement and issue a measurement report. The data is monitored yearly.</p> <p>According to the analysis in the section of project emission in B.6, one additional parameter is also monitored: Operational hours of emergency back-up diesel generator. The project entity will record the operational hours in the daily operation logs simultaneously when operation. The actual emissions from the operation of the diesel generator will be calculated and considered as project emissions if it is more than 1% of emission reduction of the proposed project.</p> <p>CAR04</p> <p>The procedure of electricity monitoring and emission reduction calculation of when the electrical meter operates abnormally is not included in the monitoring plan. Please modify.</p> | CAR04 | OK |
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| 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 | The information all parameters contained in the monitoring plan, including label, data unit, description, source of data are stated clearly and transparently.<br>See the comments in B.7.1.1. | 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 | CAR05<br>According to the on-site review, the description of transformer, transmission and meters in the PDD is not in accordance with the actual situation. Please correct.                   | <del>CAR05</del> | OK |
| B.7.2.2. Are the responsibilities and institutional arrangements for data collection and archiving clearly provided?                                                                                                                                                                                |  | DR | Yes.<br>The project owner is responsible for recording the data collection and archiving the data.<br>See the comments in B.7.1.1.                                                             | OK               | OK |



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| 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 | Yes.<br>All monitored data records are kept until 2 years after the end of the crediting period.<br>See the comments in B.7.1.1. | OK | OK |
| <b>B.8. Date of completion of the application of the baseline and monitoring methodology study</b>                                                                                                                   |  |    |                                                                                                                                  |    |    |
| B.8.1 Is there any indication of a date when the baseline was determined?                                                                                                                                            |  | DR | Yes.<br>The date is 20/07/2010 according to the revised PDD version 3.0.                                                         | OK | OK |
| B.8.2 Is this consistent with the time line of the PDD history?                                                                                                                                                      |  | DR | Yes.<br>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.<br>It is correct.                                                                                                           | OK | OK |
| <b>C. Duration of the Project Activity/Crediting Period</b>                                                                                                                                                          |  |    |                                                                                                                                  |    |    |



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| C.1. Are the project's starting date and operational lifetime clearly defined and evidenced?                                                                                             |  | DR      | Yes.<br>The starting date of the proposed project activity is defined as 14/12/2005, which is the day on which the turnkey 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 project 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 and considered appropriate according to CEC's technical expertise. | 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<br>I | Yes<br>The renewable crediting period of 7 years with potential for 2 renewable periods is reasonable considering the life time of the project is 33 years.                                                                                                                                                                                                                                                                                                                                                                                          | OK | OK |
| <b>D. Environmental Impacts</b>                                                                                                                                                          |  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    |    |
| <b>D.1. Documentation on the analysis of the environmental impacts, including Trans- boundary impacts</b>                                                                                |  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    |    |
| 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 EIAs.                                                                                                                                                                                                                                                                                                      | 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.<br>The EIA is a must in P.R. China for new hydropower projects. The EIAs of the proposed project were approved by local government Chongqing Environmental Protection Bureau on 07/11/2005. These documents have been reviewed by the validation team.                                                                                                                                                                                                                                                                                          | OK | OK |



|                                                                                                                                                                                                                                            |                                                                                                    |  |         |                                                                                                                                                                                                                                                                                                                                                                  |    |    |
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| D.1.3                                                                                                                                                                                                                                      | Will the project create any adverse environmental effects?                                         |  | DR<br>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 transboundary environmental impacts considered in the analysis?                                |  | DR<br>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.<br>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.<br>The EIAs were finished and approved by the authorized organization.                                                                                                                                                                                                                                                                                      | OK | OK |
| <b>E. Stakeholder Comments</b>                                                                                                                                                                                                             |                                                                                                    |  |         |                                                                                                                                                                                                                                                                                                                                                                  |    |    |
| 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<br>I | Yes.<br>The stakeholders were consulted through meeting and questionnaires prior to the publication of the PDD.                                                                                                                                                                                                                                                  | OK | OK |



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| E.1.2 Have appropriate media been used to invite comments by local stakeholders?                                                                                                                    |  | DR<br>I | According to the evidence and on-site auditing. The local residents were informed by the bulletin on the newspaper and via the website.                                                                                                                                           | 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<br>I | The stakeholder consultation process is required in the EIA in China. It has been carried out in accordance with the regulation                                                                                                                                                   | OK   | OK |
| E.2. Is a summary of the stakeholder comments received provided?                                                                                                                                    |  | DR<br>I | Confirmed by review the original meeting archives and questionnaires documents.<br>CL08<br>The time period of the CDM stakeholder consulting meeting and questionnaires and the number of questionnaire in the PDD is not fully consistent with related evidence. Please clarify. | CL08 | OK |
| E.3. Has due account been taken of any stakeholder comments received?                                                                                                                               |  | DR<br>I | The overall comments with regards to the project were positive and the relevant stakeholders are satisfied with the compensations.                                                                                                                                                | OK   | OK |

**Table2 Resolution of Corrective Action and Clarification Requests**

| No.   | CL/CAR/FAR Requests                                                                                                                                       | Ref. to Table 1 | Summary of PP's response                                                                                   | Validation team's conclusion                                                                                                                                                                 |
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| CAR01 | LoA of Annex I Party has not been provided.                                                                                                               | A.3.3           | LoA of Annex I party is provided.                                                                          | The validation team checked the provided LoA issued on 25/08/2010. It confirms that it authorizes AES Carbon Exchange, Ltd. as a project proponent in the proposed project. CAR01 is closed. |
| CAR02 | The project start date in the PDD is April 2006, when the equipment purchase contract was signed. However the overall contracting agreement was signed in | B.5.2.1         | The turnkey contract is the earliest activity in Dec. 14 2005. CDM starting date is revised to Dec.14 2005 | The validation team checked related evidences, and confirmed that the revised starting date is correct and in accordance with                                                                |



|       |                                                                                                                                                                                                                                                         |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                           |
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|       | Dec. 2005, earlier than the equipment purchase contract. Please correct the project start date according to CDM glossary.                                                                                                                               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | related regulations. CAR02 is closed.                                                                                                                                     |
| CAR03 | The proposed project applies post-tax benchmark, however the actual interest payable is not taken into account in the calculation of income tax, which is not consistent with the latest version of Guideline of the Assessment of Investment Analysis. | B.5.4.6 | <p>As applied 8% benchmark is a post tax benchmark, interests payable estimated at the time of decision making are taken into account to calculate the income tax in GSP PDD, which is in accordance with 'Guidelines on the assessment of Investment Analysis' (version 03).</p> <p>As per requirement of <b>Guidance 6</b> that <i>"input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant"</i>, interest rate (5.76%<sup>1</sup>) and loan amount (80% of total investment) are taken from FSR in basis of which the investment decision was made.</p> <p>As per requirement of <b>Guidance 11</b>" In cases where a post-tax benchmark is applied the DOE shall ensure that actual interest payable is taken into account in the calculation of income tax. In such situations interest should be calculated according to the prevailing commercial interest rates in the region"</p> | The interest rate of 5.76% is justified and correctly applied. The inaccurate data of 5.8% in PDD version 2.0 was corrected to 5.76% in PDD version 3.0. CAR03 is closed. |

<sup>1</sup> 5.76% was rounded to 5.8% in GSP PDD. Here we apply the original value from FSR.



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|       |                                                                                                                                                                                           |         | <p>The interest payable is deducted during income tax calculation. The actual total investment is raised from <b>886,460,000</b> Yuan to <b>1,183,162,100</b> Yuan. Loan attained by the project owner is increased from the estimate value (<b>709,168,000</b> Yuan) to <b>850,000,000</b> Yuan accordingly. Furthermore, with the actual loan (850,000,000), basic interest rate in 2009 (5.94%) and total investment (1,183,162,100Yuan) applied in investment analysis, the IRR is 4.24% which remains below benchmark.</p> |                                                                                                                                                                                                         |
| CAR04 | <p>The procedure of electricity monitoring and emission reduction calculation of when the electrical meter operates abnormally is not included in the monitoring plan. Please modify.</p> | B.7.1.1 | <p>Please find revised “<b>Procedure in case of damaged metering equipment/Emergencies</b>” in monitoring plan in PDD (version 3.0).</p>                                                                                                                                                                                                                                                                                                                                                                                        | <p>In the revised monitoring plan, the procedures of requested two situations are described: when metering equipment is damaged and in emergencies. The description is acceptable. CAR04 is closed.</p> |
| CAR05 | <p>According to the on-site review, the description of</p>                                                                                                                                | B.7.2.1 | <p>The monitoring plan has been revised in PDD (version 3.0)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>The two on-site transformer</p>                                                                                                                                                                      |



|      |                                                                                                                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                |
|------|-----------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | transformer, transmission and meters in the PDD is not in accordance with the actual situation. Please correct. |       |                                                                                                                                                                                                                                                                                                                                                                                                                                  | stations, two main power lines, one backup power line and three meters are correctly described. The monitoring plan is in accordance with the real situation and methodology. CAR05 is closed.                 |
| CL01 | Please justify the applied Plant Load Factor by the proposed project as per EB 48 Annex 11.                     | A.2.1 | <p>The Plant Load Factor has been justified in B.6.2.</p> <p>In accordance with the guidance for the reporting and validation of Plant Load Factor, the ex-ante plant load factor is determined according to the data defined by Central South Survey &amp; Design Institute of State Grid Company which has authorized design qualification Class A.</p> <p>Ex-ante Plant Load Factor=Operating hours/8760=3267/8760=0.3729</p> | <p>The PLF is derived from operating hours of FSR. The FSR clearly demonstrates the decision method of average annual operating hours of 3267. The calculation is based on historical data. And the FSR is</p> |



|      |                                                                               |         |                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                           |
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|      |                                                                               |         |                                                                                                                                                                                                                                                                                                                                                | approved by Chongqing Development and Reform Committee. The PLF is in accordance with the guidance for the reporting and validation of Plant Load Factor. CL01 is closed. |
| CL02 | Please provide evidence certifying the location of the proposed project.      | A.4.1   | In GSP PDD, the estimated coordinates are applied as no exact data are available. The coordinates' readings justified by GPS instruments are revised in PDD (version 3.0) as below:<br>East longitude of 109°08'51"; North latitude of 28°58'01".<br>Please find the attached GPS record.                                                      | The modification is correct. CL02 is closed.                                                                                                                              |
| CL03 | The demonstration of prior consideration of CDM is not sufficient in the PDD. | B.5.2.2 | The prior consideration of CDM has been supplemented in PDD (version 3.0) as blow:<br>In June 2004, Feasibility Study Report was completed. According to the conclusion of FSR, only if the gross tariff reached 0.326yuan/kwh, the IRR of Youchou project would crossover the industry benchmark of 8%. However project owner discovered that | Related documents have been checked by the validation team, the information of related events have                                                                        |



|  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                              |
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|  |  |  | <p>the tariff of 0.326yuan/kWh was not realistic and attainable when they investigated the tariff level of Chongqing municipality, And they noticed that the highest actual tariff issued to hydropower project was only 0.284Yuan/kWh. Youchou project was less financial attractive for project owner under this investment environment. That is reason why the project owner did not start construction even the government approved the project in Jun. 30th 2004.</p> <p>In June 2005, the shareholder of project owner took part in a CDM training seminar organized by the National Development and Reform Commission. Since then, they started to seek CDM support.</p> <p>In September 2005, the Board of Director finally made a decision to invest in the project with serious consideration of the CDM revenue.</p> | <p>been checked during the on-site visit and interview. The demonstration is sufficient. CL03 is closed.</p> |
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| CL04 | Please explain the reason of applying the value of depreciation and residual value. | B.5.4.3 | <p>The residual rate is revised from Zero in GSP PDD to 5% following the national regulations.</p> <p>The <b>5%</b> residual rate is applied in investment analysis according to Guoshuihan[2005]883'<b>State Tax Bureau inform to clarify executing date on entrepreneur adjusting fixed asset residual rate'</b></p> <p>The <b>20</b> year depreciation period is applied in investment analysis by design institute. According to Clause 25 in Guoshuifa[2000] 84 '<b>State Tax bureau issuing notice on deduction instruction on pre Entrepreneur Income Tax'</b>, The minimum depreciation rate is as below: 1) House and architecture are 20 years; 2) Train, ship, machine and other equipments are 10 years; 3) Other vehicles and instruments, tools and furniture related to productions are 5 years. Therefore, 20 year depreciation period applied is appropriate and conservative.</p> <p>IRR has been recalculated accordingly.</p> | Related regulations have been checked by the validation team. The calculation is correct in PDD and IRR calculation sheet. The clarification is acceptable. CL04 is closed. |
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|------|-------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| CL05 | Please further demonstrate the rationality of the input value of investment analysis, e.g. total investment, tariff and loan. | B.5.4.5 | <p><b>1 Total investment:</b></p> <p>The actual investment cost in contract is 1,183,162,100 Yuan demonstrated in PDD. Furthermore, as indicated in Audit Report 2009 published by Chongqing Wulian Accounting Firm, the total investment cost occurred by the end of 2009 is <b>1,011,234,457</b> Yuan (Page 16).It is higher than that of FSR. Therefore, we consider the estimate total investment in FSR is <b>reasonable and conservative</b> to be applied in IRR calculation.</p> <p><b>2. Grid Tariff</b></p> <p>The highest tariff (0.284 Yuan/kWh) issued to hydropower projects in Chongqing at the time of investment decision taken by the project participant is applied in PDD.</p> <p>Due to differences of resource distribution and investing scales in Chongqing region, Chongqing municipality did not establish a bus-bar tariff for all hydropower projects. Different projects have different tariffs. According to the official document in Chongqing Municipality "The Notice on Chongqing Price Bureau's Implementation of the Grid Tariff Adjustment Made by NDRC" for normal hydropower projects and a statistical table made by the Regulatory Authority of Centre China Grid, the highest tariff issued to hydropower project at the time of investment decision in Chongqing is 0.284 Yuan/kWh(VAT incl.). This tariff applied in IRR calculation is conservative.</p> | The demonstration of input values is sufficient. CL05 is closed. |
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|------------------------|--------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------|--------------|------|-------------|-------------|------------------|-------------|---------------|------------------------|-----|--------|--|
|                        |                                                              |               | <p>3. <b>Loan</b></p> <p>In FSR, <b>80%</b> of total investment sources from the bank loan, which is 709,168,000Yuan. While the actual investment cost rise from 886,460,000 Yuan to 1,183,162,100 Yuan.</p> <p>The approved bank loan is raised to 850,000,000Yuan accordingly which is <b>71.84%</b> of actual total investment cost. Considering the higher loan finance percentage leading to higher IRR, the loan calculation in investment analysis is <b>conservative and suitable</b>.</p> <table><tr><td></td><td>FSR(Yuan)</td><td>Actual(Yuan)</td></tr><tr><td>Loan</td><td>709,168,000</td><td>850,000,000</td></tr><tr><td>Total Investment</td><td>886,460,000</td><td>1,183,162,100</td></tr><tr><td>Loan/ Total Investment</td><td>80%</td><td>71.84%</td></tr></table> |                                                                          | FSR(Yuan) | Actual(Yuan) | Loan | 709,168,000 | 850,000,000 | Total Investment | 886,460,000 | 1,183,162,100 | Loan/ Total Investment | 80% | 71.84% |  |
|                        | FSR(Yuan)                                                    | Actual(Yuan)  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                          |           |              |      |             |             |                  |             |               |                        |     |        |  |
| Loan                   | 709,168,000                                                  | 850,000,000   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                          |           |              |      |             |             |                  |             |               |                        |     |        |  |
| Total Investment       | 886,460,000                                                  | 1,183,162,100 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                          |           |              |      |             |             |                  |             |               |                        |     |        |  |
| Loan/ Total Investment | 80%                                                          | 71.84%        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                          |           |              |      |             |             |                  |             |               |                        |     |        |  |
| CL06                   | The demonstration of sensitivity analysis is not sufficient. | B.5.4.10      | <p>The sensitivity analysis is supplemented in PDD as below.</p> <p>In addition it is not considered likely that the project’s return will exceed the benchmark due to the following reasons:</p> <p>- Investment Cost:</p> <p>As discussed in suitability of input value section, actual investment costs are increased 33.4% more than the estimated value in feasibility study because construction, Therefore, a 10% decrease of total costs is not considered realistic.</p> <p>- Annual O&amp;M cost:</p>                                                                                                                                                                                                                                                                          | The demonstration of sensitivity analysis is sufficient. CL06 is closed. |           |              |      |             |             |                  |             |               |                        |     |        |  |



|  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
|--|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  |  |  | <p>Annual O&amp;M costs are expected to rise rather than fall due to increases in the wage level. According to Chongqing Statistical Yearbook (2007-2009), it indicates that the average wage of the employees in Electricity, water and gas production and supply industry keep rising from 2005 to 2008. Therefore, a 10% decrease of annual O&amp;M costs is not considered realistic. Furthermore, the IRR which will be 7.31% remains below the benchmark (8%) even if the O&amp;M costs decreased by 50%, which is impossible to happen.</p> <p>- Annual Power Generation:</p> <p>Annual power generation designed by Central Southern Survey &amp; Design Institute is based on 46 years of water flow statistics (1957-2003) and the fixed water head data available at the project site. When the power generation increased by 15.9%, the IRR of proposed project will reach the benchmark of 8%. Considering the construction is complete now, the occurred total investment is fixed anyhow in the future. With the actual total investment (1,183,162,100 RMB) applied in the above IRR calculation, only if the power generation increased by 49.4%, the IRR of proposed project can reach the benchmark of 8%, which is impossible to happen.</p> <p>- Grid Tariff (VAT incl.)</p> <p>The value of <b>0.284RMB/KWh</b> (VAT incl.) that is the highest tariff</p> |  |
|--|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|



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|------|------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
|      |                                                                                                                                                |         | attainable at the time of investment decision is applied in the above IRR calculations. When grid tariff is increased by 15.9%, the IRR of proposed project will reach the 8% benchmark. Considering the construction is complete now, the occurred total investment is fixed anyhow in the future. With the actual total investment (1,183,162,100 RMB) applied in the above IRR calculation, only if the grid tariff increased by 49%, the IRR of proposed project can reach the benchmark of 8%, which is not likely to happen. . |                                                                                                                                 |
| CL07 | The selection and demonstration of similar projects is not sufficient. Please further demonstrate the common practice of the proposed project. | B.5.6.3 | Besides the projects in the Yearbook of China Water Resources 2006, the projects in the same river also were demonstrated in PDD (version 3.0).                                                                                                                                                                                                                                                                                                                                                                                      | The demonstration of common practice is sufficient. CL07 is closed.                                                             |
| CL08 | The number of questionnaire in the PDD is not fully consistent with related evidence. Please clarify.                                          | E.2     | A total of 422 questionnaires (418 collected) were distributed to local residents, including 82 questionnaires (79 collected) during the consultation meeting described below and 340 questionnaires (339 collected) directly in the villagers. The information on questionnaires collected has been added in to PDD (version 3.0).                                                                                                                                                                                                  | Relative evidences were checked by the validation team. PDD ver. 2.0 only included the number of distributed questionnaires and |



|  |  |  |  |                                                                                                                                             |
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|  |  |  |  | did not specify the number of collected ones. The numbers in PDD ver. 3.0 are now correct. The clarification is acceptable. CL08 is closed. |
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## Appendix 2 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 Sectoral Scope(s): 1, 4, 9, 12

Beijing, 10 October 2009

ZHANG Xiaodan



CDM Supervisor, Technical Director

XU Linghua



P&P

### WANG Yanping

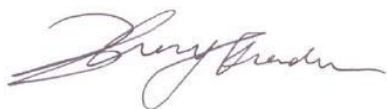
Qualification in accordance with CEC-4001C-B/3 *Operation Instruction for Personal Competence Assessment* for CDM

CDM Auditor: Yes

Industry Sector Expert for Sectoral Scope(s): 13, 15

Beijing, 12 May 2009

ZHANG Xiaodan



CDM Supervisor, Technical Director

XU Linghua



P&P