
Project Title	Sichuan Baishuijiang Duonuo Hydropower Project
ERM CVS Project Reference	2300
Client Name	Deutsche Bank AG, London Branch
Client Address	Winchester House, Floor 2, 1 Great Winchester Street, London, U.K

CDM Validation Report

ERM Certification and Verification Services

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Version Control	Date
Version 1.0	29 May 2012 (draft validation report)
Version 2.0	06 November 2012(final validation report pending LoA and MoC)
Version 2.1	18 December 2012 (final validation report)

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Abbreviations

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

Project/Party specific abbreviations

CCPG	Central China Power Grid
EPB	Environmental Protection Bureau
NDRC	National Development and Reform Committee
PRC	People's Republic of China
PLF	Project Load Factor
CNY	Chinese yuan

1 Project Information

1.1 Key project information

Project Title	Sichuan Baishuijiang Duonuo Hydropower Project
Project Location(s)	Jiuzhaigou County, A Ba Autonomous Prefecture, Sichuan Province , People's Republic of China
Host Party	People's Republic of China
Other Party(ies)	United Kingdom of Great Britain and Northern Ireland
Project participants	Jiuzhaigou Hydropower Development Co.LTD. (project owner) Deutsche Bank AG, London Branch (CER buyer)

Methodology(ies) used	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.3.0 valid from 17 September 2010 to 10 May 2012, under which requests for registration can be submitted until 11 January 2013 23:59:59 GMT according UNFCCC
Methodological tool(s) used	Tool for the demonstration and assessment of additionality, version 06.1.0 Tool to calculate the emission factor for an electricity system, version 02.2.1
Sectoral Scope(s) (as per http://cdm.unfccc.int/DOE/scopes.html)	Sectoral scope 1 Energy industries (renewable - / non-renewable sources)

Project Design Document GSP Version	Date: 09 April 2012	Project Design Document Final Version	Date: 14 December 2012
	Version Number: 01		Version Number: 02.1

Starting date of the project activity	06 July 2009
Crediting Period start and end date	01 January 2013 ~31 December 2019 (1 st renewable crediting period)
Estimated annual average emission reductions	284,491 tCO ₂ e

Date(s) of validation site visit	08 May and 09 May 2012
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1.2 Key technical information


Capacity of the project (if applicable)	100 MW (2×50MW)
Operating days/hours per year (if applicable)	3,947 operating hours per year
Lifetime of the project	30 years of operational lifetime
Quantity of energy (electrical/thermal/mechanical) delivered to the end user per year (if applicable)	392,727MWh
Grid to which the project is connected to (if applicable)	CCPG

1.3 Key financial information

IRR of the project without income of CERs	5.49% after tax
IRR benchmark	8 % after tax

2 Summary and Validation Opinion

Project Title	Sichuan Baishuijiang Duonuo Hydropower Project
Name of Client	Deutsche Bank AG, London Branch
Basis of validation	<p>ERM CVS based its validation work on:</p> <ul style="list-style-type: none"> • CDM approved monitoring methodology(ies) ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.3.0 • CDM Validation and Verification Manual (version 1.2) • ERM CVS's internal CDM validation methodologies and protocols • CDM decisions and guidance issued by the CDM Executive Board • UNFCCC criteria for the Clean Development Mechanism • Host Country criteria for the Clean Development Mechanism
Responsibilities of ERM CVS	ERM CVS is responsible to provide a thorough independent third party assessment of the proposed CDM project activity to ensure that the proposed CDM project activity meets all the identified and applicable criteria for registration of projects under the CDM.
Responsibilities of Project participants	The Project Participants are responsible for preparing the PDD, supporting documentation and providing all necessary evidences to support the information included in the PDD.
Activities performed	<p>ERM CVS conducted its activities in accordance with the CDM Validation and Verification Manual. The validation consisted of a review of project documentation, a site visit, interviews with relevant personnel, cross checking information through other reliable sources and reporting. Where necessary, Clarification Requests and Corrective Action Requests were raised and closed out with the Project participants. The validation work was subject to detailed Technical Review and assessment prior to submission.</p> <p>No component of the project activity was excluded from the validation.</p>
ERM CVS Conclusion	<p>ERM Certification and Verification Services (ERM CVS) has performed the validation of the project activity against the criteria for the Clean Development Mechanism as set out by the Conference of the Parties and the UNFCCC CDM Executive Board, and host country criteria. The validation employed standard auditing techniques, and addressed the requirements of the CDM Validation and Verification Standard.</p> <p>The Parties involved in the project fulfil the criteria for participation in the CDM, and have issued a letter of approval (LoA) for the project and authorised the Project participants. The LoA of the host Party confirms the contribution of the project towards sustainable development.</p> <p>The validation has provided sufficient evidence to demonstrate that the project activity is not the baseline scenario, and that emission reductions would be additional to what would have taken place in the absence of the CDM project activity.</p> <p>The project meets the applicability criteria and correctly applies methodology methodology(ies) ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.3.0, and is therefore expected to result in real, measurable and long term reductions in greenhouse gas emissions.</p> <p>The monitoring plan provides for the collection and archiving of data sufficient to ensure that emission reductions can be verified. The DNA of the host Party has confirmed that the project assists in meeting sustainable development criteria.</p> <p>Nothing came to our attention to suggest that the project activity, if implemented as described, would not result in emission reductions of annual 284,491 tCO₂e per year on average over the first 7 years crediting period.</p>

	<p>In summary, it is the opinion of ERM CVS that the Project as described in the PDD Version 02.1 of 14 December 2012, meets all stated criteria of the CDM, correctly applies the methodology, and is expected to result in real, measurable and long term emission reductions.</p> <p>ERM CVS therefore requests the CDM Executive Board approves registration of the project activity.</p>
Signed on behalf of ERM CVS	
Name:	Melanie Eddis
Date:	18 December 2012

3 Introduction

3.1 Validation Objectives

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

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

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

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

3.1.1.1 Validation Criteria

ERM CVS applies the following principles in performing its validation:

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

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

3.2 Scope

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

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

3.3 Contract Review

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

3.4 Validation Personnel

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

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

Validation Team

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

DOE Head Office

Name	Role	CDM Requirements	Knowledge relevant to the technical area
Ying Li	Technical Reviewer	Yes	Yes

3.5 Summary of CVs of the validation personnel

Peter Huang is a Lead Auditor based in Beijing with experience in the validation and verification of more than 90 CDM projects, including wind power, hydro power, LNG cogeneration and energy efficiency projects, and also involved in more than 50 ACM0002 validation and verification projects.

He is trained and well verse with the carbon market, CDM Methodology for various case studies, group work, emission reduction monitoring and financial analysis. He is fully competent as a lead for CDM validation and verification.

He has more than 5 years working experience on energy efficiency and energy conservation project. He has had responsibility to investigate new energy conservation technology, working together with the staffs on-site, establish and perform monitoring plan to confirm the actual effect of the technology, mainly focus on Boilers, Steam turbines, furnace efficiency, TRT, CDQ and Iron-steel production line, frequency control of motor speed, green light and efficiency of hydro turbines and then transfer to the relevant industry in China.

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

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

Ying Li is an environmental engineer with extensive practical experience in the carbon market. She has worked in carbon markets since 2006 and gained extensive experience in the development and implementation of CDM projects, working in the area of project-based mechanisms. Her background includes both project validation and verification, in different sectoral scopes, including renewable energy, waste heat and gas recovery from iron and steel plants or cement plants, landfill gas combustion and utilization projects, coal mine methane, natural gas. She has developed and managed the validation/verification of number of CDM project activities, including experiences in CDM Project Design Document (PDD) development, the monitoring system building, data QA/QC, emission reduction calculation review and documentation review, where she has obtained a good understanding of technical aspects in these sectoral scopes as well as their specific CDM aspects

4 Validation Approach

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

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

4.1 Global Stakeholder Process

At the start of the validation, in accordance with the latest version of the "Procedures for processing and reporting on validation CDM project activities", the unvalidated PDD supplied by the client was uploaded on the UNFCCC website to be available for global stakeholder review. The GSP period was from 28 April 2012 - 27 May 2012.

Any comments received were evaluated by the validation team and taken into account in the course of the validation activities.

4.2 Document Review

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

- A review of data and information to verify the correctness, credibility and interpretation of presented information;
- Cross checks between information provided in the PDD and information from other sources, not limited to those provided by the PPs

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

4.3 Site visit and Interviews

The site visit included a tour of the physical project site, which was still under construction. The site visit also included a visit to the office of the project owner.

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

The site visit was designed to enable the validation team to

- undertake a detailed review of additional project documentation and verify the supporting documentation;

- inspect the project site and confirm the validity of the project description in the PDD;
- assess the validity of the project boundary;
- cross-check the validity of the project information with other sources of information; and
- interview relevant stakeholders involved in the project activity as required.

4.4 Preparation of Draft Validation Report

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

4.4.1 Remediation requests

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

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

Corrective Action Request (CAR): where:

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

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

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

4.5 Final Validation Report and Validation Opinion

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

4.6 Internal Quality Control

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

5 Validation findings – Approval, Participation and Project Description

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

- The common practice analysis has been updated according to the “Tool for the demonstration and assessment of additionality” version 06.1.0;
- Mistakes of input values and in calculation of IRR calculation spreadsheet and PDD have been corrected;
- Data and parameters that fixed ex ante or to be monitored have been updated;
- Insufficient description of project activity and incorrect quotation of methodology have been updated;
- Information of the timeline of the proposed project has been updated in section B.5. Table B.5-1 of PDD;
- Information related to resettlement and stakeholder survey of the project has been updated;
- The monitoring plan was updated to meet the requirements of the methodology;
- The start of the crediting period has been updated.

5.2 Stakeholder consultation

As per VVM section D, the PDD was made publicly available for a period of 30 days from 28 April 2012 - 27 May 2012 (<http://cdm.unfccc.int/Projects/Validation/DB/GWTJC5HT06833KVOIF7JH1R5NOM4OQ/view.html>) on the UNFCCC website for the Global stakeholder process.

No comments were received.

5.3 Approval

As per VVM section E.1, ERM CVS assessed whether the DNA of each Party indicated as being involved in the project activity has provided an appropriate letter of approval (LoA).

ERM CVS has confirmed that the LoA has been issued and provides confirmation of:				
Party	Ratified Kyoto Protocol?	Voluntary Participation	Contribution to Sustainable Development	Exact project title
China (Host Party)	Yes	Yes	Yes	Yes
U.K (Annex 1 Party)	Yes	Yes	n/a	Yes

ERM CVS received the LoAs directly from the PP-Deutsche Bank AG, London Branch, who has a contractual relationship with ERM CVS. The authenticity of the LoAs has been confirmed by checking the official website of the China DNA/6/ and email from U.K DNA on LoA issuance, respectively.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/CL	Final OK/ NOT OK
5.3.1	Are LoAs in place for every PP that confirm <ul style="list-style-type: none"> ▪ Ratification of the Kyoto Protocol ▪ Voluntary Participation 	The LoAs from host party and Annex I party were not provided during DVR stage. CAR 1 thus was raised.	CAR-1	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
	<ul style="list-style-type: none"> Reference to the precise project title in the PDD Contribution to sustainable development (host party only) 	<p>Both the host party LoA and Annex 1 LoA have been provided, CAR 1 is closed.</p> <p>The host party LoA was reviewed and confirms that P.R.China ratified the Kyoto protocol on 30 August 2002, confirms voluntary participation in the proposed project, references the precise project title as written in the PDD, and confirms the contribution of the project to the sustainable development of the host party.</p> <p>The Annex 1 LoA was reviewed and confirms that U.K ratified the Kyoto protocol on 31 May 2002, confirms voluntary participation in the proposed project, and references the precise project title as written in the PDD.</p>		
5.3.2	Is the information in the LoAs consistent with the other project documentation, including PP names, etc	<p>The LoAs from host party and Annex I party were not provided during DVR stage. CAR 1 thus was raised</p> <p>Both the host party LoA and Annex 1 party LoA have been provided, CAR 1 is closed.</p> <p>ERM CVS has checked the LoAs from host party /6/ and Annex I party /7/. The information including the PP name, project title etc. in the LoAs /6//7/ is consistent with the final version of the PDD.</p>	CAR-1	OK

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

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.3.3	Does any LoA contain additional specification or conditions of the project activity? If so, are these conditions fully complied with?	<p>The LoAs from host party and Annex I party were not provided during DVR stage. CAR 1 thus was raised</p> <p>Both the host party LoA and Annex 1 party LoA have been provided, CAR 1 is closed.</p> <p>ERM CVS can confirm that the LoAs do not contain any additional specification or conditions relevant to the validation requirements</p>	CAR-1	OK
5.3.4	<p>If the LoA references a specific version of the Validation Report and this version cannot be submitted, then has either of the following been submitted?</p> <ul style="list-style-type: none"> a statement indicating final LoA has not been received or an updated Validation Report 	<p>The LoAs from host party and Annex I party were not provided during DVR stage. CAR 1 thus was raised</p> <p>Both the host party LoA and Annex 1 party LoA have been provided, CAR 1 is closed.</p> <p>The LoA from UK DNA references the Validation Report number 2300.V2 dated 06 November 2012 and version 02 of the PDD dated 14 September 2012. ERM CVS has updated the validation report to reflect the receipt of the LoA. The validation report major number has remained unchanged and the minor number has been increased, i.e. from version 2.0 to version 2.1, to reflect the receipt of the LoA and the updated crediting period start date from 01 December 2012 to 01 January 2013 due to the delay of Annex I Party's LoA that finally issued on 12 December 2012. These are the only changes due to LoA that has been made to the version referred to in the letter of approval. PDD version has also been updated from version 02.0 to version 02.1, due to update of the crediting period start date.</p> <p>The LoA from China DNA does not reference a specific version of the validation report.</p>	CAR-1	OK
5.3.5	If the project is a bundled activity (more than 1 project in the same PDD) does the LoA	The project is not a bundled activity. Not applicable.	N/A	N/A

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
	from the host party acknowledge the bundle activity?			

Conclusion

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

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

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

ERM CVS therefore confirms that the LoAs are in accordance with paragraphs 45-48 of the VVM..

5.4 Participation

As per VVM section E.2, ERM CVS evaluated whether all PPs are listed in a consistent manner in section A.3 of the PDD and have been appropriately authorised by a Party to the Kyoto Protocol. ERM CVS also checked the consistency of information between the PDD, Letters of Approval (LoAs) and the Modalities of Communication (MoC).

PPs (list all)	Is the PP listed in Section A.3 of PDD?	Are contact details given in Annex 1 of PDD?	Does the LoA name the authorised PP?	Is information in the MoC correct?
Jiuzhaigou Hydropower Development Co.LTD	Yes	Yes	Yes	Yes
Deutsche Bank AG, London Branch	Yes	Yes	Yes	Yes

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.4.1	Is the correct information provided on PPs, and consistently applied in A.3 and Annex 1 of the PDD and other project documentation (Letters of Approval and Modalities of Communication)?	<p>The LoAs from host party and Annex I party were not provided during DVR stage. CAR 1 thus was raised</p> <p>The LoAs from both PPs and the MoC have been provided, CAR 1 is closed.</p> <p>The PPs are listed in a consistent manner in the PDD and all related project documentation, including the LoAs /6//7/ and Modalities of Communication /8/.</p>	CAR 1	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
	Can it be confirmed that there are no entities other than those approved as PPs included in section A.3 or Annex 1 of the PDD.	<p>The LoAs from host party and Annex I party were not provided during DVR stage. CAR 1 thus was raised</p> <p>The LoAs from both PPs and the MoC have been provided, CAR 1 is closed.</p> <p>ERM CVS has checked the LoAs /6//7/ and Modalities of Communication /8/, and confirms that there are no entities other than those included as PPs in section A.4 or Appendix 1 of the PDD.</p>	CAR-1	OK

Conclusion

All PPs to the project activity have been authorised by a party to the Kyoto Protocol, and ERM CVS has reviewed the letters of approval to confirm this. The PPs are listed in a consistent manner in the PDD and all related project documentation, including the LoAs and Modalities of Communication. No entities other than those approved as PPs are included in section A.4 or Appendix 1 of the PDD.

5.5 Project Design Document (PDD)

As per VVM section E.3, ERM CVS reviewed the PDD to determine whether it has been prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC website.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/CAR/ CL	Final OK/ NOT OK
5.5.1	<p>Is the PDD prepared in accordance with the latest forms and guidance by the CDM EB?</p> <p>http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html</p>	Yes. ERM CVS can confirm that the PDD has been checked against the 'Guidelines for developing the Project Design Document' (version 07) and the template for the Project Design Document (version 03) available on the CDM website, which is the latest form and guidance available at GSP period and still currently valid. The final PDD is in compliance with the template and guidelines.	OK	OK

Conclusion

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

5.6 Project Description

As per VVM section E.4, ERM CVS reviewed the description of the project in the PDD in order to evaluate whether it provides a clear and accurate description of the proposed CDM project activity. Validation of the project description was based on review of documentation, a physical site inspection and interviews.

5.6.1 Description of the project activity

Sichuan Baishuijiang Duonuo Hydropower Project is a grid-connected renewable power generation project, which is located on Jiuzhaigou County, A Ba Autonomous Prefecture, Sichuan Province, People's Republic of China. This project will employ two sets of 50 MW hydro power turbines and generators /25/. The total installed capacity of the project activity is 100 MW. The expected annual equivalent full load operate hour is 3,947 hours and the plant load factor (PLF) of the project is 45.06%, which corresponds to an average annual net electricity supplied to the grid of 392,727MWh /2/. The project will be connected to Sichuan Provincial Power Grid, and finally to the Central China Power Grid (CCPG). The electricity generated by the project should have been supplied by the CCPG prior to the start of the implementation of the project activity, which is the same as the baseline scenario. The project will transmit renewable hydro power to the CCPG, substitute relevant generation from fossil fuel

fired power plants of the CCPG, and then reduce Greenhouse Gas emissions amount to 284,491 tCO₂e annually in the first crediting period.

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

5.6.2 Project Location and Status

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
5.6.1	<p>(i) Description: project design</p> <p>Does the project description in the PDD section A.4 provide a clear, accurate and sufficiently detailed description of all relevant elements of the proposed project activity?</p> <p>Specifically, does the project description provide clear indication of:</p> <ul style="list-style-type: none"> a) List of main technologies involved b) List of main equipment and installations c) The lifetime of the project equipment d) Monitoring equipment and its location e) Capacities and efficiencies f) Emissions sources and GHGs involved in the project activity g) Existing and forecast energy and mass flows and balances h) Interaction with processes/equipment outside the project boundary, if any, is stated. i) Description of technology transfer from Annex I countries (if applicable) 	<p>The PDD contains a clear and complete description of the project activity, and the nature and technical implementation of the project activity. The description includes:</p> <ul style="list-style-type: none"> a) The project will employ two 50 MW hydro power turbines and generators. The main parameters including model, units, rated power of turbines and generators have been described in Section A.4.3 of the GSP PDD. b) List of main equipment and installations: the equipment purchase contract /25/ and manufacture's notification on the technical data for turbine and generator /26/ have been provided, and have been confirmed against the PDR. c) The lifetime of the project equipment has been validated against the specifications provided by the equipment purchase contract /25/. d) The electricity supplied to the CCPG through Sichuan provincial power grid will be measured by electricity meter installed at the project site. e) Capacities and efficiencies: the installed capacity of the project is stated and has been validated against the equipment purchase contract /25/ and PDR /2/. f) Emissions sources and GHGs involved in the project activity: these have been listed in accordance with the applied methodology. g) The plant load factor is 45.06% and annual supply to the grid has been included in section A.4 of the PDD, as required by the Guidelines for Completing the PDD. h) Not applicable, since the electricity grid is also included as part of the project boundary. i) This is not applicable as the project uses domestically produced equipment /25/. This has been validated against the specifications /25/ and PDR /2/. 	OK	OK
5.6.2	<p>Description: Project location</p> <p>Is the location of the project correctly stated in the PDD? Are geographical coordinates given (in decimal format)? How has the location been validated?</p>	<p>The geographical coordinates of the dam and the powerhouse of the project were not indicated in the GSP PDD, which was insufficient to identify the location of the project.</p> <p>See CL 1</p> <p>The PDD is revised, and the correct coordinates of the dam and the powerhouse have been included, and ERM CVS checked the <i>Notification on the geographical coordinates of Sichuan Province Baishui River Duonuo Hydropower Station /53/</i> to confirm. Therefore, CL 1 is closed.</p>	CL 1	OK
5.6.3	<p>Description: Existing installations</p>	Not applicable. The project does not take place in an existing installation.	N/A	N/A

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>a) If the proposed CDM project activity involves the alteration of an existing facility, installation or process, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?</p> <p>b) How has the description of the existing facility, installation or process been validated?</p> <p>c) Is the description of the existing facility, installation or process consistent with information provided in other parts of the PDD such as common practice and baseline selection?</p>			
5.6.4	<p>Description: Operational lifetime</p> <p>a) Does the PDD state the operation start date of the project? How was this validated? If the project is being implemented in phases, is this clearly described in the PDD?</p> <p>b) What is the expected operational lifetime of the project activity? Is this lifetime considered reasonable for a project of this type in the host country?</p>	<p>a) At the time of site inspection, the project was still under construction. The GSP PDD didn't state the operation start date. CL 2 was raised for PP to estimate a project operational start date.</p> <p>b) The expected operational lifetime of the project activity is 30 years, which is in line with the PDR /2/. Based on ERM CVS local and sectoral knowledge, this lifetime is considered reasonable for a project of this type.</p> <p>ERM CVS has checked the construction contract /24/ and construction progress report /65/, and will be in October 2012, which has been added in section B.5 of the revised PDD. The project is expected to start operation in October 2012, which has been indicated in section B.5 of the PDD. Therefore, CL 2 is closed.</p>	CL-2	OK
5.6.5	Is information on the plant load factor provided in the PDD? How has this been validated (please refer to the Guidelines for the reporting and validation of plant load factors, EB48_Annex 11.	The load factor is 45.06% and has been determined by an independent third party in the PDR /2/, which was also approved by the local government /2/, and is therefore in line with the 'Guidelines for the reporting and validation of plant load factors' /12/.	OK	OK

Conclusion

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

5.6.3 Description of baseline scenario

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

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
5.6.6	Is there a clear description of the baseline scenario in the PDD? This should include: a) A list of the equipment(s) and systems that would have been in place in the absence of the project activity (if any) b) Information about the age and average lifetime of the baseline facility based on manufacturer's specifications and industry standards (if applicable) c) Installed capacities, load factors and efficiencies of the baseline facility (if applicable) d) An explanation of how the same types and levels of services provided by the project activity would have been provided in the baseline scenario.	The PDD includes a description of the baseline, which is defined in the methodology ACM0002 /9/ 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". Details of the grid are provided in section B.6 of the PDD, and have been validated against the data provided by the DNA on the electricity grid /40/. The PDD therefore provides an explanation of how the same types and levels of services provided by the project activity would have been provided in the baseline scenario. (a) Not applicable since the project is a Greenfield project (b) Not applicable since there is no baseline facility (c) Not applicable since there is no baseline facility (d) The PDD explains that the electricity generated by the project would have been generated by the grid in the baseline scenario.	OK	OK
	If the scenario existing prior to the start of the implementation of the project activity is different from the selected baseline scenario, is there a clear description of the pre-existing scenario, with a list of the equipment(s) and systems in operation at that time?	Not applicable. The scenario existing prior to the start of the implementation of the project activity is the same as the selected baseline scenario.	N/A	N/A

Conclusion

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

6 Validation findings – Baseline and Monitoring Methodology

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

6.1 Validity of selected methodology and methodological tools

As per VVM section 5a, ERM CVS validated that an approved and currently valid baseline and monitoring methodology (and associated methodological tools) have been applied for this proposed CDM project activity.

Baseline methodology applied	ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.3.0
Methodological tools applied as required by the methodology	Tool for the demonstration and assessment of additionality, version 06.1.0 Tool to calculate the emission factor for an electricity system, version 02.2.1

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.1.1	Are the number, title and version of the approved methodology clearly and correctly stated? Is the methodology within its period of validity?	ERM CVS has determined that the methodology is correctly quoted and applied by comparing with the actual text of the applicable version of the methodology available on the UNFCCC CDM website. The methodology was valid from 17 September 2010 to 10 May 2012, under which requests for registration can be submitted until 11 Jan 2013 23:59:59 GMT, according to UNFCCC website/9/.	OK	OK
	Are all the required tools applied and fully referenced in the PDD? Are the version numbers applicable at the time of validation?	The methodological "Tool for the demonstration and assessment of additionality" was not correctly quoted. Please correctly quote the tools throughout PDD. CL 3 is raised. The tools are within their period of validity. ERM CVS confirms that the methodological "Tool for the demonstration and assessment of additionality" is correctly quoted in revised PDD. Therefore, CL 3 is closed.	CL-3	OK
	If applicable, has any specific guidance provided by the CDM EB relating to the applied methodology been considered?	Yes. The following EB guidance have been considered: Guidelines on the demonstration and assessment or prior consideration of the CDM, EB 62, Annex 13 /18/; Guidance on the Assessment of Investment Analysis, EB 62, Annex 5 /19/; Guidance for the reporting and validation of plant load factors (version 01), EB 48 Annex 11 /12/; EB guidance on deviation from approved methodology AM0005 /20/ now consolidated into ACM0002 for the purpose of estimating the build margin emission factor for power grids in China /40/.	OK	OK

Conclusion

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

6.2 Applicability of the selected methodology to the project activity

As per VVM section 5b, ERM CVS evaluated whether the selected baseline and monitoring methodology applied is applicable to the project activity. This evaluation was based on a review of the PDD and associated documentation and a visit to the project site. ERM CVS has validated that the applicability conditions of the methodology (and tools, where relevant) are met and that the project activity is not expected to result in emissions other than those allowed by the methodology.

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

	Applicability Conditions in methodology and/or tools	Discussed in PDD (yes/no)	Applicable (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
6.2.1	This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s)	Yes	Yes	<p>The applicability conditions are properly explained and clearly justified in the PDD. The project activity applies the approved simplified baseline and monitoring methodology ACM0002, Version 12.3.0 /9/ The PDD applied latest versions of Tool to calculate the emission factor for an electricity system /11/ and the Tool for the demonstration and assessment of additionality /10/.</p> <p>This applicability condition was able to be validated on site. ERM CVS has confirmed by reviewing the PDR and its approval /2/, visual inspection and interviews with PP representatives that the project is a newly built grid connected hydro power project. No renewable power plant was operated at the site prior to the implementation of the project activity /2/.</p>	OK	OK
	In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 11 to calculate the parameter $EG_{PJ,y}$): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;	No	N/A	Not applicable, the Project is a greenfield hydropower project and doesn't involve capacity additions, retrofits or replacements.	N/A	N/A

	Applicability Conditions in methodology and/or tools	Discussed in PDD (yes/no)	Applicable (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
	<p>In case of hydro power plants, one of the following conditions must apply:</p> <ul style="list-style-type: none"> o The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or o 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 section, is greater than 4 W/m²; or o The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m² 	Yes.	Yes.	<p>The power density was validated by checking the surface area of the reservoir in the PDR and the installed capacity in the PDR /2/. According to the PDR, the project activity results in a new reservoir with the water area of 1,760,000 m² and the installed capacity of 100 MW. Therefore the power density is calculated as 56.82W/m², greater than 4 W/m²,</p>	OK	OK
	<p>The methodology is not applicable to the following:</p> <ul style="list-style-type: none"> • Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; • Biomass fired power plants; • A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m². 	Yes	Yes	<p>The proposed project is a Greenfield hydro power plant, and the project does not involve a switching from fossil fuels to renewable energy sources at the site of the project activity, which was confirmed by review the PDR and its approval /2/.</p> <p>Biomass is not relevant.</p> <p>The power density of the project is greater than 4 W /m² /2/.</p>	OK	OK
	<p>Applicability condition "Tool to calculate the emission factor for an electricity system"</p> <p>This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side</p>	Yes	Yes	<p>This tool will be applicable for the project case, as the project supplies electricity to the grid.</p> <p>It is confirmed from the review of the PDR /2/, and ERM CVS's local and sectoral knowledge that the project electricity system is CCPG, which covers Henan Province, Hubei Province, Hunan Province, Jiangxi Province, Sichuan Province and Chongqing City within P. R. China/40/. Therefore, the project electricity system is neither totally nor partially located in an Annex I country. Therefore, the "Tool to calculate the emission factor for an electricity system" is applicable.</p>	OK	OK

	Applicability Conditions in methodology and/or tools	Discussed in PDD (yes/no)	Applicable (Yes/No, or state that this condition is not relevant for the project)	Validation findings (including justification and substantiation of information, data and evidence).	Draft OK/ CAR/CL	Final OK/ Not OK
	energy efficiency projects). The tool is not applicable if the project electricity system is located partially or totally in an Annex I country.					

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

Conclusion

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

6.3 Project Boundary

As per VVM section 5.c, ERM CVS reviewed the description of the project boundary in the PDD, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.

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

6.3.1 Emission sources

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

	Source	Gas	Included in the project boundary as stated in PDD?	Is inclusion / exclusion justified in the PDD?	How has this been validated?
Baseline emissions	CO ₂ emissions from electricity generation in fossil fuel fired power plants that	CO ₂	Yes	Yes	This is main emission source in baseline as per ACM0002.

	Source	Gas	Included in the project boundary as stated in PDD?	Is inclusion / exclusion justified in the PDD?	How has this been validated?
Project emissions	are displaced due to the project activity	CH ₄	No	Yes	This is minor emission source in baseline as per ACM0002.
		N ₂ O	No	Yes	This is minor emission source in baseline as per ACM0002.
	Project activity	CO ₂	No	Yes	The proposed project activity is a newly installed hydro power project /2/, minor emission source as per ACM0002.
		CH ₄	No	Yes	Minor emission source, since the power density is greater than 10 W/m ² .
		N ₂ O	No	Yes	This is minor emission source in baseline as per ACM0002.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.3.1	Has the PDD justified the inclusion/exclusion of all potential sources of GHG emissions as set out in the applied baseline methodology	ERM CVS evaluated whether the sources of GHG emission set out in the applied methodology were included in the project boundary and, where the methodology allows PPs to choose whether a source or gas is to be included within the project boundary, this has been clearly justified in the PDD. The validation was based on the PDR /2/and the methodology applied ACM0002 /9/.	OK	OK

Conclusion

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

6.3.2 Physical delineation of the project

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

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.3.2	Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary?	<p>Based on the site visit and review of PDR and its approval /2/, ERM CVS confirmed that the PDD correctly describes which installations/processes are included within the geographical boundary of the project activity.</p> <p>However, the figure B.3 Diagram of project boundary in section B.3 was not fully consistent with the Guidelines for Completing the CDM-PDD and the CDM- NM; See CL 4</p> <p>ERM CVS has reviewed the revised PDD and confirms that a diagram is included in the PDD to demonstrate the project boundary. The figure B.3 in section B.3 clearly illustrates the project boundary, including all the key equipment, systems and flows of energy included in the project boundary in line with the Guidelines</p>	CL-4	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		for Completing the CDM-PDD and the CDM- NM. CL 4 is closed.		
	Were any emission sources identified that will be affected by the project activity and are not addressed by the selected approved methodology? If so, was clarification of, revision to or deviation from the methodology approved in accordance with required procedures.	No emissions sources other than those addressed by the methodology were identified.	OK	OK

Conclusion

The PDD correctly describes the project boundary, including the physical delineation of the proposed CDM project activity, in compliance with the requirements of the selected baseline methodology, and this is consistent with site observations and other documentation provided. All sources and GHGs required by the methodology have been included within the project boundary. Where the methodology allows PPs to choose whether a source or gas is to be included within the project boundary, the PPs have sufficiently justified that choice. The justifications provided are reasonable, based on the review of PDR and its approval /2/, ACM0002 /9/and site observations. The project boundary is justified for the project activity, based on ERM CVS's local and sectoral knowledge.

6.4 Baseline identification

As per VVM paragraph 105, no alternative analysis is required if the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario.

The baseline scenario for new grid-connected renewable power plants (Greenfield facilities) is defined in ACM0002. This is in accordance with the baseline scenario identified in the PDD. Project activities that apply the additionality tool in context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity. No further discussion of alternatives is required.

The baseline identification has been validated as follows:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.4.1	Does the PDD identify the baseline, a scenario that represents the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed CDM project activity?	In accordance with ACM0002, as the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system". This is correctly identified in the PDD, and this does represent the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed CDM project activity.	OK	OK
	Have the procedures/ steps to identify the most reasonable baseline scenario, as required by the methodology and applicable tools, been documented clearly in the PDD?	Since the baseline is prescribed by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	Are all feasible and credible alternatives identified including but not limited to all the potential scenarios listed in the methodology? Does the list of alternatives include the project activity undertaken without being registered as a CDM project?	As per paragraph 105 of the VVM version 01.2 /13/, no analysis of baseline alternatives is required if the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario. No assessment of alternative baseline scenarios is therefore to be conducted in the PDD. Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK
	Are realistic different configurations or combinations of alternatives that may be able to provide similar outputs and services considered?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK
	Are all considered alternatives assessed for consistency with (enforced) mandatory laws and regulations?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK
	Have all relevant national and/or sectoral policies and circumstances been taken into account? Are they identified and correctly considered in the PDD?	Since the baseline is specified by the methodology, no further procedures / steps to identify the most reasonable baseline scenario are required.	OK	OK

Conclusion

Based on the site visit and documentary evidence to cross check the information contained in the PDD as referenced above, ERM CVS confirms that the justification on the baseline scenario is in line with the applied methodology and relevant EB's guidance (i.e. the VVM paragraph 105). Assumptions used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable. The approved baseline methodology has been correctly applied and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

6.5 Algorithms and/or formulae used to determine emission reductions

As per VVM section 5e, ERM CVS has evaluated whether the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring methodology.

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

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

6.5.1 Ex Ante Data and Parameters

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

Parameter required as per methodology / tools	Description of the parameter (as per methodology)	Is the parameter included in the PDD?	Title and description in the PDD line with the Methodology/tool?	Data unit correctly expressed in PDD?	Value in PDD correct and provides for conservative estimate of Emission Reductions? How was this validated?	Measurement method correctly described in the PDD (if applicable)
$F_{i,j,y}$	The amount of fuel i consumed by relevant power sources j in year y (mass or volume, tonnes for solid and liquid fuel, and m^3 for gas fuel)	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	ERM CVS validated this by checking China Energy Statistical Yearbooks (Editions 2008, 2009 and 2010)/38/	N/A
$FC_{i,y}$	The quantity of fuel i (in a mass or volume unit) consumed in CCPG for power generation in year y .	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	ERM CVS validated this by checking China Energy Statistical Yearbooks (Editions 2008, 2009 and 2010)/38/	N/A
$NCV_{i,y}$	Net calorific value (energy content) of fossil fuel type i in year y	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	ERM CVS validated this by checking China Energy Statistical Yearbook (Editions 2008, 2009 and 2010) /38/	N/A
$EF_{CO_2,i,y}$	CO_2 emission factor of fossil fuel type i used in power unit m in year y	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system	Yes	Yes. ERM CVS validated this by checking 2006 IPCC Guidelines for National Greenhouse Gas Inventories /39/	N/A
$CAP_{Total,y}$	Total newly capacity addition exceeds 20% on different power sources connected to the CCPG	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking Notification on 2011 Baseline Emission Factors for Regional Power Grids in China /40/	N/A
$CAP_{Thermal,y}$	Newly capacity addition on thermal power sources connected to the CCPG	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking Notification on 2011 Baseline Emission Factors for Regional Power Grids in China /40/	N/A
Electricity	Electricity generated by power plant/unit connected to the CCPG	Yes	Yes, it is in line with the Tool to calculate the	Yes	ERM CVS validated this by checking China Electric Power	N/A

Parameter required as per methodology / tools	Description of the parameter (as per methodology)	Is the parameter included in the PDD?	Title and description in the PDD line with the Methodology/tool?	Data unit correctly expressed in PDD?	Value in PDD correct and provides for conservative estimate of Emission Reductions? How was this validated?	Measurement method correctly described in the PDD (if applicable)
generation	in year y		emission factor for an electricity system. This parameter is used to calculate EG_y .		Yearbooks 2008-2010 /37/.	
Auxiliary Power Ratio	Average on-site electricity usage by all power plants connected to the provincial grids covered by the CCPG	Yes	Yes, it is in line with the Tool to calculate the emission factor for an electricity system. This parameter is used to calculate EG_y .	Yes	ERM CVS validated this by checking China Electric Power Yearbooks 2008-2010 /37/	N/A
$EF_{Coal,Adv.,y}$	CO ₂ emission factor of the most advanced technology commercially used in coal -fired plants in China	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking Notification on 2011 Baseline Emission Factors for Regional Power Grids in China /40/	N/A
$EF_{Oil,Adv.,y}$	CO ₂ emission factor of the most advanced technology commercially used in oil-fired plants in China	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking Notification on 2011 Baseline Emission Factors for Regional Power Grids in China /40/	N/A
$EF_{Gas,Adv.,y}$	CO ₂ emission factor of the most advanced technology commercially used in gas-fired plants in China	Yes	This parameter is not listed in the methodology or tool but is unique to grid emission factor calculations in China	Yes	ERM CVS validated this by checking 2011 Baseline Emission Factors for Regional Power Grids in China /40/	N/A
EF_{Res}	Default emission factor for emissions from reservoirs of hydro power plants	Yes	Yes	Yes	90 kgCO ₂ e/MWh, as per methodology ACM0002/9/.	N/A
A_{BL}	Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the	Yes	Yes	Yes	For new reservoirs, this value is zero as per ACM0002. ERM CVS validated this by checking the PDR/2/.	N/A

Parameter required as per methodology / tools	Description of the parameter (as per methodology)	Is the parameter included in the PDD?	Title and description in the PDD line with the Methodology/tool?	Data unit correctly expressed in PDD?	Value in PDD correct and provides for conservative estimate of Emission Reductions? How was this validated?	Measurement method correctly described in the PDD (if applicable)
	reservoir is full (m ²).					
Cap _{BL}	Installed capacity of the hydro power plant before the implementation of the project activity.	Yes	Yes	Yes	For new hydro power project, the value is zero as per methodology ACM0002/9/. ERM CVS validated this by checking the PDR/2/.	N/A

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.5.1	Have the parameters required by the methodology / tools been correctly described in the PDD? Where the methodology provides for selection between different options for data and parameters; is the choice of data and parameters justified?	No. Some parameters required by the methodology and tools were not correctly described in the PDD. CL 5 is raised for PP to correctly justify the data and parameters. For further details please see the table above. The parameters are corrected in the revised PDD, in line with the Tool to calculate the emission factor for an electricity system /11/. CL 5 is closed.	CL-5	OK

6.5.2 Equations and calculations used to calculate emission reductions

ERM CVS has confirmed that the equations and parameters in the PDD have been correctly applied by comparing them to ACM0002 version 12.3.0 requirements/9/. The GHG emission reductions of the project activity are calculated in accordance with the applied methodology: the baseline emissions are the product of the electrical energy baseline $EG_{\text{facility},y}$, expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor. Project emissions are considered following the procedure described in the methodology ACM0002 /9/. Leakage is not to be considered as per the methodology ACM0002 /9/

Baseline emissions:

According to the methodology ACM0002, the baseline emissions are to be calculated as follows:

$$BE_y = EG_{PJ,y} * EF_{\text{grid},CM,y}$$

Where:

- BE_y = Baseline emissions in year y (tCO₂)
- $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh). Because the project is a greenfield project, $EG_{PJ,y} = EG_{\text{facility},y}$
- $EF_{\text{grid},CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO₂/MWh)

Baseline emissions (BE_y in tCO_2) are calculated as the quantity of net electricity supplied by the project ($EG_{PJ,y}$ in MWh) multiplied by the baseline emissions factor of the CCPG ($EF_{grid,CM,y}$ in tCO_2/MWh).

Grid emissions factor:

According to the requirement of ACM0002 version 12.3.0, the proposed project applied the steps of the Tool to calculate the emission factor for an electricity system /11/ to calculate the grid emission factor. The grid emission factor is calculated as a combined margin (CM) which is made up of the combination of operating margin (OM) and build margin (BM).

The DNA of the host country has published a delineation of the project electricity system and connected electricity systems /11/, and these delineations are used in the PDD as required by the Tool to calculate the emission factor for an electricity system. The description in the PDD has been checked against the delineation published by China DNA /38/ as correct.

The emission factor of the grid is determined ex-ante for the first 7 years crediting period following the Tool to calculate the emission factor for an electricity system /11/.

The PDD version for the Global Stakeholder Process was published for global consultation on 28 April 2012, and the calculation of the grid emission factor is determined as per 2011 Baseline Emission Factors for Regional Power Grids in China published by the China DNA /38/, which is the latest data available at the time of submitting PDD for validation. 2011 Baseline Emission Factors for Regional Power Grids in China published by the China DNA are established based on the China Electric Power Yearbooks /37/ and the China Energy Statistical Yearbooks /38/, IPCC guidelines /39/ and the approved deviation from the approved methodology AM0005 now consolidated into ACM0002 for the purpose of estimating the build margin emission factor for regional power grids in China.

Operating Margin (OM):

Method (a) (Simple OM) is used. This is appropriate since low-cost/must run resources constitute less than 50% of total grid generation in the average of the five most recent years (2005-2009). The Simple OM emission factor is calculated as the generation-weighted average emissions per electricity unit (tCO_2/MWh) of all generating sources serving the system, excluding low operating cost and must-run power plants. The data on fuel consumption and net electricity generation of each power plant /unit in the grid is not publicly available; therefore the simple OM is calculated based on data on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system (option B). Aggregated generation and fuel consumption data are used as more disaggregated data are not available. Low-cost/must run power resources in the grid include only renewable power generation, and the quantity of electricity supplied to the grid by these sources is known. Off-grid power plants are not included in the calculation. Therefore, Option B is appropriate for calculating the Simple OM emission factor. Net calorific values of each fuel type were obtained from the China Energy Statistical Yearbook /38/, and IPCC 2006 default values /39/ were used for the emission factor of each type of fossil fuel. The values used and the calculation of the simple OM is considered to be reasonable, and is in line with official data published by the Government of China /40/. The OM is calculated to be $1.0297 tCO_2/MWh$.

Build Margin (BM):

Because plant specific fuel consumption and electricity generation data are not publicly available in China, the guidance given by the CDM Executive Board for a deviation from methodology AM0005 /20/ has been applied for calculation of the build margin (BM) emission factor for this project. In accordance with this guidance, the build margin consists of the set of power capacity additions in the electricity system that comprises 20% of the generation capacity (in MW) of the system that have been built most recently, based on the aggregate incrementally installed capacity of all generation sources in year y , and the aggregate incrementally installed capacity of all generation sources in year $y-n$, where n represents the number of years of historical data that need to be considered in order for the sample group to comprise 20% of the total system generation capacity (in MW). The emissions factor of fossil fuel fired power generation in the grid is calculated using the proportions of GHG emissions from solid, liquid and gaseous fuels in the total GHG emissions related to power generation as the weights, and the emission factors of the most advanced commercial generation technologies available in the host country (as published by the NDRC). Finally, the BM emission factor is calculated as the product of this emission factor of fossil fuel fired power generation and the proportion of fossil fuel fired power plants in the newly installed 20% capacity, based on data for years 2007-2009, contained in the power yearbooks 2008-2010. The sample group of capacity additions reached 20.63% of the total system generation capacity in the period between 2006 and 2008. The BM is calculated as $0.4191 tCO_2/MWh$.

The OM and BM of the connected regional grid system (CCPG) are calculated based on public and official data from the China Energy Statistical Yearbooks 2008-2010 editions /38/ and the China Electric Power Yearbooks 2008-2010 editions /37/. The weights ω_{OM} and ω_{BM} are selected as 0.5 and 0.5 respectively for hydro power projects according to the Tool to calculate the emission factor for an electricity system /11/. The combined margin is fixed ex-ante for the entire first crediting period.

Combined Margin (CM): The combined margin emissions factor is calculated as $0.5 * EF_{grid,OM,y} + 0.5 * EF_{grid,BM,y} = 0.7244 \text{ tCO}_2/\text{MWh}$. Therefore baseline emissions are calculated as $392,727 \text{ MWh} * 0.7244 \text{ tCO}_2/\text{MWh} = 284,491 \text{ tCO}_2\text{e per annum}$.

The results are consistent with the data 2011 Baseline Emission Factors for Regional Power Grids of China, published by the DNA of China in October 2011 /40/.

Project emissions:

The proposed project utilizes renewable hydro energy to generate electricity. The area of the reservoir is 1.76 km^2 according to the project PDR /2/ prepared by Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd, who is a qualified third party /36/. The total installed capacity of 100 MW is consistent with the PDR /2/, and it was crosschecked with the equipment purchase contract /25/ as well. Thus, the power density is calculated as 56.82 W/m^2 , which is greater than 10 W/m^2 .

Therefore, the project emissions are considered to be zero as per the applied methodology ACM0002 /9/.

Leakage:

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

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
6.5.2	Has the PP correctly applied all relevant calculations as required by the methodology and associated tools? Is it fully explained how the procedures provided in the Methodology and applicable Tools are applied by the proposed project activity? (i.e. Are the required steps clearly followed?)	Yes, the PP applied all relevant calculations as required by the methodology and tools. All the equations have been applied correctly; the calculation spreadsheet is correct and traceable.	OK	OK
	Where the methodology provides for selection between different options for equations; is every choice of options for calculating project emissions, baseline emissions and leakage offered by the methodology correctly justified in the context of the project activity and baseline scenario?	Yes, ACM0002 provides for selection between different options for equations, the choice of options for calculating project emissions, baseline emissions and leakage offered by the methodology is correctly justified in the context of the project activity and baseline scenario.	OK	OK
	Are the formulae required for the determination of project emissions, baseline emissions and leakage correctly presented in a complete and transparent manner, enabling a complete identification of parameters to be used and / or monitored?	Yes, the calculation of project emissions, baseline emissions and leakage are followed the procedures as per the Tool to calculate the emission factor for an electricity system and ACM0002 and correctly presented in a complete and transparent manner.	OK	OK
	Are detailed calculations provided in a traceable spreadsheet showing relevant information?	Yes, detailed calculations provided in a traceable spreadsheet showing relevant information, and the table of emission reductions in section B.6.4 of the PDD is consistent with the calculations /5/.	OK	OK
	Are the tables of emission			

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	reductions in the PDD (section A.4.4 and B.6.4) consistent with the calculations?			
	Can the calculation of emission reductions be replicated using the data and parameters supplied in the PDD?	Yes, the calculation of emission reductions are replicated using the data and parameters contained in the PDD.	OK	OK

Conclusion

ERM CVS confirms that:

As per the VVM paragraph 91, based on the information reviewed and calculations reproduced by the validation team, ERM CVS confirms the following:

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

7 Validation findings – Additionality

As per VVM section 6, ERM CVS assessed the PDD to determine whether it clearly describes how the proposed CDM project activity is additional, as supported by sufficient and appropriate evidence. In accordance with decision 3/CMP.1, annex, paragraph 43, a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.

ERM CVS assessed and verified the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by PPs to support the demonstration of additionality in order to critically assess the presented evidence, using local knowledge and sectoral and financial expertise.

In undertaking this aspect of the validation, ERM CVS considered tools and documents provided by the CDM Executive Board to demonstrate the additionality of proposed CDM project activity, as well as specific complementary or alternative requirements included in the approved CDM methodology.

In the sections below, ERM CVS describes all steps taken, and sources of information used, to cross-check the information contained in the PDD on additionality. Where appropriate, we describe how the validation team determined that the documentation assessed is authentic.

7.1 Prior consideration of the CDM

As per VVM section 6a, if the project activity start date is prior to the date of publication of the PDD for stakeholder comments, it shall be demonstrated that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity. ERM CVS therefore evaluated the start date of the project activity

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.1.1	What is the start date of the project activity? Is this before the publication of the PDD for public comments?	The project activity start date is given in the PDD as 06 July 2009, which is before the publication of the PDD for public consultation.	OK	OK
	Is the start date clearly defined in the PDD in accordance with the "Glossary of CDM terms"? Does the PDD contain a description of how this start date has been determined, and a description of the evidence available to support this start date?	ERM CVS has validated the Turnkey Construction Contract /24/, the Equipment Purchase Contract/25/ and Construction approval /27/of the proposed project, and confirms that the start date of the project activity is defined as 06 July 2009 e.g. the date of the Turnkey Construction Contract, which is the earliest of the dates above. This is in accordance with the "Glossary of CDM terms".	OK	OK
	Does the PDD provide an implementation timeline of the proposed CDM project activity, in line with the PDD guidelines?	The PDD includes the implementation timeline and relevant key stages such as the dates when the investment decision was made, construction contract was signed etc. Detailed validation of each individual stage is contained in the table below. However, some information of project and CDM activities were missing or not correctly stated as listed below: 1. the date when construction works started was not indicated table B.5-1; 2. the design institute of the PDR was not indicated throughout PDD; 3. the date of EIA approval in PDD was not consistent with the date in EIA approval; 4. the date of equipment purchase contract in PDD was not consistent with the	CL-6	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		<p>date in the equipment purchase contract;</p> <p>5. the date of board meeting that held for pending of the project's implementation due to its financial barriers and the considering the CDM was not indicated in table B.5-1. Therefore, CL 6 is raised for the PP to provide full exact information for the implementation timeline.</p> <p>The full exact information for the implementation timeline is correctly provided in the table B.5-1 of the revised PDD /1/, CL 6 is therefore closed.</p>		

The timeline of the project is set out in the table below, showing the evidence used to support each step. ERM CVS reviewed the evidence provided and can confirm that the starting date is correctly defined and that the timeline is credible and supported by reliable evidence.

	Activity	Date	How has ERM CVS validated this information	Draft OK/ CAR/CL	Final OK/ Not OK
7.1.2	Preliminary Design Report(PDR) of the project was completed	March 2006	The PDR /2/ has been checked, date and signatures are confirmed	OK	OK
	The Environmental Impact Assessment (EIA) was completed.	May 2006	The EIA /3/ has been checked, date and signatures are confirmed.	OK	OK
	EIA approval	19 July 2006	The EIA approval /3/ has been checked and the date is confirmed.	OK	OK
	Board meeting for the pending of the project's implementation due to its financial barriers and consideration of CDM.	21 July, 2006	The meeting minute /30/ has been checked and the date is confirmed.	OK	OK
	PDR approval	01 August 2006	The PDR approval /2/ has been checked and the date is confirmed.	OK	OK
	Board meeting for deciding the investment of Sichuan Baishuijiang Duonuo Hydropower Project and the application for the CDM	04 June 2007	The meeting minutes /31/ has been checked and the date is confirmed	OK	OK
	Project notification for China DNA	02 March 2009	The notification /33/ has been checked and the date is confirmed.	OK	OK
	Turnkey Construction Contract between Jiuzhaigou Hydropower Development Co.LTD and Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd.	06 July 2009	The signed contract /24/ has been checked, date and signatures are confirmed.	OK	OK
	Equipment (including the hydro turbines, generators and the accessories) Purchase Contract signed between Jiuzhaigou Hydropower Development Co.LTD	28 July 2010	The signed contract /25/ has been checked, date and signatures are confirmed.	OK	OK

	Activity	Date	How has ERM CVS validated this information	Draft OK/ CAR/CL	Final OK/ Not OK
	and Hangzhou Resource Power Equipment Co., Ltd.				
	Prior consideration of CDM notification to UNFCCC.	02 November 2010	The notification form /32/ has been checked, date and signatures are confirmed.	OK	OK
	Intension letter of CERs sales and purchase.	14 March 2011	The Intension letter of the project CERs sales and purchase was signed between the PP and a buyer candidate /28/ has been checked, date and signatures are confirmed.	OK	OK
	ERPA signed between the PP and Deutsche Bank	07 March 2012	ERPA has been checked, date and signatures are confirmed./34/	OK	OK

Conclusion

Based on the evidence provided, ERM CVS confirms that the start date for this project is 6 July 2009.

This is after 02 August 2008. ERM CVS has validated the compliance of the project with the Guidelines on the demonstration and assessment of prior consideration of the CDM provided by the CDM Executive Board (EB 62 Annex 13) as follows.

7.1.1 Notification of intent to seek CDM status for the project activity

The proposed project activity defines a start date of 06 July 2009 which is after 02 Aug 2008, and the PDD has *not* been published for global stakeholder consultation and no new methodology has been proposed to the EB for the specific project before the project activity start date, the following compliance criteria were considered:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.1.3	<p>Have the PPs informed the DNA and UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status within 6 months of the project activity start date?</p> <p>Do the notifications indicate the precise geographic location and provide a brief description of the proposed project using the standardized form F-CDM-Prior Consideration?</p> <p>Have the PPs informed the UNFCCC secretariat of the progress of the project activity every two years subsequent to the initial notification?</p>	<p>The proposed project chose the date of construction contract signed namely 06 July 2009, which is after 02 August 2008. As per the EB guidelines /18/, version 01 issued on 02 August 2008, the PP is required to inform a Host Party DNA and/or the UNFCCC secretariat. The PPs prepared the notification of prior CDM consideration to the host Party DNA (NDRC) on 02 March 2009/33/ in writing of the commencement of the project activity and of their intention to seek CDM status. The notification has been provided to ERM CVS for validation. The receipt of confirmation and stamp of the NDRC on the same page has been confirmed by the validation team. Therefore, ERM CVS was able to confirm that the PP has informed the China DNA within 6 months of the project activity start date.</p> <p>According to EB guidelines version 02 issued on 17 July 2009, it was required that all notifications to be sent to the UNFCCC secretariat. Therefore, the PP sent the notification of prior CDM consideration to UNFCCC secretariat on 02 November 2010 /32/ as well.</p> <p>ERM CVS has reviewed the notifications /32/ /33/ submitted and confirmed the notifications indicate the precise geographic location and provide a brief description of the proposed project using the standardized form F-CDM-Prior Consideration.</p> <p>Less than 2 years have elapsed since the initial notification to UNFCCC, therefore the PPs have not been required to inform the UNFCCC secretariat of progress.</p>	OK	OK

Conclusion

The PP has informed the Host Party DNA /33/ and the UNFCCC secretariat /32/ in writing of the commencement of the project activity and of their intention to seek CDM status. The notification to the Host Party DNA was made within six months of the project activity start date according to the Guidelines on the demonstration and assessment of prior consideration of the CDM, Version 01, EB 41 /18/. Notification to the UNFCCC was also made according to the Guidelines on the demonstration and assessment of prior consideration of the CDM, Version 02. The notifications contain the precise geographical location and a brief description of the proposed project activity. ERM CVS has reviewed the notifications and has confirmed that the information contained matches the project as described in the PDD, and has checked that the standardised form F-CDM-Prior Consideration was used.

ERM CVS has validated the authenticity of the notifications by reviewing the list of notifications on the UNFCCC website, and by reviewing the document that was sent to the Host Party DNA which is stamped with the seal of the PPs and the DNA. Therefore it has been demonstrated that the CDM benefits were considered necessary in the decision to undertake the project. The project activity therefore complies with the 'Guidelines on the demonstration and assessment of prior consideration of the CDM'.

7.2 Identification of alternatives

As per VVM section 6b, ERM CVS evaluated whether the PDD clearly describes credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required. The project applies methodology ACM0002 /9/ which defines the baseline as "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the 'Tool to calculate the emission factor for an electricity system'." Therefore no further assessment of baseline alternatives is required.

Conclusion

On the basis of local and sectoral knowledge and the evidence provided, ERM CVS confirms that the list of baseline alternatives in the PDD is credible and complete and that:

- a) The list of alternatives includes, as one of the options, the project activity is undertaken without being registered as a CDM project activity
- b) The list contains all plausible alternatives that ERM CVS, on the basis of local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed project activity;
- c) The alternatives comply with all applicable and enforced legislation.

7.3 Investment analysis

As per VVM section 6c, ERM CVS evaluated the investment analysis presented in the PDD to demonstrate the additionality of the proposed CDM project activity. ERM CVS evaluated whether there is sufficient and reliable evidence to validate that the proposed CDM project activity would not be either:

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

Additionality of the project is demonstrated using the 'Tool for the demonstration and assessment of additionality,' version 06.1.0. An investment analysis is used to demonstrate that the project activity is not financially or economically feasible without CER revenues.

The financial analysis was assessed by the validation team, including assessment of the spreadsheet and evidences relating to the input values to the financial analysis. The analysis was also assessed by referring to the 'Guidelines on the assessment of investment analysis' version 05 by a financial expert assigned by ERM CVS, who has specific expertise in the assessment of financial analysis for CDM projects. The validation of the investment analysis is set out below and in the resolution of CARs and CLs relating to the investment analysis.

7.3.1 Evaluation of Analysis Option

PPs can choose one of the following approaches:

- **Option I (Simple Cost Analysis):** Used when the proposed CDM project activity and the identified alternatives would produce no financial or economic benefits other than CDM-related income. It involves documentation of the costs associated with the proposed CDM project activity and the alternatives identified and demonstration that there is at least one alternative which is less costly than the proposed CDM project activity;
- **Option II (Investment Comparison Analysis):** Used to compare the rate of return of the project activity (without CDM) and the alternative(s), to demonstrate whether the proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative;
- **Option III (benchmark analysis):** Used to demonstrate that the financial returns of the proposed CDM project activity would be insufficient to justify the required investment, when compared to a benchmark.

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

Option III evaluation

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

Conclusion

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

7.3.2 Evaluation of Benchmark

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

- a) Determined whether the type of benchmark applied is suitable for the type of financial indicator presented;
- b) Ensured that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity;
- c) Determined whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the PPs involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a change in the benchmark.

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

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
If a Government/officially approved benchmark has been used				
7.3.3 (a)	Is the use of a government/official benchmark appropriate (<i>i.e. are such benchmarks used for investment decisions for this type of project in the host country?</i>)?	<p>The chosen benchmark is a project IRR established as a suitable rate for this kind of project by the Government of China. According to the official documented source this benchmark should be applied for projects of this type in the host country /42/. The rate is widely used in the country and is a widely accepted reference for investment decisions on electric power projects. Furthermore the benchmark is also applied by the local government when deciding whether to grant approval for the project.</p> <p>Based on local and sectoral knowledge and on past project experience, the validation team confirms that the benchmark is verifiable and appropriate.</p>	OK	OK
	Is an appropriate benchmark or discount rate value chosen that is relevant for the project activity (<i>i.e. for this investor, country, risk of project, time of investment decision?</i>)?	The benchmark is provided by the host country government in the document 'Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects' /42/, is specific for electric power projects and is widely applied in the host country. The benchmark is specifically applicable to the electric power industry in China, and therefore is suitable for the proposed project. The reference for the benchmark /42/ was issued in 2002 and there is no more recent guidance to replace it.	OK	OK
	Is the benchmark applicable to the project activity and the type of IRR calculation presented (<i>project or equity IRR; before or after tax?</i>)?	A project IRR indicator, after tax, is used, which is consistent with the type of benchmark applied, which is a post-tax project IRR benchmark supplied by the relevant national authority /42/.		
	Is the benchmark or discount rate based on verifiable publicly available data sources?	Yes. The benchmark is based on a publicly available source 'Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects' issued in 2002 by the Government of China /42/.	OK	OK
	Is the chosen benchmark appropriate and in line with other benchmarks or discount rates used in current or previous projects by the same or similar investors? (<i>including the Benchmark or discount rate used in Feasibility Studies or other financial analyses of the project activity</i>)	The chosen benchmark established as a suitable rate for this kind of project by the Government of China. The rate is widely used in the country and is widely accepted as a reference for projects of this type. Based on local and sectoral knowledge, the chosen benchmark is widely applied in investment decisions for similar projects and by similar investors.	OK	OK
If an external benchmark or discount rate has been used:				
7.3.3 (b)	Is the use of an external benchmark appropriate?	N/A	N/A	N/A
	Is the benchmark or discount rate based on publicly available data sources?	N/A	N/A	N/A

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	Is the benchmark based on parameters that are standard in the market? (I.A Guideline 13)	N/A	N/A	N/A
	Are the assumptions underlying the referenced benchmark or discount rate relevant to the sector?	N/A	N/A	N/A
	Is an appropriate benchmark or discount rate value chosen that is relevant for the project activity (<i>i.e. for this investor, country, risk of project, time of investment decision</i>)?	N/A	N/A	N/A
	Is the chosen benchmark conservative and in line with other benchmarks or discount rates used in current or previous projects by the same investor? (<i>including the benchmark or discount rate used in Feasibility Studies or other financial analyses of the project activity</i>)	N/A	N/A	N/A
	Does the benchmark meet the requirements of the investment analysis guidelines paragraph 15, <i>i.e. if the cost of equity is used in the determination of the benchmark, is the cost of equity determined either by:</i> (a) <i>selecting the values provided in Appendix A of the investment analysis guidelines; or by (b) calculating the cost of equity using best financial practices, based on data sources which can be clearly validated?</i> Are all underlying factors sufficiently justified?	N/A	N/A	N/A
	If the cost of debt is used in the determination of the benchmark, is it calculated as the cost of financing in the capital markets (e.g. <i>commercial lending rates and guarantees required for the country and the type of project activity concerned</i>), based on documented evidence from financial institutions with regard to the cost of debt financing of comparable projects? <i>In cases where this data is not available, has the commercial lending rate in the host country been used to</i>	N/A	N/A	N/A

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

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	investment analysis guidelines; or by (b) calculating the cost of equity using best financial practices, based on data sources which can be clearly validated? Are all underlying factors sufficiently justified? (I.A. Guideline 15)			
	Is the debt: equity ratio in line with Guideline 17 of the Guidelines on the assessment of investment analysis?	N/A	N/A	N/A
Risk Premiums				
7.3.4	Are risk premiums applied in the development of the benchmark or discount rate? If so, are they reasonable and justified? How has this been validated?	A government benchmark is used and no additional risk premiums are applied.	OK	OK

7.3.3 Investment analysis assumptions and Input Values

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

Assumptions based on Preliminary Design Report (PDR)

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.5	Has the PDR been the basis of the decision to proceed with the investment in the project? How has this been verified?	<p>The PPs rely on values from a Preliminary Design Report (PDR) that is approved by the appropriate national authorities.</p> <p>The PDR was completed in March 2006 and approved in August 2006, while the investment action was made in July 2009. As such it is likely that the input values would have materially changed by the time the investment decision was made. See CL 7</p> <p>The PP relied on values from a Preliminary Design Report (PDR) that is approved by the appropriate national authority /2/ on 01 August 2006. Although the period of time between the of the finalisation of PDR [March 2006] and the project start date [6 July 2009] exceeds three years, ERM CVS has ensured that the PDR has been the basis of the decision to proceed with the investment in the project by actions below:</p> <ol style="list-style-type: none"> ERM has reviewed the confirmation letter /59/ issued by design institute of PDR clarifies that the main technical parameters were still valid at the time of project start, and no revision of the PDR is need or has been made thereafter. Therefore, ERM confirms that the PDR was the only basis at the time of investment decision; ERM also checked the investment planning in PDR against the actual investment happened at the time of validation by reviewing the contracts 	CL 7	OK

Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK																																																			
	<p>singed as below:</p> <p>For total static investment:</p> <table><tr><th colspan="2">Item</th><th>Value in the investment planning of PDR (10⁴CNY)</th><th>Value in the contracts (10⁴ CNY)</th></tr><tr><td rowspan="6">Part A. Construction Costs</td><td>Construction Works</td><td>48467.62</td><td>66566.33</td></tr><tr><td>Electric Equipment and Installation</td><td>10232.07</td><td>11403.88</td></tr><tr><td>Structural Equipment and Installation</td><td>4535.76</td><td>5304.13</td></tr><tr><td>Temporary Works</td><td>9387.47</td><td>10192.52</td></tr><tr><td>Other Costs</td><td>12893.33</td><td>8552.94</td></tr><tr><td>Basic Contingency Reserve</td><td>5130.98</td><td>3333.25</td></tr><tr><td colspan="2">Static Investment of Part A</td><td>90647.23</td><td>105353.05</td></tr><tr><td colspan="2">Part B. Compensation and Environmental Protection Fee caused by Reservoir Inundation</td><td>13642.88</td><td>12655.93</td></tr><tr><td colspan="2">Total Static Investment</td><td>105386.46</td><td>118008.98</td></tr></table> <p>For O&M cost: the O&M could be breakdown as table below:</p> <table><tr><th>Item</th><th>PDR value</th><th>Value in 2009</th><th>Remark</th></tr><tr><td>Repair costs</td><td>1.0% of the fixed assets value</td><td>1.0% the fixed assets value</td><td>The rate is not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.</td></tr><tr><td>Staff salary</td><td>18,000 CNY/year</td><td>23,191 CNY/year</td><td>According to Sichuan provincial statistics/62/, the average working salary was 23,191CNY in 2009, increased by 30% from 17,852CNY in 2006. Therefore, it is conservative by using the 2006 value in the calculation of the 2009 IRR.</td></tr><tr><td>Labor welfare</td><td>Equal to salary* (14%+17%+10%)</td><td>Equal to salary* (14%+17%+10%)</td><td>According to Notice on Interim Rules on</td></tr></table>	Item		Value in the investment planning of PDR (10 ⁴ CNY)	Value in the contracts (10 ⁴ CNY)	Part A. Construction Costs	Construction Works	48467.62	66566.33	Electric Equipment and Installation	10232.07	11403.88	Structural Equipment and Installation	4535.76	5304.13	Temporary Works	9387.47	10192.52	Other Costs	12893.33	8552.94	Basic Contingency Reserve	5130.98	3333.25	Static Investment of Part A		90647.23	105353.05	Part B. Compensation and Environmental Protection Fee caused by Reservoir Inundation		13642.88	12655.93	Total Static Investment		105386.46	118008.98	Item	PDR value	Value in 2009	Remark	Repair costs	1.0% of the fixed assets value	1.0% the fixed assets value	The rate is not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.	Staff salary	18,000 CNY/year	23,191 CNY/year	According to Sichuan provincial statistics/62/, the average working salary was 23,191CNY in 2009, increased by 30% from 17,852CNY in 2006. Therefore, it is conservative by using the 2006 value in the calculation of the 2009 IRR.	Labor welfare	Equal to salary* (14%+17%+10%)	Equal to salary* (14%+17%+10%)	According to Notice on Interim Rules on		
Item		Value in the investment planning of PDR (10 ⁴ CNY)	Value in the contracts (10 ⁴ CNY)																																																			
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	Question	Validation findings (including justification and substantiation of information, data and evidence)				Draft OK/ CAR/CL	Final OK/ Not OK
					Economic Assessment of Electrical Engineering Retrofit Projects/42/, which was still valid in 2009, the Labor welfare was calculated based on the rates of other welfare (14%), labor insurance (17%) and housing provident fund (10%).		
		Material costs	5 CNY/kW	5 CNY/kW	The rate is not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.		
		Maintenance	0.001 CNY/kWh	0.001 CNY/kWh	The rate is not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.		
		Fixed assets premium	0.25% of fixed assets value	0.25% of fixed assets value	The rate of fixed assets premium of 0.25% is reasonable based on ERM CVS's local adn, sectoral and financial knowledge This is not changed in 2009.		
		Water resource fee	0.0025 CNY/kWh	0.0025 CNY/kWh	Not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.		
		Resettlement compensation	600 CNY/year/capita	600 CNY/year/capita	Not changed as per Opinion on Improving the Supporting Policy of Post Large-Medium Reservoir/55/, which was still valid in 2009.		
		Other costs	24 CNY/kW	24 CNY/kW	Not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.		

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK																												
		<div>For other parameters:</div> <table><tr><th>Parameter</th><th>Value in PDR</th><th>Value in 2009</th><th>Remark</th></tr><tr><td>Installed capacity</td><td>100 MW</td><td>100 MW</td><td>The installed capacity has not changed based on site interview IV1-IV12 and confirmation letter from the design institute of PDR/59/.</td></tr><tr><td>Annual output to the grid</td><td>392,727 MWh</td><td>392,727 MWh</td><td>The annual output of the project was determined by the 40 years (1966~2006) water resource data provided by local hydrological station as indicated in the PDR /2/ and not changed. Please refer to section 7.3.6 below.</td></tr><tr><td>Tariff</td><td>0.246 CNY/kWh (without VAT)</td><td>0.246 CNY/kWh (without VAT)</td><td>According to the Notification on Forwarding the Notification of Raising the Tariff of CCPG by National Development and Reform Commission/57/, the tariff in Sichuan has been maintained at the 0.246 CNY/kWh (without VAT) in 2009.</td></tr><tr><td>Value Added Tax (VAT)</td><td>17%</td><td>17%</td><td>Not changed according to Notice of the VAT regulations of China/43/, which was still valid in 2009.</td></tr><tr><td>City construction and maintenance tax</td><td>5%</td><td>5%</td><td>Not changed according to Interim Regulations on City Maintenance and Construction Tax of the People's Republic of China/45/, which was still valid in 2009.</td></tr><tr><td>Educational</td><td>3%</td><td>3%</td><td>Not changed according to Provisional</td></tr></table>	Parameter	Value in PDR	Value in 2009	Remark	Installed capacity	100 MW	100 MW	The installed capacity has not changed based on site interview IV1-IV12 and confirmation letter from the design institute of PDR/59/.	Annual output to the grid	392,727 MWh	392,727 MWh	The annual output of the project was determined by the 40 years (1966~2006) water resource data provided by local hydrological station as indicated in the PDR /2/ and not changed. Please refer to section 7.3.6 below.	Tariff	0.246 CNY/kWh (without VAT)	0.246 CNY/kWh (without VAT)	According to the Notification on Forwarding the Notification of Raising the Tariff of CCPG by National Development and Reform Commission/57/, the tariff in Sichuan has been maintained at the 0.246 CNY/kWh (without VAT) in 2009.	Value Added Tax (VAT)	17%	17%	Not changed according to Notice of the VAT regulations of China/43/, which was still valid in 2009.	City construction and maintenance tax	5%	5%	Not changed according to Interim Regulations on City Maintenance and Construction Tax of the People's Republic of China/45/, which was still valid in 2009.	Educational	3%	3%	Not changed according to Provisional		
Parameter	Value in PDR	Value in 2009	Remark																													
Installed capacity	100 MW	100 MW	The installed capacity has not changed based on site interview IV1-IV12 and confirmation letter from the design institute of PDR/59/.																													
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Tariff	0.246 CNY/kWh (without VAT)	0.246 CNY/kWh (without VAT)	According to the Notification on Forwarding the Notification of Raising the Tariff of CCPG by National Development and Reform Commission/57/, the tariff in Sichuan has been maintained at the 0.246 CNY/kWh (without VAT) in 2009.																													
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	Question	Validation findings (including justification and substantiation of information, data and evidence)				Draft OK/ CAR/CL	Final OK/ Not OK
		surcharge			Regulations of Levying Education Surtax /46/, which was still valid in 2009.		
		Income tax	15%	15%	Not changed according to Notice on Tax Preference Policy Issues concerning the Western Development Strategy /51/, which was still valid in 2009.		
		Depreciation rate	4%	4%	The depreciation rate is calculated based on depreciation period of 25 years, which is in line with Guidelines on the assessment of investment analysis/19/, and ERM CVS's local and sectoral knowledge.		
		Residual rate	0	0	<p>Not changed. According to Implementation Rules for Law of the People's Republic of China on Enterprise Income Tax/44/, which was still valid in 2009, that an enterprise could determine reasonable residual rate of fixed assets based on the nature and use of fixed assets of the enterprise. The assessment period for the proposed project is equal to the lifetime of the assets, which is 30 years; hence zero residual value is consistent with host country accounting regulations.</p> <p>Therefore, based on ERM CVS's sectoral and local knowledge, the residual rate of the project is considered</p>		

	Question	Validation findings (including justification and substantiation of information, data and evidence)				Draft OK/ CAR/CL	Final OK/ Not OK
					reasonable.		
		Project operational lifetime	30 years	30 years	Not changed according to confirmation letter from the design institute of PDR/59/.		
		<p>It can be concluded that the total static investment has increased 11% than budgeted in the investment planning of the PDR; the O&M also rose with the increase of repair costs, salary and labour welfare and fixed assets premium. The other parameters including Installed capacity, Annual output, Tariff, Value Added Tax (VAT), City construction and maintenance tax, Educational surcharge, Income tax, Depreciation rate, Residual rate, and Project operational lifetime, have not changed as analysed above. Hence, it is conservative to conduct financial analysis based on the parameters in PDR.</p> <p>Therefore, ERM CVS has ensured that it is reasonable and conservative to use the PDR as the basis of the decision to proceed with the investment in the project.</p> <p>CL 7 is closed.</p>					
	Are the values used in the PDD and associated annexes valid and consistent with the PDR?	<p>The values used in the financial analysis have been crosscheck with the PDR /2/.</p> <p>The amount of annual output to the grid used in the financial analysis was 404,368 MWh in the GSP PDD, however, the average annual power generation of Sichuan Baishuijiang Duonuo Hydropower Project in the approved PDR was 392,727 MWh.</p> <p>CAR 2 Please correct the input values in PDD and financial analysis calculation sheet accordingly.</p> <p>ERM CVS confirms that the annual output to the grid in the revised PDD, ER calculator and IRR calculator has been corrected to 392,727MWh, which is consistent with the PDR and PDR approval /2/. CAR 2 is closed.</p>				CAR-2	OK
	At the time of the investment decision, are the input values from the PDR valid and applicable (based on specific local and sectoral expertise and knowledge)?	<p>Based on ERM CVS's local and sectoral knowledge, the values in the approved third party PDR are reasonable and conservative at the time of investment decision. The values have been cross checked against other sources as described below.</p>				OK	OK

Input values used in the investment analysis

As per VVM paragraph 111 (a to c) ERM CVS has conducted a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determined the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices. ERM CVS has cross-checked the parameters against third-party or publicly available sources, such as invoices or price indices where available, and has reviewed feasibility reports, public announcements and annual financial reports, where available, related to the proposed CDM project activity and the PPs. Details of the validation activities and cross checks carried out are set out as follows:

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
Technical assumptions					
7.3.6	Annual output to the grid per year (load factor) 0.5% of electricity produced is consumed by the project	<p>The amount of annual output to the grid in the IRR calculation spreadsheet was 404,400MWh, which is neither consistent with the value of 404,368 in the GSP PDD, nor consistent with the value of 392,727 MWh in PDR and PDR approval. CAR 2 was raised.</p> <p>ERM CVS confirms that the annual output to the grid in the revised PDD, ER calculator and IRR calculator has been corrected to 392,727MWh, which is consistent with the PDR and PDR approval /2/. CAR 2 is closed.</p>	<p>The annual electricity generation was determined by the 40 years (1966~2006) water resource data provided by local hydrological station as indicated in the PDR /2/ prepared by a qualified third party-Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd/36/ contracted by the project owner, which is in line with the Guidelines for the reporting and validation of plant load factors /12/.</p> <p>ERM CVA has further cross-checked the value against the similar registered CDM hydro projects (i.e. with $\pm 50\%$ of the capacity of the proposed project in the Sichuan Province). The plant load factor (PLF) of proposed project is 45.1% which is within the range of 36.4% (Ref.2197) to 59.9% (Ref.4724), and the internal consumption rate is within the range of 0.2% (Ref.6153) to 1.0% (Ref.6249) amongst registered similar projects /58/, which is considered reasonable based on ERM CVS's local, sectoral and financial knowledge.</p> <p>Please find the list of all similar projects used for this cross-check in A.2 in Appendix A.</p>	CAR-2	OK
	Project operational lifetime	The project lifetime is sourced from the PDR /2/. It contains 5 years of construction period and 30 years of operation lifetime. PDR has been reviewed by ERM CVS and consistency has been confirmed.	The operational lifetime is cross checked against PDR approval /2/ and the lifetime for main equipments as indicated in the equipment purchase contract /25/, the value is confirmed to be consistent.	OK	OK
Costs					
7.3.7	Investment costs	The investment cost is derived from the PDR /2/.	<p>Clarification was required on the reasonability of the input parameters of investment cost in the financial analysis. Please see CL 8. It closed successfully. Please refer to Appendix B for details.</p> <p>The investment cost has been cross checked against turnkey construction contract /24/, equipment contract, /25/, summary of resettlement compensation& land acquisition contract/29/, and supplementary contracts signed in 2009-2012/63/. The total amount of contracted investment signed reaches CNY 1,180,089,837, accounts for 112% of total fixed</p>	CL-8	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>investment in the PDD. Therefore, the investment cost of the proposed project is considered reasonable.</p> <p>The static total investment of the project is 1,053,864,600 CNY, and the unit investment of the proposed project calculates as 10,539CNY/kW. This unit investment of the proposed project is which is within the range of 4,828CNY/kW (Ref.1943) and 13,049 CNY/kW (Ref.3601) amongst registered similar projects /58/ in Sichuan province, which is considered conservative and reasonable based on ERM CVS's local, sectoral and financial knowledge.</p> <p>Please find the list of all similar projects used for this cross-check in A.2 in Appendix A.</p>		
	Annual O&M cost	Annual O&M cost is derived from the PDR /2/.	<p>Clarification was required because the annual O&M cost in the IRR calculator version 01 was inconsistent with PDD/PDR. Please see CL 8. It's closed successfully. Please refer to Appendix B for details.</p> <p>ERM CVS has reviewed the revised IRR calculator /4/ and confirms that the annual O&M cost in the IRR calculator is consistent with PDD/PDR.</p> <p>According to the PDR /2/, The O&M cost comprises of Repair costs, labor costs and pension, material costs, Maintenance, fixed assets premium, Water resource fee, Resettlement compensation and other costs. ERM has checked the Interim Rules on Financial Assessment of Hydropower Projects /54/, Opinion on Improving the Supporting Policy of Post Large-Medium Reservoir /55/ and IRR calculation spreadsheet, confirms that the calculation of the O&M cost is reasonable.</p> <p>The range of unit annual O&M costs of similar registered projects in Sichuan Province is between 0.1269 (Ref.1432) and 0.3136 million CNY/MW (Ref.6153), the value of unit O&M costs of proposed project activity (0.1911 million CNY/MW) is within the range. The rate of annual O&M costs/ total static investment of 1.81% is also within the range of 1.72% (Ref.6204) to 3.81%</p>	CL-8	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>(Ref.2162) amongst registered similar projects /58/, which is considered conservative and reasonable based on ERM CVS's local, sectoral and financial knowledge.</p> <p>Please find the list of all similar projects used for this cross-check in A.2 in Appendix A.</p>		
Revenues					
7.3.8	Are all potential sources of revenue accounted for in the analysis?	Yes. The revenue of electricity sales has been considered, which is the only revenue of the proposed project.	It's has been validated based on ERM CVS sectoral and local knowledge and compared with other similar projects.	OK	OK
	Electricity tariff - CNY 0.288 p/kWh incl. VAT	This is referenced to the PDR and is fixed for the full period of assessment.	This is the highest approved tariff for large scale run-of-river hydropower projects in the Sichuan province according to the Information Note on the Highest Tariffs Applied by the EB in Its Decisions on Registration of Projects in the People's Republic of China/17/.	OK	OK
Taxes and subsidies (if applicable)					
7.3.9	Are there any policies, subsidies, incentives, grants, tax breaks etc that apply to any of the alternatives? Are these incorporated in the analysis?	<p>The following policies / incentives are applied in the analysis:</p> <ul style="list-style-type: none"> Income tax is set at 0% in years 4-5, 15% in years thereafter Losses are carried forward to offset against future profits in the calculation of taxable income VAT paid on the purchase of fixed assets (equipment) is offset from future sales VAT. 	<p>CL 9 was raised because it was not clear why the Income tax is set at 0% in years 4 – 5, 15% in years thereafter. CL 9 is closed successfully. Please refer to Appendix B for details.</p> <p>This is consistent with the People's Republic of China VAT regulations /43/.</p> <p>ERM have reviewed the Notice on Tax Preference Policy Issues concerning the Western Development Strategy /51/ and Notice on Taxation Policy Issues concerning the In-depth Implementation of the Western Development Strategy /56/, confirms that the income tax is set at 0% in years 4-5, 15% in years thereafter is in line with current policy of China.</p> <p>In addition, the losses incurred by enterprises in a tax year was offset against the taxable income in successive tax years up to 5 years, which is in line with the Enterprise Income Tax Law/41/ and Implementation Rules for Law of the People's Republic of China on Enterprise Income Tax/44/.</p>	CL-9	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			<p>VAT paid on the purchase of fixed assets (equipment) is offset from future sales VAT, as per the Notice of the Ministry of Finance and the State Administration of Taxation on Several Issues concerning the National Implementation of Value-added Tax Reform/43/.</p> <p>ERM CVS has checked the revised PDD and IRR calculation spreadsheet, and confirms all the policies, subsidies, incentives, grants, tax breaks applicable to the project are incorporated in the analysis.</p>		
	Income tax rate	15%, referenced to the PDR /2/.	<p>CL 9 was raised because it was not clear why the Income tax is set at 0% in years 4 – 5, 15% in years thereafter. It's closed successfully. Please refer to Appendix B for details.</p> <p>Notice on Tax Preference Policy Issues concerning the Western Development Strategy /51/ and Notice on Taxation Policy Issues concerning the In-depth Implementation of the Western Development Strategy /56/, confirms that the income tax is set at 0% in years 4-5, 15% in years thereafter is in line with current policy of China.</p>	CL-9	OK
	Value added tax (VAT) for electricity	17%, referenced to the PDR /2/.	It is consistent with the People's Republic of China VAT regulations /43/.	OK	OK
	City maintenance & construction tax	5% of VAT, referenced to the PDR /2/.	Interim Regulations on City Maintenance and Construction Tax of the People's Republic of China/45/.	OK	OK
	Educational surtax	3% of VAT, referenced to the PDR /2/.	Decision on the revision of the "Provisional Regulations of Levying Education Surtax" /46/.	OK	OK
	Bank loan	The amount of bank loan was 80% of total investment; long term bank loan interest was 6.39%, referenced to the PDR /2/.	<p>The amount of bank loan was crosschecked against Bank Loan Contract with Sichuan Province Branch of China Development Bank/22/ and considered reasonable; the bank loan rate of 6.39% was crosschecked with the Bank loan rate published by Bank of China on 28 April 2006/64/, and confirmed consistent.</p> <p>At the time of the project start, the bank loan interest rate was adjusted to 5.94%, which was lower than 6.39% in the PDR/2/; therefore, it is</p>	OK	OK

	Input parameter	Validation (source of the value used in the PDD financial analysis, including justification and substantiation of information, data and evidence)	Cross check (cross check of parameter against other sources or sectoral/financial knowledge, including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
			considered conservative.		

7.3.4 Investment analysis calculations

As per VVM paragraph 111(d) ERM CVS has assessed the correctness of computations carried out and documented by the PPs as follows:

Spreadsheet evaluation

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.10	<p>Has the PP supplied unprotected and traceable spreadsheet versions of all investment analysis?</p> <p>Have the listed input values been consistently applied in all calculations?</p> <p>Are the computations/ formulae correct? (this includes the computations implicit in input values, such as technical calculations of the amount of energy demanded or sold etc)</p> <p>From the investment analysis provided, is it possible to reproduce the results?</p>	<p>The PP has supplied unprotected spreadsheet version of the investment analysis /4/.</p> <p>However, issues below were identified in the IRR calculation spreadsheet version 01:</p> <p>1) The amount of annual output to the grid in the IRR calculation spreadsheet was 404,400MWh, not consistent with the value of 404,368 in the GSP PDD, nor consistent with the value of 392,727 MWh in PDR.</p> <p>2) There was an error in the calculation of interest payable in year 4 (row 83 of the 'Project IRR' tab), please amend</p> <p>3) Depreciation was not correctly calculated and is not consistent with the cost of the assets and the residual value. Please amend the analysis as appropriate.</p> <p>See CAR 2</p> <p>ERM CVS confirms that:</p> <p>1) The annual output to the grid in the revised PDD /1/, ER calculator/5/ and IRR calculator/4/ has been corrected to 392,727MWh, which is consistent with the PDR and PDR approval /2/.</p> <p>2) The error in the calculation of interest payable in year 4 has been amended in the revised PDD and IRR calculator.</p> <p>3) Depreciation is correctly calculated and is consistent with the cost of the assets and the residual value in the revised PDD and IRR calculator.</p> <p>The listed input values have been consistently applied in all calculations in the revised IRR calculator spreadsheet/4/, and the computations/ formulae are correct. From the investment analysis provided, it is possible to reproduce the results.</p> <p>CAR 2 is closed.</p>	CAR-2	OK

Depreciation and residual value

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.11	<p>Is any residual value of the project activity assets included in the analysis?</p> <p>Are residual value assumptions reasonable and justified and consistent with local accounting rules/international best practice/industry experience?</p>	<p>No residual value was included in the IRR calculation spreadsheet version 1. Please provide evidence to justify this assumption. See CL 8.</p> <p>The residual value is set as zero in the analysis. This is consistent with the PDR.</p> <p>No residual value of fixed assets is included in the analysis. The accounting of residual value has been checked against the Implementation Rules for Law of the People's Republic of China on Enterprise Income Tax/44/, which states that an enterprise could determine reasonable residual rate of fixed assets on its own based on the nature and use of fixed assets of the enterprise.. The assessment period for the proposed project is equal to the lifetime of the assets, which is 30 years; hence zero residual value is consistent with host country accounting regulations. Therefore the residual value of zero is also in line with host country regulations. Moreover, this parameter is not considered to have a significant impact on the IRR of the project.</p> <p>CL 8 is closed.</p>	CL-8.	OK
	<p>Is the depreciation consistent with the assessment period and the residual value?</p> <p>Are depreciation costs/ periods consistent with local accounting regulations?</p>	<p>Depreciation is carried out over 25 years, which is shorter than the assessment period and project lifetime. It is consistent with Guidelines on the assessment of investment analysis/19/, and in line with ERM CVS's local and sectoral knowledge.</p> <p>Yes, it is consistent with local accounting regulations -Enterprise Income Tax Law of the People's Republic of China.</p> <p>The depreciation rate in the final IRR calculation spreadsheet is consistent with the depreciation period and the residual value.</p>	OK	OK
	<p>Is depreciation correctly accounted for?</p> <p><i>(Depreciation costs (and other non-cash items) related to the project activity should be <u>excluded (not deducted)</u> from net Cash Flow used for calculating the financial indicator (e.g. IRR, NPV). Depreciation is relevant only for the calculation of income tax.)</i></p>	<p>Depreciation was not correctly calculated and was not consistent with the cost of the assets and the residual value. See CAR 2</p> <p>ERM CVS has checked the revised PDD /1/ and IRR calculator /4/, and confirms that depreciation is correctly calculated and is consistent with the cost of the assets and the residual value in the revised PDD /1/ and IRR calculator /4/. Depreciation costs are excluded from the cash flow and are only included for the purposes of determining income tax, and depreciation is relevant only for the calculation of income tax.</p> <p>CAR 2 is closed.</p>	CAR-2	OK

Taxation and interest

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.3.12	<p>Is the treatment of taxation consistent with the chosen benchmark or discount rate? <i>(i.e. taxation should only be treated as an expense in the IRR/NPV calculation if the chosen benchmark or</i></p>	<p>Yes, the treatment of taxation is consistent with the chosen benchmark. Both the investment analysis and the benchmark are post-tax, and interest costs are included only for tax calculation purposes, in line with the Guidance on the Assessment of Investment Analysis /19/.</p>	OK	OK

	<i>discount rate is intended for post-tax calculations?)</i>			
	<p>For post-tax benchmarks or discount rates :</p> <ul style="list-style-type: none"> Are interest costs included in the calculation of net taxable income and thus tax? Are interest costs calculated in accordance with the <i>Guidelines on the Assessment of Investment Analysis</i>? 	<p>A post-tax benchmark is applied.</p> <p>a. Interest costs are not deducted from net cash flow in the calculation of project IRR /4/. They are only used for the calculation of income tax.</p> <p>b. Interest payments are correctly accounted for in line with the Guidelines on the Assessment of Investment Analysis /19/.</p> <p>The total of the principal payments was not consistent with the value of the loan plus interest accrued during the construction period. Please clarify how the loan repayments have been calculated. See to CL 9</p> <p>ERM has reviewed the revised IRR spreadsheet/4/, and confirms that the total principal payment is consistent with the value of loan plus interest accrued during the construction period in the revised IRR spreadsheet. CL 9 is closed.</p>	CL-9	OK
	<p><i>If a Project IRR has been used:</i> Are the costs of financing expenditures excluded from the calculation of Project IRR? (<i>financing costs should not be deducted from Net Cash Flow</i>)</p> <p><i>If an Equity IRR has been used:</i> Is the debt portion of the investment cost excluded as a cash outflow and the interest costs and principal repayments included as costs?</p>	<p>A project IRR has been used. The costs of financing expenditures are not deducted from the net cash flow /4/.</p>	OK	OK

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

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.1.13	Is the cessation of project implementation demonstrated by means of credible evidence such as cancellation of contracts or revocation of government permits?	N/A The project was not a recommended project.	N/A	OK
	<p>Are input values valid and applicable at the time of making the decision to recommence the project?</p> <p>Are capital costs incurred prior to the revised project activity start date included only as the recoverable value of the assets (limited to the potential reuse/ resale</p>	N/A	N/A	OK

of tangible assets)?			
How has the fair market value of the capital expenditures been calculated and validated? (e.g. by chartered specialists). Is this fair market value reasonable and justified?			

Sensitivity analysis

A sensitivity analysis has been carried out to demonstrate the impact on the IRR of variations in the key input values to the financial analysis in accordance with the *Guidelines on the assessment of investment analysis* /19/. All costs and revenues greater than or equal to 20% of total costs / revenues have been included in the analysis. The variation in each parameter needed in order for the IRR to reach the benchmark, and the likelihood of such variations taking place, are explained in the PDD. As per VVM paragraph 111(e) ERM CVS has assessed the sensitivity analysis by the PPs to determine under what conditions variations in the result would occur, and the likelihood of these conditions. ERM CVS has reviewed the calculations for the sensitivity analysis which are presented in the IRR Spreadsheet /04/ and checked whether the computations are reproduced as correct and consistent with the information presented in the PDD.

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

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonable ?	Validation of why such variation is considered unlikely, based on evidence	Draft conclus ion [OK/ CAR / CL]	Final conclus ion [OK/Not OK]
7.3.14	Static investment costs	Yes	Yes	Yes	With a decrease of 23.4% of the static total investment, the post tax IRR of the project could reach the benchmark of 8%. According to the National Bureau of Statistics of China, the procurement price index for material, fuel and power was increased by 8.3%, 6.0% , 4.4% , 10.5% and 9.6% nationwide, and by 4.3% , 5.7% , 12.4% and 6.1% in Sichuan province during 2005, 2006, 2007, 2008 and 2010 /47/. Besides, the investment cost is cross checked against turnkey construction contract /24/, equipment contract, /25/, and summary of resettlement compensation& land acquisition contract./29/ The total amount of contracted investment signed reaches CNY 1,039,417,364, accounts for 98.6% of total fixed investment in the PDD. Therefore, it is not likely for investment costs to decrease by as much as 23.4% in order for the project IRR to exceed the benchmark.	OK	OK
	Annual O&M cost	Yes	Yes	Yes	Only if the annual operating cost decreases by 140.5%, the project IRR of the project can reach the benchmark of 8%, which is not possible.	OK	OK
	Electricity tariff	Yes	Yes	Yes	Considering that the tariff in Sichuan has been maintained at the 0.288 CNY/kWh (incl. VAT) since 2008 according to the tariff management document from Sichuan	OK	OK

	Parameters ≥ 20% of costs or revenues (list all)	Is the parameter included in the PDD sensitivity analysis?	Is the sensitivity analysis correctly calculated and traceable?	Is the degree of variation reasonable ?	Validation of why such variation is considered unlikely, based on evidence	Draft conclus ion [OK/ CAR / CL]	Final conclus ion [OK/Not OK]
					Provincial Price Bureau /57/, and that the applied tariff is in line with the highest historical tariff identified in the EB tariff information note /17/ which is 0.288 CNY/kWh (incl. VAT), it is not considered likely for the tariff to increase by 28.6% in the whole lifetime in order for the IRR to reach the benchmark, based on ERM CVS's local and sectoral knowledge.		
	Annual electricity delivered to grid	Yes	Yes	Yes	ERM CVS confirms that the annual output to the grid in the revised PDD, ER calculator and IRR calculator has been corrected to 392,727MWh, which is consistent with the PDR and PDR approval /2/. CAR 2 is closed. The annual electricity generation which was derived from the PDR, which was calculated based on the water resource data collected during the past 40 years (1966~2006), the amount of electricity generation is most unlikely to be increased in the project activity in normal condition. Thus, it is not likely for the annual net electricity supply to increase by 28.9 in the whole lifetime in order for the IRR to reach the benchmark.	CAR-2	OK

Investment analysis conclusion

On the basis of its specific local and sectoral expertise, ERM CVS has confirmed that the input values to the investment analysis are valid and applicable at the time of the investment decision. Further details on the cross checks carried out on the input parameters are given in the table above.

The PDD presents the key input parameters and results of the IRR of the project, and ERM CVS assessed the correctness of computations carried out by the PPs by reproducing the results using the IRR calculation spreadsheet /04/.

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

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

The project IRR calculated in the PDD and the spreadsheet is in line with the results of the PDR /1//2//4/. The IRR of the project without CDM income is well below the benchmark of 10%, and hence it can be concluded that the project is additional.

7.4 Barrier Analysis

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

7.5 Common practice analysis

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

The project applies the additionality tool version 06. For measures covered in paragraph 6 of the tool, common practice analysis should be carried out in accordance with the requirements of paragraph 47 of the tool. The project falls under the measures listed in paragraph 6 since it involves (b) switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies). ERM CVS used its local and sectoral expertise to assess compliance with the common practice requirements of the tool for the demonstration and assessment of additionality, paragraph 47. The tool requires the following:

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

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

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

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

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

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

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

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

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.5.1	Is the proposed project activity described a 'first of its kind'? If so, does the project comply with requirements on the Foik as per the Tool for the demonstration and assessment of additionality?	Not applicable. The PDD does not claim that the project is the first of its kind.	N/A	N/A

7.5.2 Geographical scope of the common practice analysis

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.5.2	Is the applicable geographical area of the common practice analysis appropriate for the assessment related to the project activity's technology or industry type? If a region other than the host country is chosen, is this appropriate?	The geographical scope of the analysis (i.e. the defined region) is determined as Sichuan province. The applicable geographical area as Sichuan province was applied instead of the host country China which was set to be default i according to paragraph 5 in the Tool for the demonstration and assessment of additionality /10/ because the investment climate, subsidies or other financial flows, tariff and promotional policies are quite different among provinces. This is considered appropriate for the project type and industry because each provincial region in China is very large in terms of geographical area, population size and natural resource availability; and provincial government has authorities for its own policy framework. Investment and regulatory environment vary	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		significantly between provinces in China.		

7.5.3 Comparison with similar and operational projects

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.5.3	In the applicable geographical area, has the PP identified all plants that deliver the same output or capacity, within the applicable output range, that started commercial operation before the starting date of the project? How have we validated the data sources, including that the list includes all relevant plants?	<p>CAR 3 was raised because common practice analysis in Section B.5 of GSP-PDD was not fully consistent with latest version of the "Tool for the demonstration and assessment of additionality". It's closed successfully. Please refer to Appendix B for details.</p> <p>ERM CVS has checked the revised PDD, and confirms that the latest version of the 'Tool for the demonstration and assessment of additionality' /10/ is applied in the PDD.</p> <p>The PP has defined the applicable range to be from 50MW to 100 MW, which is the capacity range of +/-50% (50~150MW) of the proposed project activity as required by the tool.</p> <p>The applicable geographical area as Sichuan province was applied instead of the host country China which was set to be default i according to paragraph 5 in the Tool for the demonstration and assessment of additionality (version 06.1.0) because the investment climate, subsidies or other financial flows , tariff and promotional policies are quite different among provinces. This is considered reasonable based on ERM CVS's sectoral and local knowledge.</p> <p>Two categories of projects are identified in this step:</p> <p>Category 1: Hydropower projects between 50MW~150MW in Sichuan Province. Note their number N_{C1}.</p> <p>Category 2: Power generation projects other than hydropower projects in Sichuan province. Note their number N_{C2}.</p> <p>For Category 1 projects, 17 hydropower projects in Sichuan province are identified with the installed capacity between 50 MW and 150 MW and starting commercial operation before 06 July 2009 (the starting date of the proposed project) as recorded in the Yearbooks of China Water Resources (2003-2011) /60/ , which can be regarded as an independent and reliable source.</p> <p>Registered CDM projects or projects seeking CDM status are not included in the analysis.</p> <p>The number of projects which meet the requirements is $N_{all} = N_{C1} + N_{C2} = 17 + N_{C2}$.</p> <p>The tool requires noting the number of N_{all} (all plants that deliver the same output or capacity, within the applicable output range calculated in Sub-step 4.1 of PDD, as the proposed project activity and have started commercial operation before the start date of the project). However it's difficult to identify the exact number for N_{all} due to data limitation in China, which can be confirmed based on ERM CVS sectoral and local knowledge and the information published by the China DNA for grid EF calculation. Considering it does not affect the final assessment, expressing N_{all} as N_{C1} and N_{C2} is acceptable.</p>	7-5-4	OK
	Has the PP correctly identified those plants that apply technologies different from that the technology applied in the proposed project activity?	<p>CAR 3 was raised because common practice analysis in Section B.5 of GSP-PDD was not fully consistent with latest version of the "Tool for the demonstration and assessment of additionality". It's closed successfully. Please refer to Appendix B for details.</p> <p>ERM CVS has checked the revised PDD, and confirms that the latest version of</p>	CAR-3	OK

Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK																																																
	<p>the 'Tool for the demonstration and assessment of additionality' /10/ is applied in the PDD.</p> <p>The power industry in China underwent a significant suit of reforms in 2002. First of all, under the reform, the China State Power Corporation was diversified into five separate region grids in 2002. Secondly, there were changes to the existing electricity tariff mechanisms. As a result, the investment environment of power production projects in China changed significantly in 2002. Therefore, those projects started construction before 2002 (in total 10 projects) should also be seemed as those applying different technology from the proposed project as per paragraph 9(d) of the additionality tool.</p> <p>Accordingly, the hydropower projects with installed capacity of 50MW ~150MW which have started operation since 2002 and before July 6th, 2009 are further selected below:</p> <table><tr><th>No.</th><th>Name of Hydropower Station</th><th>Installed Capacity (MW)</th><th>Commercial Operation Starting Year</th><th>Operating Hours (h)</th><th>Unit Investment Cost (CNY/KW)</th></tr><tr><td>1</td><td>Jiangsheba Hydropower Station</td><td>128</td><td>2005</td><td>6090</td><td>5625</td></tr><tr><td>2</td><td>Huilongqiao Hydropower Station</td><td>50</td><td>2004</td><td>5021</td><td>5360</td></tr><tr><td>3</td><td>Kehe Hydropower Station</td><td>72</td><td>2006</td><td>5200</td><td>4723</td></tr><tr><td>4</td><td>Wanbahe II Hydropower Station</td><td>66</td><td>2006</td><td>4833</td><td>5379</td></tr><tr><td>5</td><td>Zhugeduo Hydropower Station</td><td>80</td><td>2007</td><td>5013</td><td>5183</td></tr><tr><td>6</td><td>Jinkang Hydropower Station</td><td>150</td><td>2006</td><td>5230</td><td>6480</td></tr><tr><td>7</td><td>Hongba Hydropower Station</td><td>100</td><td>2005</td><td>5122</td><td>4679</td></tr></table> <p>Jiangsheba Hydropower Station is located on main stream of Minjiang which has better water resources and development conditions. The proposed project is located on Baishui river, which is merely a branch of the Bailong river, and is categorized presumably to more difficult to develop for a hydropower project. The annual operating hour of Jiangsheba Hydropower Station is 6090h which is higher than that of the proposed project.</p> <p>The operation hour for Huilongqiao Hydropower Station, Kehe Hydropower Station, Wanbahe II Hydropower Station, Zhugeduo Hydropower Station, Jinkang Hydropower Station, and Hongba Hydropower Station are 5021h, 5200h, 4833h, 5013h, 5230h and 5122h, respectively, which are much longer than 3947h of the proposed project. The operating hours of the project was determined depending on the historical mean river flow of 17.7 m3/s collected during the past 40 years (1966~2006). Compared with two other operated hydropower stations which are Shuanghe Hydropower Station and Qinglong Hydropower Station along the Baishuijiang River, the operating hours of proposed project activity is reasonable for the reason that the proposed project is the first cascading hydropower station and will increase the electricity of downstream hvdropower stations.</p>	No.	Name of Hydropower Station	Installed Capacity (MW)	Commercial Operation Starting Year	Operating Hours (h)	Unit Investment Cost (CNY/KW)	1	Jiangsheba Hydropower Station	128	2005	6090	5625	2	Huilongqiao Hydropower Station	50	2004	5021	5360	3	Kehe Hydropower Station	72	2006	5200	4723	4	Wanbahe II Hydropower Station	66	2006	4833	5379	5	Zhugeduo Hydropower Station	80	2007	5013	5183	6	Jinkang Hydropower Station	150	2006	5230	6480	7	Hongba Hydropower Station	100	2005	5122	4679		
No.	Name of Hydropower Station	Installed Capacity (MW)	Commercial Operation Starting Year	Operating Hours (h)	Unit Investment Cost (CNY/KW)																																														
1	Jiangsheba Hydropower Station	128	2005	6090	5625																																														
2	Huilongqiao Hydropower Station	50	2004	5021	5360																																														
3	Kehe Hydropower Station	72	2006	5200	4723																																														
4	Wanbahe II Hydropower Station	66	2006	4833	5379																																														
5	Zhugeduo Hydropower Station	80	2007	5013	5183																																														
6	Jinkang Hydropower Station	150	2006	5230	6480																																														
7	Hongba Hydropower Station	100	2005	5122	4679																																														

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		<p>Consequently, less electricity will be generated by the proposed project, which makes the project less financially attractive and more financial risks than the above projects. The differences are much more than the specified differentiation thresholds of 20%.</p> <p>In addition, the unit investment costs of the projects listed in Table B.5.-6 are less than 10,539CNY/KW of the proposed project activity. This is because the project is a diversion type of hydropower station with a long headrace tunnel about 14.8km and a large reservoir area about 1,760,000m². The differences of investment are much more than the specified differentiation thresholds of 20%. Thus these 7 projects can be clarified to be different technologies as per paragraph 9(e) of the additionality tool.</p> <p>$N_{diff,C1}$ is the number of Category 1 projects (hydropower) which apply technologies different from the proposed project technology. For Category 1 projects, 17 projects described above within the range were found, so $N_{diff,C1}=17$.</p> <p>For power generation projects other than hydropower projects in Sichuan province, they are considered as different technologies since they are using different energy source/fuel to the project activity. So, $N_{diff,C2}=N_{C2}$.</p> <p>$N_{diff,C2}$ is the number of Category 2 projects (power generation projects other than hydropower) which apply technologies different from the proposed project technology.</p> <p>Therefore, $N_{diff} = N_{diff,C1} + N_{diff,C2} = 17 + N_{C2}$ according to the above analysis.</p>		
	<p>Has the PP correctly calculated the factor F, in accordance with the requirements of the tool?</p> <p>Is the project activity common practice (The proposed project activity is a common practice within a sector in the applicable geographical area if both the following conditions are fulfilled: (a) the factor F is greater than 0.2, and (b) $N_{all} - N_{diff}$ is greater than 3)?</p>	<p>CAR 3 was raised because common practice analysis in Section B.5 of GSP-PDD was not fully consistent with latest version of the "Tool for the demonstration and assessment of additionality". It's closed successfully. Please refer to Appendix B for details.</p> <p>ERM CVS has checked the revised PDD, and confirms that the latest version of the 'Tool for the demonstration and assessment of additionality' is applied in the PDD.</p> <p>Based on the above ($N_{all}=N_{diff}$) and the tool /10/:</p> <p>Factor F is determined as $1 - N_{all}/N_{diff} = 0 < 0.2$;</p> <p>and $N_{all} - N_{diff} = 0 < 3$.</p> <p>The proposed project is therefore not common practice.</p> <p>CAR 3 is closed.</p>	CAR-3	OK
	Has the PP provided documented evidence and, where relevant, quantitative information to support the analysis?	<p>Information of total installed capacity of the hydropower stations were not indicated in the source used in Table B.5.-5, please provide. See CL 10</p> <p>ERM has reviewed the revised PDD /1/ and confirms that the source of information of total installed capacity of the hydropower stations used in Table B.5.-5 has been added in the PDD. The PP has provided the latest public available documented evidence to support the analysis.</p> <p>CL 10 is closed.</p>	CL-10	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
7.5.4	Overall, has it been demonstrated that the proposed CDM project activity is not common practice?	<p>Information of total installed capacity of the hydropower stations were not indicated in the source used in Table B.5.-5.</p> <p>The annual operating hours of the proposed project is 3947h, which is less than other similar projects as listed in Table B.5.-6, and investment of the proposed project is 10,537CNY/KW, which is higher. Please clarify the reason as CL 10.</p> <p>The Step 4: Common practice analysis in the section B.5 of PDD was not fully consistent with "Tool for the demonstration and assessment of additionality (version 06.1.0)". See CAR 3ERM CVS has checked the revised PDD, and confirms that the latest version of the 'Tool for the demonstration and assessment of additionality' is applied in the PDD.</p> <p>As N_{all} is equal to N_{diff} for this proposed project, the factor F is less than 0.2 and $N_{all}-N_{diff}$ is less than 3. It has been demonstrated in the PDD that the proposed project is not common practice. CAR 3 is closed.</p> <p>ERM has reviewed the PDR and confirms that the operating hours of the project was determined depending on the historical mean river flow of 17.7 m³/s collected during the past 40 years (1966~2006). The unit investment costs of the projects listed in Table B.5.-6 are less than 10,539CNY/KW of the proposed project activity. This is because the project is a diversion type of hydropower station with a long headrace tunnel about 14.8km and a large reservoir area about 1,760,000m². The detailed explanation has been added in the revised PDD.</p> <p>CL 10 is closed. Please refer to Appendix B.</p>	<p>CL 10</p> <p>CAR 3</p>	OK

Common Practice Conclusion

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

- (a) The geographical scope of the common practice analysis is justified;
- (b) An assessment of the existence of similar projects has been undertaken by the PPs and validated by ERM CVS;
- (c) An assessment of N_{all} and N_{diff} has been undertaken by the PPs and validated by ERM CVS;
- (d) The project is not common practice according to paragraph 47 of the additionality tool.

8 Validation Findings - Monitoring plan and other issues

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

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

8.1 Compliance of the monitoring plan with the approved methodology

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

8.1.1 Completeness of monitoring parameters

The monitoring parameters required by the methodology and applicable tools are:

Parameter Name		Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence)
EG _{facility,y}		Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	Yes, the parameter is appropriately included in the monitoring plan. The parameter is required to be monitored as per requirement of the applied methodology ACM0002. It is calculated as per the difference between the electricity imported from the grid (EG _{CCPJ to facility,y}) and imported from the grid (EG _{facility to CCPJ,y}) by the project in year y. It is directly measured by the metering devices installed at the project site. The recording frequency will be continuously measured and daily recorded, and monthly aggregated.
	EG _{facility to CCPG,y}	Quantity of electricity exported to the grid in year y	Yes, the parameter is appropriately included in the monitoring plan. The parameter is required to be monitored as per requirement of the applied methodology ACM0002. It is the base for calculation of EG _{facility,y} and directly measured by the metering devices installed at the project site. The recording frequency will be continuously measured and daily recorded, and monthly aggregated.
	EG _{CCPG to facility,y}	Quantity of electricity imported from the grid in year y	Yes, the parameter is appropriately included in the monitoring plan. The parameter is required to be monitored as per requirement of the applied methodology ACM0002. It is the base of calculation for EG _{facility,y} and directly measured by the metering devices installed at the project site. The recording frequency will be continuously measured and daily recorded, and monthly aggregated.

Parameter Name	Parameter Description	Is the parameter appropriately included in the Monitoring Plan? (including justification and substantiation of information, data and evidence)
Cap _{PJ}	Installed capacity of the hydro power plant after the implementation of the project activity	The parameter is required to be monitored as per requirement of the applied methodology ACM0002.
A _{PJ}	Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full	The parameter is required to be monitored as per requirement of the applied methodology ACM0002.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.1.1	Are all required parameters included in the monitoring plan?	<p>ERM has checked the revised PDD /2/, and confirms that both the power exported to the grid ($EG_{CCPJ \text{ to facility},y}$) and imported from the grid ($EG_{\text{facility to CCPJ},y}$) by the project are parameters to be monitored in section B.7 of the revised PDD /1/. The parameters will be directly measured by the metering devices installed at the project site. The recording frequency will be continuously measured and at least monthly recorded, and aggregated. The net electricity generation supplied to the grid ($EG_{\text{facility},y}$) is the difference between power exported to grid and imported from grid.</p> <p>ERM CVS confirms that all necessary monitored parameters required by the methodology ACM0002 /9/ have been included in the monitoring plan of the final version PDD.</p> <p>CAR 4 was raised because not all required parameters were included in the monitoring plan of the GSP PDD. It is closed. Please require to Appendix B for details.</p>	CAR-4	OK

Conclusion

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

8.1.2 Compliance of monitoring

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

Monitored Parameters	Parameter Names				
	EG _{facility,y}	Cap _{PJ}	A _{PJ}	EG _{facility to CCPJ,y}	EG _{CCPJG to facility,y}
Parameter Description correct?	Yes	Yes	Yes	Yes	Yes
Description in line with methodology?	Yes	Yes	Yes	Yes	Yes
Data unit correctly expressed?	Yes	Yes	Yes	Yes	Yes

Monitored Parameters	Parameter Names				
	EG _{facility,y}	Cap _{PJ}	A _{PJ}	EG _{facility to CCPG,y}	EG _{CCPG to facility,y}
Source clearly referenced?	Yes	Yes	Yes	Yes	Yes
Correct value provided for ex ante estimation?	Yes	Yes	Yes	Yes	Yes
Has this value been verified?	Yes	Yes	Yes	Yes	Yes
Measurement method correctly described?	Yes	Yes	Yes	Yes	Yes
Measurement and recording frequency correctly described?	Yes	Yes	Yes	Yes	Yes
Correct reference to standards?	Yes	N/A	N/A	Yes	Yes
Indication of accuracy provided?	Yes	N/A	N/A	Yes	Yes
QA/QC procedures described?	Yes	N/A	N/A	Yes	Yes
QA/QC procedures appropriate?	Yes	N/A	N/A	Yes	Yes

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.2.2	Are all required parameters appropriately monitored in accordance with the methodology (including applicable tools)?	<p>ERM has checked the revised PDD /2/, and confirms that both the power exported to the grid (EG_{CCPJ to facility,y}) and imported from the grid (EG_{facility to CCPJ,y}) by the project are parameters to be monitored in section B.7 of the revised PDD /1/. The parameters will be directly measured by the metering devices installed at the project site. The recording frequency will be continuously measured and at least monthly recorded, and aggregated. The net electricity generation supplied to the grid (EG_{facility,y}) is the difference between power exported to grid and imported from grid. ERM CVS confirms that the data and parameters monitored and the description of the monitoring plan are in line with the methodology ACM0002 /9/.</p> <p>The installed generation capacity of the project (CAP_{PJ}) will be monitored yearly in accordance with the nameplate of each generator.</p> <p>The surface area of the reservoir (A_{PJ}) determined from topographical surveys, maps, satellite pictures, etc. It is monitored yearly.</p> <p>CAR 4 was raised because not all required parameters were included in the monitoring plan of the GSP PDD. It is closed. Please require to Appendix B for details.</p>	CAR-4	OK

Conclusion

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

8.2 Implementation of the monitoring plan

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

Operational and management structure:

The PDD contains a diagram illustrating the organisational structure to be implemented in order to monitor the project activity. To ensure all data are reliable and transparent. Additionally a manager in charge of CDM will be in overall charge of the monitoring system and there will be separate roles for data recording and meter calibration and data management, in order to carry out the monitoring plan. Roles and responsibilities of the organization are clearly stated in the PDD.

Equipment:

Electricity delivered to/imported from the CCPG will be monitored by metering devices installed at the project site. Two sets of metering systems will be equipped at the project site. They are classified as main meter and back meter respectively, with accuracy class no lower than 0.5S. Both electricity meters are bidirectional and capable of measuring the imported and exported electricity by the project simultaneously. The metering equipment will be properly calibrated yearly for accuracy. The calibration will be carried out according to the national standards by an accredited third party or the grid company. Detailed monitoring procedures to measure electricity supplied to the CCPG by the project will be established later between the project owner and the grid company in line with the Power Purchase Agreement.

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

The monitoring plan described in section B.7.2 of the PDD states that the project owner and the grid company will record the readings of the meters monthly and all monitoring data and records will be archived in both paper and electronic format, and the copies of sales invoices will be kept for cross check purpose. All the electronic and paper documents will be archived and be kept for 2 years after the end of the crediting period.

The PDD describes calibration and trouble-shooting procedures in the monitoring plan. The meters will be calibrated annually, and a back-up meter will be used if the main meter is shown to be malfunctioning or falls below the required accuracy limit. The PDD contains sufficient description on how quality will be controlled and assured in the monitoring of emission reductions.

Feasibility of the monitoring plan:

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
8.2.3	Are the arrangements described in the plan feasible and practical within the project design? Please consider: (a) operational and management structure, including responsibilities (b) Plans for maintenance and calibration of equipment (c) Plans for QA/QC of equipment and data (d) Installation of monitoring equipment (whether in place, or planned)	<p>(a) The operational and organisational structure is considered sufficient to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified.</p> <p>(b) The equipment setup is considered sufficient to carry out the monitoring requirements of the methodology. However, the accuracy and relevant national standard of calibration were not indicated in the GSP PDD. Please see CL 11.</p> <p>(c) The QA/QC of equipment and data procedures are considered appropriate to fulfil the monitoring requirements of the methodology and to ensure that emission reductions can be verified.</p> <p>(d) The location of the monitoring meters was not clear; and project participants did not provide a diagram indicating the monitoring arrangement in the GSP PDD. Please see CL 11.</p> <p>The accuracy and calibration information has been included in the revised PDD/1/, and is confirmed by ERM CVS to be in line with national standard "Management Regulations for Power Metered Device Technology" (DL/T448-2000) /52/.</p> <p>The net electricity generation will be monitored by the main and back up metering systems installed in booster station at the project site, which is clearly indicated in the revised PDD/1/ with a diagram indicating the monitoring arrangement.</p> <p>CL 11 is closed.</p>	CL 11	OK

Conclusion

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

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

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

9 Validation Findings – Sustainable Development, Local Stakeholder Consultation and Environmental Impact

9.1 Sustainable Development

As per VVM section 8, ERM CVS evaluated whether the letter of approval by the DNA of the host Party confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.1.1	Does the LOA from the Host Party confirm that the project activity contributes to the sustainable development of that country?	<p>The LoA from host party was not provided during DVR stage. CAR 1 thus was raised</p> <p>The host party LoA has been provided to ERM CVS, CAR 1 is closed.</p> <p>ERM CVS has reviewed the host party LoA and confirms that the project activity contributes to the sustainable development of that country.</p>	CAR-1	OK

9.2 Local Stakeholder Consultation

As per VVM section 9, ERM CVS evaluated whether local stakeholders had been invited to comment on the on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.2.1	Have comments from local stakeholders that can reasonably be considered relevant been invited prior to the publication of the PDD on the UNFCCC website?	<p>Yes. Comments have been invited from local stakeholders through a questionnaire survey during EIA phase, 83 out of 100 questionnaires /35/ were recovered. The original samples of the questionnaires were available at the site validation, and the content of the questionnaires are specified in the PDD. However, the information of resettlement and how the comments from the stakeholders were addressed was not indicated in section E of the GSP PDD, CL 12 is raised.</p> <p>ERM CVS confirm that the resettlement information is added in section E.3. of the revised PDD /1/. 19 people (4 households) will be resettled in the areas including Batun Village and Xiangzha Village, and This information is checked against Resettlement Planning Report /50/.</p> <p>CL 12 is closed.</p>	CL-12	OK
	Is the summary of comments received as provided in the PDD complete?	<p>Yes. Based on review of the 83 stakeholder survey questionnaires /35/, summary of comments received is provided in the PDD. In addition, ERM CVS interviewed several project stakeholders onsite and confirmed the feedback to be consistent with the summary and conclusion in the PDD. However, the information of resettlement and how the comments from the stakeholders were addressed was not indicated in section E of the GSP PDD, please see CL 12.</p> <p>ERM CVS confirm that the resettlement information is added in section E.3. of the revised PDD/1/. 19 people (4 households) will be resettled in the areas including Batun Village and Xiangzha Village, and this information is checked against Resettlement Planning Report prepared by Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd /50/. The compensation for the land and crops is in compliance with the relevant national and provincial policies and satisfies the need of immigration and reproduction, as checked against the Resettlement Planning Report /50/.</p> <p>The summary of comments received as provided in the PDD is confirmed to be</p>	CL-12	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
		complete. CL 12 is closed.		
	Has due account been taken of any stakeholder comments received and is this adequately and clearly described in the PDD?	<p>Yes. According to the survey questionnaire, all surveyed stakeholders were reflected in the summary described in the PDD.</p> <p>However, the information of resettlement and how the comments from the stakeholders were addressed was not indicated in section E of the GSP PDD, please see CL 12.</p> <p>As per the stakeholder's comments, the project owner analyzed the issues which focus on water and soil loss to be caused by the project, aquatic animals, and immigration and compensation. For water and soil loss, the project owner prepared Scheme of Water and Soil Conservation for Sichuan Baishuijiang Duonuo Hydropower Project which has already been approved by Water Resources Bureau of Sichuan. As for the impact on aquatic animals, project owner also takes measures including releasing an ecological flow downstream of the dam to sustain the aquatic ecosystem, adjusting the ecological flow release scheme according to the breeding habits of the fish species and releasing more flow during the breeding season, and establishing a reproduction centre for the protected fish species, and release fry (young fish) into the Baishuijiang River. The information above was confirmed by review of EIA /3/. In terms of immigration and compensation, 19 people (4 households) will be resettled in the areas including Batun Village and Xiangzha Village. The compensation for the land and crops is in compliance with the relevant national and provincial policies and satisfies the need of immigration and reproduction, which is confirmed by checking Notice on Recognition of Land Acquisition Standards and the Resettlement Plan of for the Duonuo Hydropower Plant Construction, issued by The People's Government of the Jiuzhaigou County /61/.</p> <p>CL 12 is closed.</p>	CL 12-	OK

Conclusion

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

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

9.3 Environmental Impacts

As per VVM section 10, ERM CVS evaluated whether an analysis of the environmental impacts of the project activity had been conducted in accordance with paragraph 37(c) of the CDM modalities and procedures.

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.3.1	Confirm whether an analysis of the environmental impacts of the project activity has been conducted, including transboundary impacts, and if those impacts are considered significant by the PPs or Host Party?	<p>Yes. An analysis of the environmental impacts of the proposed project has been conducted by means of perform the Environmental Impact Assessment (EIA) /3/. The EIA form was prepared by Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd, who is a qualified third party/3/. The EIA was approved by Sichuan Provincial Environmental Protection Bureau on 19 July 2006 /3/. No unacceptable adverse environmental impact was identified in the EIA.</p>	OK	OK

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
	Has the PP conducted an environmental impact assessment if required to do so by the host Party, in accordance with the Party's procedures?	Yes. An Environmental Impact Assessment (EIA) Report has been performed according to China requirements/3/. The EIA report was conducted by Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd in May 2006 /3/, and the document has been reviewed by ERM CVS. The EIA was approved, as per host country regulations, by the Bureau on 19 July 2006 /3/.	OK	OK

Conclusion

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

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

It was confirmed that no environmental impact assessment is required by the host Party.

9.4 Public funding

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

	Question	Validation findings (including justification and substantiation of information, data and evidence)	Draft OK/ CAR/CL	Final OK/ Not OK
9.4.1	If the project involves public funding from an Annex 1 country, have the annex 1 parties involved provided an affirmation that such funding does not result in a diversion of official development assistance?	Not applicable. The project will be financed by the project owner and local bank /22/. No public funding will be used for the project activity according to the interview with the project developer and the financial analysis in the PDR and its approval.	N/A	N/A
	Is the information provided on public funding (PDD, Annex 2) provided in compliance with the actual situation or planning as available by the PPs?	Not applicable.	N/A	N/A

Conclusion

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

Appendix A: Documents and Interviewees

A.1 DOCUMENT LIST

Reference number	Date	Document Title and version number (if applicable)
/1/	09 April 2012 14 September 2012 14 December 2012	Project Design Document for the 'Sichuan Baishuijiang Duonuo Hydropower Project', prepared by Marukyu Shanghai Environment Co., Ltd. , version 01 (for GSP) , version 02 and version 02.1
/2/	March 2006 01 August 2006	Preliminary Design Report(PDR) for the 'Sichuan Baishuijiang Duonuo Hydropower Project' by Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd Project approval for the project 'Sichuan Baishuijiang Duonuo Hydropower Project' issued by Sichuan Provincial Development and Reform Commission
/3/	May 2006 19 July 2006	Environmental Impact Assessment for the Project 'Sichuan Baishuijiang Duonuo Hydropower Project' by Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd EIA approval for the Project 'Sichuan Baishuijiang Duonuo Hydropower Project' issued by Sichuan Provincial Environmental Protection Bureau
/4/	09 April 2012 14 September 2012	IRR calculation spreadsheet prepared by Marukyu Shanghai Environment Co., Ltd. version 01 and version 02
/5/	09 April 2012 04 June 2012 14 December 2012	ER calculation spreadsheet prepared by Marukyu Shanghai Environment Co., Ltd. version 01, version 02 and Version 02.1
/6/	13 July 2012	Host Country Letter of approval for the proposed project issued by China DNA. The project information is available on official website of China DNA: http://cdm.ccchina.gov.cn/web/index.asp
/7/	12 December 2012	Annex-I country Letter of approval for the proposed project issued by U.K DNA.
/8/	25 October 2012	Modalities of Communication for the proposed project.
/9/	25 November 2011	CDM Executive Board: ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.3.0, EB 65, Annex 16. http://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT
/10/	13 September 2012	CDM Executive Board: Tool for the demonstration and assessment of additionality version 06.1.0
/11/	29 September 2011	CDM Executive Board: Tool to calculate the emission factor for an electricity system version 02.2.1
/12/	17 July 2009	CDM Executive Board: Guidelines for the reporting and validation of plant load factors, Version 01, EB 48 Annex 11
/13/	30 July 2010	CDM Executive Board: CDM Validation and Verification Manual, Version 1.2, EB 55
/14/	28 July 2006	CDM Executive Board: CDM PDD Form (CDM PDD), Version 03.0
/15/	02 August 2008	CDM Executive Board: Guidelines for Completing the CDM-PDD and the CDM- NM, version 07
/16/	19 August 2009	CDM Executive Board: Glossary of CDM terms, Version 05.
/17/	03 June 2011	CDM Executive Board: Information note on the highest tariffs applied by the EB in its decisions on registration of projects in the People's Republic of China, version 02.0, EB 61 http://cdm.unfccc.int/Reference/Notes/reg_note07.pdf
/18/	02 August 2008 17 July 2009	CDM Executive Board: Guidelines on the demonstration and assessment of prior consideration of the CDM, Version 01, EB 41 and Version 02, EB 48
/19/	15 July 2011	CDM Executive Board: Guidelines on the assessment of investment analysis, Version 05, EB 62 Annex 05
/20/	2005	CDM Executive Board: The guidance for deviation in use of methodology AM0005 by several project activities in China by EB. http://cdm.unfccc.int/Projects/deviations/87512
/21/	17 June 2003 - 16 June 2053	Business License of Jiuzaiyou Hydropower Development Co.LTD by Aba Autonomous Prefecture Administration of Industry and Commerce
/22/	31 August 2010	Bank Loan Contract with Sichuan Province Branch of China Development Bank
/23/	24 September 2004	The combination of Sichuan Baishuijiang Duonuo Hydropower Project was agreed in principle by Sichuan Provincial Power Grid.
/24/	06 July 2009	Turnkey Construction Contract of Sichuan Baishuijiang Duonuo Hydropower Project, signed between Jiuzaiyou Hydropower Development Co.LTD and Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd
/25/	28 July 2010	Equipment (including the hydro turbines, generators and the accessories) Purchase Contract signed between Jiuzaiyou Hydropower Development Co.LTD and Hangzhou Resource Power Equipment Co., Ltd.
/26/	08 May 2012	Technical data for turbine and generator, issued by Hangzhou Resource Power Equipment Co., Ltd.
/27/	03 September 2009	Construction approval issued by Southern China Water Conservancy & Hydropower Engineering Consulting Company.
/28/	14 March 2011	Intention letter of the project CERs sales and purchase was signed between the Jiuzaiyou Hydropower Development Co.LTD and J-TEC Co.,Ltd
/29/	08 May 2012	Summary of resettlement compensation & land acquisition contract, issued by Baishui River Duonuo Hydropower Station Resettlement Comprehensive Supervision Department of Changjiang Water Resources Commission Supervision Center.
/30/	21 July 2006	Board meeting minute of Jiuzaiyou Hydropower Development Co.LTD for the pending of the project's implementation due to its financial barriers and the considering the CDM.

Reference number	Date	Document Title and version number (if applicable)
/31/	04 June 2007	Board meeting minute of Jiuzhaigou Hydropower Development Co.LTD for deciding the investment of Sichuan Baishuijiang Duonuo Hydropower Project and the application for the CDM.
/32/	02 November 2010	EB Notification
/33/	02 March 2009	Prior consideration form sent to NDRC.
/34/	07 March 2012	Emission Reduction Purchase Agreement (ERPA) signed between Jiuzhaigou Hydropower Development Co.LTD and Deutsche Bank AG, London Branch.
/35/	EIA period	83 stakeholder questionnaires
/36/	23 May 2005 17 July 2002	Class A of power industry, construction engineering and hydrological design certificate for Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd, Accreditation No. 220013-sj, issued by the Ministry of Construction of the People's Republic of China. Class A of Environmental Protection and Project Resettlement certificate for Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd, Accreditation No. 3206, issued by the Ministry of Environmental Protection of the People's Republic of China.
/37/	2006-2010	China Electric Power Yearbook
/38/	2008-2010	China Energy Statistical Yearbook
/39/	2006	2006 IPCC Guidelines for National Greenhouse Gas Inventories
/40/	20 October 2011	China NDRC: 2011 Baseline Emission Factors for Regional Power Grids of China, NDRC official website: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2720.pdf http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2719.doc
/41/	6 March 2007	Enterprise Income Tax Law of the People's Republic of China
/42/	2002	Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects
/43/	Issued on 15 December 2008 and in effect since 01 January 2009 Issued on 13 December 1993, revised on 10 November 2008. 19 December 2008	Notice of the Ministry of Finance and the State Administration of Taxation on Several Issues concerning the National Implementation of Value-added Tax Reform, issued by Ministry of Finance & State Administration of Taxation and National Tax Bureau. http://www.gov.cn/gongbao/content/2009/content_1322132.htm Interim Regulation of the People's Republic of China on Value Added Tax issued by the State Council. http://www.gov.cn/zwggk/2008-11/14/content_1149516.htm Notice of the Ministry of Finance and the State Administration of Taxation on Several Issues concerning the National Implementation of Value-added Tax Reform, CAISHUI [2008] No.170 http://www.chinatax.gov.cn/n8136506/n8136593/n8137537/n8138502/8745403.html
/44/	6 December 2007 and valid since 1 January 2008.	Implementation Rules for Law of the People's Republic of China on Enterprise Income Tax, Promulgated by Decree No. 512 of the State Council of the People's Republic of China
/45/	1985	Interim Regulations on City Maintenance and Construction Tax of the People's Republic of China.
/46/	20 August 2005	Decision on the revision of the "Provisional Regulations of Levying Education Surtax", issued by State Council
/47/	28 February 2011	2010 national economic and social development statistical bulletin prepared by National Bureau of Statistics of China
/48/	11 April 2002	Approval and implementation of Power industry system reform in China
/49/	2006-2010	China Hydro Resources Year Book
/50/	December 2006	Resettlement Planning Report, prepared by Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd
/51/	2001	Notice on Tax Preference Policy Issues concerning the Western Development Strategy (promulgated in Document [2001] No. 202 of the Ministry of Finance on Dec. 30, 2001)
/52/	2000	Management Regulations for Power Metered Device Technology" (DL/T448-2000)
/53/	09 May 2012	Notification on the geographical coordinates of Sichuan Province Baishui River Duonuo Hydropower Station, issued by Environmental Supervision Department of Duonuo Hydropower Station.
/54/	14 June 1994	Interim Rules on Financial Assessment of Hydropower Projects, issued by the Ministry of Electricity and Ministry of Water Resource
/55/	17 May 2006	Opinion on Improving the Supporting Policy of Post Large-Medium Reservoir issued by the National Development and Reform Commission, GUOFA [2006] No.17
/56/	27 July 2011	Notice on Taxation Policy Issues concerning the In-depth Implementation of the Western Development Strategy, [2011] No. 58 of the Ministry of Finance
/57/	02 July 2008	Notification on Forwarding the Notification of Raising the Tariff of CCPG by National Development and Reform Commission, CHUANJIAFA [2008] 127
/58/	-	Cross-check data of financial input values of Similar Registered CDM Projects in Sichuan Province. Refer to details as A.2 below.
/59/	18 September 2012	Confirmation Letter on the Parameters of Sichuan Baishuijiang Duonuo Hydropower Project, issued by Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd
/60/	2003-2011	Yearbook of China Water Resources, published by China Water &Power Press
/61/	15 March 2006	The People's Government of the Jiuzhaigou County Notice on Recognition of Land Acquisition Standards and the Resettlement Plan of for the Duonuo Hydropower Plant Construction, Jiuzhaigou Fu Han [2006] No.9,
/62/	2010	Average wage of staff and workers and related indices http://www.sc.stats.gov.cn/sctj/Default.htm?status=Main&menu=5&sub=5,false

Reference number	Date	Document Title and version number (if applicable)
/63/	2009-2012	Supplementary contracts signed in 2009-2012
/64/	-	Historical bank loan interest published by Bank of China
/65/	October 2012	Construction progress report issued by construction department of Chengdu Hydroelectric Investigation & Design Institute of Hydrochina Investment Co., Ltd

A.2 Similar Registered CDM Projects in Sichuan Province

The projects listed below were used for the cross-check of financial input values (reference /58/)

UNFCCC Ref.	Project Name	Installed Capacity (MW)	Total static investment (million CNY)	Unit investment cost (CNY/kW)	Plant Load Factor (%)	Annual operating cost (million CNY)	Unit O&M Costs (million CNY/MW)	Annual O&M cost/ Total investment (%)	Internal electricity use rate
1432	Ganluo Kaijianqiao Hydropower Project, P.R.China	52.5	308.99	5886	55.7%	6.66	0.1269	2.16%	-
1943	Sichuan Greenleaf (Lvye) 60MW Hydropower Project	60	289.68	4828	46.1%	8.16	0.1360	2.82%	-
1987	Sichuan Pingwu Xiannvbao Hydropower Station	76	570.46	7506	57.1%	13.21	0.1738	2.32%	-
1996	Sichuan Balangkou 96MW Hydropower Project	96	572.89	5968	42.8%	13.61	0.1418	2.38%	-
2009	Sichuan Jiajiang Qianfoyan Hydro Project	102	741.68	7271	56.6%	18.87	0.1850	2.54%	-
2037	Yangliutan Hydro Power Project	54	398.14	7373	52.4%	7.40	0.1370	1.86%	-
2105	Sichuan Erdaoqiao Hydropower Project	55	342.10	6220	50.3%	9.03	0.1642	2.64%	-
2107	Sichuan Baihuatan 120MW Hydropower Project	120	866.20	7218	50.5%	21.66	0.1805	2.50%	-
2155	Sichuan Baishuijiang Shuanghe Hydro Power Project	81	624.07	7705	49.5%	13.32	0.1644	2.13%	0.5%
2162	Yidaoqiao Hydropower Project in Tiechang River, Jiulong County, Sichuan Province	80	455.12	5689	47.0%	17.32	0.2165	3.81%	-
2197	Sichuan Ya'an Shaping Hydropower Station Project	56	432.04	7715	36.4%	8.18	0.1461	1.89%	-
2539	Sichuan Jinxi Hydropower Project	150	1388.72	9258	54.1%	24.82	0.1655	1.79%	0.5%
2590	Sichuan Xiaolongmen Hydropower Project	52	511.38	9834	54.8%	12.05	0.2317	2.36%	0.5%
2702	China Sichuan Province Liuping Hydropower Project	120	1157.01	9642	50.5%	22.99	0.1915	1.99%	-
2858	Sichuan Kangding Huashangou 72MW Hydropower Project	72	679.04	9431	41.4%	13.83	0.1921	2.04%	-
3030	China Sichuan Province Se'ergu Hydropower Project	150	1330.96	8873	46.1%	25.29	0.1686	1.90%	-
3039	Sichuan Baishuijiang	102	825.31	8091	46.8%	16.26	0.1594	1.97%	0.5%

UNFCCC Ref.	Project Name	Installed Capacity (MW)	Total static investment (million CNY)	Unit investment cost (CNY/kW)	Plant Load Factor (%)	Annual operating cost (million CNY)	Unit O&M Costs (million CNY/MW)	Annual O&M cost/ Total investment (%)	Internal electricity use rate
	Qinglong Hydropower Project								
3041	Sichuan Jialingjiang River Shaxi Hydropower Project	87	985.96	11333	49.9%	17.31	0.1990	1.76%	0.3%
3096	Sichuan Mabian River Zhouba Hydropower Station	102	674.81	6616	42.7%	15.54	0.1524	2.30%	0.3%
3597	Sichuan Jialingjiang River Cangxi Hydropower Project	66	668.99	10136	44.1%	12.93	0.1959	1.93%	0.3%
3601	Sichuan Jialingjiang River Fengyi Hydropower Project	84	1096.08	13049	52.5%	24.23	0.2885	2.21%	0.3%
3609	Sichuan Jialingjiang Xinzhen Hydropower Project	108	1018.18	9428	53.7%	25.26	0.2339	2.48%	0.3%
3741	Sichuan Dechang Xinma Hydropower Project	120	1087.66	9064	54.6%	29.46	0.2455	2.71%	-
4570	Sichuan Yanyuan Woluoqiao Hydropower Station Project	100	951.71	9517	51.8%	20.63	0.2063	2.17%	-
4609	Sichuan Shimian Songlinhe Hongyi Hydropower Project	80	771.15	9639	56.7%	14.27	0.1784	1.85%	-
4686	Sichuan Zhaojue Subagu 52MW Hydropower Project	52	421.14	8099	44.4%	9.88	0.1900	2.35%	0.5%
4724	Sichuan Lingguan 76MW Hydropower Project	76	606.97	7986	59.9%	16.41	0.2160	2.70%	-
4729	Sichuan Ganzi Jiulong Wuyiqiao Hydropower Project	132	1199.29	9086	46.3%	21.09	0.1597	1.76%	-
4779	Sichuan Muli Ninglang Hydropower Station Project	114	968.50	8496	47.8%	25.43	0.2231	2.63%	0.3%
4901	Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project	100	877.79	8778	50.9%	21.39	0.2139	2.44%	0.5%
5539	Xieka Hydropower Project in Jiulong County	135	1499.48	11107	42.4%	32.20	0.2385	2.15%	0.3%
5667	Sichuan Langzhong City Baoning Hydropower Project	120	1066.73	8889	53.6%	21.26	0.1772	1.99%	0.5%
6059	Yangang Hydropower Station Project in Muli County	120	1055.45	8795	46.6%	28.30	0.2358	2.68%	0.5%
6153	Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Luogu Hydroelectric Project	110	1332.25	12111	48.4%	34.50	0.3136	2.59%	0.2%
6163	Sichuan Jiulong County Taka Hydropower Project	110	765.71	6961	46.7%	21.92	0.1993	2.86%	0.5%

UNFCCC Ref.	Project Name	Installed Capacity (MW)	Total static investment (million CNY)	Unit investment cost (CNY/kW)	Plant Load Factor (%)	Annual operating cost (million CNY)	Unit O&M Costs (million CNY/MW)	Annual O&M cost/ Total investment (%)	Internal electricity use rate
6204	Sichuan Province Yingxiongpo 56MW Hydropower Project	56	551.15	9842	51.0%	9.46	0.1689	1.72%	0.5%
6249	Sichuan Wusheng County Xiuguan Hydropower Project	108	930.00	8611	49.1%	21.16	0.1959	2.28%	1.0%
6347	Sichuan Ya'an Shuijinguan Hydropower Station Project	63	527.11	8367	53.8%	12.33	0.1957	2.34%	-
6378	Sichuan Huadian Xixi River Hydro-electricity Development Co.,Ltd. Lianbu Hydroelectric Project	130	1090.59	8389	49.8%	25.01	0.1924	2.29%	-
Maximum		150	1499.48	13049	59.9%	34.50	0.3136	3.81%	1.0%
Average		94	811	8534	49.6%	18.27	0.1923	2.29%	0.4%
Minimum		52	290	4828	36.4%	6.66	0.1269	1.72%	0.2%
The proposed project		100	1053.86	10539	45.1%	19.11	0.1911	1.81%	0.5%

Note: the similar projects are selected as all hydropower projects with the installed capacity of 50-150 MW that registered in Sichuan Province public available in 1) UNFCCC website and 2) CDM Pipeline <http://cdmpipeline.org/>

A.3 INTERVIEWS

Reference	Name	Title & Organisation	Main topics discussed
IV 1	Liu Yan	Jiuzhaigou Hydropower Development Co.LTD	<ul style="list-style-type: none"> ➤ Project background information. ➤ CDM considerations ➤ Project financing ➤ Project technology, operation, maintenance. ➤ Environmental Impact ➤ Monitoring and management plan ➤ Project approval status ➤ Stakeholder consultation process
IV 2	Yan Li		
IV 3	Mu Hong		
IV 4	Li Shaoqun	Jiuzhaigou County Agriculture and Water Resource Bureau	<ul style="list-style-type: none"> ➤ Project approval status (incl. EIA approval, CDM project approval status) ➤ Environmental Impact
IV 5	Deng Yongrong	Jiuzhaigou County Environment Protection Bureau	
IV 6	Huang Meiling	Marukyu Shanghai Environment Co., Ltd.	<ul style="list-style-type: none"> ➤ Applicability of selected methodology. ➤ Baseline determination. ➤ Additionality ➤ Emission reductions calculation. ➤ Monitoring plan ➤ Stakeholder consultation process ➤ Environmental Impact ➤ Society and Sustainable Development
IV 7	Jiang Shu		
IV 8	Li Wenli	Resettlement Bureau of Jiuzhaigou County	<ul style="list-style-type: none"> ➤ Stakeholder consultation process ➤ Environmental Impact
IV 9	Wang Guobin	Dalu Township Government	
IV 10	Ge Feng	Officer of Dalu Township	
IV 11	Ge Ta	Villager of Dalu Township	
IV 12	Ru Ta	Villager of Dalu Township	

Appendix B: Remediation Form

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

Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
CAR 1 The Letters of Approval from host party and Annex I party and the Modalities of Communication have not been provided yet.	5.3.1 5.3.2 5.3.3 5.3.4 5.4.1 9.1.1	The Letter of Approval from Chinese DNA (host party) was issued on 13 July 2012. The Letter of Approval from UK DNA (Annex I party) was issued on 12 December 2012. The Modalities of Communication between Jiuzhaigou Hydropower Development Co.LTD and Deutsche Bank AG, London Branch was signed on 25 October 2012. All above documents have been provided to DOE.	The LoAs from both PPs and the MoC have been provided to ERM CVS, the information including the PP name, project title etc. in the final version of the PDD is confirmed consistent with the LoAs /6//7/ and MoC/8/. CAR 1 is closed.
CAR 2 1) The amount of annual output to the grid in the IRR calculation spreadsheet was 404,400MWh, not consistent with the value of 404,368 in the GSP PDD, nor consistent with the value of 392,727 MWh in PDR. 2) There was an error in the calculation of interest payable in year 4 (row 83 of the 'Project IRR' tab), please amend 3) Depreciation was not correctly calculated and is not consistent with the cost of the assets and the residual value. Please amend the analysis as appropriate	7.3.5 7.3.6 7.3.8 7.3.10 7.3.11 7.3.14	(1) The annual output to the grid has been corrected to 392,727MWh in PDD and financial analysis calculation spreadsheet is consistent with the PDR and PDR approval. (2) The error in the calculation of interest payable in year 4 has been amended. (3) The analysis has been amended and the depreciation is calculated in line with the cost of the assets and the residual value.	ERM CVS confirms that: 1) The annual output to the grid in the revised PDD /1/, ER calculator/5/ and IRR calculator/4/ has been corrected to 392,727MWh, which is consistent with the PDR and PDR approval /2/. 2) The error in the calculation of interest payable in year 4 has been amended in the revised PDD and IRR calculator. 3) Depreciation is correctly calculated and is consistent with the cost of the assets and the residual value in the revised PDD and IRR calculator. CAR 2 is closed.
CAR 3 Common practice analysis in the section B.5 of PDD was not fully consistent with "Tool for the demonstration and assessment of additionality (version 06.1.0)", please make correction.	7.5.3	Common practice analysis has been updated in accordance with "Tool for the demonstration and assessment of additionality(version 06.1.0)".	ERM CVS has checked the revised PDD /1/ and confirms that the Common practice analysis has been corrected in accordance with "Tool for the demonstration and assessment of additionality(version 06.1.0)". CAR 3 Common practice analysis in the section B.5 of PDD was not fully consistent with "Tool for the demonstration and assessment of additionality (version 06.1.0)", please make correction. CAR 3 is closed.
CAR 4 The parameter $EG_{facility,y}$ is required	8.1.1	$EG_{facility,y}$ is indicated and quantity of net electricity generation	ERM CVS has checked the revised PDD/2/, and confirms that both the

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Corrective Action Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
to be monitored as per the applied methodology ACM0002. However, only electricity supplied to the grid was monitored in the Section B.7.1 of PDD.	8.2.2	supplied by the project will be monitored in the section B.7.1 of PDD. The actual value of net electricity generation supplied by the project will be the difference between power exported to grid and imported from grid. In addition, parameters $EG_{\text{facility to CCPG},y}$ and $EG_{\text{CCPG to facility},y}$ have been added in Section B.7.1 of the PDD.	power exported to the grid ($EG_{\text{facility to CCPG},y}$) and imported from the grid ($EG_{\text{CCPG to facility},y}$) by the project are parameters to be monitored in section B.7 of the revised PDD/1/. The parameters will be directly measured by the metering devices installed at the project site. The recording frequency will be continuously measured and at least monthly recorded, and aggregated. The net electricity generation supplied to the grid ($EG_{\text{facility},y}$) is the difference between power exported to grid and imported from grid. ERM CVS confirms that the data and parameters monitored and the description of the monitoring plan are in line with the methodology ACM0002 /9/. CAR 4 is closed.

Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
CL 1 The geographical coordinates of the dam and the powerhouse of the project were not indicated in the PDD, which is insufficient to identify the location of the proposed project.	5.6.2	The geographical coordinate of the dam is 103.7808° E and 33.6131° N and the powerhouse is 103.9206° E and 33.5603° N. The description was revised in PDD A.4.1.4.	The geographical coordinates of the dam and the power house are correctly indicated in the revised PDD/1/. The information is cross checked with the <i>Notification on the geographical coordinates of Sichuan Province Baishui River Duonuo Hydropower Station /53/</i> , issued by Environmental Supervision Department of Duonuo Hydropower Station. CL 1 is closed.
CL 2 The PDD did not state the operation start date. Please estimate a project operational start date in the PDD.	5.6.4	The project is estimated to be put into operation in December 2012 in line with the estimation in the construction progress report from the construction company.	ERM CVS has checked the construction contract /24/ and construction progress report /65/, and confirmed that the estimated operation start date of the turbines will be in October 2012, which has been added in section B.5 of the revised PDD. CL 2 is closed.
CL 3 The methodological "Tool for the demonstration and assessment of additionality" was not correctly quoted. Please correctly quote the tools throughout PDD.	6.1.1	All typo errors in the PDD regarding to Tool for the demonstration and assessment of additionality are corrected.	The methodological "Tool for the demonstration and assessment of additionality" is correctly quoted in the revised PDD2. CL 3 is closed.
CL 4 The figure B.3 Diagram of project boundary in section B.3 was not fully consistent with the "Guidelines for Completing the CDM-PDD and the CDM-NM".	6.3.2	The figure B.3 Diagram of project boundary in the PDD has been revised according to Guidelines for Completing the CDM-PDD and the CDM-NM.	ERM CVS has checked the revised PDD /1/ and confirms that the figure B.3 Diagram of project boundary in section B.3 is consistent with the "Guidelines for Completing the CDM-PDD and the CDM-NM". CL 4 is closed.
CL 5 Parameters of $F_{i,j,y}$, $FC_{i,y}$, $NCV_{i,y}$, $EF_{CO2,i,y}$, Auxiliary power ration, $EF_{\text{Coal},Adv,y}$, $EF_{\text{Oil},Adv,y}$, $EF_{\text{Gas},Adv,y}$, $CAP_{\text{Total},y}$, $CAP_{\text{Thermal},y}$, $Cap_{BL,ABL}$, which are required by the methodology and tools were not correctly	6.5.1	The description of parameters in section B.6.2 has been revised in accordance with the requirements of methodology and tools.	ERM CVS have reviewed therevised PDD /1/ and confirm that the description of all the parameters required or related to the methodology in section B.6.2 has been revised in accordance with the ACM0002 /9/ by checking the revised PDD against ACM0002 /9/ and 2011 Baseline Emission Factors for Regional Power Grids of China published by China

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Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion
described in the PDD. Please correctly justify all the data and parameters required by the methodology and tools in section B.6.2.			NDRC /40/. CL 5 is closed.
CL 6 Some information of project and CDM activities were missing or not correctly stated as listed below: 1. the date when construction works started was not indicated table B.5-1; 2. the design institute of the PDR was not indicated throughout PDD; 3. the date of EIA approval in PDD was not consistent with the date in EIA approval; 4. the date of equipment purchase contract in PDD was not consistent with the date in the equipment purchase contract; 5. the date of board meeting that held for pending of the project's implementation due to its financial barriers and the considering the CDM was not indicated in table B.5-1. Please provide full exact information for the implementation timeline.	7.1.1	1. According to the Order on Start-up of Construction issued by the supervisor of the project construction works, the construction works were started on 3 September 2009. The date has been indicated in table B.5-1. 2. The design institute of PDR is Chengdu Hydroelectric Investigation & Design Institute which is added throughout the PDD. 3. The date of EIA approval was corrected to 19 July 2006 in the PDD in accordance with the EIA Approval. 4. The date of equipment purchase contract was corrected to 28 July 2010 in the PDD. 5. The dated of board meeting is 21 July 2006 which was held for pending of the project's implementation due to its financial barriers and the considering the CDM.	ERM CVS confirm that the information of project and CDM activities are correctly stated as listed: 1) The construction start date was 03 September 2009, which is indicated in the Construction approval issued by Southern China Water Conservancy & Hydropower Engineering Consulting Company /27/ as reviewed by ERM CVS. The construction start date has been added in table B.5-1 of the revised PDD /1/; 2) ERM CVS have reviewed the PDR and PDR approval /2/, confirm that the design institute of PDR is Chengdu Hydroelectric Investigation & Design Institute which is added in the revised PDD /1/; 3) ERM CVS have reviewed the EIA approval /3/ and the revised PDD /1/, confirm the date is correctly stated as 19 July 2006 in the revised PDD; 4) ERM CVS have reviewed the equipment purchase contract /25/ and the revised PDD /1/, confirm the date is correctly stated as 28 July 2010 in the revised PDD; 5) ERM CVS have reviewed the Board meeting minute /30/ and the revised PDD /1/, confirm the date is correctly stated as 21 July 2006 in the revised PDD. Therefore, CL 6 is closed.
CL 7 The PPs rely on values from a Preliminary Design Report (PDR) that is approved by the appropriate national authorities. The PDR was completed in March 2006 and approved in August 2006, while the investment decision was made in July 2009. As such it is likely that the input values would have materially changed by the time the investment decision was made. Please provide evidences for input values which are valid at the time of the investment decision	7.3.5	Investment: By summarizing the actually signed contracts, the investment of the project has already reached 112% against the budget estimated in the PDR. Till now the project is still under construction. Therefore, it is conservative by using the same investment value estimated in the 2006 PDR for the calculation of IRR in 2009. O&M costs: By comparing the each parameter, only the working salary was increased by 30% in 2009 from that of 2006. So it is conservative by using the 2006 value in the calculation of the 2009 IRR. Taxes: (1) The rates of City construction and maintenance tax (5%), Educational surcharge (3%), preferential Income tax (15%) for the enterprises located in western region of China were the same in 2006 and 2009. (2) Considering the Notice of	The PP relied on values from a Preliminary Design Report (PDR) that is approved by the appropriate national authority /2/ on 01 August 2006. Although the period of time between the of the finalisation of PDR [March 2006] and the project start date [6 July 2009] exceeds three years, ERM CVS has ensured that the PDR has been the basis of the decision to proceed with the investment in the project by actions below: 1. ERM CVS has reviewed the confirmation letter /59/ issued by design institute of PDR clarifies that the main technical parameters were still valid at the time of project start, and no revision of the PDR is need or has been made thereafter. Therefore, ERM confirms that the PDR was the only basis at the time of investment decision; 2. ERM CVS also checked the investment planning in PDR against the actual investment happened at the time of validation by reviewing the contracts signed as below:

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Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion																																			
		<p>the Ministry of Finance and the State Administration of Taxation on Several Issues concerning the National Implementation of Value-added Tax Reform in effective from January 1, 2009, all such as VAT paid on the purchase of fixed assets (equipment) can be offset from future sales VAT. Since the budget for equipment procurement stated in the approved PDR is 97,978,500 CNY, the offset sales VAT is calculated to be 14,236,193 CNY $(=97,978,500/(1+17\%)*17\%)$ as the source of cash inflow in Cash Flow Sheet and being excluded from the depreciation of fixed assets in IRR calculation.</p> <p>Bank loan interest: The long-term (over 5 years) loan interest was decreased to 5.94% in 2009 from 6.39% in 2006, published by The People's Bank of China on December 23, 2008.</p> <p>On the basis of above analysis, the project IRR is 5.49%, still below the benchmark of 8%.</p> <p>In sum, it can be concluded that the input values are still valid and credible at the time of the investment decision.</p>	<p>For total static investment:</p> <table> <tr> <th colspan="2">Item</th><th>Value in the investment planning of PDR (10⁴CNY)</th><th>Value in the contracts (10⁴ CNY)</th></tr> <tr> <td rowspan="6">Part A. Construction Costs</td><td>Construction Works</td><td>48467.62</td><td>66566.33</td></tr> <tr> <td>Electric Equipment and Installation</td><td>10232.07</td><td>11403.88</td></tr> <tr> <td>Structural Equipment and Installation</td><td>4535.76</td><td>5304.13</td></tr> <tr> <td>Temporary Works</td><td>9387.47</td><td>10192.52</td></tr> <tr> <td>Other Costs</td><td>12893.33</td><td>8552.94</td></tr> <tr> <td>Basic Contingency Reserve</td><td>5130.98</td><td>3333.25</td></tr> <tr> <td colspan="2">Static Investment of Part A</td><td>90647.23</td><td>105353.05</td></tr> <tr> <td colspan="2">Part B. Compensation and Environmental Protection Fee caused by Reservoir Inundation</td><td>13642.88</td><td>12655.93</td></tr> <tr> <td colspan="2">Total Static Investment</td><td>105386.46</td><td>118008.98</td></tr> </table> <p>For O&M cost: the O&M could be breakdown as table below:</p>	Item		Value in the investment planning of PDR (10 ⁴ CNY)	Value in the contracts (10 ⁴ CNY)	Part A. Construction Costs	Construction Works	48467.62	66566.33	Electric Equipment and Installation	10232.07	11403.88	Structural Equipment and Installation	4535.76	5304.13	Temporary Works	9387.47	10192.52	Other Costs	12893.33	8552.94	Basic Contingency Reserve	5130.98	3333.25	Static Investment of Part A		90647.23	105353.05	Part B. Compensation and Environmental Protection Fee caused by Reservoir Inundation		13642.88	12655.93	Total Static Investment		105386.46	118008.98
Item		Value in the investment planning of PDR (10 ⁴ CNY)	Value in the contracts (10 ⁴ CNY)																																			
Part A. Construction Costs	Construction Works	48467.62	66566.33																																			
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	Other Costs	12893.33	8552.94																																			
	Basic Contingency Reserve	5130.98	3333.25																																			
Static Investment of Part A		90647.23	105353.05																																			
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Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion																			
			<table><tr><th>Item</th><th>PDR value</th><th>Value in 2009</th><th>Remark</th></tr><tr><td>Repair costs</td><td>1.0% of the fixed assets value</td><td>1.0% the fixed assets value</td><td>Not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.</td></tr><tr><td>Staff salary</td><td>18,000 CNY/year</td><td>23,191 CNY/year</td><td>According to Sichuan provincial statistics/62/, the average working salary was 23,191CNY in 2009, increased by 30% from 17,852CNY in 2006. Therefore, it is conservative by using the 2006 value in the calculation of the 2009 IRR.</td></tr><tr><td>Labor welfare</td><td>Equal to salary* (14%+17%+10%)</td><td>Equal to salary* (14%+17%+10%)</td><td>According to Notice on Interim Rules on Economic Assessment of Electrical Engineering Retrofit</td></tr></table>				Item	PDR value	Value in 2009	Remark	Repair costs	1.0% of the fixed assets value	1.0% the fixed assets value	Not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.	Staff salary	18,000 CNY/year	23,191 CNY/year	According to Sichuan provincial statistics/62/, the average working salary was 23,191CNY in 2009, increased by 30% from 17,852CNY in 2006. Therefore, it is conservative by using the 2006 value in the calculation of the 2009 IRR.	Labor welfare	Equal to salary* (14%+17%+10%)	Equal to salary* (14%+17%+10%)	According to Notice on Interim Rules on Economic Assessment of Electrical Engineering Retrofit
Item	PDR value	Value in 2009	Remark																			
Repair costs	1.0% of the fixed assets value	1.0% the fixed assets value	Not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.																			
Staff salary	18,000 CNY/year	23,191 CNY/year	According to Sichuan provincial statistics/62/, the average working salary was 23,191CNY in 2009, increased by 30% from 17,852CNY in 2006. Therefore, it is conservative by using the 2006 value in the calculation of the 2009 IRR.																			
Labor welfare	Equal to salary* (14%+17%+10%)	Equal to salary* (14%+17%+10%)	According to Notice on Interim Rules on Economic Assessment of Electrical Engineering Retrofit																			

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Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion			
						Projects/42/, which was still valid in 2009, the Labor welfare was calculated based on the rates of other welfare (14%), labor insurance (17%) and housing provident fund (10%).
			Material costs	5 CNY/kW	5 CNY/kW	Not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.
			Maintenance	0.001 CNY/kWh	0.001 CNY/kWh	Not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.
			Fixed assets premium	0.25% of fixed assets value	0.25% of fixed assets value	The rate of fixed assets premium of 0.25% is reasonable based on ERM CVS's

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Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion			
						local adn, sectoral and financial knowledge This is not changed in 2009.
			Water resource fee	0.0025 CNY/kWh	0.0025 CNY/kWh	Not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.
			Resettlement compensation	600 CNY/year/capita	600 CNY/year/capita	Not changed as per Opinion on Improving the Supporting Policy of Post Large-Medium Reservoir/55/, which was still valid in 2009.
			Other costs	24 CNY/kW	24 CNY/kW	Not changed as per Interim Rules on Financial Assessment of Hydropower Projects/54/, which was still valid in 2009.
			For other parameters:			

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Clarification Requests	Ref. to Question Number	Summary of PPs' response	Final conclusion			
			Parameter	Value in PDR	Value in 2009	Remark
			Installed capacity	100 MW	100 MW	The installed capacity has not changed based on site interview IV1-IV12 and confirmation letter from the design institute of PDR/59/.
			Annual output to the grid	392,727 MWh	392,727 MWh	The annual output of the project was determined by the 40 years (1966~2006) water resource data provided by local hydrological station as indicated in the PDR /2/ and not changed. Please refer to section 7.3.6 below.
			Tariff	0.246 CNY/kWh (without VAT)	0.246 CNY/kWh (without VAT)	According to the Notification on Forwarding the Notification of Raising the Tariff of CCPG by National Development and Reform Commission/57/, the tariff in Sichuan has been maintained at the 0.246 CNY/kWh

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						(without VAT) in 2009.
			Value Added Tax (VAT)	17%	17%	Not changed according to <i>Notice of policies regarding the value added tax on comprehensive utilization of resources and other products/43/</i> , which was still valid in 2009.
			City construction and maintenance tax	5%	5%	Not changed according to Interim Regulations on City Maintenance and Construction Tax of the People's Republic of China/45/, which was still valid in 2009.
			Educational surcharge	3%	3%	Not changed according to Provisional Regulations of Levying Education Surtax /46/, which was still valid in 2009.
			Income tax	15%	15%	Not changed according to Notice on Tax Preference Policy Issues

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						concerning the Western Development Strategy /51/, which was still valid in 2009.
			Depreciation rate	4%	4%	The depreciation rate is calculated based on depreciation period of 25 years, which is in line with Guidelines on the assessment of investment analysis/19/, and ERM CVS's local and sectoral knowledge.
			Residual rate	0	0	Not changed. According to Implementation Rules for Law of the People's Republic of China on Enterprise Income Tax/44/, which was still valid in 2009, that an enterprise could determine reasonable residual rate of fixed assets based on the nature and use of fixed assets of the enterprise.

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			Project operational lifetime	30 years	30 years	Not changed according to confirmation letter from the design institute of PDR/59/.
			<p>It can be concluded that the total static investment has increased 11% than budgeted in the investment planning of the PDR; the O&M also rose with the increase of repair costs, salary and labour welfare and fixed assets premium. The other parameters including Installed capacity, Annual output, Tariff, Value Added Tax (VAT), City construction and maintenance tax, Educational surcharge, Income tax, Depreciation rate, Residual rate, and Project operational lifetime, have not changed as analysed above. Hence, it is conservative to conduct financial analysis based on the parameters in PDR.</p> <p>Therefore, ERM CVS has ensured that it is reasonable and conservative to use the PDR as the basis of the decision to proceed with the investment in the project.</p>			
CL 8 1) Please clarify the reasonability of the input parameters of investment cost and O&M cost in the financial analysis. 2) No residual value was included in the analysis. Please provide evidence to justify this assumption	7.3.7 7.3.11	<p>(1) Please find the provided relevant evidences for the input parameters of investment cost and O&M cost in the financial analysis. All the input parameters were adopted according to the relevant regulations and standards. Furthermore, it is found that the range of unit annual O&M costs of similar registered projects in Sichuan Province (between 50 and 150MW) is between 0.1269 and 0.3136 million CNY/MW, the value of unit O&M costs of proposed project activity (0.1911 million CNY/MW) is within the range and reasonable. The range of unit investment costs of similar registered projects in Sichuan Province (between 50 and 150MW) is between 4.83 and 13.05 million CNY/MW, the value of unit investment costs of proposed project activity (10.54 million CNY/MW) is within the range and reasonable.</p> <p>(2) No residual value of fixed assets is included in the analysis. The accounting of residual value has been checked against the relevant host country regulations and guidelines which further elaborate and explain standard accounting, which</p>	<p>1)</p> <p>Investment cost:</p> <p>The investment cost is cross checked against turnkey construction contract /24/, equipment contract, /25/, and summary of resettlement compensation& land acquisition contract./29/ The total amount of contracted investment signed reaches CNY 1,180,089,837, accounts for 112% of total fixed investment in the PDD. Therefore, the investment cost of the proposed project is considered reasonable.</p> <p>The static total investment of the project is 1,053,864,600 CNY, and the unit investment of the proposed project calculates as 10,539CNY/kW. This unit investment of the proposed project is which is within the range of 4,828CNY/kW (Ref.1943) and 13,049 CNY/kW (Ref.3601) amongst registered similar projects /58/ in Sichuan province, which is considered</p>			

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		<p>recommend that normally a residual value of between 3% and 5% is applied, but also allow project developers to specify a value of zero if this is considered appropriate for the specific project. Therefore the residual value of zero is also in line with host country regulations. If a 5% residual value is adopted for the proposed project, the IRR is still far below the benchmark of 8%. In sum, this parameter is not considered to have a significant impact on the IRR of the project.</p>	<p>conservative and reasonable based on ERM CVS's local, sectoral and financial knowledge.</p> <p>O&M cost:</p> <p>According to the PDR /2/, the O&M cost comprises of Repair costs, labor costs and pension, material costs, Maintenance, fixed assets premium, Water resource fee, Resettlement compensation and other costs. ERM has checked the Interim Rules on Financial Assessment of Hydropower Projects /54/, Opinion on Improving the Supporting Policy of Post Large-Medium Reservoir /55/ and IRR calculation spreadsheet, confirms that the calculation of the O&M cost is reasonable.</p> <p>The range of unit annual O&M costs of similar registered projects in Sichuan Province (between 50 and 150MW) is between 0.1269 (Ref.1432) and 0.3136 million CNY/MW (Ref.6153), the value of unit O&M costs of proposed project activity (0.1911 million CNY/MW) is within the range. The rate of annual O&M costs/ total static investment of 1.81% which is also within the range of 1.72% (Ref.6204) to 3.81% (Ref.2162) amongst registered similar projects /58/; therefore this is considered conservative and reasonable based on ERM CVS's local, sectoral and financial knowledge.</p> <p>Please find the list of all similar projects used for this cross-check in A.2 in Appendix A.</p> <p>2) No residual value of fixed assets is included in the analysis. The accounting of residual value has been checked against the Implementation Rules for Law of the People's Republic of China on Enterprise Income Tax/44/, which states that an enterprise could determine reasonable residual rate of fixed assets on its own based on the nature and use of fixed assets of the enterprise. Therefore the residual value of zero is also in line with host country regulations. In sum, this parameter is not considered to have a significant impact on the IRR of the project.</p> <p>Therefore, CL 8 is closed.</p>
CL 9 Clarification is requested for: 1) the Income tax is set at 0% in years 4 –	7.3.9	1) According to Notice on Tax Preference Policy Issues concerning the Western Development Strategy (promulgated in	1) ERM CVS has reviewed the Notice on Tax Preference Policy Issues concerning the Western Development Strategy (promulgated in Document

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5, 15% in years thereafter; 2) breakdown the city construction and maintenance tax and educational surcharge in table B.5.-2; 3) The total of the principal payments was not consistent with the value of the loan plus interest accrued during the construction period.	7.3.12	<p>Document [2001] No. 202 of the Ministry of Finance on Dec. 30, 2001), a domestic enterprise whose business dominates in transportation, power generation, hydraulic engineering etc. is permitted to pay no income tax for the first two years since its business start. In addition, the Notice also stipulates that a preferential income tax rate of 15% is set for nationally encouraged projects (incl. hydropower power) located in western region from the year 2001 to 2010. Furthermore, the Notice on Taxation Policy Issues concerning the In-depth Implementation of the Western Development Strategy (promulgated in Document [2011] No. 58 of the Ministry of Finance on Jul. 27, 2011) stipulates this preferential income tax rate of 15% remains valid from January 1, 2011 to Dec. 31, 2020.</p> <p>The proposed project activity is estimated to be put in operation in the 4th construction year. Therefore no income tax is set to be imposed in the 4th and 5th construction years and tax of 15% in years afterwards in accordance with above policies.</p> <p>2) The city construction and maintenance tax and educational surcharge have been separated in table B.5.-2 as well as in IRR calculation spreadsheet.</p> <p>3) The calculation in the IRR spreadsheet has been corrected so that the total principal payment is consistent with the value of loan plus interest accrued during the construction period.</p>	<p>[2001] No. 202 of the Ministry of Finance on Dec. 30, 2001) /51/ and Notice on Taxation Policy Issues concerning the In-depth Implementation of the Western Development Strategy (promulgated in Document [2011] No. 58 of the Ministry of Finance on Jul. 27, 2011)/56/, confirms that the income tax is set at 0% in years 4-5, 15% in years thereafter is in line with current policy of China.</p> <p>2) ERM CVS has reviewed the revised PDD and confirms that the city construction and maintenance tax and educational surcharge are in line with the PDR, Decision on the revision of the "Provisional Regulations of Levying Education Surtax", issued by State Council, and Interim Regulations on City Maintenance and Construction Tax of the People's Republic of China.</p> <p>3) ERM CVS has reviewed the revised IRR spreadsheet, and confirms that the total principal payment is consistent with the value of loan plus interest accrued during the construction period in the revised IRR spreadsheet.</p> <p>CL 9 is closed.</p>
CL 10 Clarification is requested for: 1) source of information of total installed capacity of the hydropower stations used in Table B.5.-5. 2) The annual operating hours of the proposed project is 3,947h, which is much less than other similar projects as listed in Table B.5.-6, and investment of the proposed project is 10,537CNY/KW, which is much higher. Please clarify the reason.	7.5.3	<p>1) Data from the Yearbook of China Water Resources which is an official publication and the information that project owner provided are used to demonstrate the proposed project is not common practice. Please refer to the Yearbook of China Water Resources provided herein and footnotes of the hydropower stations used in Table B.5.-5 of the PDD. Only versions 2003-2011 are sourced and comparable because China's power industry started a reform in 2002 which changed the investment climate greatly.</p> <p>2) The operating hours of the project was determined depending on the historical mean river flow of 17.7 m³/s collected during the</p>	<p>1) ERM CVS has reviewed the revised PDD /1/ and confirms that the source of information of total installed capacity of the hydropower stations used in Table B.5.-5 has been added in the PDD.</p> <p>2) ERM CVS has reviewed the PDR and confirms that the operating hours of the project was determined depending on the historical mean river flow of 17.7 m³/s collected during the past 40 years (1966~2006). The unit investment costs of the projects listed in Table B.5.-6 are less than 10,539CNY/KW of the proposed project activity. This is because the project is a diversion type of hydropower station with a long headrace tunnel about 14.8km and a large reservoir area about 1,760,000m² which is indicated in the PDR /2/. The detailed explanation has been added in the revised PDD.</p>

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		past 40 years (1966~2006). The unit investment costs of the projects listed in Table B.5.-6 are less than 10,539CNY/KW of the proposed project activity. This is because the project is a diversion type of hydropower station with a long headrace tunnel about 14.8km and a large reservoir area about 1,760,000m ² . The detailed explanation has been added in the PDD.	Besides, the unit investment of the proposed project is which is within the range of 5,689CNY/kW (Ref.2162) and 13,049 CNY/kW (Ref.3601) amongst registered similar projects /58/ in Sichuan province, and the rate of annual O&M costs/ total static investment of 1.81% is which is within the range of 1.72% (Ref.6204) to 3.81% (Ref.2162) amongst registered similar projects /58/, which is considered conservative and reasonable based on ERM CVS's local, sectoral and financial knowledge. CL 10 is closed.
CL 11 The location ,accuracy and relevant national standard of calibration of the monitoring equipment were not indicated in the PDD	8.2.3	The meters will be configured to meet the technology requirements of "Management Regulations for Power Metered Device Technology" (DL/T448-2000) and the subsequent industrial standards. These meters installed for power measurement should reach 0.5 or above in accuracy degree. The description is indicated in the PDD.	The accuracy and calibration information has been included in the revised PDD /1/, and is confirmed by ERM CVS to be in line with national standard "Management Regulations for Power Metered Device Technology" (DL/T448-2000) /52 /. CL 11 is closed.
CL 12 Through document review and site interview, 19 people (4 households) will be resettled, but the resettlement information was not indicated in the PDD, Please indicate the resettlement information and clarify how the comments from the stakeholders were addressed in section E of the PDD.	9.2.1	The resettlement information is added in section E.3. of the PDD. As per the stakeholder's comments, the project owner analyzed the issues which focus on water and soil loss to be caused by the project, aquatic animals, and immigration and compensation. For water and soil loss, the project owner prepared Scheme of Water and Soil Conservation for Sichuan Baishuijiang Duonuo Hydropower Project which has already been approved by Water Resources Bureau of Sichuan. As for the impact on aquatic animals, project owner also takes measures including releasing an ecological flow downstream of the dam to sustain the aquatic ecosystem, adjusting the ecological flow release scheme according to the breeding habits of the fish species and releasing more flow during the breeding season, and establishing a reproduction centre for the protected fish species, and release fry (young fish) into the Baishuijiang River. In terms of immigration and compensation, 19 people (4 households) will be resettled in the areas including Batun Village and Xiangzha Village. The compensation for the land and crops is in compliance with the relevant national and provincial policies and	ERM CVS confirm that the resettlement information is added in section E.3. of the revised PDD /1/. 19 people (4 households) will be resettled in the areas including Batun Village and Xiangzha Village, and This information is checked against Resettlement Planning Report /50/. As per the stakeholder's comments, the project owner analyzed the issues which focus on water and soil loss to be caused by the project, aquatic animals, and immigration and compensation. For water and soil loss, the project owner prepared Scheme of Water and Soil Conservation for Sichuan Baishuijiang Duonuo Hydropower Project which has already been approved by Water Resources Bureau of Sichuan. The information related to environmental impact was confirmed by review of EIA /3/. In terms of immigration and compensation, 19 people (4 households) will be resettled in the areas including Batun Village and Xiangzha Village. The compensation for the land and crops is in compliance with the relevant national and provincial policies and satisfies the need of immigration and reproduction, which is confirmed by checking Notice on Recognition of Land Acquisition Standards and the Resettlement Plan of for the Duonuo Hydropower Plant Construction, issued by The People's Government of the Jiuzhaigou County /61/.

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		satisfies the need of immigration and reproduction.	CL 12 is closed.

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Document template history

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