



VALIDATION REPORT

Eco Asset Inc.

**Shiyazi Hydro power Project in Guizhou
Province China**

REPORT NO. : 10011038

REPORT DATE. : 26/08/2011

China Environmental United Certification Center Co., Ltd

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China Environmental United Certification Center Co., Ltd (CEC)	Eco Asset Inc.		
Project Title:	Country:		
Shiyazi Hydro power Project in Guizhou Province China	China		
Methodology and Version	Sectoral Scope:		
ACM0002 (Version 12.1.0)	1		
PDD for GSP	Final PDD Version		
Date of Finalization:22/02/2010 Version:3.0	Date of Finalization:22/08/2011 Version: 6.0		
GHG Reducing Measure/Technology	ER Estimate:		
Renewable Power Generation from Hydro Sources	368,209 tCO ₂ e per year during the first crediting period.		
China Environmental United Certification Center Co., Ltd (CEC) has performed the validation of Shiyazi Hydro power Project in Guizhou Province China on the basis of all applicable CDM requirements. The CDM requirements include the CDM modalities and procedures and subsequent decisions by the CMP and documents released by the CDM Executive Board and available on the UNFCCC CDM website. The validation scope is defined as an independent and objective review of the 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 & opinion, was conducted using CEC internal procedures. The first output of the validation process is a list of Clarification and Corrective Actions Requests (CLs and CARs), presented in Appendix A. Taking into account this output, the Project participant took corrections and revised its PDD. In summary, it is CEC's opinion that Shiyazi Hydro power Project in Guizhou Province China, as described in the PDD ver.6.0 dated 22/08/2011, meets all relevant UNFCCC requirements for the CDM and all relevant Host Parties criteria and correctly applied the baseline and monitoring methodology ACM0002 ver.12.1.0. CEC thus requests the registration of the Project as a CDM Project activity.			
Work Carried out by:	Date of this revision	Rev. No.	Number of Pages:
XU Linghua, HAN Yuanxiang, LIU Yaotian	26/08/2011	03	78
Work Reviewed by:	☐ Draft Validation Report ☒ Final Validation Report ☒ No Distribution (without permission from the client responsible organizational unit) ☐ Limited Distribution ☐ Unrestricted Distribution		
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Approved by:			
TANG Dingding, Chairman of Board			



Abbreviations

ACM	Approved Consolidated Methodology
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEC	China Environmental United Certification Center Co., Ltd
CER	Certified Emission Reductions
CH ₄	Methane
CL	Clarification Request
CM	Combined Margin
CO ₂ eq	Carbon Dioxide Equivalent
CSPG	China Southern Power Grid
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EIA	Environmental Impact Assessment
EF	Emission Factor
ERPA	Emission Reduction Purchase Agreement
FSR	Project Feasibility Study Report
GHG	Green House Gas(es)
GSP	Global Stakeholders Consultation Process
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of Approval
MoV	Means of Verification
MP	Monitoring Plan
N/A	Not Applicable
NDRC	China National Development Reform Commission(DNA)
NGO	Non Government Organization
ODA	Official Development Assistance
PDD	Project Design Document
PDR	Preliminary Project Engineering Report
OM	Operational Margin
PP	Project Participant
PPA	Power Purchase Agreement
UNFCCC	United Nations Framework Convention for Climate Change
VVM	Validation & Verification Manual



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1. INTRODUCTION

Eco Asset Inc. has commissioned China Environmental United Certification Center Co., Ltd (CEC) to perform a validation of the CDM project: Shiyazi Hydro power Project in Guizhou Province China (hereafter called “the project”) at Meilin canyon which lies between Daping town and Baicun town, Wuchuan Country, Zunyi City, Guizhou Province, P.R. China.

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. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board.

1.1 Objective

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

The project activity discussed by this validation report has been submitted under the project title: Shiyazi Hydro power Project in Guizhou Province China.

1.2 Scope

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

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

Once CEC receives a first PDD version, it is made publicly available on the internet on the UNFCCC CDM web pages for starting a 30 days global stakeholder consultation process (GSP). In case of any request, a PDD might be revised (under certain conditions, the GSP will be repeated) and the final PDD will form the basis for the final evaluation as presented by this report. The information on the first and on the final PDD version is presented at page 1.

2. VALIDATION METHODS

The overall validation, from Contract Review to Validation Report& Opinion, was conducted



using CEC internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, in accordance with Version 01.2 of the Clean Development Mechanism Validation and Verification Manual (VVM) issued in EB55 Meeting on 30/07/2010 /6.1/. The protocol shows in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

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

Table 1: Requirements checklist

Checklist Question	Reference	Means of Verification(MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Give reference to documents where the answer to the checklist question or item is found.	Explain how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I), N/A means not applicable.	The section is used to elaborate and discuss the checklist question and /or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided(OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question.(See below).Clarification Request(CL) is used when the validation team has identified a need for further clarification. Forward action request (FAR) is used for a need for review during the first verification.

Table 2: Resolution of Corrective Action and Clarification Requests

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

According to the designation requirements on the validation team in the CDM accreditation standards of Executive Board, and following requirements from the technical scopes and professional characters in the sectoral scopes, CEC designated a validation team.

It is required that the validation team collectively has the required competencies in the technical, methodological and sectoral aspects of specific CDM project activities.

The validation team consists of the following members, the detailed personal information see Appendix B.

Table 3 Validation team

Name	Role	Qualification	Specific Scope
XU Linghua	Team Leader	Auditor	✓
HAN Yuanxiang	Team Leader	Auditor	✓
LIU Yaotian	Team Member	Auditor	✓

2.2 Document Review

The Project Design Document (PDD) version 3.0/1.1/ date 22/02/2010 and additional background documents related to the project design and baseline were submitted by the consultant: Guizhou zhongshui Hengyuan Project Management and Consultation Co., Ltd.

Once CEC receives the PDD version 3.0 date 22/02/2010, 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 PDD version 3.0 date 22/02/2010 will form the basis for the final evaluation as presented by this report. The information of the PDD version is presented on Page 1.

To address the validation team's corrective action and clarification requests, the PP revised the PDD and resubmitted it on 18/01/2011 and the validation findings presented in this report



related to the project are described in the PDD version 6.0 date 22/08/2011/1.2/.

2.3 Follow-up Interviews

The validation team performed on-site interviews with the relevant stakeholders and cross-checked information provided by interviewed personnel to ensure that no relevant information has been omitted from the validation. Representatives of the PP, the consultant and local stakeholders were interviewed on 12/05/2010(See Reference), the main topics of the interview are summarized in Table 4.

Table 4 Interview topics and organization

Date: 12/05/2010	
Interview topics	Interview Organization
✓ Project background information and CDM consideration. ✓ Project technology, operation, maintenance and monitoring capability. ✓ Project monitoring and management plan. ✓ Stakeholder consultation process. ✓ Project approval status (incl. EIA approval, CDM project approval status) ✓ Hydro power development in the area ✓ Government policies related to hydro power projects	Guizhou Zhongshui Energy Co., Ltd. (the PP)
✓ Project background in details ✓ Stakeholder comments ✓ Social and environmental impact of the project ✓ Project approval status (incl. EIA approval, CDM project approval status) ✓ Hydro power development in the area ✓ Government policies related to wind power projects	Local Stakeholders.
✓ Applicability of selected methodology. ✓ Baseline determination ✓ Emission reductions calculation. ✓ Emission reduction monitoring plan.	Guizhou zhongshui Hengyuan Project Management and Consultation Co., Ltd. (the Consultant)

2.4 Resolution of CARs and CLs

During the validation of a project activity, CEC 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, CEC shall ensure that these issues are correctly identified, discussed and concluded in the validation report.

Corrective Action Requests (CARs) are issued, where:

- The project participants have made mistakes that will influence the ability of the project



activity to achieve real, measurable additional emission reductions;

- The CDM requirements have not been met;
- There is a risk that emission reductions cannot be monitored or calculated.

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

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.

To guarantee the transparency of the validation process, the concerns raised and responses that have been given are documented in more detail in the validation protocol in Appendix A.

The PDD version 6.0 dated on 22/08/2011 that was submitted on 23/08/2011 presented herewith serves as the basis for the final assessment.

Table 5 Main Changes in the Content of the PDDs

Subject and Section in the PDD	Main Changes in the Revised PDD
Section A General Description of Project Activity	Title of the proposed project PDD version and revision history The geographical coordinates of the proposed project
Section B Application of a Baseline and Monitoring Methodology	Assessment and demonstration of additionality Combined margin CO ₂ emission factor calculation Data and parameters that are available at validation Monitoring plan Time of hydrological statistical data
Section C Duration of the Project Activity /Crediting Period	N/A
Section D Environmental Impacts	Analysis of the environmental impacts



Section E	N/A
Stakeholders' Comments	

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, 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.

After confirmation of the PP, the validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform.



3. VALIDATION SUMMARY

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

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in **10 Corrective Action Requests** and **9 Clarification Requests**.

3.1 Participants and Approval

The project participants are Guizhou Zhongshui Energy Co., Ltd. of China and Eco Asset Inc. of Japan. The host party China and Annex I Party Japan meet the requirements to participate in the CDM. Both have ratified the Kyoto Protocol and established a DNA as per the participating requirements for CDM under the Kyoto Protocol.

The Letter of Approval (LoA) of the host Party was issued by the DNA of China on 21/05/2010/1.3/, confirming the project is a bilateral CDM project, with Guizhou Zhongshui Energy Co., Ltd. and Eco Asset Inc. 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 14/04/2010/1.5/. The information of Project Participants and project title in these documents is consistent with the PDD.

The LoA of the DNA of Japan was issued on 01/06/2010/1.4/, confirming that it authorizes Eco Asset Inc. as a project proponent in the proposed project. CEC confirmed its authenticity by cross-checking the original document during the on-site visit. The approval is not conditional, and the participation is voluntary.

The LoA of the DNA of China and LoA of Annex 1 Party Japan were provided by the project participant. CEC confirmed its authenticity by cross-checking the Announcement of newly approved projects issued by DNA of China on 14/04/2010/1.5/ and relative documents provided. The information of Project Participants and project title in these documents is consistent with the PDD.

Both LoAs do not refer to any specific version of the PDD or validation report. Both LoAs are valid for Shiyazi Hydro power Project in Guizhou Province China. 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. Japan has ratified the Kyoto Protocol on 04/06/2002. The host Party China and the participating Annex I Party the UK 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=JP>

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.

According to Para.49, 50 and 125 of VVM 01.2, CEC confirms that

- (a) The letters of Approval have been received with clearly referencing the letter itself and any supporting documentation.
- (b) The letters are received from the PPs.
- (c) The letters of Approval are authenticity.
- (d) The letters are in accordance with Paragraphs 45-48 of VVM version 01.2.

3.2 Project Design Document

The PDD is compliant with relevant form and guidance as provided by UNFCCC.

The most recent version of the PDD form was used.

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. Completeness was assessed by employing the validation protocol checklist included in Appendix A of this report.

3.3 Project Description

The project is the construction of a grid-connected large-scale hydro power project located at Meilin canyon which lies between Daping town and Baicun town, Wuchuan Country, Zunyi City, Guizhou Province, P.R. China.

The total installed capacity of the Project is 140 MW, consists two sets of 70 MW water turbines and generators. The expected full load operating hours are 3416 hours annually, the power load factor is 0.39, the average annual electricity generated is 478,200 MWh and the expected annual feed-in electricity to the grid is 467,300MWh. The power generated by the proposed project will be transmitted to the Guizhou Grid via the transformer on-site, and finally to the China Southern Power Grid (CSPG). The estimated annual GHG emission reduction is



368,209 tCO₂e.

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 hydro turbine and generator, the type and parameter in the PDD is consistent with the purchase contract. The construction of the project is as per the FSR /2.3/. 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 hydro 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.

CAR02, CL01 were raised and closed. Please see details in Appendix A.

According to Para.57 of VVM, the validation team confirmed 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 12.1.0) /6.2/ is applicable to the proposed CDM project activity as it involves a newly built grid-connected renewable power generation using hydro energy. ACM0002 version 11 is valid from 26/02/2010 to 17/09/2010, which is valid at the time of PDD for global stakeholder publication on 17/04/2010. The PP revised the methodology version applied in the final PDD resubmitted to the validation team on 18/01/2011. ACM0002.version 12.1.0 was applied. 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) /6.4/ and Tool to calculate the emission factor for an electricity system (version 2.0) /6.3/.

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 CSPG. According to the applicable guidance of China's DNA issued on 02/07/2009 (http://qhs.ndrc.gov.cn/qjzjz/t20090703_289357.htm), the CSPG covers provinces and areas of Guangdong, Guangxi, Yunnan and Guizhou. The power generated by the proposed project is transmitted to the Guizhou Grid via the transformer on-site, and finally to the CSPG. Through document review and on-site observation, the project is under normal generation and supplies electricity to CSPG. So the boundary and baseline selection of proposed project is correct.

The only GHG and emission source included in the project boundary are the CO₂ emissions from the electricity generation in fossil fuel fired power plants that are displaced due to the project activity.

The same have been validated during the validation process; further details of any observation are transparently presented in Appendix A.

According to Para.80 of VVM, CEC confirms that the identification of Project Boundary is in compliance with the applicable version of "Notification on Determining Baseline Emission Factor of China's Grid" published by China's DNA on 02/07/2009 (hereafter called "China-Grid EF") 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

As the project is the installation of the new grid-connected renewable power plant that delivers the generated electricity to the CSPG, According to ACM0002 (version12.1.0), the baseline scenario is determined properly as:

"Electricity delivered to the Grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources", as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system" version 2.0 dated 16/10/2009 (hereafter called "Tool-Grid EF")



According to the “China-Grid EF”, the delineation of the Grid boundary of the project is the CSPG. Furthermore, the baseline of the Project determined in the PDD, i.e. “Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plant and by the addition of new generation sources” is transparent and deemed to be reasonable.

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.

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

Alternative 1: “The proposed project activity undertaken without being registered as a CDM project activity” is not feasible because of lack of financial attraction based on the investment analysis in Section B.5 of the PDD.

Alternative 2: “Thermal power plant generation with equivalent annual power generation” is not in compliance with the national law and regulation requirements evidences by the following sources:

- Notice on Strictly Forbidding Construction of Fossil Fuel Fired Power Plants with the Capacity of 135MW or below issued by the General Office of the State Council on 15/04/2002(Decree No:[2002]6)/3.2/

Alternative 3” Other renewable sources power plant generation with equivalent annual power generation” CEC was able to confirm that:

- There is no wind resource nearby the project site /3.8/;
- Biomass fired power plants were installed with a maximum capacity of 50MW, due to supply constraints on localized biomass, and were facing high operational risks /3.7/. Furthermore, Biomass fired power plant is an unattractive alternative in project site because the lack of biomass fuel supply and low power tariff /3.7/;
- fuel supply and operational expertise in the operation of biomass fired boiler systems together with comparatively low power tariffs Biomass fired power plants were installed with a maximum capacity of 50MW, due to supply constraints on localised biomass, and were facing high operational risks
- There are no enough Solar PV /3.5/, geothermal /3.6/ and wave and tidal sources resources nearby the project site.

Therefore the alternative 3 is unrealistic and should be eliminated. The relevant references have been verified by CEC.



Therefore, the baseline scenario is concluded to be Alternative 4.” The equivalent annual electricity is supplied by the CSPG”, which is common practice and has no barriers. The information is cross-checked based on verifiable and credible sources. The validation team has determined that no reasonable alternative has been excluded.

Based on the validated assumptions, the validation team considers that the identified baseline scenario is reasonable.

CAR04 was raised and closed. Please see details in Appendix A.

The validation team confirms that all relevant CDM requirements, including relevant and/or sectoral policies and circumstances, have been identified correctly taken into account in the definition of the baseline scenario.

According to Para.87 of VVM, CEC therefore confirms that:

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

3.4.4 Algorithms and/or Formula Used to Determine Emission Reductions

The calculations of project emissions, baseline emissions and leakage and emission reductions have been checked by the validation team. The calculations were carried out based on the calculation Excel spreadsheets/4.1/. The parameters and equations presented in the PDD and further documentation have been compared with the information and requirements presented in applied methodology and respective tools.

● Baseline Emission

The calculation of the baseline emissions followed the procedures described in the Methodology: ACM0002 (version12.1.0). There is net power import from China Central Power Grid (CCPG), so CCPG is considered to be included into the physical project boundary.

The seven steps of the emission factor tool (ver.2.0) were applied to determine the operating margin (EF_{OM}), build margin (EF_{BM}) and combined margin emission factor (EF_{CM}).



The baseline calculation was based on the published OM/BM calculation process issued by the NDRC (China DNA) in 02/07/2009 /3.1/. The values for the EF_{OM} 0.9987 tCO_{2e}/MWh and EF_{BM} 0.5772 tCO_{2e}/MWh were equal to the data that was available at the time of the commencement of this validation in 17/04/2010 and therefore considered as correct and accepted.

The value for the Combined Margin Emission Factor(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 hydro power projects).

Therefore the combined baseline emission factor is determined ex-ante and will remain fixed during the first crediting period, via $EF_{grid,CM,y}=0.9987 \times 0.5 + 0.5772 \times 0.5 = 0.78795$ tCO₂/MWh.

CAR06, CAR07, CAR08 and CL06 were raised and closed. Please see details in Appendix A.

The assumptions and data used to determine the emission reductions are listed in the PDD and all the sources have been checked and confirmed.

Based on the information reviewed, it can be confirmed that the sources used are correctly quoted and interpreted in the PDD.

The baseline methodology has been correctly applied following the requirements. The detailed information on the parameters checked used in the equations can be seen in Appendix A.

In summary, the calculation of the baseline emissions can be considered to be correctly done.

● **Project Emissions**

As per the applied methodology ACM0002 (version12.1.0), for hydro power project activities that result in new reservoirs, project proponents shall account for CH₄ emissions from the reservoir. As the project will build a new reservoir with a surface area of 8,060,000m² at the full level, which is consistent with the FSR, and has a power density of 17.4W/m², greater than 10W/m², so the project emission is zero.

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

CAR03, CL05 were raised and closed. Please see details in Appendix A.

Detailed information on the audit on project emission can be found in the Appendix A.

● **Leakage**

As per the applied methodology ACM0002 (version12.1.0), the project does not need to consider leakage.

● **Emission Reductions**



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

According to the estimated annual electricity delivered to the grid is 467,300MWh, as the estimated crediting period begins from 01/11/2011, so the estimated annual average emission reductions of the project is 368,209tCO₂e during the first crediting period represents a reasonable estimation using the assumptions given by the project. All these have been verified by on-site visit.

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.

According to Para.92 and 93 of VVM, CEC hereby confirms that:

- (a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources.
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD.
- (c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity.
- (d) The baseline methodology has been applied correctly to calculated project emissions, baseline emissions, leakage and emission reductions
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

3.5 Additionality of a Project Activity

The validation team assessed the additionality of the project activity with the following steps as below. The additionality was demonstrated according to “Tool for the demonstration and assessment of additionality (Version 5.2). /6.4/

3.5.1 Prior consideration of the Clean Development Mechanism

- **Project Starting Date**

As defined in the CDM glossary, the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins. In light of above definition, the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity.



Based on the following table 6, the validation team confirms the starting date of the project is as following:

The construction contract, purchase contract of the generator and turbine and purchase contract of the main transformer are signed respectively on 15/07/2007, 16/03/2008 and 21/07/2009. Among which, the date of construction contract is the earliest date at which the PP committed to expenditures related to the implementation of the project activity. Thus, the starting date of the Shiyazi Hydro power Project in Guizhou Province China is defined on 15/07/2007.

The validation team has checked the dates of different contracts of the project, and confirms that the date of the road construction contract is the starting date of the project.

The validation team confirms that the start date of the project is 15/07/2007, which is the earliest date at which the implementation or construction or real action of the project activity began which is in line with the CDM glossary.

- **Prior and continuing and real action taken to secure CDM**

Based on Para102 in VVM (v1.2) and EB49 Annex22 “Guidelines on the demonstration and assessment of prior consideration of the CDM”, the starting date of the proposed project activity is after 2 August 2008.

The following table shows the timeline of the key events of the project.

Table 6: Timeline of key events of Shiyazi Hydro power Project in Guizhou Province China

Date	Key Events
06/2005	EIA
18/08/2006	EIA Approval
08/2006	FSR
18/09/2006	The board of directors decided to apply CDM
05/12/2006	Consulting contract was signed
12/02/2007	FSR Approval
15/07/2007	The construction contract was signed
19/11/2007	Communication with former buyer about the ERPA
17/12/2007	Stakeholder meeting was held
16/03/2008	The purchase contract of the generator and turbine was signed
06/2008-03/2009	Contacted and negotiated with the new buyer



21/07/2009	The purchase contract of the main transformer was signed
11/09/2009	The project owner signed ERPA with the buyer
21/05/2010	LoA was issued by Chinese DNA
01/06/2010	LoA was issued by Japanese DNA

For the project, the documents such as the EIA and its approval, FSR and its approval, board decision to apply for CDM, consulting contract, construction contract, purchase contract of the generator and turbine, purchase contract of the main transformer, signed ERPA, LoA issued by Chinese DNA as well as LoA issued by Japanese DNA have been checked by the validation team and been confirmed that the date of 18/09/2006 of the board decision to apply for CDM is earlier than the starting date of 15/07/2007 of the project. When the board made the decision, CDM revenue is the key factor. The interval between the major events is less than one year. Thus, the validation team confirms that the PP has prior, really and continuously considered CDM.

All documents were provided by the project participants, and the information was cross-checked with local stakeholders during the on-site interviews. Thus, it was confirmed by CEC that CDM was prior, real and continuously considered by project participants.

The validation team hereby confirmed that PP considered seriously the incentives from CDM in the context of the project before taking its real actions and verified the start date of the project activity identified in the PDD is appropriate and the CDM status has been kept by continuing actions.

3.5.2 Identification of Alternatives

See 3.4.3 Baseline Identification in this report.

3.5.3 Investment analysis

Considering the baseline scenario as above identified, the Benchmark Analysis was applied in the investment analysis as per the Sub-step 2b of Step 2 of "Tool for the demonstration and assessment of additionality (Version 5.2)".

3.5.3.1 Benchmark Analysis

Since the project generates financial and economic benefits through the sales of electricity other than CDM related income, benchmark analysis is applied for conducting the investment analysis in the PDD. The project IRR after tax (hereafter IRR) was calculated to be IRR value without CERs revenue, and IRR value with CERs revenue. It was therefore concluded that the Project without CERs revenue was not financially attractive, and are validated with the steps described below:



Application of benchmark analysis was justified appropriately as below:

A) Tool for demonstration and assessment of additionality provides three options for the methods of investment analysis. Option I Apply simple cost analysis and II: Apply investment comparison analysis, however were not applicable, since the project activity aimed to obtain revenue from electricity sale in addition to revenue from CERs, and the specified baseline scenario was not an investment project. Only option III: benchmark analysis, therefore can be applied to the project activity

B) There is an official benchmark IRR applicable to the project activity, as per “Interim Rules of Electrical Engineering Retrofit Projects” /5.2/.

The validation team reviewed the PDD, and judged that the selection of benchmark analysis for investment analysis was appropriate and fully complied with the relevant tool “Tool for the demonstration and assessment of additionality” (version 05.2) and CDM VVM(version 01.2).

According to the above mentioned Regulation, the benchmark IRR is specified as the project IRR after tax at 8% that can be applied to the investment analysis for the scale of the project activity, the benchmark of project IRR 8% is widely applied by all large hydro power projects in local power sector. 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. CEC confirmed the PDD appropriately applied this benchmark value.

3.5.3.2 Evaluation of IRR Calculation

With the result of benchmark analysis, the PDD concluded that the project activity would not be implemented without CDM application, as the project IRR without CERs revenue is 6.43%, which is lower than the benchmark 8%, while 9.51% with CERs revenue.

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

a). All the input data of parameters except CER price and the amount of annual Emission Reduction in the investment analysis to calculate project post tax IRR with CDM revenue is consistent with FSR. The source of CER price is the signed ERPA on 11/09/2009. The sources of amount of annual Emission Reduction are the “2009 Baseline Emission Factors for Regional Power Grids in China” renewed by Director Office of National Climate Change Coordination of NDRC (Chinese DNA) on 02/07/2009 and the annual amount of net electricity supplied to the grid.

b). The FSR designing institute is Guiyang Reconnaissance and Design Institute, 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.3 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 completed in August 2006, the investment decision was made on 18/09/2006, the starting date of the proposed project is 15/07/2007. 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 Guizhou. There are altogether 15 hydro power projects located in Guizhou registered at the beginning of validation, 3 projects are between 70 to 210 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 7. 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 7 Input parameters used in similar CDM projects in Guizhou

UNFCCC Registration No.	Capacity (MW)	Total investment (Yuan)	Total Investment per MW (Yuan/MW)	Tariff (including VAT Yuan/kWh)	Operating Hours (h/y)	Annual operating cost per MWh (Yuan/MWh)
1282	80	464,090,000	5,801,125.00	0.248	3,094	29.77
2065	100	714,400,000	7,144,000.00	0.205	4,180	17.03
3351	150	1,006,489,000	6,709,926.67	0.228	3,387	36.49
Proposed project	140	842,820,000	6,020,142.86	0.243	3,416	36.32

Total static investment

The designed total static investment per MW of the proposed project is 6,020,142.86 Yuan, only higher than the project No. 1282 (5,801,125.00 Yuan) which has nearly half of the installed capacity of the proposed project, and lower than other 2 projects. As the installed capacity of project 1282 is different obviously, the application of 6,020,142.86 Yuan is conservative. Furthermore, by cross-checking the Monthly Statistics for the Expense Occurred /4.8/, the validation team confirms that the actual cost till April 2010 for the project construction is 883,682,140 Yuan, which is 4.8% higher than the FSR. So the application of the total static investment is conservative.

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 the approved FSR, the tariff 0.243 Yuan/kWh (VAT incl.) is used for the investment analysis of the proposed project. The highest tariff for hydro power project in Guizhou Province at the time of GSP of the PDD is 0.25 Yuan/kWh (VAT incl.) (Project No. 2955), which is a little higher than the expected grid price in the FSR. Although the PDD applies the tariff (0.243 Yuan/kWh) which is consistent with the FSR, it also uses the 0.25 Yuan Yuan/kWh in sensitivity analysis to calculate the Post-tax Project IRR, the result is 6.63%, still far lower than the benchmark of 8%. So the input value of tariff is valid and conservative.

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 0.25 Yuan/kWh (VAT incl.), the project IRR does not cross the benchmark.

Operating Hours (h) (used to calculate PLF)

The operating hours of the proposed project is 3,416 per year, estimated by the FSR design institute based on the historical hydrological condition (1965-2001) and device technical information. This value is between the data used by the other 3 projects, it is within an appropriate range. And according to the additional approval document issued by the Institute compiled the FSR /4.9/, the hydrological condition since 2001 to 2005 does not take any negative effect to the result of the operation hours. The FSR report was compiled by Guiyang Reconnaissance and Design Institute, which has authorized design qualification Class A. The approval document of FSR report by Guizhou Development & Reform committee was also reviewed by the validation team, both documents clearly indicates that the estimated annual operating hours will be 3,416.

Furthermore, comparing with the similar CDM projects mentioned above, the estimated annual operating hours (3,416) is in the middle of the range of other projects' operating hours.

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=3,416/8,760=0.39.

CL03 was raised and closed. Please see details in Appendix A.

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

Operating Cost (Yuan)

The annual O&M costs mainly include annual salary, repair cost, reservoir region maintenance, water resources fee, fund for relocation, material cost, insurance and other costs. The design



institute of FSR estimated the value based on the investigation of operated hydro power projects in China. The O&M costs were calculated according to the Economical Assessment Method and Parameters for Construction Project (3rd edition) issued by NDRC and Ministry of Construction of China on August 2006. All the parameters were consistent with that of FSR and in line with the national and local regulations.

Annual operational cost			
1	Annual salary & compensation (10,000Yuan)	58.31	
	Number of employee	25	
	Annual average payroll (10,000Yuan)	1.5	
	Compensation rate (%)	55.5	
2	Repair cost (10,000Yuan)	915	1% of fixed assets
3	Reservoir region maintenance (10,000Yuan)	47	0.001Yuan/kWh
4	Water resources fee (10,000Yuan)	47	0.001Yuan/kWh
5	Fund for relocation (10,000Yuan)	70	pay for 15 years
	Number of relocation people	1747	
	Payment for relocation (10,000Yuan)	0.04	
6	Material cost (10,000Yuan)	70	5.0Yuan/kW
7	Insurance (10,000Yuan)	229	0.25% of fixed assets
8	Other costs (10,000Yuan)	336	24.0Yuan/kW

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 first 15 years: 17,720,000Yuan, for the last 15 years: 17,020,000Yuan.

The average annual operating cost per MWh of the proposed project activity is 36.32 Yuan/MWh, between the 17.03Yuan/MWh and 36.49 Yuan/MWh used by other 3 projects. So the value is within a normal range.

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

Loan (Yuan)

In FSR, near 80% of total investment will be sourced from bank loans, which is 665,270,000 Yuan. By cross-checking bank loan contracts /4.10/, the validation team is able to confirm that the actual bank loan is 600,000,000 Yuan, which is lower (9.8%) than the FSR. As the actual interest is lower than the FSR which will lead to the reduction of the IRR without CER revenue, the application of 665,270,000 Yuan in the FSR is conservative.

The input value of interest of bank loan of 6.39% is from FSR, which is in accordance with the Guidance 11 of "Guideline of the Assessment of Investment Analysis".

The applied input value of loan amount is 665,270,000 Yuan, 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 installed capacity 140MW is consistent with the approved FSR and the signed equipment purchase contract.

The 5% residual rate is applied in investment analysis according to the approved FSR and the national regulation "State Tax Bureau inform to clarify executing date on entrepreneur adjusting fixed asset residual rate, Guoshuihan [2005]883" /5.4/.

The 30 years of depreciation period is according to the approved FSR and the Clause 25 of "State Tax bureau issuing notice on deduction instruction on pre Entrepreneur Income Tax, Guoshuifa [2000]84" /5.5/. 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 30 years of depreciation period is appropriate and conservative.

The 30 years of operating period is according to the approved FSR and the common situation of the hydro power projects in China.

The VAT 17% is according to the approved FSR and the "Provisional Regulations of the People's Republic of China on Value Added Tax" issued in 1993 /5.6/, which is valid at the time the FSR approved. The income tax 33% is according to the approved FSR and the updated "Provisional Regulations of the People's Republic of China on Enterprises Income Tax" issued in 1993 and invalid until the beginning of 2008 /5.7/, which is valid at the time the FSR approved.

The CER price is 8 €/tCO₂e, which is consistent with the signed EPRA on 11/09/2009.

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" /6.7/, they adequately represent the economic situation when the investment decision was made.

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 VVM version 01.2 Para. 113.

3.5.3.3 Sensitivity Analysis

A sensitivity analysis is presented in the PDD which demonstrates that the project activity is unlikely to be financially viable under reasonable variations in the critical assumption, i.e. fluctuation range of $\pm 10\%$, in four selected financial parameters, incl. (i) net electricity generation; (ii) tariff; (iii) total static investment and (iv) annual O&M costs. The selection of the sensitivity test parameters focuses mainly on those parameters with reference to the



“Guidance on the Assessment of Investment Analysis (Version 03) Annex 58, EB 51. It states, “The parameters analyzed shall at least include that contribute more than 20% of either total project costs or total project revenue”. The selection of the fluctuation range of $\pm 10\%$ is also consistent to the statement of the guideline.

In the PDD, each parameter that may reach the benchmark (i.e. 8% project IRR) is presented and analyzed. The validation team checked each parameter as follows:

The net electricity generation is increased by 24%: The PP demonstrated that According to the FSR of the proposed project, the annual power generation is estimated basing on historical hydrological condition (1965-2001). And according to the additional approval document issued by the Institute compiled the FSR /4.9/, the hydrological condition since 2001 to 2005 does not take any negative effect to the result of the operation hours. Furthermore, by interviewing the local government, the validation team confirms that the operating hours which is related to the annual net electricity supplied to Grid is applicable and reliable. So the probability that the annual net electricity supplied to the grid is 24% higher than the estimated value is very small.

Tariff is increased by 24%: The tariff used in investment analysis (0.243 Yuan/kWh, VAT incl.) is sourced from the approved FSR. And as mentioned in the Electricity tariff analysis above, the highest tariff for hydro power project in Guizhou Province is 0.25 Yuan/kWh (VAT incl.) at the time the validation is started, and the Post-tax Project IRR is 6.63% still far lower than the benchmark of 8%. As the tariff is regulated by the local government, and rather unlikely to increase, it is impossible to improve the economic attraction due to the increase in the grid price.

Total static investment is decreased by 17%: The PP demonstrated that the fixed asset investment could not be decreased by 17% since the project faced further investment due to the price of equipment and material is increasing annually. The validation team confirms that with reference to the statistics published by Chinese NDRC, the means of production increased by 4.50% in 2007, and the increase scale in 2008 is expected to be 3-4%. Consequently the static total investment of the proposed project is unlikely to decrease by 17%. The validation team checked the supporting documents/4.11/ and confirmed that the total static investment of the project would not decrease by 17%, but was instead higher than the original amount as stated in the FSR. In addition, by reviewing the Actual Expense Statistic Sheet until April 2010 which is provided by PP, validation team confirms the actual cost for the project construction till April 2010 is already 4.8% higher than the FSR. Therefore, the validation team confirms that the 17% decrease of fixed asset investment is unlikely to happen.

Annual O&M cost is decreased by 100%: The PP demonstrated that in 2008, the Consumer Price Index was raised by 5.9% /4.11/. In addition, by interviewing the local government and relative evidence/4.21/, the validation team confirms that the O&M cost is impossible to



decrease by 100% in the future. Hence the 100% decrease of annual O&M cost is unlikely to happen. And even if the O&M cost is decrease by 100%, the IRR is 7.68%, still lower than the benchmark 8%.

CAR05, CL02, CAR10, CL09 were raised and closed. Please see details in 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 project is deemed finically unfeasible.

3.5.4 Barrier Analysis

Barrier analysis is not applicable in this project.

3.5.5 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 Guizhou Province according to the similar policy and investment environment. The similar scale is chosen to be between 50MW and 210MW according to Standard for Classification and Flood Control of Water Resources and Hydroelectric Projects (SL252-2000) issued by the Ministry of Water Resources of China (MWR) in 2000 and the similar construction year is defined as from 10/02/2002 /5.8/, 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 information finding through the website. Only two similar projects were identified, both of these projects have longer annual operation time and lower investment per kW than the proposed project. 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.

The validation team has reviewed the approach presented in the PDD and can confirm that relevant parameters such as setting taxes, loan policies, electricity tariff policies, grid planning, construction, operation and electricity supply 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 Guizhou in terms of investment conditions and wind resources development.

Therefore, it can be confirmed that the proposed CDM project activity is not a common practice in the defined region.

CL04 was raised and closed. Please see details in Appendix A.

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 Monitoring Plan

The project used the approved consolidated monitoring methodology ACM0002 (Version 12.1.0): “Consolidated baseline and monitoring methodology for grid-connected electricity generation from renewable sources”.

The validation team has checked all the parameters presented in the monitoring plan against the requirement of the methodology, no deviations from the Methodology relevant for the project activity have been found in the plan.

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. Base on the above, CEC confirmed that the PP has ability to implement the monitoring plan.

The net power supplied to the grid is measured by the meters complied with “Technical Administrative Code of Electric Energy Metering (DL/T 448-2000) /5.3/. The main meter M1 is installed at the output of the project on-site to measure the power exported to and consumed from the grid. The accuracy class of main meter is 0.5s. The backup meter M2 is installed at the same location with the main meters, and its accuracy class is 0.5s. Cross-check measures include the comparison with the actual power sale invoices as well as backup meter reading provided by meter M2.

CAR09 was raised and closed. Please see details in Appendix A.

The validation team hereby confirms that the monitoring plan is in compliance with the requirements of the methodology and the monitoring arrangements described in the monitoring plan are feasible within the project design and the project participants have ability to implement the monitoring plan.

3.7 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.

3.8 Local Stakeholder Consultation

Relevant local stakeholders received consultation questionnaires and they were invited to participate in the consultation meeting hold on 17/12/2007 prior to the publication of PDD on the UNFCCC website from 17/04/2010. The project owner published a bulletin of the “Suggestion Consultation of Shiyazi Hydropower Plant CDM Project” on *Zunyi Daily* on 20 July, 2007 /4.12/. 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, 31 questionnaires were recollected, of which, 96.8% is farmer, 51.6% is from people graduated from elementary



school, 48.4% is from middle school or above, 100% is from people elder than 18 years old. 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.

The PDD version 3.0 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 17/04/2010 to 16/05/2010. 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.

3.9 Environmental Impacts

The project participants undertook the Environmental Impact Assessments of Shiyazi Hydro power Project in Guizhou Province China /2.1/ and got the approvals /2.2/ from local Environmental Protection Bureau.

The environmental impact results from the project have been identified and analyzed in the PDD.

The EIA approval from local government confirms the correctness of the approach used by the PPs. During the document review and on-site visit and interview with the local personnel affected, the validation team can judge that there is no significant environmental impact is identified since relevant mitigation measures were properly implemented as stated in the EIA Study, and there is no environmental complaint on the proposed project is received.

CL07, CL08 were raised and closed. Please see details in Appendix A.

The validation team hereby confirms that there is little negative environmental impact caused by the project by means of measures of pollution avoidance and control as well as ecological recovery.



4. VALIDATION OPINION

China Environmental United Center Co., Ltd (CEC) has performed a validation of the Shiyazi Hydro power Project in Guizhou Province 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 368,209 tCO₂e 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 Shiyazi Hydro power Project in Guizhou Province China, as described in the project design document ver. 6.0 of 22/08/2011, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria, and correctly applied the baseline and monitoring methodology ACM0002 ver. 12.1.0, CEC thus requests the registration of the project as a CDM project activity.

Beijing, 26/08/2011

A handwritten signature in black ink, appearing to read '徐玲华' (XU Linghua), is positioned above the name.

XU Linghua

Validation Team Leader

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

Beijing, 26/08/2011

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

TANG Dingding

Chairman of Board



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 - 6.3 Tool to calculate the emission factor for an electricity system Version 2.0
 - 6.4 Tool for demonstration and assessment of additionality Version 5.2
 - 6.5 Guidance on the demonstration and assessment of prior consideration of the CDM Version 03



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

6.7 Guidance on the Assessment of Investment Analysis Version03.1

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
SHEN Keye	Guizhou zhongshui Hengyuan Project Management and Consultation Co.,Ltd. / Project Manager
WANG Can	Guizhou zhongshui Hengyuan Project Management and Consultation Co.,Ltd. / Project Manager
LI Xiaohui	Guizhou zhongshui Hengyuan Project Management and Consultation Co.,Ltd. / Project Manager
LIU Ge	Guizhou zhongshui Hengyuan Project Management and Consultation Co.,Ltd. / Project Manager
HAN Zengxin	Guizhou Zhongshui Energy Co., Ltd Guizhou Branch / General Manager Assistant
WU Guoquan	Wuchuan County Emigration Bureau / Vice Director
SHEN Bo	Wuchuan County Emigration Bureau / Vice Director
CHEN Hang	Wuchuan County Emigration Bureau / Vice Director
RUAN Fan	Water Conservancy Bureau / Vice Director
HAN Chenxin	Land and Resources Bureau / Leader
LEI Xingmin	Wuchuan County EPB / Vice Director
ZOU Huaishu	Delegate of Immigrant
LIAO Zuohua	Delegate of Immigrant
SHEN Jiezhong	Yang Village / Villager
WANG Guisheng	Wuchuan County Grid Company/ Delegate
ZOU Aimin	Wuchuan County DRC / Vice Director
OU Renju	Zhongshui Project Construction Headquarters / Engineer
LI Ning	Zhongshui Project Construction Headquarters / Engineer
MENG Xiansheng	Zhongshui Project Construction Headquarters / Engineer
CHEN Hao	Zhongshui Project Construction Headquarters / Engineer



APPENDIX A: VALIDATION PROTOCOL

Table 1 Requirement Checklist

CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview		MoV	comments	Draft Concl	Final Concl
A. General Description of Project Activity <i>The project Design is assessed</i>					
A.1. Title of the Project Activity					
A.1.1	Does the used project title clearly enable to identify the unique CDM activity?	DR	Yes. The project title is “Shiyazi Hydro power Project in Guizhou Province China”, it is identifying the unique CDM activity clearly. CL01 The title of the project in LoA, FSR, EIA and other relevant documents is inconsistent with the GSP PDD, further clarification is required.	CL01	OK
A.1.2	Are there any indication concerning the revision number and the date of the revision?	DR	Yes. The proposed project PDD version 3.0 dated 22/02/2010 is made publicly. The revised and final PDD is version 6.0 dated 22/08/2011.	OK	OK
A.1.3	Is the PDD revision history consistent with the time line of the project's history?	DR	The first version was aimed to apply to China LoA, The first GSP was started with version 3.0 as the UNFCCC CDM website: http://cdm.unfccc.int/Projects/Validation/DB/76QH99ZZBLCT6E2I6EZ01BXB2CRORJ/view.html Version 6.0 was the result of the first DOE feedback. It is consistent with the time line of the project's history.	OK	OK
A.2. Description of the Project Activity					
A.2.1	Is the description delivering a	DR	An overview of the project is described transparently in section A.2 of the	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
transparent overview of the project activities?		PDD. The project is the construction of a grid-connected large-scale hydro power project located at Meilin canyon which lies between Daping town and Baicun town, Wuchuan Country, Zunyi City, Guizhou Province, P.R. China. The total installed capacity of the Project is 140 MW, consists two sets of 70 MW water turbines and generators. The expected full load operating hours are 3416 hours annually, the power load factor is 0.39, the average annual electricity generated is 478,200 MWh and the expected annual feed-in electricity to the grid is 467,300MWh. The power generated by the proposed project will be transmitted to the Guizhou Grid via the transformer on-site, and finally to the China Southern Power Grid (CSPG). The estimated annual GHG emission reduction is 368,209 tCO₂e.		
A.2.2 What major proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	DR	The project activity is the displacement of electricity generated by coal fired power plants with electricity generated by hydro power plants. The following documents deliver evidences for the project activity: ● EIA and EIA Approval ● Feasibility Study Report and FSRs Approval ● Feasibility Adjustment Reports and Approval ● Grid Connection Suggestion These documents have been evidenced during the audit.	OK	OK
A.2.3 Is the information provided by the PDD consistent with the information provided by the proofs?	DR	Yes. The information provided by these proofs is consistent with the information provided by the PDD.	OK	OK
A.2.4 Is all information presented consistent with details provided	DR	Yes.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
by further chapters of the PDD?		There is no inconsistency in the PDD.		
A.2.5 Has the CDM project activity at the start of the validation been constructed or does the CDM project activity use existing facilities or equipment?	DR I	The project activity is being constructed and expected to be commissioning in May 2011. And the project activity uses new installed equipments.	OK	OK
A.2.6 Is the project a large scale project, a small scale project with average annual emission reductions above 15,000 t or a bundled small scale project? Has on-site visit been carried out?	DR I	The project activity is a large scale project activity (140MW of total installed capacity) with annual emission reductions of over 15,000 t CO ₂ e per year. The validation team performed interviews with project stakeholders to confirm the selected information and to resolve the issues identified during the desk review through an on-site visit on 12/05/2010.	OK	OK
A.2.7 Does the project activity involve alternation of existing installation? If so, have the differences between pre-project and post-project activity been clearly described in the PDD?	DR I	The proposed project does not involve alteration of existing installations.	OK	OK
A.3. Project Participation <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM Glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>				
A.3.1 Is the form required for the indication of project participants correctly applied?	DR	Yes. The form is correctly applied.	OK	OK
A.3.2 Which Parties and project participants are participating in the project?	DR	The project participant representing the host is: Guizhou Zhongshui Energy Co., Ltd. of China and Eco Asset Inc. of Japan is the project participant representing the Annex I country.	OK	OK
A.3.3 Has the project provided written approvals of all parties involved?	DR	Letter of Approval from China's DNA (Document No. [2010]1032) issued on 21/05/2010 has been provided and verified. Letter of Approval from Japan (Document No. 13) issued on 01/06/2010 has	CAR01	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
		been provided and verified. CAR01 The LoAs of PPs have not been obtained.		
A.3.4 Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol?	DR	P.R. China has ratified the Kyoto Protocol on 30/08/2002 Japan has ratified the Kyoto Protocol on 04/06/2002 Please refer to CAR01	CAR01	OK
A.3.5 Do the written approvals confirm that the participation is voluntary?	DR	Please refer to CAR01	CAR01	OK
A.3.6 Does the written approval from the host country confirm that the project contributes to the sustainable development in the country?	DR	Yes.	OK	OK
A.3.7 Do the written approvals refer to the precise project title in the PDD submitted for registration?	DR	As per the letter of approval from China, Project activity title is: Shiyazi Hydro power Project in Guizhou Province China is consisting with the title in the PDD. Please refer to CL01 .	CL01	OK
A.3.8 Are the written approvals unconditional with regard to A 3.3 to A3.6?	DR	Please refer to CAR01	CAR01	OK
A.3.9 Is the information regarding the project participants listed in section A.3 and in Annex 1 of the PDD internally consistent to each other?	DR	Please refer to CAR01	CAR01	OK
A.3.10 Are all project participants listed in the PDD approved at least by one Party involved?	DR	Letter of Approval from China DNA's Document No.[2010]1032 Please refer to CAR01	CAR01	OK
A.3.11 Are any other project	DR	No.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
participants approved but not listed in the PDD?		There are no other project participants approved but not listed in the PDD.		
A.3.12 Will the project create other environmental or social benefits than GHG emission reductions?	DR	Yes. 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. More project specific information about its contribution to sustainable development has been provided, including contribution to the province's economic development, improving of the infrastructure of local villages and providing employment opportunities in operation period.	OK	OK
A.4. Technical Description of the Project activity <i>Validation of project technology focuses on the project engineering, choice of technology and competence/maintenance needs. The auditor should ensure that environmentally safe and sound technology and know-how is used.</i>				
A.4.1 Location of the project activity				
A.4.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	DR I	Yes. The project is located at Meilin canyon which lies between Daping town and Baicun town, Wuchuan Country, Zunyi City, Guizhou Province, P.R. China. The geographical coordinates of the dam are 107°58'7"E and 28°39'9"N, and the geographical coordinates of the powerhouse are 107°58'7"E and 28°39'9"N. CAR02 The geographical coordinates of the dam and the powerhouse in the PDD version 3.0 are inconsistent with the data acquired during the on-site visit, further clarification is required.	CAR02	OK
A.4.1.2. How is it ensured and/or demonstrated, that the project participants can implement the project at this site (ownership, licenses, contracts etc.)?	DR I	The project approval issued by Guizhou Development and Reform Commission and The EIA approvals issued by Guizhou EPB demonstrated that the project participant can implement the project at this site.	OK	OK
A.4.2 Category(ies) of the project activity				



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
A.4.2.1. To which category (ies) does the project activity belonging to? Is the category correctly identified and indicated?	DR	The project falls under scope 1(Energy industries (renewable/non-renewable sources). The category is correctly identified in Section A 4.2 of the PDD.	OK	OK
A.4.3 Technology to be employed by the project activity				
A.4.3.1. Does the technical design of the project activity reflect current good practices?	DR I	Yes. After document review and on-site visit, the project uses well established hydro power generation technology for electricity generation and transmission and hence reflects the current good practices to use renewable resources to generate electricity.	OK	OK
A.4.3.2. Does the description of the technology to be applied provide sufficient and transparent input/information to evaluate its impact on the greenhouse gas balance?	DR	Yes. The project activity comprises the use of hydro power for the substitution of grid supplied electricity mainly from fossil fuel fired plants. Therefore two units of HLA630-LJ-280 turbines and two units of SF70-22/6400 generators matched with total installed capacity of 140MW are utilized. There is no doubt that this technology will reduce the GHG emissions significantly.	OK	OK
A.4.3.3. Does the implementation of the project activity require any technology transfer from Annex I countries to the host country (ies)?	DR I	No. All elements of the power plant will be made in China. Therefore no technology transfer is required.	OK	OK
A.4.3.4. Is the technology implemented by the project activity environmentally safe?	DR I	Yes. As the project is a hydro power project, it is clear that the technology implemented by the project activity is environmentally safe.	OK	OK
A.4.3.5. Is the information provided in compliance with actual situation or planning?	DR I	Technical Agreement of Generators and turbines have been reviewed by the validation team, and it is in compliance with the planning in the project application report. And the dam and power plants layout is in compliance with the plans. And the power generated by the project will be transmitted to the Guizhou Grid via the transformer on-site, and finally to the China Southern Power Grid (CSPG).	OK	OK
A.4.3.6. Does the project use state of the art technology and/or does	DR	The common practice for electricity generation in Guizhou Province is still fossil fuel fired power plant. Hence, the project would result in a better	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
the technology result in a significantly better performance than any commonly used technologies in the host country?		performance than the common practice.		
A.4.3.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	DR	No. It is not expected that there will be a substitution because the turbines, generators and the other equipment will be newly commissioned and installed. The expected lifetime of the project is under normal circumstances longer than the crediting period.	OK	OK
A.4.3.8. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	DR	Yes. The project participant will make arrangements for its staff to become familiar with the operation of a hydro power station, besides these trainings, the manufacturer of the equipments will also provide on-site training and will provide one of its staffs to operate the generator before the operation of the project. Additionally, the consultant will train the project owner on CDM monitoring.	OK	OK
A.4.3.9. Is information available on the demand and requirements for training and maintenance?	DR I	No, for the project is still in construction, the owner will operate the training and maintenance in the future before the project in commissioning.	OK	OK
A.4.3.10. Is a schedule available for the implementation of the project?	DR I	The planning schedule in the past and for the future was clearly described by the project owner during on-site visit. The project is still in construction and will in commissioning in January 2010.	OK	OK
A.4.4 Estimated amount of emission reductions over the chosen crediting period				
A.4.4.1. Is the form required for the indication of projected emission reductions correctly applied?	DR	Yes. The form is correctly applied	OK	OK
A.4.4.2. Are the figures provided consistent with other data presented in the revised PDD?	DR	The figures provided are consistent with other data presented in the revised PDD.	OK	OK
A.4.5 Public funding of the project activity				



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
A.4.5.1. Is the information provided on public funding provided in compliance with the actual situation or planning as available by the project activity?	DR	Yes. According to the statement in Section A 4.5 of the PDD there is no public funding for the project activity. By reviewing the FSRs and other relevant documents, the validation team confirmed that no public funds are used by the project.	OK	OK
A.4.5.2. Is all information provided consistent with the details given in remaining Sections of the PDD (in particular Annex 2)	DR	Yes. The information on public funding is consistent with the information provided in Annex 2 that no public funding takes place.	OK	OK
B. Application of a Baseline and Monitoring Methodology <i>The validation of the baseline established whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario. And the validation of monitoring plan is appropriate for the project activity and in line with the applied methodology.</i>				
B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity(Baseline Methodology) <i>It is assessed whether the project applies an appropriate baseline methodology.</i>				
B.1.1 Does the project apply an approved methodology and the correct version thereof?	DR	The project applies approved baseline and monitoring methodology ACM0002, version 12.1.0"Consolidated Baseline Methodology for Grid-Connected Electricity Generation from Renewable Sources" that is valid from 26/02/2010 to 17/09/2010. At the time of PDD for global stakeholder publication on 17/04/2010, ACM0002 ver.11 is valid. ACM0002, version 12.1.0 "Consolidated Baseline Methodology for Grid-Connected Electricity Generation from Renewable Sources" that is valid from 26/11/2010.	OK	OK
B.1.2 Is the applied version the most recent one and/or this version still applicable?	DR	It is the most recent version at the time of uploading for GSP.	OK	OK
B.1.3 Does the methodology refer to the tools with the latest approved versions?	DR	Yes. "Tool to calculate the emission factor for an electricity factor for an electricity system" (ver.2.0) was published on Oct.13 th in EB50 meeting, so the latest version was used in the revised PDD ver.3 and it is also mentioned clearly.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview		MoV	comments	Draft Concl	Final Concl
			"Tool for demonstration and assessment of additionality (ver.5.2)" has been mentioned clearly and they are the latest approved version.		
B.2. Justification of the choice of the methodology and why it is applicable to the project activity <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.2.1	Is justification of the choice of methodology that the project activity meets each of the applicability conditions provided?	DR	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. This has been confirmed by the approved Feasibility Adjustment Reports of the proposed project. The methodology is applicable under the following conditions: -The project activity is installation of a new hydro power plant/unit. (OK). This has been confirmed by the validation team by reviewing the FSR that the project is a new hydro power plant. However, in case of hydro power plants, one of the following conditions must apply: a. The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or b. The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions selection, is greater than 4W/m²; or c. The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emission Section, is greater than 4W/m². The evidence of surface area at the full reservoir has been provided and the validation team confirmed that the power density is larger than 4W/m². So one of the above conditions has been applied. The methodology (ACM0002 ver12.1.0) is not applicable to the following: -Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continues use of fossil fuels at the site;	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview		MoV	comments	Draft Concl	Final Concl
			-Biomass fired power plants; -Hydro power plants that result in new reservoir or in the increase in existing reservoirs where the power density of the power plant is less than 4W/m ² . The validation team will conclude that it is applicable to this project activity.		
B.2.2	Does the GHG emission reductions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity contribute more than 1% the overall expected average annual emission reductions, which are not addressed by the applied methodology?	DR I	No other project emission or leakage sources contribute more than 1% and not mentioned by the methodology have been found at this stage.	OK	OK
B.3. Description of the sources and gases included in the project boundary <i>Project Boundaries are the limits and borders defining the GHG emission reduction project</i>					
B.3.1	Are the project's spatial boundaries (geographical) clearly defined?	DR	Yes. The project boundary concludes physical and geological boundary of this proposed project and all the other power plants connecting to the CSPG. The CSPG is a regional grid, which consists of four sub-grids: Guangdong, Guangxi, Yunnan and Guizhou Grid.	OK	OK
B.3.2	Are all sources and GHGs included in the project boundary as required in the applied methodology?	DR I	As per methodology the main emission sources (baseline) included in the project boundary is CO ₂ produced by fossil-fuel fired power plants that is displaced due to the project activity. The project is a new hydro power project, it will build a new reservoir with a surface area of 8,060,000m ² at the full level, and has a power density of 17.4W/m ² , greater than 10W/m ² , so CH ₄ is excluded for simplification according to ACM0002. CAR03 In section B.3 of PDD version 3.0, CH ₄ is the main emission source of the project activity, which is inconsistent with the conclusion of the description	CAR03	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
		about the project emission in the PDD version 3.0, further clarification is required.		
B.3.3 In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and justified?	DR	N/A	OK	OK
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario(Baseline Scenario Determination) <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>				
B.4.1 What is the baseline scenario?	DR	The baseline scenario is that in the absence of project activity, the same amount of electricity would have been generated by existing fossil fuel power plants of CSPG.	OK	OK
B.4.2 What other alternative scenarios have been considered and why is the selected scenario the most likely one?	DR	Four alternative baseline scenarios to the project have been identified and discussed: 1. The proposed project activity undertaken without being registered as a CDM project activity. 2. Thermal power plant generation with equivalent annual power generation. 3. Other renewable sources power plant generation with equivalent annual power generation. 4. The equivalent annual electricity is supplied by the CSPG. Alternative 1: If not undertaken as a CDM project activity, is unlikely to be the baseline scenario due to the project not being financially attractive Alternative 2: Conflicts with current Chinese regulation. Alternative 3: Renewable energy is strongly depended on local natural resources and natural circumstances, Guizhou Province, is located in the inner land of China and is far away from the seaside. In addition, limited by development technology and high cost, other renewable energy will be financially unattractive, therefore, this alternative is not considered as baseline scenario.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview		MoV	comments	Draft Concl	Final Concl
			Alternative 4: "The equivalent annual electricity is supplied by the CSPG" namely continuation of the current situation, is a likely baseline scenario and is a real alternative consistent with current laws and regulations.		
B.4.3	Has the baseline scenario been determined according to the methodology?	DR	Yes. It is determined according to the methodology.	OK	OK
B.4.4	Has the baseline scenario been determined using conservative assumptions where possible?	DR	Yes. According to the deduction from the available information, the assumptions are conservative.	OK	OK
B.4.5	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	DR	Yes. The relevant national and/or sectoral policies, macro-economic trends and political aspirations have been taken into account.	OK	OK
B.4.6	Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	DR	Yes. The baseline scenario has been determined in compliance with the data provided by China DNA and IPCC 2006. It is compatible with the available data and all literature and sources are clearly referenced.	OK	OK
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below that would have occurred in the absence of the registered CDM project activity (Additionality Assessment and Demonstration) <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.5.1 Methodology					
B.5.1.1.	Does the additionality justification follow the requirements of the applied methodology and/or methodological tools?	DR	According to ACM0002 ver. 12.1.0, the additionality of the project activity shall be demonstrated and assessed using the latest version of the "Tool for demonstration and assessment of additionality, ver 5.2 "approved by the CDM EB, which is available on the UNFCCC CDM website. In PDD the "Tool for the Demonstration and Assessment of Additionality (ver.5.2)" was referred to which is the latest version.	OK	OK
B.5.2 Prior consideration of the CDM					
B.5.2.1.	Is the project starting date reported in accordance with	DR I	Yes. Overview of key events and timeline of the CDM consideration was provided	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
the CDM glossary of terms		in Section B.5 to demonstrate that CDM incentive was seriously considered before the start of the project, besides the documented evidences were provided to support this. The starting date is defined as the signature of the Construction Application Form. It is the earliest date of real and continual action of the project implementation as per CDM glossary.		
B.5.2.2. In case the project start date is prior to the date of publication of the PDD for global stakeholder consultation, was the incentive from the CDM seriously considered and are details given in the PDD?	DR	The start date of project activity is 16/08/2007, is before the date of GSP (17/04/2010). CDM was considered seriously prior to the project start date. The evidences for the serious CDM consideration have been provided, which show the board has decided to apply to CDM on 18/09/2006. Real and continual actions were taken during the implementation of the project since the start date. The timeline of key events clearly indicated and confirmed the prior consideration of CDM.	OK	OK
B.5.2.3. How and when was the decision to proceed with the project taken?	DR	The decision was made on the board meeting on 18/09/2006. The board decided to apply to CDM to proceed with the project after the FSR was completed. The board considered that the revenues from the CDM can help them to overcome the investment barriers. Without CDM revenues, the post-tax project IRR of the project in the FSR was 6.43%, lower than the financial benchmark of hydro power industry.	OK	OK
B.5.2.4. Is the project start date consistent with the available evidences?	DR	Yes. The project start date is the date of the signature of the Construction Application Form, which is later than the CDM decision made on 18/09/2006. After the CDM decision, the project owner took a serious consequent action to implement the project, such as signing cooperation contract with CDM consultant and signing the ERPA with the project buyer and purchasing main equipment, and beginning the construction of the project, etc.	OK	OK
B.5.2.5. Have real and continual actions been taken during the implementation of the project?	DR	Yes. See comments above in B 5.2.4.	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. A complete list of four credible alternatives has been identified to the project	GAR04	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
		activity in the PDD. CAR04 In section B.5 of PDD version 3.0, the description about step 1 "Identification of alternatives to the project activity consistent with current laws and regulations." is not clear enough, further description and more evidences are required.		
B.5.3.2. Contains the list of alternatives at least the status-quo situation and the project not undertaken as a CDM project?	DR	Yes. The alternatives contain the status-quo situation and the project not undertaken as a CDM project. The status-quo situation is the Scenario 4 "The equivalent annual electricity is supplied by the CSPG".	OK	OK
B.5.3.3. Do all identified alternatives comply with applicable regulation?	DR	Alternative 2 is not in compliance with the applicable regulation; all other alternatives are in compliance.	OK	OK
B.5.4 Step 2 Investment analysis				
B.5.4.1. Is an appropriate analysis method chosen for the project?	DR	Yes. Since this proposed project will have revenue from sales of electricity and the alternative 4 is not a specific investment project. So the benchmark analysis to this specific project is appropriate.	OK	OK
B.5.4.2. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation?	DR	Yes. The Excel Spreadsheets of the project with IRRs and without IRRs are viewable and unprotected. They have been submitted to DOE and reproduced by the auditor. CAR05 Please provide the source and evidence of all of the basic data in the IRR calculation sheet. Meanwhile, please provide the reproducible IRR calculation sheet. CAR10 Part of the input values for IRR calculation in the PDD version 5 is inconsistent with the PDD for GSP (version 3), such as the annual O&M cost and discount rate, and the final result of IRR is inconsistent with each other either, however, the input values in both versions of the PDD are all from the same Feasibility Study Report (FSR) approved on 12/02/2007. Further	CAR05 CAR10	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
		clarification is required.		
B.5.4.3. Does the period chosen for the investment analysis reflect the technical lifetime of the project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included?	DR I	Yes. The total operation period is 30 years and for IRR calculation is 21 years in the FSR of the project, which reflects the technical lifetime of project activity. And the fair value of the project activity's assets at the end of the investment analysis period is included in. CL09 In the PDD version 5, it is mentioned that the starting date is 15/07/2007, however, the beginning of the crediting date is 01/08/2011, it is only 4 years and is inconsistent with the construction period mentioned in the IRR calculation sheet (5 years), further clarification is required and please re-calculated the investment analysis spreadsheet by using the actual data occurred and re-analyze the project additionality.	CL09	OK
B.5.4.4. Is the fair value calculated in accordance with local accounting regulations (where available) or international best practice?	DR	Yes. The fair values of the project's fixed assess at the end of the IRR calculation period were included in the Excel spreadsheets, which are the residual value of Fixed Assets Investment, 5% of Fixed Assets Investment. They are calculated as cash flow sheet. They are in accordance with FSR and Interim Regulations on Financial Assessment of wind power project.	OK	OK
B.5.4.5. Is the book value as well as the expectation of the potential profit or loss included in the fair value calculation?	DR	The investment analysis period reflect the technical lifetime of the project of 30 years, so it is not applicable for the project.	OK	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	The depreciation and other non-cash related items added back to net profits are included.	OK	OK
B.5.4.7. Is taxation excluded in the investment analysis or is the benchmark intended for post-tax comparison?	DR	The benchmark is intended for post-tax comparison. This is stipulated in the applied regulation and assessed to be correct.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
B.5.4.8. Were the input values used in the investment analysis valid and applicable at the time of the investment decision?	DR	The input values used in the investment analysis are derived from the approved FSR, the investment decision was made one month later than the finalization of the FSR, therefore the input values are valid and applicable at the time of investment decision, and the validation team had checked the data in Table B.4 are correct.	OK	OK
B.5.4.9. In case of Project IRR, Are the costs of financing expenditures (loan repayments and interests) included from the calculation of Project IRR?	DR	The costs of financing expenditures (loan repayments and interests) are considered as output when calculating income tax. This is in compliance with national regulation. But it is not included in the cash flow out of the project IRRs	OK	OK
B.5.4.10. In case of Equity IRR: is the part of the investment costs, which is financed by equity considered as net cash outflow and is the part financed by debt excluded in net cash outflow?	DR	N/A The project does not apply equity IRRs.	OK	OK
B.5.4.11. Is the type of benchmark chosen 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. The benchmark of project IRR was derived from “Interim Rules of Electrical Engineering Retrofit Projects” issued by former State Power Corporation of China. It is appropriate for the type of IRR calculation.	OK	OK
B.5.4.12. Is the benchmark value suitable for the project activity?	DR	Yes. According to the “Interim Rules of Electrical Engineering Retrofit Projects”, the benchmark value of 8% is suitable for the project activity.	OK	OK
B.5.4.13. In case of internal benchmark: Is it ensured that the project cannot be developed by other	DR	According to the project IRRs of 6.43%, which is lower than the benchmark, the project didn't have financial attractive. so it can conclude that the project can't be developed by other developers than the PP.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
developers than the PP?				
B.5.4.14. Was the benchmark consistently used in the past for similar projects with similar risks?	DR	Yes. The benchmark is chosen from national published assessment code and was consistently used in similar projects assessment with similar risks.	OK	OK
B.5.4.15. Was sensitivity analysis appropriately assessed by the project participants? Please assess and determine under what conditions variations in the result would occur and likelihood of these conditions?	DR	Yes. The sensitivity analysis was assessed in the PDD. Four parameters are analyzed in the sensitivity analysis. And the elaboration was verified and found robust. CL02 In the sensitivity analysis, please illuminate the reason and the rationality about the variety range of selected four factors, and re-complete the analysis figure. Meanwhile, further description is required about the amount of electricity supplied to the Grid. CL03 Please add the obtainable hydrological data until the latest year before the FSR was developed, and demonstrate the reasonableness of PLF in accordance with the added complete data.	CL02 CL03	OK
B.5.5 Step 3:Barrier analysis				
B.5.5.1. Are there any barriers given which have a clear and definable impact on the profitability of the project?	DR	N/A	OK	OK
B.5.5.2. How is it justified and evidenced that the barriers given in the PDD are real?	DR	N/A	OK	OK
B.5.5.3. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity?	DR	N/A	OK	OK
B.5.6 Step 4 Common practice analysis				
B.5.6.1. Is the defined region for the	DR	Yes.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
common practice analysis appropriate for the technology/industry type?		Guizhou Province is defined as the region for common practice analysis, which is appropriate for similar investment conditions and natural conditions etc.		
B.5.6.2. To what extent similar projects have been undertaken in the relevant region?	DR	Yes. The PP analyzed the two similar projects with installed capacity between 50MW and 200MW in Guizhou province. The essential distinctions are operation hours and unit investment cost. The argument is assessed to be appropriate and evident. CL04 In the common practice analysis, the range selected about the installed capacity for the similar project in Guizhou Province is not sufficient enough, please re-select it. Meanwhile, further clarification is required for the reason why the investment per kW of the proposed project is much higher than other projects in the same Province.	CL04	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 is observed?	DR	Two similar projects were identified, Based on B.5.6.2; there are key difference between the project and the identified two projects.	OK	OK
B.6. Emission Reductions <i>It is assessed whether the ex-ante calculation of project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values (where applicable) is justified. Further calculation of emission reductions shall be assessed.</i>				
B.6.1 Explanation of methodological choices				
B.6.1.1. Are the equations applied correctly according to the applied approved methodology?	DR	The equations applied for calculations are correctly applied according to the approved methodology ACM0002 ver. 12.1.0 as follows: Step 1: Identify the relevant electric power system The power to be generated from the Project will be delivered to the CSPG, in addition ,there is net imported power from CSPG to China Central Power Grid, so it is considered as part of the relevant electric power system. the	CAR06	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
		ex-ante calculation method with fixed emission factors (for OM and BM) is selected. Step 2: Choose whether to include off-grid power plants in the project electricity system (optional). Step 3: Select a method to determine the operating margin(OM) The share of the low-cost/must run resources in CSPG is less than 50% in 2003-2007,therefor ,simple OM is used reasonably Step 4: Calculate the operating margin emission factor according to the selected method. Option B is selected Step 5: Identify the group of power units to be included in the build margin(BM) Option 1 is selected Step 6: Calculate the build margin emission factor The project uses the share of different type capacity in capacity addition as weight, the weighted average of emission factors of different type capacity is calculated as the Build Margin emission factor Step 7: Calculate the combined margin(CM) emission factor The weight of EF_{OM} is 0.5 and the weight of EF_{BM} is 0.5 by default. Step 8: Calculate the baseline emission.(BE_y) CAR06 In section B.6.1 of PDD version 3.0, the step 4 of Calculation of operating margin emission factor is not completed, further description is required.		
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	With a surface area of reservoir at full level of 8,060,000m², the power density of the project is 17.4W/m², greater than 10W/m², so the project emission is 0 according to ACM0002 ver. 12.1.0. The baseline scenario has identified according to methodology ACM0002 ver. 12.1.0, no alternative for choice. CL05 In section B.6.1 of PDD version 3.0, there is not any description about the project emission, further clarification is required.	GL05	OK
B.6.1.3. Have conservative	DR	Yes.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
assumptions been used when calculating the emission reduction?		The conservative assumptions have been used when calculating the emission reduction according to the methodology ACM0002 ver. 12.1.0.		
B.6.2 Data and parameters that are available at validation				
B.6.2.1. Is the list of parameters presented in Chapter B.6.2 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. CL06 Please provide more illustration on the reason why select the parameter $e_{i,y}$ and its purpose in section B.6.2 of PDD version 3.0.	CL06	OK
B.6.2.2. Is the choice of ex-ante or ex-post vintage of OM and BM factors clearly specified in the PDD?	DR	Yes. Ex-ante is clearly specified.	OK	OK
B.6.3 Ex-ante calculation of emission reduction				
B.6.3.1. Are the GHG calculations documented in a complete and transparent manner?	DR	Yes. Detailed descriptions are given and conservative IPCC values are adopted.	OK	OK
B.6.3.2. Is the calculation of the operating margin and build margin emission factors documented electronically in a spreadsheet with the relevant information as defined per the "Tool for calculation of emission factor for electrical system"? Has this spreadsheet been submitted to the validation team?	DR	Yes. The calculation electronically in a spreadsheet is provided to the DOE. CAR07 In the PDD version 3.0, the value of EF of CSPG is 0.78796, which could not be calculated through the data provided in the PDD, further clarification is required.	CAR07	OK
B.6.3.3. Is the data provided in this section consistent with data as presented in other chapters of	DR	Yes.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
the PDD?				
B.6.4 Summary of the ex-ante estimation of emission reductions				
B.6.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	DR	As demonstrated in the PDD, the hydro power project will result in fewer GHG emissions than the baseline scenario.	OK	OK
B.6.4.2. Is the form/table required for the indication of projected emission reductions correctly applied?	DR	Yes. The table is complete. It includes emissions due to the project activity, baseline emissions, leakage emissions and the overall emission reductions.	OK	OK
B.6.4.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	DR I	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 01/11/2011.	OK	OK
B.6.4.4. Is the data provided in this section in consistency with data as presented in other chapters of the PDD?	DR	Yes. It is consisting. CAR08 The calculation result of the OM in table 3.4 of Annex 3 could not be verified, please re-calculate it.	CAR08	OK
B.7. Application of the monitoring methodology and description of the monitoring plan <i>It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology</i>				
B.7.1 Data and parameters monitored				
B.7.1.1. Is the list of parameters presented considered to be complete with regard to the requirement of the applied methodology?	DR	Yes. All the following parameters are presented with regard to the requirement of the applied methodology ACM0002. EG _{PJ to Grid, y} : Electricity exported to the grid by the proposed project; EG _{Grid to PJ, y} : Electricity imported by the proposed project bought from the power grid; CAP _{PJ} : Installed capacity of the hydro power plant after the implementation of the project activity; A _{PJ} : Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.	OK	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	Yes. The information of all parameters contained in the monitoring plan, including label, data unit, description, source of data and QA/QC procedure etc are stated clearly and transparently. The description and other information provided for the monitoring parameters were reviewed by the validation team and deemed to be appropriate.	OK	OK
B.7.2 Description of the monitoring plan				
B.7.2.1. Is the operational and management structure clearly described and in compliance with envisioned situation?	DR	Yes. The data recording method and the monitoring management structure, and emergency ,calibration etc. are clearly described in Section B7.2	OK	OK
B.7.2.2. Are the responsibilities and institutional arrangements for data collection and archiving clearly provided?	DR	Yes. The project owner is responsible for recording the data collection and archiving the data.	OK	OK
B.7.2.3. Does the monitoring plan provide current good monitoring practice?	DR	Yes. The monitoring plan includes monitoring organization, monitoring equipment and program, data collection, calibration, data management and monitoring report. CAR09 More detailed description is required for the monitoring plan in the PDD version 3.0, especially for the calibration on the meters.	CAR09	OK
B.7.2.4. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting	DR	Yes. All monitored data records are kept until 2 years after the end of the crediting period.	OK	OK



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period or the last issuance of CERs, for this project activity, whichever occurs later?				
B.7.2.5. If applicable: Does annex 4 provide useful information enabling a better understanding envisioned monitoring provisions?	DR	N/A	OK	OK
B.8. Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)				
B.8.1 Is there any indication of a date when the baseline was determined?	DR	Yes. It is determined on 22/08/2011 in the revised PDD version 6.0	OK	OK
B.8.2 Is this consistent with the time line of the PDD history?	DR	Yes. It is consistent.	OK	OK
B.8.3 Is the information on the person(s)/entity (ies) responsible for the application of the baseline and monitoring methodology provided consistent with the actual situation?	DR	Yes. The responsible people Mr. LIU Bo, Ms. SHEN keye and Mr. LIU Ge were interviewed on site.	OK	OK
B.8.4 Is information provided whether this person/entity is also considered a project participant?	DR I	Guizhou zhongshui Hengyuan Project Management and Consultation Co., Ltd. and the above persons are not project participants.	OK	OK
C. Duration of the Project Activity/Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>				
C.1. Duration of the project activity				
C.1.1 Are the project's starting date and operational lifetime clearly	DR	Yes. The starting date of the proposed project activity is 16/08/2007, which is	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
defined and evidenced?		defined as the day the Construction Application Form was signed; The definition of the starting date of the project was in line with the "Glossary of CDM terms" because it is the earliest date on which the owner committed to expenditures related to the project activity. The expected operational lifetime of the project activity is 30 years, which is defined in the approved FSR.		
C.2. Choice of the crediting period and related information				
C.2.1 Is the assumed crediting period clearly defined and reasonable (renewable crediting period of Max 7 years with potential for 2 renewals or fixed crediting period of Max.10 years)?	DR I	The renewable crediting period of Max.7 years with potential for 2 renewable is reasonable considering the life time of the project (30 years).	OK	OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the auditor.</i>				
D.1. Documentation on the analysis of the environmental impacts, including Trans- boundary impacts				
D.1.1 Has an analysis of the environmental impacts of the project activity been sufficiently described?	DR	Yes. The environmental impacts of the project activity have been clearly described in Section D.1 of the PDD. The EIA has been carried out and be approved by the Guizhou Environmental Protection Bureau. The project causes little negative impact on the environment. CL07 In section D.1 of PDD version 3.0, it is described that "The proposed project is a representative canyon reservoir then there is no transmigrant", which is inconsistent with the actual situation, further clarification is required.	CL07	OK
D.1.2 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	DR	Yes. The EIA is a must in P.R. China for new hydro power projects. The EIA of the proposed project was approved by Guizhou Environmental Protection Bureau on 18/08/2006. The documents have been reviewed by the auditor. CL08 In section D.1 of PDD version 3.0, the description on the ecosystem impact is inconsistent with the EIA and the on-site visit result, further clarification is	CL08	OK



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			required.		
D.1.3	Will the project create any adverse environmental effects?	DR I	As described in the PDD, the project activity will have little negative impact on the environment.	OK	OK
D.1.4	Are Trans-boundary environmental impacts considered in the analysis?	DR I	There is no trans-boundary impact described in the EIA reports or its approval.	OK	OK
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party.					
D.2.1	Have identified environmental impacts been addressed in the project design?	DR	Yes.	OK	OK
D.2.2	Does the project comply with environmental legislation in the host country?	DR	Yes. The EIA was done and approved by the authorized organization.	OK	OK
E. Stakeholder Comments <i>The auditor should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
E.1. Brief description how comments by local stakeholders have been invited and compiled					
E.1.1	Have relevant local stakeholders been invited to consultation prior to the publication of the PDD?	DR I	Yes. The stakeholders were consulted through a special stakeholder consultation meeting on 17/12/2007. This is prior to the publication of the PDD.	OK	OK
E.1.2	Have appropriate media been used to invite comments by local stakeholders?	DR I	The local residents were informed by the bulletin on the newspaper of <i>Zunyi Daily</i> .	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	DR I	The stakeholder consultation process is required in the EIA in China. It has been carried out in accordance with the regulation.	OK	OK



CHECKLIST QUESTION MoV=Means of Verification, DR=Document Review, I=Interview	MoV	comments	Draft Concl	Final Concl
such regulations/laws?				
E.2. Summary of the comments received				
E.2.1 Is a summary of the stakeholder comments received provided?	DR I	Yes. Confirmed by detailed documents, the process is described in a complete and transparent manner.	OK	OK
E.3. Report on how due account was taken of any comments received				
E.3.1 Has due account been taken of any stakeholder comments received?	DR 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
CAR01	The LoAs of PPs have not been obtained.	A.3.3 A.3.4 A.3.5 A.3.8 A.3.9 A.3.10	The LoAs of both parties have already been submitted.	The LoAs were provided and checked to be valid by the DOE before the finalization of the validation report. CAR01 is closed.
CAR02	The geographical coordinates of the dam and the powerhouse in the PDD version 3.0 are inconsistent with the data acquired during the on-site visit, further clarification is required.	A.4.1.1	When drafting the PDD, the geographical coordinates were estimated. After the on-site measurement by GPS tool, the right ones were got. The right geographical coordinates is dam are 107°58'7" E and 28°39'9"N, and the powerhouse are 107°58'7" E and 28°39'9"N. So the PDD was revised according to the right ones.	During the on-site visit, DOE verified the actual geographical coordinates through the GPS tool and confirms that the geographical coordinates described in the PDD version 6.0 are consistent with the actual situation. CAR02 is closed.
CAR03	In section B.3 of PDD version 3.0, CH ₄ is the main emission source of the project activity, which is inconsistent with the conclusion of the description about the project emission in the PDD version 3.0,	B.3.2	It is a written mistake which has been already revised.	As described in the approved FSR, the surface area of the reservoir with full of the water is 8.06 km ² , and the power density of the project is 17.4 W/m ² . So according to the applied methodology ACM0002 version 12.1.0, the project



	further clarification is required.			emission is zero. The revised PDD version 6.0 has been provided by the PP. CAR03 is closed.
CAR04	In section B.5 of PDD version 3.0, the description about step 1 "Identification of alternatives to the project activity consistent with current laws and regulations." is not clear enough, further description and more evidences are required.	B.5.3.1	The PDD has been revised in accordance with the current laws and regulations. Further description has been added into the section B.5 of PDD.	The Description about step 1 has been revised in PDD version 6.0, and the updated information is consistent with the current laws and regulations in China now. CAR04 is closed.
CAR05	Please provide the source and evidence of all of the basic data in the IRR calculation sheet. Meanwhile, please provide the reproducible IRR calculation sheet.	B.5.4.2	The revised IRR sheet was provided. The parameters for IRR calculation in revised PDD were sourced from the FSR developed by qualified institute. The FSR has already provided as evidence.	The revised IRR sheet has added the source and evidence of all of the basic data. All of the parameters in IRR calculation were sourced from the FSR which has been provided by the PP. CAR05 is closed.
CAR06	In section B.6.1 of PDD version 3.0, the step 4 of Calculation of operating margin emission factor is not completed, further description	B.6.1.1	The description of calculation operating margin emission factor has been completed in section B.6.1 of PDD.	The description of calculation operating margin emission factor has been revised in accordance with the approved methodology ACM0002



	is required.			version 12.1.0. CAR06 is closed.
CAR07	In the PDD version 3.0, the value of EF of CSPG is 0.78796, which could not be calculated through the data provided in the PDD, further clarification is required.	B.6.3.2	When drafting the PDD, the PP thought the value can omit decimal fractions smaller than 0.5 and counting all others. So they counted it to 0.78796 which is against the conservative principle, then it was changed into 0.78795.	The value of EF of CSPG has been revised as 0.78795 in PDD version 6.0 for the conservative principle. CAR07 is closed.
CAR08	The calculation result of the OM in table 3.4 of Annex 3 could not be verified, please re-calculate it.	B.6.4.4.	The OM 0.99871 calculated by total three years CO ₂ emission divided by total three years power supply. The calculation sheet was provided as evidence.	The value of OM has been revised in accordance with the approved methodology ACM0002 version 12.1.0, and the value is correct and consistent with the official result issued by NDRC. CAR08 is closed.
CAR09	More detailed description is required for the monitoring plan in the PDD version 3.0, especially for the calibration on the meters.	B.7.2.3	The electricity monitoring point is in the project-site by meters installed at the output of project. The class of the main meter and backup meter is 0.5s at less. All relevant information about the meters is added in the monitoring plan.	The information about the calibration on the meters has been added in the revised PDD version 6.0. CAR09 is closed.
CL01	The title of the project in LoA, FSR, EIA and other relevant documents is inconsistent with the GSP PDD, further clarification is required.	A.1.1 A.3.1	The title difference between the LoA, FSR EIA and the GSP PDD was due to the written mistake and the PDD has been revised as the actual one.	According to the desk review of the proof documents, such as LoAs, FSR and EIA, the validation team confirms that the project title in GSP PDD has



				made a written mistake. Furthermore, during the on-site visit, the validation team interviewed relevant local officers and residents and confirms that the actual project title is “Shiyazi Hydro power Project in Guizhou Province China” which is consistent with the proof documents mentioned above. The title has been revised in the PDD version 6.0. CL01 is closed.
CL02	In the sensitivity analysis, please illuminate the reason and the rationality about the variety range of selected four factors, and re-complete the analysis figure. Meanwhile, further description is required about the amount of electricity supplied to the Grid.	B.5.4.15	According to the “Tool for the demonstration and assessment of additionality” issued by EB, the variety range of selected four factors is $\pm 10\%$, and the variety ranges when the four factors reach the benchmark are also analysed in the section of sensitivity analysis. The revised PDD with completed analysis figure and further description about the amount of electricity supplied to the Grid has been provided to the validation team.	The revised sensitivity analysis has been added in the revised PDD version 6.0. The validation team confirms the variety range of selected four factors analysis is rationality and correctly. CL02 is closed.
CL03	Please add the obtainable hydrological data until the latest	B.5.4.15	The new added 4 years hydrological data from 2001 to 2005 was provided as evidence. Also the runoff is	The additional approval document issued by the institute compiled the



	year before the FSR was developed, and demonstrate the reasonableness of PLF in accordance with the added complete data.		little smaller than the one in the FSR, if considering the runoff after 2001, the electricity will be less than one in FSR but the difference can be ignored . Thus using the calculated electricity in FSR is reasonable and conservative.	FSR has been provided by the PP. The validation team confirms the runoff data for 2001 to 2005 does not take any negative effect to the result of the operation hours. CL03 is closed.
CL04	In the common practice analysis, the range selected about the installed capacity for the similar project in Guizhou Province is not sufficient enough, please re-select it. Meanwhile, further clarification is required for the reason why the investment per kW of the proposed project is much higher than other projects in the same Province.	B.5.6.2	The common practice analysis has been optimized. And the relevant description has been added. 1. The investment per kW and the annual operational time of the two compared examples are different from the former GSP PDD, because the value in GSP PDD was not published. After finding the public information on registered CDM project, the registered CDM project (ref. 2065) demonstrated the example project “Yunguixiang Hydropower Plant” investment per kW is 4539.6 Yuan/kW. 2. The proposed project firstly has a larger installation capacity than other projects so cause a higher immigrant cost. Secondly the other two projects were construction in earlier time than the proposed project. For these years, the products price was increased rapidly, so the	The validation team confirms the clarification from PP and confirms the result of the investment per kW for each project mentioned in the common practice analysis. CL04 is closed.



			proposed project has a higher investment especially the immigrant cost. 3. The web site for Puding hydro power can show the annual operational time 4,213h and the investment per KW can be calculated by total investment 193 million divided by installation capacity 75MW. So the 2,573 Yuan/kW was got. It is shown from the web site for Yunguixiang hydro power that the total investment is 453.96 million, the investment per kW 4539.6Yuan/KW which is calculated by 4539.6 million/100MW. A new web-site was added in PDD from which the annual generated electricity is 602,000MWh. So the annual operation hour 6,020 can be calculated by 602000MWh/100MW.	
CL05	In section B.6.1 of PDD version 3.0, there is not any description about the project emission, further clarification is required.	B.6.1.2	The description has been added into section B.6.1 of PDD version 6.0.	The description about the project emission has been added in the revised PDD version 6.0, and the description is consistent with the approved methodology ACM0002 version 12.1.0. CL05 is closed.



CL06	Please provide more illustration on the reason why select the parameter $e_{j,y}$ and its purpose in section B.6.2 of PDD version 3.0.	B.6.2.1	The description of parameter $e_{j,y}$ “Internal use rate of power plant” have been revised. It is used for OM calculation.	The updated description of the parameter has been added in the revised PDD version 6.0. CL06 is closed.
CL07	In section D.1 of PDD version 3.0, it is described that “The proposed project is a representative canyon reservoir then there is no transmigrant”, which is inconsistent with the actual situation, further clarification is required.	D.1.1	The written mistakes were revised in PDD version 6.0.	According to the document review and on-site visit, the validation team verified the actual transmigrant process and confirms that the proposed project has transmigrant and the revised PDD version 6.0 has been provided by PP. CL07 is closed.
CL08	In section D.1 of PDD version 3.0, the description on the ecosystem impact is inconsistent with the EIA and the on-site visit result, further clarification is required.	D.1.2	The description has been revised in accordance with the actual situation.	The section D.1 in PDD version 6.0 has been revised according to the approved EIA and the on-site visit result. CL08 is closed.
CAR10	Part of the input values for IRR calculation in the PDD version 5 is inconsistent with the PDD for GSP (version 3), such as the annual O&M cost and discount rate, and the final result of IRR is	B.5.4.2	The relevant financial parameters have been revised in the final PDD to keep them consistent with the ones in the approved FSR. After the GSP version of the publicity, the errors on financing parameters and formula of IRR calculation were found during site validation by DOE, and CAR05	Firstly, according to the result of desk review and on-site visit, the validation team confirms that all of the parameters in the final PDD (version 6.0) are consistent with the approved FSR now. The FSR was compiled by



	inconsistent with each other either, however, the input values in both versions of the PDD are all from the same Feasibility Study Report (FSR) approved on 12/02/2007. Further clarification is required.		was issued. And the IRR spreadsheet was revised according to CAR05. As the GSP error when calculating the IRR, although the data source resulted from the FSR, but the GSP version and the version of PDD submitted for registration are different in the IRR. The details of the three different parameters are further explained as below: 1, project lifetime: According to the FSR, the construction period is 5 years and the lifetime of the project is 30 years. The original lifetime of 35 years includes five-year construction period. The final PDD has been corrected to keep consistent. 2, discount rate: The scrap value of 5% is used in the proposed project activity, which is in line with the approved FSR and national policy. And then the discount rate = (1- scrap value rate)/depreciation period = (1- 5%) /30 =3.17%.¹ However, in the PDD version of GSP, the discount	an authoritative third party and approved by the local government. Furthermore, in CAR05 the validation team has found part of the parameters in the IRR calculation sheet are inconsistent with the result of desk review and on-site visit, and then the PP revised the sheet and marked the detailed position of every parameter in the approved FSR. According to the approved FSR and relevant proof documents, the validation team confirms the response from PP is reliable and all of the parameters in the final PDD and the final IRR calculation sheet are credible. CAR10 is closed.
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¹ Construction Project Finance Analysis and Parameters, Version 3 Issued by National Development and Reform Commission of PRC and Ministry of Construction in 2006



			rate is wrongly written as 4%. 3, O&M cost: The total investment is revised by considering interests which was not considered in the PDD version of GSP (see Table 1) . Therefore there're changes in O&M cost. The O&M cost includes: repair fee, salary and welfare, reservoir region maintenance fee, fund for relocation, water resources fee, materials fee, insurance fee and other costs. (The parameters leading to changes in O&M costs are: repair fee and insurance fee, see Table 2.) ● Repair fee: the repair rate of 1% is used in this case, which is consistent with FSR and is revised according to revised fix assets value. ● Salary and welfare: Hydropower station will employ 25 fixed staffs and take the annual salary standard with 15,000 yuan per-capita, and supplementary wage calculate by the total payroll's 55.5% ,which include staffs welfare fund 14%, labor union's fund 2%, basic pension insurance 26%, housing fund 10%, unemployment insurance fund 2%, staffs	
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			educational expenditure 1.5%. Then the salary used in the case equals to $25 \times 15,000 \times (1+55.5\%) = 583,100$ Yuan. ● Reservoir region maintenance fee: Reservoir region maintenance is calculated by the net electricity supply multiplied with 0.001 yuan/kwh, which is consistent with FSR and the guideline" Notice of Financial Evaluation Interim Provisions of Hydropower Projects". ● Fund for relocation: It is in line with the FSR and the certificate issued by the qualified institute Guiyang Reconnaissance and Design Institute. And the duration of payment is at the first 15 years.. ● Water resource fee: According to the Measures of Guizhou Province for Administration of Collection of Water Resources Charges, hydroelectricity abstract water collect water resources fee by the standard of 0.001yuan/kw.h. ● Materials fee: 5 yuan/kw is used in this case. ● Insurance fee: Power station takes 0.25% of value of fixed assets, which is consistent with	
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			FSR and national accounting practice, and is revised according to revised fix assets value. ● Other costs: 24 yuan/kw is used in the proposed project activity, which is consistent with the FSR and the guideline” Notice of Financial Evaluation Interim Provisions of Hydropower Projects”. The comparisons on investment and O&M cost can be seen from the tables below: Table 1 Investment Comparison(Unit: RMB ¥ 10,000) <table><tr><td></td><td>GSP version</td><td>PDD Version for registration</td></tr><tr><td>Total static investment</td><td>84282</td><td>84282</td></tr><tr><td>Total investment</td><td>84422</td><td>91673</td></tr><tr><td>Fix assets value</td><td>84282</td><td>91533</td></tr></table> Table 2 O&M Comparison(Unit: RMB ¥ 10,000) <table><tr><td></td><td>GSP version</td><td>PDD Version for registration</td></tr></table>		GSP version	PDD Version for registration	Total static investment	84282	84282	Total investment	84422	91673	Fix assets value	84282	91533		GSP version	PDD Version for registration	
	GSP version	PDD Version for registration																	
Total static investment	84282	84282																	
Total investment	84422	91673																	
Fix assets value	84282	91533																	
	GSP version	PDD Version for registration																	



			Repair fee	843	915
			Salary and welfare	58	58
			Reservoir region maintenance	47	47
			Fund for relocation	70 (for the first 15 years)	70 (for the first 15 years)
			Water resource fee	47	47
			Materials fee	70	70
			Insurance fee	211	229
			Other costs	336	336
			Subtotal	1647(It is an average value. For the first 15 years O&M is 1682; for the last 15 years O&M is 1612.)	1737 (It is an average value. For the first 15 years O&M is 1772; for the last 15 years O&M is 1702.)



			The value of O&M costs was manually filled in the spreadsheet of GSP version, not automatically calculated, and the actual value should be 16.47 million Yuan per year, which was wrongly written as 16.67, so the corresponding IRR 5.68% should be revised. When the O&M costs are 16.47, IRR should be 5.70%.	
CL09	In the PDD version 5, it is mentioned that the starting date is 15/07/2007, however, the beginning of the crediting date is 01/08/2011, it is only 4 years and is inconsistent with the construction period mentioned in the IRR calculation sheet (5 years), further clarification is required and please re-calculated the investment analysis spreadsheet by using the actual data occurred and re-analyze the project additionality.	B.5.4.3	The project construction starts from July 2007 and estimated to be completed in October 2011 considering the construction would lasts four years and three months. Obviously, during the construction period, 6 months in the first year, 9 months in the fifth year, the electricity production is from the beginning of the sixth year by taking the period of testing run into account. The construction timeline of the proposed project activity in the PDD is fully from the approved FSR, which was designed by the qualified Guiyang Reconnaissance and Design Institute, a third party professional designing institute with qualifications of level A in engineering design, contracting, consulting, supervision, and construction cost consulting. The FSR was reviewed and agreed by	The validation team confirms that, in page 67 of the approved FSR, the construction period would be lasted out for 4 years and 3 months, which is satisfied the requirement of national standard SL303-2004 of the Design Standard of Construction Organization of Hydropower Projects. The actual construction period of the project is 07/2007-05/2011, it last for 3 years and 10 months, which is less than the expected schedule in the approved FSR only 5 months, according to the SL303-2004, it allows that two adjacent stages of the construction can cross each other, so



			the experts and finally approved by the local government. According to Item 1.0.2 of Design Standard of Construction Organization of Hydropower Projects (SL303-2004) approved and issued by Ministry of Water Resources of the PRC on 23/08/2004, this standard is applicable for designing the construction organization when designing the FSR of large- and medium- scale hydropower projects. So, this standard is applicable for the FSR of the proposed project. The Chapter 8 in SL303-2004 gives the detailed requirements when designing the construction schedule in the FSR. In line with the Item 8.1.1 and Item 8.1.2 in SL303-2004, the construction general schedule in FSR has considered the construction organization management level and the construction mechanization level in the project site. And the requirements for the construction schedule raised by the project owner were demonstrated when compiling FSR. The overall construction process was indeed composed of the very early preparation period, the construction preparation engineering	the actual construction period is reliable. During the desk review and on-site visit, the validation team confirms that the starting date of the project is 15/07/2007, and after reviewing the signed Power Grid Connection Protocol, the validation team also confirms that the commissioning date is 30/04/2011, the whole construction period is 3 years and 10 months. Furthermore, after reviewing the updated IRR calculation sheet, which has add 8 months of revenue and cost in the 5th year of the project in order to consistent with the actual situation, the validation team confirms that the updated IRR is 6.82%, lower than the benchmark, and the project still has the additionality. CL09 is closed.
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			period, the main body construction engineering period and the construction completion engineering period. Based on the specific local and sectoral expertise of the design institute, compared with other projects designed by the design institute, the construction schedule of the proposed project activity in the FSR was reasonable. However, the actual construction period is likely ahead of the schedule, according to the regulatory requirements in Design Standard of Construction Organization of Hydropower Projects (SL303-2004), that two adjacent stages of the construction can cross each other. The project owner conducted cross-building based on the regulatory requirements in the Design Standard (SL303-2004) during the very early preparation period, the construction preparation engineering period and the main body construction engineering period, according to their extensive experiences in the type of project. When taking into account the actually occurred construction timeline, the proposed project activity was commissioned from May 1st, which is 5 months	
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		earlier than the commissioning time of design (referred to the attached statement from the design institute). The adjusted schedule is in line with the regulatory requirements. In order to crosscheck the financial result under the actual construction timeline, eight months' revenue was considered in the 5th construction year in the IRR calculation, IRR calculation is revised correspondingly, and the Project IRR would be 6.82%, which is still far lower than the benchmark 8%, referred to the attached IRR spreadsheet.	
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Appendix 2 Certificate of Competence

XU Linghua

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

CDM Auditor: Yes

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

Beijing, 25 Mar 2011

ZHANG Xiaodan

CDM Supervisor, Technical Director

ZHANG Ruizhi

Project Implementation Management Division

HAN Yuanxiang

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

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2, 2.1

Beijing, 25 Mar 2011

ZHANG Xiaodan

CDM Supervisor, Technical Director

XU Linghua

Quality Assurance Management Division



LIU Yaotian

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

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2

Beijing, 25 Mar 2011

ZHANG Xiaodan

A handwritten signature in black ink, appearing to read 'Zhang Xiaodan'.

CDM Supervisor, Technical Director

XU Linghua

A handwritten signature in black ink, appearing to read 'XU Linghua'.

Quality Assurance Management Division

ZHANG Ruizhi

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

CDM Auditor: Yes

Industry Sector Expert for Technical Area(s): 1.2

Beijing, 25 Mar 2011

ZHANG Xiaodan

A handwritten signature in black ink, appearing to read 'Zhang Xiaodan'.

CDM Supervisor, Technical Director

XU Linghua

A handwritten signature in black ink, appearing to read 'XU Linghua'.

Quality Assurance Management Division



WANG Yanping

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

CDM Auditor: Yes

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

Beijing, 25 Mar 2011

ZHANG Xiaodan

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

CDM Supervisor, Technical Director

XU Linghua

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

Quality Assurance Management Division