

Validation Report

Report for:
EcoSecurities International Limited
and
**Sichuan Huadian Xixi River Hydro-electricity
Development Co., Ltd**

Validation of CDM project for
**Sichuan Huadian Xixi River Hydro-electricity
Development Co., Ltd. Diluo Hydroelectric
Project**

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1 Executive Summary

Lloyd's Register Quality Assurance Limited has been contracted by EcoSecurities International Limited, representing the project participants (PP), to undertake validation of the proposed project activity Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project. The validation has been performed through a process of document review based on the project design document, Version 1 dated 03/03/2010 initially submitted for validation and the subsequent revisions, follow-up interviews with the stakeholders, resolution of outstanding issues and issuance of the validation report.

The proposed Project is a grid-connected hydropower plant with a newly-built dam in Sichuan Province in People's Republic of China. Total installed capacity is 100 MW, consisting of two 50 MW turbine generator units. The predicted electricity supply of 397,013 MWh per year will be sold to Central China Power Grid (hereafter referred to as CCPG). Electricity delivered by the project activity to the CCPG would have otherwise been generated in grid-connected fossil fuel based power plants resulting in Green House Gas (GHG) emissions in the absence of the project activity. The annual emission reductions of the project are estimated as 337,572 tCO₂e.

The fulfilment of the requirements as set forth in Article 12 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), the modalities and procedures for a CDM (CDM M&P) and relevant decisions of the Conference of the Parties, serving as meeting of the Parties to the Kyoto Protocol (COP/MOP) and the Executive Board of the CDM (CDM-EB) have been evaluated and conformance to the validation requirements were confirmed based on the given information. A risk based approach was taken to conduct the validation and corrective action requests (CARs) and clarifications (CLs) were raised for relevant actions by the PP.

The validation team has found through the validation process 11 CARs and 3 CLs and 1 FAR. The PP has taken actions and submitted to LRQA an overview of changes and other evidence. The validation team is of the opinion that the proposed project activity as described in the project design document Version 5.1 dated 19/05/2011 meets all the relevant UNFCCC requirements for the CDM, as well as the host country's national requirements and if implemented as designed, is likely to achieve the emission reductions and contribute to the sustainable development of the host country. LRQA therefore requests the registration of "Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project" to the CDM Executive Board as a CDM project activity.

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Abbreviations

BE	Baseline emissions
CARs	Corrective action requests
CCPG	Central China Power Grid
CDM	Clean development mechanism
CDM-EB	Executive board of clean development mechanism
CDM M&P	Modalities and procedures for a clean development mechanism
CDM VVM	CDM Validation and Verification Manual
CERs	Certified emission reductions
CLs	Clarification requests
COP/MOP	Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol
DNA	Designated national authority
DOE	Designated operational entity
EF	Emission factor
EIA	Environmental impacts assessment
ERPA	Emissions reduction purchase agreement
FAR	Forward action requests
GHG	Greenhouse gas
GSP	Global stakeholders' consultation process
HNA	Host Nation Approval
IPCC	Intergovernmental panel on climate change
IRR	Internal rate of return
KP	Kyoto Protocol of the United Nations Framework Convention on Climate Change
kW / kWh	Kilowatt / Kilowatt hour
LE	Leakage emissions
LoA	Letter of approval
LR	Lloyd's Register
LRQA	Lloyd's Register Quality Assurance Limited
MW / MWh	Mega watt / Mega watt hour
MoC	Modalities of Communication
NCV	Net calorific value
NDRC	National Development and Reform Commission
NGO	Non governmental organization
ODA	Official development aid
PDD	Project design document
PE	Project emissions
PP	Project participant
SDRC	Sichuan Provincial Development and Reform Commission
tCO ₂ e	Tonnes of carbon dioxide equivalent
UK	United Kingdom of Great Britain and Northern Ireland.
UNFCCC	United Nations Framework Convention on Climate Change

2 Introduction

The project participant (PP) represented by EcoSecurities International Limited has contracted with Lloyd's Register Quality Assurance Limited (LRQA) to undertake validation of the proposed project activity Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project. This report summarises the findings of the validation process that has been conducted on the validation requirements of the CDM.

The validation has been undertaken by the team formed of the qualified personnel of LRQA as follows:

Ketan S Deshmukh	LRQA Asia	Team leader, CDM lead validator
Stewart Niu	LRQA China	Team member, CDM validator, Sector expert
Xianxin Yan	LRQA China	Technical reviewer (Under training) and Sector expert
Michiaki Chiba	LRQA Ltd.	Technical reviewer
Andrew Ritchie	LRQA Ltd.	Decision maker

Personnel being engaged in a CDM project validation are qualified based on the established procedures of LRQA to assure the resource requirements satisfy all the requirements of competence criteria in the CDM accreditation standard for operational entities. LRQA is designated as an operational entity and holds the full responsibility of decision-making regarding the validation, in accordance with the accreditation requirements of the CDM-EB. The certificate of appointment of the team personnel is attached to this report.

2.1 Objective

Validation is the process of an independent third party evaluation of a project activity on the basis of the PDD, against the requirements of the CDM as set out in Article 12 of the Kyoto Protocol, the CDM M&P, the present annex, subsequent decisions made by the COP/MOP and CDM-EB, and other rules applicable to the proposed project activity including the host country's legislation and its specific requirements for sustainable development. The validation follows the requirements of the current version of the CDM validation and verification manual (CDM VVM) to ensure the quality and consistency of the validation work and the report.

2.2 Scope

The scope of validation is an independent and objective review of the project design. Review of the PDD is conducted against the requirements of the Kyoto Protocol, the CDM M&P and relevant decisions of the COP/MOP and the CDM-EB. LRQA follows a risk-based approach in the validation focusing on the identification of significant risks for project implementation and generation of CERs. Validation is not meant to provide any consulting towards the PP, however, the corrective actions requests (CARs) and clarifications (CLs) might provide input for improvement of the project design. A validation conclusion shall become final subject to the decision maker's review by LRQA Ltd.

2.3 GHG Project Description

Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project (hereafter referred to as the Project) developed by Sichuan Huadian Xixi River Hydroelectricity Development Co., Ltd, is a grid-connected hydropower plant with a newly-built dam in Sichuan Province in People's Republic of China. The diversion dam is built to divert some of the water from Xixi River into penstock. The penstock feeds the water downhill to the power station's turbine generator units. Total installed capacity of the Project is 100 MW, consisting of two 50 MW turbine generator units. The predicted electricity supply of 397,013 MWh per year will be sold to Central China Power Grid (hereafter referred to as CCPG). The surface area of the full reservoir is 292,000m², and the power density of the Project is 342 W/m².

Electricity delivered by the project activity to the CCPG would have otherwise been generated in grid-connected fossil fuel based power plants resulting in Green House Gas (GHG) emissions in the absence of the project activity. The project activity therefore, by displacing relatively carbon intensive grid electricity (primary emission source with a Combined Margin Emission Factor of 0.85285 tCO₂e/MWh) with renewable hydroelectricity, reduces GHG emission that would have occurred in the baseline.

In the GSP PDD, the net supplied electricity of 397,013 MWh was used to calculate the emission reductions. However, during the validation process, the team identified that the line loss rate of the project will be fixed as 0.8% in operation as per the agreement signed between the PP and the grid company, which is higher than the designed rate of 0.5% in the PDR. On the conservative approach, the team agreed to accept estimating the emission reduction based on the more conservative net supplied electricity of 395,816 MWh (namely, $445,570 \times 90\% \times (1-0.5\%) \times (1-0.8\%)$). The estimated GHG emission reductions are therefore 337,572 tCO₂e per annum.

3 Methodology

3.1 Review of documents

The validation is performed primarily based on the review of the project design document (PDD) and the other supporting documentation.

The PDD Version 1 dated 03/03/2010 was initially reviewed. LRQA requested the PP to present supporting information and documents relating to the project design and such additional information and documents were also reviewed by LRQA.

Through the process of the validation, the PDD and the supporting documents of the same were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by LRQA. The documents reviewed by LRQA are listed in Appendix B. LRQA reviewed the final version of the PDD Version 5.1 dated 19/05/2011 to confirm that all changes agreed had been incorporated.

3.2 Follow-up interviews

Follow-up interviews with the stakeholders and a field survey were conducted as detailed in the schedule as below:

13 April, 2010	Local residents
14 April, 2010	Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd EcoSecurities International Limited Butuo County Development and Reform Bureau Butuo County Environment Protection Bureau Butuo County Water Resource Bureau
15 April, 2010	Xichang grid company Bank of China Liangshan Branch

A full list of persons interviewed is shown in Appendix C.

3.3 Resolution of clarification and corrective action requests

LRQA applies the risk based approach aimed at focusing on high risk issues to the validation results whilst not omitting any part of the mandatory processes.

Findings identified in the process are indicated under the titles corrective action requests (CARs) and clarification requests (CLs) and forward action requests (FARs). CARs and CLs require the PP to take relevant actions. Criteria for judging items as CAR or CL are as follows:

Corrective action request (CAR):

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

Clarification request (CL):

- information is insufficient or not sufficiently clear to determine whether the applicable CDM requirements have been met.

FARs are to be raised to highlight issues related to project implementation that require review during the first verification of the project activity. FARs do not relate to CDM requirements for registration.

CARs and CLs are to be resolved or closed out if the PP modifies the project design, rectifies the PDD or provides adequate additional explanations or evidence that satisfies the concerns. If this is not completed, the project activity cannot be recommended for registration to the CDM Executive Board.

3.4 Internal quality control

A technical review by a qualified person independent from the validation team and a review by an authorised decision maker were conducted prior to the submission of the validation report to the PP and prior to requesting the registration of the project activity.

4 Validation protocol and conclusions

This section provides an overview of the validation activities undertaken by LRQA in order to arrive at the final validation conclusions and opinion. It includes a general discussion of details captured by the validation protocol (which is based on the Clean Development Mechanism Validation and Verification Manual Version 01.2) and conclusions related to CDM requirements. Further details in relation to specific findings are provided in the Validation Findings Log.

The protocol is structured based on the main validation requirements as follows:

- participation requirements
- general description
- baseline methodology
- emission reductions
- monitoring methodology and monitoring plan
- duration of the project activity / crediting period
- environmental impacts
- stakeholders' comments.

4.1 Participation requirements

A CDM project shall be approved by the Parties involved.

The host Party of the proposed project is the People's Republic of China. China ratified the Kyoto Protocol on 30 August 2002. The Designated National Authority (DNA) is National Development and Reform Commission (NDRC).

The Annex I Party United Kingdom of Great Britain and Northern Ireland. UK ratified the Kyoto Protocol on 31st May, 2002. The International Climate Change Division, Department of Energy and Climate Change, is the Designated National authority for the CDM.

The information of the DNAs has been confirmed by the validation team against the relevant information on the UNFCCC CDM website (<http://cdm.unfccc.int/DNA/index.html>).

A letter of approval (LoA) from the host Party's DNA dated 18 March 2009 and from the Annex I Party's DNA dated 03 June 2011 were made available by the PP.

The validation team reviewed the LoAs presented by the PPs against the requirements in 'Clarification on elements of a written approval' and confirmed that the LoAs contain the elements requested by the CDM-EB, including:

- confirmation of the Party's ratification to the Kyoto Protocol
- voluntary participation
- the project activity's contribution to sustainable development of the country (host Party), and
- the precise title of the CDM project activity of the final PDD referenced.

The LoAs were noted as unconditional with respect of the above elements. The LoAs were also compared with those of other approval cases issued by the DNAs, as well as information made public by the DNAs on the website. The team confirmed the authenticity of the letters issued.

CAR 01

While all parties involved should have approved the project activity, the Letter of Approval from Annex I Party was not available.

The Letter of Approval from Annex I Party Ref No. ESInt/09/2011 dated 11/05/2011 was made available by the PP. The LoA states that the approval is on the basis of PDD Version 5 dated 21/02/2011 and the draft validation report No. A20054-B Version 1.3 dated 4 March 2011. According to the UK Guidance on project approval and authorisation to participate in Clean Development Mechanism issued in April 2011, a new request for LoA will need to be made when changes are made to PDD or validation report. The PDD has been revised to Version 5.1 dated 19/05/2011, hence a new request for LoA will need to be made after completion of the validation report that requires only the LoA to be finally completed. The final LoA from UK DNA was made available to the team by the PP and the validation team confirmed the content of the LoA is in line with Clarification on elements of a written approval (EB16, Annex 6) and the finding was therefore closed accordingly.

Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd is a public entity having its registered office in People's Republic of China.

EcoSecurities International Limited is a private entity having its registered office in United Kingdom of Great Britain and Northern Ireland.

The contact details of the PPs are correctly provided in Annex 1 of the PDD.

CAR 04

The name of the participant from the Annex I Country indicated in the host country's LoA, EcoSecurities Group PLC, is different from the one stated in the PDD, EcoSecurities International Limited. The CAR was issued on the point.

Clarification was made by the PP referring to confirmation made between the Secretary of the CDM-EB and the chair of the Project Developer Forum regarding changes in Annex I Party different from HNA. The validation team confirmed that through the correspondences with the Project Developer Forum, the CDM-EB confirmed that the indication of the Annex I Party and Annex I country participant in the host country's LoA is not a requirement of CDM and it is a matter to be resolved by the host country DNA and the project developer. Based on the confirmation, the difference is not covered by the scope of validation. The finding was therefore closed.

The Modalities of Communication (MoC) was signed on 26/02/2011 and submitted to LRQA as per the guidance adopted in the 45th meeting of the CDM-EB.

Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd is the project participant as indicated in the Letter of Approval and in Section A.3 of the PDD. Mr. Taicong Long, is the same person indicated as the representative of the entity in Annex 1 of the PDD. The contact details of the entity were compared with Annex 1 of the PDD and the correctness was confirmed by the validation team.

Mr. Patrick James Brown is the same person indicated as the representative of EcoSecurities International Limited in Annex 1 of the PDD. The contact details of the entity were compared with Annex 1 of the PDD and the correctness was confirmed by the validation team.

4.2 General description

Project design document

The PDD was checked and confirmed as complete against the:

Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM) referring to the Version 07 applicable to the validation.

A valid form of the CDM-PDD Version 03 is used that is the current form as available on the CDM website;

Project description

The project activity is a newly-built grid-connected hydropower plant with run-of-river reservoir located in Zhatai Village, Diluo Town, Butuo County, Sichuan Province, in the remote South-western area of China, and is populated with ethnic minorities having low income levels. The coordinates of the powerhouse are 103°2'41" E, 27°34'52" N and the coordinates of the Dam Site are 103°2'50.43" E, 27°40'12.76" N. Total installed capacity of the Project is 100 MW, consisting of two 50 MW turbine generator units. The annual generation is expected as 445,570 MWh based on the 44 historical hydrological years data from 1959 to 2003. Considering the fact that the project has no storage function with only run-of-river reservoir and the limit of intake ability of Sichuan Power Grid (part of CCPG) during the flood season, especially low power demand period at night, the electricity generation of the project will be limited. The effective generation factor of 0.9 (or 90%) based on the electricity balance of the predicted load of Sichuan Grid in the design level year of 2015 was applied by the PDR designer, Sichuan Investigation Design & Research Institute of Water Conservancy & Electric Power. Therefore, the effective generation of the project was estimated as 401,013 MWh. After deducting the self-consumption (rate of 0.5%) and line loss (rate of 0.5%), the annual power supplied to CCPG via local grid was estimated as 397,013 MWh. These were presented in the Preliminary Design Report (PDR) and formally approved by Development and Reform commission of Sichuan Province on 08 June 2006. Based on the output data, the power load factor of the project was calculated as 50.9% (44,557MWh/100MW/8,760h) which is confirmed in accordance with the "Guidelines for the reporting and validation of plant load factors, version 01". The surface area of the full reservoir is 292,000 m², and the power density of the Project is 342 W/m².

The main components of the project include an intake structure, a water conveyance system and a powerhouse. The water intake structure is located on the upstream portion of the Xixi River, and consists of a low diversion dam with one sluice gate, which directs part of the river flow into the water conveyance system. The type of dam

is non-overflow concrete gravity dam with a maximum 35.5m height and 136.95m length. The conveyance system comprises a tunnel, a penstock, a pressure adjustment well and high pressure pipelines. It forms a 286 m water head to take advantage of the natural height drop of the river, and carries the water to the powerhouse. The water enters, through high pressure pipelines, into the two set of turbine generator unit installed in the powerhouse. After power generation, the water is discharged into the Xixi River through a tailrace.

The size of hydro turbine and generator technology has been localised in China and the project utilises equipment produced by a leading domestic manufacturer, Dongfang Electrical Machinery Company Limited. The electricity produced is transferred to the grid system through 220kV transmission lines.

The GHG emission reductions will be achieved by replacement of electricity that would otherwise have been produced by the power plants connected with CCPG, the main source of which is fossil fuel dominated thermal power plants. The annual emission reductions of the project are estimated as 337,572 tCO₂e and total Emission Reductions over the first crediting period are 2,363,004 tCO₂e.

The Project is the fourth of five planned cascade hydro power plants in the Xixi River, and is developed by Sichuan Huadian Xixi River Hydroelectricity Development Co., Ltd. The project company was co-founded on 27/11/2003 by China Huadian Group (66%) and Xichang Electric Power Co. (34%). Of the five planned cascade plants, (excluding Kuyi hydro, where no near future development is planned because of bad development condition), all four have taken CDM into consideration, supported by the signed ERPAs and the Chinese LoAs.

The accuracy and completeness of the project description was validated by document review including the PDR and its approval, the purchasing contract of turbine generator units, interview, and field survey. The validation team confirms that the project description in the PDD is accurate and complete.

Sustainable development

The host Party's DNA confirmed the contribution of the project activity to the sustainable development of the host Party by issuing the host Country LoA dated 18/03/2009.

Public funding

By checking the PDR approval issued by Sichuan Provincial Development and Reform Committee dated 08/06/2006, around 20% of the total investment is from the equity of the PP and 80% is from a loan from a commercial bank. By cross checking the actual loan contracts of the project and the equity payment records, the validation team confirmed that the project activity uses no public fund.

CAR 02

The PP shall provide latitude and longitude co-ordinates of the dam site and the power house respectively in the PDD since the dam site was not the same as the power house site.

As response from the PP, both coordinates of power house (103°2'41" E, 27°34'52" N) and dam (103°2'50.43" E, 27°40'12.76" N) were included in the revised PDD. By checking against the Google Earth, both coordinates were confirmed valid to position the project. A location map of the project activity in Butuo County, Sichuan Province,

China was also added in the revised PDD. The finding was therefore closed.

CAR 03

The description of the project activity was noted as incorrect in the following instances:

- a) The source of the surface area of the full reservoir (m^2) listed in Table A.4.1 provided in the PDD was incorrect.
- b) The rated flow of the turbine and the type of generator listed in table A.4.2 were noted to be different from the actual nameplate of the turbine generator unit as sighted during the site visit.

In response, the PDD has been revised: (a) the page number of PDR was corrected to 9-1 as the reference source for the surface area and (b) the rated flow of turbine was corrected to $19.38 m^3/s$ from $19.65 m^3/s$, and the generator type was revised as SF50-10/4120 from SF50-10/4250. The revision is deemed fully consistent with the actual employed equipment. The change in diameter (from 4250 to 4120) of the stator core of the generator is deemed small and not a substantial change from the PDR. The finding was therefore closed.

4.3 Baseline methodology

Application of baseline and monitoring methodology

The project activity applied the approved baseline and monitoring methodologies ACM0002: "Consolidated methodology for grid-connected electricity generation from renewable sources", Version 12.1.0, in effect as of EB 58. The methodology is valid since 26/11/2010.

The methodology refers to the latest version of "Tool to calculate the emission factor for an electricity system" and "Tool for the demonstration and assessment of additionality" (Additionality Tool). The current versions of the tools are Version 02 and Version 05.2 respectively.

The project applicability was confirmed against each condition in the approved methodology, selected by the following methods.

Conditions in ACM0002 Version 12.1.0	Justification in PDD and validation opinion
The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;	The project activity is a grid-connected renewable power generation project activity that installs a new run of the river reservoir hydro power plant at a site where no renewable power plant was operated prior to the implementation of the project activity. The validation team confirmed that the project is the installation of a grid-connected hydro power plant with a run-of-river reservoir based on the PDR and on site inspection.
In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter $EG_{PJ,V}$): the	The project activity is not a retrofit, replacement or capacity addition to an existing hydro power plant. The validation team noted that the project

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;	is the 4 th planned cascade hydro project in the Xixi River and each of the planned projects was designed by a qualified design company and approved by SDRC respectively. The project is a newly planned 100MW at the project site and confirmed as not being a capacity addition, retrofit or replacement project.
In case of hydro power plants, one of the following conditions must apply: • The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or • 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 • 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.	The project activity results in a new run of the river reservoir, and the power density of the power plant (342 W/m²) is greater than 4 W/m² (see section B.6.3. for the calculation of power density). The validation team confirmed that the calculation is correct based on the PDR and other supporting documents.
The methodology is not applicable to the following: • Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; • Biomass fired power plants; • Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m².	The project activity neither involves any switching from fossil fuels to renewable energy at the site of the project activity nor is it a biomass fired plant. The validation team checked the PDR and other supporting documents, conducted a field survey and confirmed the situation. The power density is 342 W/m², which is greater than the threshold of 4 W/m²

The validation team assessed each statement, cross-checked with the supporting information and interviewed the PP. The applicability conditions of the methodology are satisfied by the proposed project activity. During the validation, the team confirmed there is no greenhouse gas emission source within the project boundary as a result of the implementation of the proposed CDM project activity which is expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.

CAR 11

During the validation stage, the team identified that the used previously approved methodology ACM0002 (Version 11) in the PDD was invalid since the project was not

ready to be submitted for requesting registration before its expiring date of 17 May 2011 23:59 GMT.

In response to this finding, the PP revised the PDD to apply the latest version of ACM0012 (Version 12.1.0) throughout the PDD. The team reviewed the nature of revision of the methodology from Version 11 to Version 12.1.0 and confirmed that only the definition of reservoir and exist reservoir were added and no other change happened. The team therefore accepted the revision and closed the finding.

Project boundary

The spatial extent of the project boundary includes the Project power plant and all power plants physically connected to the CCPG to which the Project is connected. The flow diagram of the project boundary, physically delineating the project activity as per the descriptions in section A.4.3, was presented in the PDD, including all the equipment, systems and flows of mass and energy, the emissions sources and gases included in the project boundary and the monitoring variables.

The project boundary has been validated through documentation review on the PDR, EIA report and field survey that included the physical site of the dam and power house and the relevant equipment. This information was substantiated via cross-check with the local government and the local grid company during the interview. Through the processes taken, the validation team confirmed that the identified project boundary, selected sources and gases were justified for the project activity and meet the requirements of the approved methodology.

Baseline scenario

As per Methodology ACM0002, if 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”.

The validation team confirmed that the project is the installation of a new grid-connected hydro power plant with a run-of-river reservoir based on the PDR and the on-site inspection. Therefore, it is deemed appropriate that the baseline scenario of the project was identified as above.

Additionality

The project additionality was demonstrated by the PP using the Tool for the demonstration and assessment of additionality Version 05.2.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulations.

The following two alternatives to the Project activity are considered here in detail:

Alternative 1: The proposed Project activity undertaken without being registered as a CDM project activity, i.e. the construction of a new hydroelectricity generation plant with an installed capacity of 100 MW, connected to the local grid, and implemented without considering CDM revenues.

Alternative 2: Continuation of the current situation, i.e. electricity will continue to be generated by the existing generation mix operating in the CCPG.

As clearly stated in paragraph (4) of Tool for the demonstration and assessment of additionality Version 05.2, project activities that apply the 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. Therefore, the validation team confirmed the identified alternatives are acceptable.

The proposed project is a renewable project and is a kind of project that the host country China has been promoting. The amount of electricity is supplied from CCPG if no such power plant would have been built. Therefore, it was confirmed that the alternatives are consistent with mandatory laws and regulations.

Investment analysis

Investment analysis is used for demonstration of additionality. Benchmark analysis is selected out of the options for the analysis method as the project activity will produce economic return by electricity sales other than the CDM related revenue and the project owner has no other investment option to compare with. The project IRR was identified as the financial indicator.

As a large hydro power project, the project activity could be developed by another entity than the project participant and a benchmark should be based on a publicly available data source. The identified benchmark is 8%, as indicated in the Interim rules on Economic Assessment of Electric Engineering Retrofit Projects published by the Operation Department of Power Generation and Power Transmission, the State Power Corporation of China on 10 September 2002. The sector benchmark IRR was determined in considering risk premiums on the basis of long term commercial loan. The rules are still effective for assessment of power project investment in China as of the time of the validation and were valid when the investment decision was made for implementation of the project activity in 2006. The PDR of this project also referred to the rules and followed the indicated standard financial IRR of 8% on the total investment and 10% on the equity. The investment analysis is on the total investment basis and 8 % is applicable for this project as the benchmark.

In paragraph 54 of the 38th meeting and CDM VVM Version 01.2, para 113, the CDM-EB clarified that in cases where PPs rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities, DOEs are required to ensure that:

- The FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalisation of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed.
- The values used in the PDD and associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE should validate the appropriateness of the values.
- On the basis of its specific local and sectoral expertise, confirmation is provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision.

For implementation of the project activity in China, completion of feasibility study report (FSR) or Preliminary Design Report (PDR) to demonstrate the project's viability and its approval by the Government are pre-requisite.

The PDR of the project was completed in April 2006 by Sichuan Investigation Design & Research Institute of Water Conservancy & Electric Power, with A class engineering design certification, and it was approved by Development and Reform commission of Sichuan Province on 08 June 2006. The investment decision for the project activity was made at the board meeting on 20 June, 2006, which just followed the finalised PDR. The real action for implementation of the project activity was identified as 18 July 2006, on which date the diversion tunnel construction contract was signed. The validation team confirmed that it is unlikely in the context of the underlying project activity that the input values would have materially changed during the short time gap between the finalised PDR and the investment decision.

The values used in the PDD and associated annexes were confirmed as consistent with the PDR by the validation team via checking this data against the PDR.

For confirming the validity and suitability of the input values from the PDR at the time of the investment decision, the validation team checked this data by the sources other than the PDR as shown in the below table.

Name	Value	Source	Method of crosscheck
Installed capacity (MW)	100	Preliminary Design Report (PDR)* 1-4	Confirmed from the PDR. The actual installed capacity was witnessed as 100 MW (2*50 MW) during site visit. Therefore, the data is deemed accurate.
Expected power supplied to the grid (MWh)	397,013	PDR 15-2, point 15.1.2.1	Confirmed from the PDR. According to the PDR, the annual generation is expected as 445,570 MWh, after taking effective generation factor of 0.9 (or 90%), self-consumption rate of 0.5% and line loss rate of 0.5%, the annual power supplied to the grid as 397,013 MWh. The expected annual generation was confirmed as being stated in the PDR approval issued by Sichuan Provincial DRC. Therefore, the validation team confirmed that the requirement under section 3(a) of Guidelines for The Reporting and Validation of Plant Load Factors Version 01 is satisfied. 1. Effective generation factor The PDR designer clarified, by providing a written explanation, that considering the fact that the project has no storage function with only run-of-river reservoir, during the flood season, especially low power demand period at night, the electricity generation of the project will be limited and part of water flow will have to be discharged directly. The effective generation factor of 0.9 (or 90%) is calculated based on

			the electricity balance of the predicted load of Sichuan Power Grid in the design level year of 2015. Based on the fact that the generation can not be fully accepted by the grid during the flood season and part of water flow will have to be discharged directly. By comparing with similar CDM projects in Sichuan Province (1987, 2105, 2155, 2037, 3041, 1432, 2539, 2590 and 2009), the effective power factor is confirmed as reasonable. 2. Self consumption rate The self consumption rate of the project was designed as 0.5%. The validation team, by cross-checking the rated power of all main power consumption equipment during the site visit, confirmed that the total electricity required by the project would be 1177.9 kW and the normal load would be around 770 kW which, although slightly higher than 500 kW (0.5% of 100 MW), is deemed suitable in the designing stage. 3. Line loss rate Line loss rate of the project was designed as 0.5%, with designed transmission distance of 25km. The validation team cross-checked the actual measured line loss rate of 0.366%, based on the actual transmission distance of 17km, conducted by Xichang grid company dated 24/05/2010. If assuming the distance of 25km, the line loss rate would be 0.494%. Therefore, the estimation is deemed reasonable at the assumed conditions of the PDR. In the meantime, the small impact of decreased transmission line loss is addressed within the possible increase of electricity supply in the sensitivity analysis.
Total investment (RMB)	877,785,400	PDR 15-10	Confirmed from the PDR. The total investment was dynamic investment, composed of fix asset investment, the Interest during construction period and the initial current funds. The validation team reviewed the Estimated Budget Investment Adjustment Report of the project composed by the PDR designer in June 2010 and found that the actual total dynamic

			investment of the project was 1,328,694,900 RMB, which was increased by 466,909,600 RMB from the originally estimated total investment. The significant investment increase was mainly caused by the increased material price (21.69%), by the policy change (23.3%), by the allocated cost for transportation facilities, power dispatching facilities and the power imported facilities for construction (21.79%) and by the geological reason, increased construction engineering and increased interest (35.89%). Since the investment increase happened during the construction period and the designed total investment reflecting the situation in 2006, the input value was therefore deemed suitable in the decision making stage and conservative in calculation of IRR for additionality justification.												
Total annual operating costs (RMB)	21,390,000	PDR 15-11	Confirmed from the PDR. The data can be reproduced based on the input values stated in the PDR as presented in the below table and the employed data was in line with the relevant designing regulation. <table><tr><td>Operation cost</td><td>Employed data</td><td>Data source</td></tr><tr><td>Repair cost (%)</td><td>1.5%</td><td>PDR 15-3 In line with Hydropower Project Financial Evaluation Interim Provisions[1994]</td></tr><tr><td>Salary & welfare (RMB/year)</td><td>1,565,100</td><td>PDR 15-3 74*15000RMB/year *(1+41%) Welfare takes 41% of the salary. As checked from the proof of average annual salary of the employee of the company dated 10/01/2011, the average annual salary of the company is more than 60,000 RMB/year/person. The input data is deemed conservative.</td></tr><tr><td>Material cost (RMB/kW)</td><td>5.0</td><td>PDR 15-3 In line with Hydropower Project</td></tr></table>	Operation cost	Employed data	Data source	Repair cost (%)	1.5%	PDR 15-3 In line with Hydropower Project Financial Evaluation Interim Provisions[1994]	Salary & welfare (RMB/year)	1,565,100	PDR 15-3 74*15000RMB/year *(1+41%) Welfare takes 41% of the salary. As checked from the proof of average annual salary of the employee of the company dated 10/01/2011, the average annual salary of the company is more than 60,000 RMB/year/person. The input data is deemed conservative.	Material cost (RMB/kW)	5.0	PDR 15-3 In line with Hydropower Project
Operation cost	Employed data	Data source													
Repair cost (%)	1.5%	PDR 15-3 In line with Hydropower Project Financial Evaluation Interim Provisions[1994]													
Salary & welfare (RMB/year)	1,565,100	PDR 15-3 74*15000RMB/year *(1+41%) Welfare takes 41% of the salary. As checked from the proof of average annual salary of the employee of the company dated 10/01/2011, the average annual salary of the company is more than 60,000 RMB/year/person. The input data is deemed conservative.													
Material cost (RMB/kW)	5.0	PDR 15-3 In line with Hydropower Project													

			Financial Evaluation Interim Provisions[1994]
			Reservoir maintenance fee (RMB/kWh) 0.001 PDR 15-3 In line with The notice on medium-sized reservoir Fund (Cai_Zong[2007]26)
			Water resource fee (RMB/kWh) 0.0025 PDR 15-3 In line with the Notice on Adjustment of Water Fee in Sichuan Province (Chuan_Ban_Han[2005]110)
			Other cost (RMB/kW) 24.0 PDR 15-3 In line with Hydropower Project Financial Evaluation Interim Provisions[1994]
			O&M cost of transmission line (RMB) 3% of transmission investment PDR 15-3 In line with Hydropower Project Financial Evaluation Interim Provisions[1994]
Income tax (%)	33	PDR 15-4, point 15.1.4.3	Confirmed from the PDR. The income tax rate was available throughout the Country during the decision making stage (http://www.fdi.gov.cn/pub/FDI/zcfg/ss/qysds/yb_xgd/t20060619_48515.jsp).
City Maintenance and Construction Tax (%)	5%	PDR 15-4, point 15.1.4.2	Confirmed from the PDR. Meets the national regulation on City Maintenance and Construction Tax (http://www.53tax.gov.cn/showNews.jsp?info_id=1985)
Educational Surcharge Tax (%)	3%	PDR 15-4, point 15.1.4.2	Confirmed from the PDR. Meets the national regulation on Educational Surcharge Tax (http://www.53tax.gov.cn/showNews.jsp?info_id=767)
Electricity tariff, including VAT (RMB/MW)	288	PDR 15-3, point 15.1.4.1	Confirmed from the PDR. The validation team, by checking the Power Purchase Agreement, confirmed that the tariff of the project was 288 RMB/MWh (including VAT)

h)			The tariff is witnessed broadly used in Sichuan province and was available during decision making phase (http://www.scpi.gov.cn/zcfg/zcfg-content.asp?id=1972)
VAT (%)	17	PDR 15-4, point 15.1.4.2	Confirmed from the PDR. Cross-checked via China taxation regulation (http://www.gov.cn/banshi/2005-08/19/content_24733.htm)

Besides cross-checking with the data sources other than the PDR, the validation team also conducted the project comparison against other similar projects. The similar projects were selected as the projects that were registered with installed capacity between 50MW and 300MW and located within Sichuan Province. By comparing the key items, such as investment cost per installed capacity (RMB/kW), O&M cost per installed capacity (RMB/kW), project lifetime (years), tariff (RMB/kWh), unit O&M cost per investment (%), the validation team confirmed that the input values of the project were within the variation range of each item and the input values from the PDR are valid and applicable at the time of the investment decision.

Based on the input values, the IRR of the project was calculated as 6.09% (without the support of CDM revenue) in the PDR and the PDD Version 1.

During the validation process, the team found that the calculation of the project IRR did not consider the influence of actual interest to the calculation of income tax, and that 31 years' depreciation was considered though it should be with 30 years instead. The validation team therefore raised CAR 06, b) and d) to ask the PP to recalculate the IRR in compliance with the *Guidelines on the Assessment of Investment Analysis* Version 03.1. In response to the finding, the PP updated the project IRR in the final version of PDD and the IRR spreadsheet. The recalculation result is shown in the below table.

	Project IRR
Without income from CERs	6.85%
With income from CERs	10.44%

The validation team assessed the calculation in the IRR spreadsheet and the supporting evidence and confirmed the suitability of the IRR.

Given that the IRR of the project activity without CDM is less than the benchmark of 8%, it is unlikely that an investor would have considered going ahead with the project activity without the benefits of CDM.

According to Information note on the highest tariffs applied by the CDM-EB in its decisions on registration of projects in the People's Republic of China Version 01, the highest tariff identified in Sichuan Province is 0.288 RMB/kWh (incl. VAT) for hydro project with reservoir. This is the same tariff (0.288 RMB/kWh) that has been considered at the design stage and the validation team confirms that project activity remains additional.

Since the project started operating in December 2009, for testing the additionality till the validation period, the identified actual situation was incorporated into financial analysis as given below.

Name	Value in PDR	Value to be used	Comments on the newly applied data
Expected power supplied to the grid (MWh)	397,013	364,531	Electricity supplied to the grid from 01/01/2010 to 25/10/2010: 297617.580MWh/298days = 998.7167MWh/day average. The value applied = 998.7167MWh/day average * 365 days
Total investment (RMB)	877,785,400	1,328,694,900	The actual investment based on the Estimated Budget Investment Adjustment Report. (The increased investment will be conservatively assumed to have been spent in the last construction year).
Income tax (%)	33	25	The enterprise income tax law of the People's Republic of China was adopted at the Fifth Session of the tenth National People's Congress (NPC) and issued by the President of the People's Republic of China on 16th March 2007. This law has been applicable since 1st January 2008.
The interest rate (%)	6.12	5.51	According to the loan contract, the PP can have 10% discount of the commercial interest rate.

Based on the latest available data and keeping other input values the same, the IRR of the project is calculated as 2.67% without CDM revenue. As presented by the PP, even if taking the gross generation of 455,570 MWh as the input value to the IRR spreadsheet in validation stage, the IRR is only 4.68% without CDM revenue. Therefore, the validation team confirmed that the project's status of additionality had been maintained as of the time of the validation.

Sensitivity analysis

The PP conducted the sensitivity analysis based on the main factors to affect the result of IRR analysis that are 1) Operating costs, 2) Investment costs, 3) Electricity tariff and 4) Annual power supplied to the grid. These indicators are the variables that constitute more than 20% of either total project costs or total project revenues. The values presented in the PDD with respect of the sensitivity analysis could be reproduced and therefore stands validated. The sensitivity analysis shows that the range of variation of each factor when the IRR for the project reaches the 8% benchmark. The results of the sensitivity analysis were presented in the below table.

	% Variation of the parameter required to reach the 8% benchmark
Operating costs	-62%

Investment costs	-15.6%
Electricity tariff	13.8%
Annual power supplied to the grid	17.6%

Operating costs:

With the continuous development of China's economy, the cost of labour and raw material in China is a disputable fact as presented in the PDD. It is unlikely that the operating costs will reduce significantly as much as 62% during the project lifetime.

The validation team compared the annual O&M cost per kWh of the project to the data of 22 other registered hydro project within Sichuan Province with capacity between 50MW to 300MW, and found that the unit kWh O&M cost of the similar projects ranges from 0.026 Yuan/kWh to 0.57 Yuan/kWh and the data of the project is 0.054Yuan/kWh, which is within the variation of the data. The unit kW O&M cost of the similar projects is ranged from 0.127 Yuan/kW to 0.232Yuan/kW and the data of the project is 0.214 Yuan/kW, which is also within the variation range. Therefore, the validation team confirmed the suitability of the data and deemed it a reasonable cost.

Investment costs:

With the continuous development of China's economy, the inflation was common year by year, the prices of materials, such as iron and cement, have been seen to increase in recent years via checking public available information as provided in the PDD.

According to the Estimated Budget Investment Adjustment Report of the project composed by the PDR designer in June 2010, the actual total dynamic investment of the project was 1,328,694,900 RMB, which was increased by 466,909,600 RMB from the originally estimated total investment. The investment increase was mainly caused by the increased material price (21.69%), by the policy change (23.3%), by the allocated cost for transportation facilities, power dispatching facilities and the power imported facilities for construction (21.79%) and by the geological reason, increased construction engineering and increased interest (35.89%). Therefore, it is unlikely that there will be a decrease of investment.

Electricity tariff:

The electricity tariff used in the financial analysis was checked for consistency with the PDR. The Project supplies electricity to Sichuan Provincial Power Grid Company via Xichang City Power Grid, and the electricity tariff assumed in the PDR was 288 RMB/MWh which followed the benchmark tariff in Sichuan Province.

Since the tariff is a key data for the electricity consumers (for both household and industry), the electricity producers and the grid companies, the tariff is normally approved by government price management agency. The government considers the acceptability of the power station based on its construction condition and the acceptability of the connected grid. By reviewing the series of tariff policies in Sichuan Province, such as regulations (ChuanJiaFa (2005) No. 1231 and ChuanJiaFa (2006) No.1452 and ChuanJiaDianFa [2009] No.593, the benchmark electricity tariff of 288

¹ <http://www.scpi.gov.cn/newzcfg/zcfg-content.asp?id=3238>

² <http://www.scpi.gov.cn/zcfg/zcfg-content.asp?id=1972>

RMB/MWh for hydropower plants regulated by Sichuan Provincial Price Bureau has not found to have changed over the past 5 years. The tariff control was originated from the “Provisional Measures for the Administration of On-Grid Electricity Tariffs” – document NDRC [2005] No.514, issued by the National Development and Reform Commission in March 2005, which aimed to regulate the determination of the electricity tariff offered to power producers in order to stabilise tariffs and increase competitiveness in the electricity market.

The validation team, by checking the Power Purchase Agreement, confirmed that the tariff of the project was 288 RMB/MWh (including VAT).

From publicly available information, with the market-oriented reform in power sector, the competition mechanism will not lead to significant rises in the electricity tariff. Given the electricity pricing structure in China and in Sichuan Province, estimating a 13.8% increase in electricity tariff was highly unrealistic for the Project developer at the time of the investment decision and as such, the IRR is not likely to reach the 8% benchmark.

Annual power supplied to the grid:

The expected annual power supplied to the grid by the Project indicated in the PDR is calculated based on 44 years’ of historical hydrological data and therefore the long term average annual power supply is unlikely to be significantly different to the value used in the financial analysis. Even if assuming the effective electricity factor as 1, the annual power supply to the grid would be increased only by 10%. However, a 17.6% increase of annual power supply to the grid on the long term average basis is not reasonable and the IRR is therefore unlikely to reach the 8% benchmark.

The validation team therefore concluded that the additionality of the project is robust. Given the Project is not financially attractive, the project activity would not have been implemented without the CDM.

CAR 06

- a) Assumptions and input data for the investment analysis in table B.5.3 should have been presented in Sub-step 2c, not in Sub-step 2d.
- b) The actual interest payable should be taken into account in the calculation of income tax. For carrying out the correction, the more basic input data would need to be included in the PDD or in the cash flow sheet.
- c) The footnote 7 is not deemed valid to support the relevant statement, since it just gave the fuel and material rising in Guangxi Province.
- d) The depreciation of the project was witnessed as 31 years in financial IRR calculation sheet.

The validation team agreed to closed the finding on the basis of:

- a) The table of Main parameters used in the investment analysis was confirmed as listed in Sub-step 2c, B.5 of the revised PDD;
- b) & d) The recalculated post-tax IRR was updated in the revised PDD to take into account the influence of actual interest in the calculation of income tax and to employ 30 years depreciation in the calculation.
- c) The reference website, included in the revised PDD as footnote 10, was deemed valid to justify the steel and cement price rises in recent years.

³ <http://www.scpi.gov.cn/newzcfg/zcfg-content.asp?id=3574>

CL 01

Since the total investment in the PDR approval was found not to include transmission line investment, the PP was required to justify the amount of money spent on the same.

The validation team confirmed, based on the provided payment documents, that the transmission line cost added up to amount of 16,717,237 RMB, was paid by the PP. The team also confirmed that the estimated expense on the transmission line engineering of the amount of 15,000,000 RMB in the PDR was deemed conservative to calculate IRR of the project. The finding was therefore closed.

Barrier analysis

Barrier analysis is not selected.

Common practice analysis

The validation team reviewed the common practice analysis of the project by checking the description in the PDD, related documented evidence and publicly available information. The PP selected Sichuan Province as the geographical scope of the common practice analysis. This is considered appropriate because the factors including the investment climate, such as the regulatory framework, water resource availability and economic development situation of each province are different in China. The hydropower plants with capacity of 50MW to 300MW are defined as medium - sized hydropower project in China. Therefore, it is deemed appropriate that the activities with the installed capacity 50MW to 300MW are similar to the proposed project. In 2002, China started the reform of the electric sector to transform it into a more dynamic market. As a result, the investment environment of power production projects in the Host Country has changed significantly since 2002.

Therefore, the projects with capacity of 50MW to 300MW located in Sichuan Province and implemented after 2002 were reasonably defined as the similar projects to the Project.

The validation team reviewed the China Water Resources Yearbook 2005 to 2008, which is most recently available official source. The validation team identified a total of twenty-four more projects located in Sichuan Province with capacity between 50MW to 300MW, fourteen of which were not listed in the PDD. The validation team issued CAR 08 asking the PP to justify as to why the fourteen hydropower plants were not included. In response, the PP clarified that the power plants were either constructed prior to 2002 or were CDM projects (refer CAR 08 for details).

Of the remaining ten hydropower plants, Hongyanzi Power Station was confirmed to be an accumulation reservoir power station with shipping functions that has better social and economic benefits (IRR: 15%) than the proposed project activity. Therefore, it cannot be considered similar to the proposed project.

Of the remaining nine hydropower plants, the validation team checked each publicly available data source of these projects and confirmed that the projects have lower unit capacity investment cost, which is no more than 6480 RMB/kW, while the unit capacity investment cost of the proposed project is 8778 RMB/kW. The validation team confirmed that the unit capacity investment cost of the project activity at 8778 RMB/kW is significantly higher than the other similar projects (it is 26% higher than the highest unit cost of 6480 RMB/kW). Since the proposed project activity lies in far remote mountain area that involves distant road building as part of access to the site and the digging of a diversion tunnel as long as 13.665 km from the dam site to the powerhouse, the validation team deems the high unit cost as reasonable. Of the total

investment, construction engineering cost accounts for 46%. Of the construction engineering cost, the diversion engineering tunnel constitutes 38.76%; the relevant dam cost is 14.78% and 14.76% constitutes road building cost.

Under similar economic condition, taking the highest value of 6480 RMB/KW, the IRR of the proposed project activity would cross the benchmark of 8% and the proposed project activity therefore become financially attractive. The validation team therefore confirms that the existence of these similar hydropower stations does not contradict the claim that the proposed project activity is financially unattractive.

Therefore, the validation team concluded that the common practice analysis meets the requirement and the project activity is not widely observed or commonly carried out in the region.

CAR 08

By checking the provided copies of Yearbook of China Water Resources 2005 to 2008, fourteen more projects with installed capacity between 50MW and 300MW were identified. Please clearly justify why these project can not be defined as similar project with transparent evidence.

Name of power plant	Installed capacity (MW)
Mahui Power station	86.1
Chengdong Power station	84
Caoyutan Power station	75
Huaneng Dongxiguan Power station	180
Jiangkou Power station	51
Yucheng Power station	60
Tongtuo Power station	80
Tongzhong Power station	57
Daqiao Shuiku Power station	100
Wanbahe Yiji Power station	69
Er Daoqiao Power station	55
Xiaotiandu Power station	240
Shaping hydro power station	162
Kaijianqiao hydro power station	52.5

The fourteen projects highlighted were confirmed as not similar to the project against the reported criteria in the PDD since the projects 1~9 were constructed before 2002 and the projects 10~14 were proposed CDM project by checking the provided reference web pages. The finding was therefore closed.

CAR 09

Footnotes presented in the PDD were initially checked and found to be not available or invalid. The PP, by providing their stored web pages and/or providing new relevant web pages, justified the validity of the presented information. The validation team therefore closed the finding.

Prior serious consideration of CDM

The validation team, by checking the provided evidence documents, confirmed that the project activity starting date was before 2 August 2008 and the processes required in Guidance on the demonstration and assessment of prior consideration of the CDM, Annex 22 to EB49, have been taken.

The date of 20/08/2006, when the Civil Works Contract was signed between the Project Developer and the 11th Engineering Bureau of Sinohydro Corporation, was reported as the starting date of the project in the PDD Version 1.

For validating the start date, the validation team checked all the provided construction contracts and main equipment purchasing contracts and confirmed that the Civil Works Contract signed between the Project Developer and the 5th Engineering Bureau of Sinohydro Corporation (contract number of XXH-DL-2006-JJ-001 for Diversion tunnel construction) on 18/07/2006 is the earliest start date. The starting date of 18/07/2006 has been updated in the revised PDD. Please see the detail in CL 02.

The PP for this project activity is a special purpose vehicle created by China Huadian Corporation (66%) and Xichang Electric Power Co. (34%) for the development of projects on Xixi River. China Huadian Corporation was aware of the CDM as early as in 2005, when they attended the China CDM Capability Building Training Course. The earliest CDM project of the entity was “Huadian Inner Mongolia Huitengxile 100.25 MW Wind Farm project” which was firstly prepared on 13/04/2006 and later registered as project reference 0823. This CDM project activity (0823) was web-hosted on the UNFCCC website from 09 Sept to 08 Oct 2006. Application for seeking Letter of Approval was prior to this date of commencement of validation. Thus, it was demonstrated that the project participants were aware of the CDM prior to the project activity start date of 18/07/2006.

A Board meeting held on 20/06/2006 considered the CDM revenues in its decision to proceed with the project activity. The board minutes provide evidence that the benefits of the CDM were a decisive factor in the decision to proceed with the project.

A Strategic Cooperation Agreement between the project owner and EcoSecurities was entered in Dec 2007. The project activity was included in the Inquiry Document dated March 2008 and the correspondence made between the project owner and EcoSecurities from 11/04/2008 were made available as the evidence to the validation team that satisfy the requirements of the Guidelines on the demonstration and assessment of prior consideration of the CDM and the gap with continuing and real actions to secure CDM status is less than 2 years. This was followed by an ERPA in July 2008. An application for the Chinese LoA was made on 13 November 2008 and the LoA from China DNA was issued on 18 March 2009. The project was in operation since 26/12/2009. LRQA was contracted to do the validation work on 01 March 2010 and the PDD was published in the UNFCCC website on 05 March 2010. The validation team reviewed the submitted evidence and checked all the relevant original documents to support the chronology.

Since the time gap between the documented evidence is less than two years, regarding 8 (a) of Annex 22 to EB49, LRQA concluded that continuing and real actions were taken to secure the CDM status for the project in parallel with the implementation of the project activity.

CL 02

The earliest date of three construction contracts presented by the PP at the initial stage of validation was confirmed as 20/08/2006, however, the PP was requested to present another contract numbered XXH-DL-2006-JJ-001.

The validation team, by checking the Civil Works Contract signed between the Project Developer and the 5th Engineering Bureau of Sinohydro Corporation (contract number of XXH-DL-2006-JJ-001 for Diversion tunnel construction) and other contracts for construction and equipment, confirmed that the signing date of the contract is 18/07/2006, which is earlier than 20/08/2006. The PP amended the starting date to 18/07/2006 in the revised PDD and the finding was therefore closed.

CL 03

During the on-site survey, the validation team confirmed the two sets of generator units had passed the commissioning test till 26 Dec 2009, but the expected commercial operation start date was reported as 01 July, 2010 in the milestone table, page 18 of the PDD.

In response to the finding, the PP revised the PDD to correct the operation starting date as 26/12/2009 when the two set of power generation units passed the commissioning test. The finding was therefore closed.

4.4 Emission reductions

Project emissions

According to ACM0002 Version 12.1.0, the power density of the project activity should be calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}}$$

The project activity is the installation of a new hydropower plant with capacity of 100 MW that results in a reservoir with power density of 342 W/m², which is greater than 10 W/m². The project employs 2 sets of hydropower generating units that can operate independently during maintenance and unplanned outage periods. In addition there is provision for electricity import from the grid when both units do not operate. Such electricity import, if any, is deducted from the net electricity supply to the grid by the installed power meters. Therefore it was confirmed PE_y = 0.

Leakage

Following the guidance of the applied methodology ACM0002 Version 12.1.0, the main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, and transport) and these emissions sources are neglected. Therefore, L_y=0.

Baseline emissions

Baseline emissions (BE_y) include only CO₂ emissions from electricity generation in fossil fuel fired power plants connected to CCPG that are displaced by the project activity, and are calculated as the product of Quantity of net supply of electricity to the grid as a result of the implementation of the CDM project activity in year y (MWh/yr) and Combined margin CO₂ emissions factor in year y (tCO₂/MWh). Namely,

$$BE_y = EG_{facility,y} \times EF_{grid,CM,y}$$

The PP has chosen ex-ante determination of the emission factor $EF_{grid,CM,y}$ calculated as a combined margin (CM), consisting of the operating margin (OM) and build margin (BM).

The grid emission factor is calculated using publicly available data from official sources for the latest three years for which data was available at the time of the PDD submission and the IPCC defaults as appropriate. The validation team reviewed the calculation and supporting documents and validated the grid emission factor.

The Combined margin CO2 emission factor ($EF_{grid,CM,y}$) is calculated by applying the following steps in accordance with the “Tool to calculate the emission factor for an electricity system” Version 02.

Step 1. Identify the relevant electric power system

The electric power system of the project activity has been identified as CCPG following the Notification on Determining Baseline emission factor of China Grid issued by China DNA. CCPG is made up of several sub-grids including Henan Grid, Hubei Grid, Hunan Grid, Sichuan Grid, Chongqing Grid and Jiangxi Grid. There was electricity import from the Northwest China Power Grid during the years concerned.

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

The “Tool to calculate the emission factor for an electricity system” offers two options to calculate the operating margin and build margin emission factor and Option I, Only grid power plants are included in the calculation, was applied in the calculation.

Step 3. Select a method to determine the operating margin (OM)

For the project activity, because the dispatch data of the Grid (including the CCPG) in China is not available to the public and low-cost/must-run power sources constitute less than 50% of the CCPG during the last 5 years, Option (a), simple OM, was selected. The validation team reviewed the PDD and confirmed the correct calculation method of OM emission factor was selected.

Step 4. Calculate OM emission factor according to the selected method

Since detailed data on the individual power plants connected to the CCPG is not available and only nuclear and renewable power generation are considered as low-cost / must-run power sources and the quantity of electricity supplied to the grid by these sources is known, option B, 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, is applicable and used to calculate the Simple OM emission factor.

$EF_{grid,OMsimple,y}$, using option B, is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must-run power plants / units, and based on the fuel type(s) and total fuel consumption of the project electricity system, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{y,grid}}$$

The Operating Margin (OM) emission factors of CCPG are calculated for 2005, 2006 and 2007 respectively and the OM emission factor of CCPG is calculated as the weighted average of the three years.

$$EF_{grid,OM,y} = 1.1255 \text{ tCO}_2\text{e/MWh.}$$

Step 5. Identify the group of power units to be included in the build margin

Due to the fact that data on electricity generation of each power plant / unit in the grid is currently not available in P. R. China, the calculation is made by the alternative method that has been accepted by the CDM-EB for Chinese projects

http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_QEJWJEF3CFBP1OZ_AK6V5YXPQKK7WYJ that details have been published by the Chinese DNA as <http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2332.doc> and <http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2333.pdf>.

The sample group 'm' is identified as capacity addition during the last two years for different power generation technologies.

Step 6. Calculate the build margin emission factor

The build margin emission factor ($EF_{grid,BM,y}$) are calculated by multiplying the $EF_{thermal}$ power with the weight of new capacity addition by thermal power of total capacity addition in CCPG:

$$EF_{grid,BM,y} = \frac{CAP_{thermal,y-n,y}}{\sum_j CAP_{j,y-n,y}} \times EF_{thermal,adv}$$

$EF_{Thermal,Adv}$ is calculated based on the weight of CO_2 emissions from fuel i fired power plants in the total CO_2 emissions from thermal power, using the most recent available data and the CO_2 emission factor of fuel i (tCO_2/MWh) using the best commercially available technology in P. R. China and taking into account the carbon content and the oxidation factor of coal, oil and gas.

$$EF_{Thermal,Adv} = \lambda_{Coal} \times EF_{Coal,Adv} + \lambda_{Oil} \times EF_{Oil,Adv} + \lambda_{Gas} \times EF_{Gas,Adv}$$

And

$$\lambda_{Coal} = \frac{\sum_{i=Coal} FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}$$

$$\lambda_{Oil} = \frac{\sum_{i=Oil} FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}$$

$$\lambda_{Gas} = \frac{\sum_{i=Gas} FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}$$

$$EF_{grid,BM,y} = 0.5802 \text{ tCO}_2/\text{MWh}$$

Step 7. Calculate the combined margin emission factor

The final step to calculate the weighted combined margin (CM) emissions factor ($EF_{grid,CM,y}$) is as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

According to Tool to calculate the emission factor for an electricity system, all projects

except wind and solar power generation (including hydro projects) : $w_{OM} = 0.5$ and $w_{BM} = 0.5$ for the first crediting period, and $w_{OM} = 0.25$ and $w_{BM} = 0.75$ for the second and third crediting period,

Therefore, for the first crediting period of the project, the grid emission factor can be confirmed as $EF_{grid,CM,y} = 0.85285 \text{ tCO}_2\text{e/MWh}$.

Emission reductions

$$ER_y = BE_y = EG_{facility,y} \times EF_{grid,CM,y} = (EG_{PJ,y} - EC_y) \times EF_{grid,CM,y}$$

$$= 395,816 \text{ MWh} \times 0.85285 \text{ tCO}_2\text{e/MWh} = 337,572 \text{ tCO}_2\text{e}$$

In the GSP PDD, the net supplied electricity of 397,013 MWh was used to calculate the emission reductions. However, during the validation process, the team identified that the line loss rate of the project will be fixed as 0.8% in operation as per the agreement signed between the PP and the grid company, which is higher than the designed rate of 0.5% in the PDR. On the conservative approach, the team agreed to accept estimating the emission reduction based on the more conservative net supplied electricity of 395,816 MWh (namely, $445,570 \times 90\% \times (1-0.5\%) \times (1-0.8\%)$).

The validation team confirmed the correct application of the calculation following the published official emission factor issued by the DNA of the host country that conforms with the approved methodology ACM0002 Version 12.1.0 and Tool to calculate the emission factor for an electricity system Version 02.

Through the validation process LRQA have confirmed that:

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

CAR 07

- a) Equation 9 in the GSP PDD showed $BE_y = EG_{pj,y} \times EF_{grid,CM,y}$ where $EG_{pj,y}$ has been denoted as the quantity of net electricity generation that is produced and fed into the grid. Considering that electricity is imported by the power plant and/or the dam and denoted by EC_y , the net supply of electricity to the grid will be $EG_{PJ,y} - EC_y$. Equation 9 & 10 were required to be suitably amended.
- b) The procedure for the determination of the project emission and leakage was missed in section B.6.1 of the PDD.
- c) $EF_{coal,Adv}$, $EF_{oil,Adv}$ and $EF_{gas,Adv}$ have been used in PDD Annex 3; however, these parameters were not listed in table B.6.2 that includes data and parameters available at validation.

The validation team confirmed the relevant actions as stated below and closed the finding.

- a) Equation 9 & 10 are suitably amended in the revised PDD.
- b) PDD section 6.1 now reflects the determination of project emission and leakage.
- c) The PDD has been updated to include $EF_{\text{coal,Adv}}$, $EF_{\text{oil,Adv}}$ and $EF_{\text{gas,Adv}}$ in table B.6.2.

CAR 10

The employed combined margin emission factor of 0.8529 tCO₂/MWh in the PDD Version 1 was not deemed accurate and conservative since the calculated operating margin emission factor is 1.1255 tCO₂/MWh and build margin emission factor is 0.5802 tCO₂/MWh. In parallel of correction of the emission factor, the estimated annual emission reduction should be corrected accordingly.

The combined margin emission factor of 0.85285 tCO₂/MWh is used to calculate the annual emission reduction of the project in the revised PDD and the validation team confirmed the correctness of the calculation. The finding was therefore closed.

4.5 Monitoring methodology and monitoring plan

The approved consolidated baseline and monitoring methodology ACM0002 Version 12.1.0

“Consolidated baseline methodology for grid-connected electricity generation from renewable sources” is applied to the project.

The surface area of the reservoir and the installed capacity, sourced from the PDR, are used for ex-ante calculation. According to ACM0002 Version 12.1.0, both the surface area and the installed capacity will be monitored yearly and the monitoring has been confirmed in the revised PDD.

The validation team cross-checked the Agreement on the Metering Arrangement of Electricity Exported and Imported from the Grid signed by the PP and Xichang Grid Company on 02/08/2010, in which the electricity monitoring point was settled at the project site and the 0.8% will be fixed as the line loss rate when calculating the electricity exported to and imported from the power grid. The PP explained that the metering data will be accurately monitored by the meters, and the amount of line loss electricity will be considered during the electricity settlement with the grid and will be recorded in the records for sold electricity.

Electricity delivered to CCPG ($EG_{\text{pj,y}}$) will be the electricity output measured by the revenue meters minus the agreed transmission loss. $EG_{\text{pj,y}}$ will be cross-checked against records for sold electricity. In case of inconsistency, the smaller value will be conservatively used.

Electricity purchased from CCPG (EC_y) will be the electricity consumption measured by the revenue meters plus the agreed transmission loss. EC_y will be cross-checked against records for purchased electricity. In case of inconsistency, the larger value will be conservatively used.

$$EG_{\text{facility,y}} = EG_{\text{pj,y}} - EC_y$$

The meters are installed according to the Technical administrative code of electric energy metering (DLT448-2000) and will be calibrated according to the Verification Regulation of Electrical Energy Meters with Electronics (JJG 596-1999) or subsequent version. The accuracy level of employed meters was reported as 0.5s or more accurate which is in line with Technical administrative code of electric energy metering

(DLT448-2000).

The monitoring plan contains;

1. CDM monitoring Organisation
2. Staff training
3. Maintenance and calibration of monitoring equipment
4. Data collection and record-keeping arrangements
5. Data Quality Control and Quality Assurance

By reviewing the PDR, observing the project site and interviewing the project owner, the validation team confirmed that the monitoring plan met the requirement of the selected approved methodology and the validation team evaluated the relevant monitoring procedures provided in PDD and believe that the project participant has the ability to implement the monitoring plan.

CAR 05

- a) The $EG_{\text{facility},y}$ was required to be expressed as $EG_{\text{pj},y}$ to denote electricity generation (export to the grid) and EC_y to denote electricity consumption (import from the grid) in B.7.1 of the PDD.
- b) The accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person / entity that should undertake the measurements were not stated in the table of B.7.1 of the PDD.
- c) The PP was required to clearly state the monitoring point of each meter and the procedure to make sure the net electricity supplied to the grid can be clearly identified, since it was found in the PPA that the checking point may include both electricity from the project and Lianbu power project, another proposed CDM developed by the PP.
- d) CAP_{PJ} and A_{PJ} should be ex-post monitored and should have been listed in B.7.1.

The validation team agreed to close the finding on the basis of:

- a) The electricity export to the grid, $EG_{\text{pj},y}$ and the electricity import from the grid, EC_y are clearly presented in B.7.1 of the revised PDD;
- b) The relevant national standards, the measurement equipment and its calibration procedures, measurement method and the responsible party were included in B.7.1 of the revised PDD;
- c) According to the Agreement on settlement point of the project signed by the PP and Xichang Power Grid on 02/08/2010, the settlement point of the electricity supplied by the project to the grid and the electricity imported by the project from the grid is set at the project site. Therefore, the net electricity supplied to the grid can be clearly identified;
- d) CAP_{PJ} and A_{PJ} are listed in B.7.1 of the revised PDD and will be monitored in operation year as per the methodology.

FAR01

During the site visit, it was noted that the power source for the dam is currently through the 10 KV temporary line that was used for the construction. The PP confirmed that the temporary power source of dam site was just for construction use and after all completion of construction, the electricity requirement of dam site will be satisfied by the self consumption line that is common to the power plant and the dam. This shall be checked by the verification DOE.

4.6 Duration of the project activity / crediting period

The project activity started on 18/07/2006 and the operational lifetime is expected to be 30 years. The PP selected the seven-year renewable crediting period.

The starting date of crediting period is indicated in the revised PDD as being 01/07/2011, or on the date of registration of the CDM project activity, whichever is later.

The PP has chosen a seven years renewable crediting period for this project activity. The validation team confirmed that the duration of the crediting period is acceptable.

4.7 Environmental impacts

The environmental impact assessment (EIA) of the proposed project activity has been conducted following the legal requirements of the host country (the Environmental Impact Assessment Law effective since September 1, 2003). The validation team reviewed the EIA report and the letters for approval of the EIA, interviewed the local environmental bureau and the PP and confirmed compliance with the legal requirements of the host country.

The EIA report of Sichuan Xixi River Diluo Hydropower Project was completed by Sichuan Investigation Design & Research Institute of Water Conservancy & Electric Power in February 2006 and was approved by the Environmental Protection Bureau of Sichuan Province in April 2006 (document number of Chuan Huan Jian Han[2006] 200). The validation team confirmed that the environmental impacts including water pollution, air pollution, noise pollution, solid waste, erosion impact, biodiversity and ecosystems were addressed in section D.1 of the PDD. The social impact of the land acquisition and relevant compensation method was also reported in section D.1 of the PDD. According to the EIA, a total of 21 persons were identified as project affected population caused by flooding and land acquisition. The amount of compensation was planned in the PDR. The validation team reviewed the provided Permanent Land acquisition Compensation Agreement dated 31/07/2007 and confirmed that the permanent occupied land was compensated by the PP to the affected people via local Land Management Bureau with amount of 715,384 RMB based on national and local standards.

No significant environmental impact was identified for the project activities. The environmental monitoring of the project is required to be carried out after commencement of power generation from the project as per the conditions of the environmental clearance.

4.8 Stakeholders' comments

The project owner carried out a project specific local stakeholders' consultation in June 2007. The project activity is located in a remote area where few residents and activities exist. The consultation was conducted by means of questionnaire survey to local residents. 80 copies of the questionnaire included local government officials (6 people), local residents (38 people) and related employees (36 people) were collected.

Considering the small population on the project area, 80 questionnaires are deemed

adequate to reflect the attitude of local stakeholders. By reviewing the evidence of the posted notice dated 05/06/2007, and by interviewing the local stakeholder who had attended the consultation, the invitation for comments by local stakeholders was deemed to have taken place in an open and transparent manner. Since the project has no people relocation issues involved, the surveyed local stakeholders included the project affected people by land acquisition, the local residents lived close to the dam area and power house area and the local civil servants and employees. It is therefore deemed all relevant stakeholders have been consulted. There is no negative comment searched by internet regarding the project.

The completeness of the summary of the comments received as provided in the PDD is confirmed by reviewing the received 80 copies of the questionnaire.

The stakeholder consultation process, targeted stakeholders and due actions for concerned issues have been clarified in the PDD.

5 Comments by parties, stakeholders and NGOs

In accordance with the requirement of the Procedures for processing and reporting on validation of CDM project activities, the PDD is to be made publicly available for 30 days subject to confidentiality provisions agreed with the PP, to enable comments to be received from Parties, stakeholders and UNFCCC accredited NGOs on the validation and registration requirements.

The PDD was made publicly available in accordance with the requirements of the procedure for the period of 5 March 2010 to 3 April 2010 as per <http://cdm.unfccc.int/Projects/Validation/DB/II7XHDN83T4IKZW6JDEQFIVTMLDPHT/vjew.html>.

1 comment was received during the period and the comments were made publicly available as per <http://cdm.unfccc.int/Projects/Validation/DB/II7XHDN83T4IKZW6JDEQFIVTMLDPHT/vjew.html>.

The comment received has been taken into consideration as detailed in Appendix D of this report.

6 Validation Opinion

LRQA has undertaken the validation of the proposed project activity Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project based on the requirements of CDM as set out in Article 12 of the Kyoto Protocol, the CDM M&P, the present annex, subsequent decisions made by the COP/MOP and CDM-EB, and the other rules applicable to the proposed project activity including the host country's legislation and its specific requirements for sustainable development.

The Project intends to reduce greenhouse gas (GHG) emissions by the installation and operation of a 100 MW hydropower plant in Zhatai Village, Diluo Town of Butuo County, Sichuan Province in People's Republic of China. The electricity generated by this hydro source will be exported to the Central China Power Grid (CCPG) via the local power grid and is expected to displace the predominantly fossil-fuel based electricity generation, thereby reducing the CO₂ emissions. The annual emission reductions of the project are estimated as 337,572 tCO₂e and total Emission Reductions over the first crediting period are 2,363,004 tCO₂e.

In order to arrive at the final validation conclusions and opinion, LRQA carried out document review, review of compliance with and application of the approved methodology and methodological tools in determination of baseline, additionality, monitoring and the calculation of emission reductions, field survey and interviews, and reference to similar CDM project activities. There were no project components or issues excluded from the validation.

Through the validation process, the validation team identified 11 CARs, 3 CLs and 1 FAR. The PP has taken action on the raised issues and submitted to LRQA the revised PDD version 5.1 dated 19/05/2011 and other supporting evidence.

The validation team is of the opinion that the proposed project activity conforms with all the relevant UNFCCC requirements for the CDM as well as the host country's national requirements, and if implemented as designed, is likely to achieve the emission reductions and contribute to the sustainable development of the host country. LRQA therefore requests the registration of "Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project" to the CDM Executive Board as a CDM project activity.

Decision Maker



Andrew Ritchie
Climate Change Services Manager

7 Appendices

7.1 Appendix A: Letter of approval for the project by the host and investing country DNA

Letter of Approval from The National Development and Reform Commission of the People's Republic of China dated 18 March 2009.

Letter of Approval from the Department of Energy & Climate Change of the United Kingdom of Great Britain and Northern Ireland dated 03 June 2011

7.2 Appendix B: List of documents reviewed

Category A documents (documents prepared by the PP)

1. The CDM-PDD for Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project Version 1 dated 03/03/2010
2. The CDM-PDD for Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project Version 2 dated 07/05/2010
3. The CDM-PDD for Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project Version 2.1 dated 19/08/2010
4. The CDM-PDD for Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project Version 3 dated 06/09/2010
5. The CDM-PDD for Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project Version 4 dated 26/09/2010
6. The CDM-PDD for Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project Version 5 dated 21/02/2011
7. The CDM-PDD for Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project Version 5.1 dated 19/05/2011
8. IRR & Emission Reduction calculation spread sheet of Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project
9. The Preliminary Design Report of Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project completed by Sichuan Investigation Design & Research Institute of Water Conservancy & Electric Power dated April 2006
10. The PDR Approval of the project approved by Sichuan Provincial Development and Reform Committee dated 08/06/2006
11. The EIA Report of Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project completed by Sichuan Investigation Design & Research Institute of Water Conservancy & Electric Power dated February 2006
12. The EIA Approval of the project approved by the Environmental Protection Bureau of Sichuan Province dated April 2006 with document number of Chuan Huan Jian Han[2006] 200.
13. The LoA from China's DNA for the project dated 18/03/2009
14. The Estimated Budget Investment Adjustment Report of the project dated June 2010
15. The delegate of CHD attending China CDM Capability Building Training Course June 2005
16. The PDD of Huadian Inner Mongolia Huitengxile 100.25MW Wind Farm Project dated 13/04/2006
17. The Proposed CDM Application Plan of Diluo and Luogu Hydropower Project for the board meeting dated 16/06/2006
18. Extraordinary Board Meeting Minutes of the PP dated 20/06/2006

19. The Diversion Tunnel construction contract of the Project dated 18/07/2006
20. The Dam Construction Contract of the project dated 20/08/2006
21. The Turbine Generator Unit Purchase Contract of the project dated 30/09/2006
22. The Power Tunnel Construction Contract of the project dated 30/10/2006
23. The Powerhouse Construction Contract of the project dated 30/10/2006
24. The Construction Permits of the project dated 01/12/2006
25. The payment evidence of PP for the transmission line construction
26. The loaning commitment from BoC dated 29/05/2006
27. The Bank Loan Contract between the PP and NDB 25/11/2006
28. The Bank Loan Contract between CCB Chendu 7th branch dated 23/03/2007
29. The Bank Loan Contract between CCB Xichang Yuecheng branch dated 23/03/2007
30. The Bank Loan Contract between the PP and NDB dated 28/04/2009
31. The average annual salary of the employee of the company dated 10/01/2011
32. The CDM Comprehensive Strategic Cooperation Framework Agreement between China Huadian Group and EcoSecurities dated 11/12/2007
33. Inquiry Document for the price of Emission Reduction from China Huadian Group dated March 2008
34. CDM Development and Emission Reduction Purchase Agreement between the PP and EcoSecurities dated 07/07/2008
35. The evidence document of Letter of Approval Application dated 13/11/2008
36. The Approval of Pre-construction project land use by Land and Resource Department of Sichuan Province dated 21/03/2006
37. The Clarification on confirmation of Effective Electricity Factor and Surface Area by the PDR Designer dated 07/05/2010
38. The clarification on Electricity Generation by the PDR Designer dated 07/05/2010
39. The Investment complete status of the project prepared by the PP till 28/02/2010
40. Power Purchase Agreement of the project dated 08/10/2009
41. The Agreement on the Metering Arrangement of Electricity Exported and Imported from the Grid dated 02/08/2010
42. EB51_PDF_Changes in Annex I Party different from HNA_response
43. EB51_PD-Forum Letter Changes in Annex I Party different from HNA_281009_final
44. Yearbook of China Water Resources 2005 to 2008
45. The common practice evidence websites
46. The Notice of the Stakeholder Consultation published by the PP dated 05/06/2007
47. The Questionnaires of local Stakeholder Consultation (80 copies)
48. The commissioning records of the project dated 20/12/2009
49. The Permanent Land Acquisition Compensation Agreement dated 31/07/2007

Category B documents (other documents referenced)

1. Approved consolidated baseline and monitoring methodology
ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Version 11
2. Approved consolidated baseline and monitoring methodology
ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" Version 12.1.0
3. Tool to calculate the emission factor for an electricity system Version 02
4. Tool for the Demonstration and Assessment of Additionality Version 05.2
5. State Council's Decision on Reforming Investment Approval Process, 16/07/2004.
http://en.ndrc.gov.cn/policyrelease/t20060207_58851.htm
6. Renewable energy law of China
<http://www.ccchina.gov.cn/en/NewsInfo.asp?NewsId=5371>

7. Eleventh five year program for energy development issued by the National Development and Reform Commission in April 2007
<http://www.ndrc.gov.cn/zjgx/P020070410516458967992.pdf>
8. Hydropower Project Financial Evaluation Interim Provisions [1994]
9. Economic evaluation Implementation code for hydropower projects, published by The Ministry of Water Resources of the P.R.China
10. Interim rules of an Economic Assessment of Electric Engineering Retrofit Projects published by the Operation Department of Power Generation and Power Transmission of the State Power Corporation of China on 10 September 2002
11. The price index of hydropower engineering
<http://www.hydrocost.org.cn/price/priceIndex.jsp>
12. Provisional Measures for the Administration of On-Grid Electricity Tariffs" – document NDRC [2005] NO.514
13. Sichuan Provincial Price Bureau on the approval of average electricity purchase price of Sichuan power grid in 2004 (ChuanJiaHan (2005)No.46)
<http://www.scpi.gov.cn/newzcfg/zcfg-content.asp?id=930>
14. Chuan_Jia_Fa (2005) No. 123 <http://www.scpi.gov.cn/newzcfg/zcfg-content.asp?id=3238>
15. ChuanJiaFa (2006) No.145 <http://www.scpi.gov.cn/zcfg/zcfg-content.asp?id=1972>
16. ChuanJiaDianFa [2009] No.59 <http://www.scpi.gov.cn/newzcfg/zcfg-content.asp?id=3574>
17. China energy statistical yearbook (2006 to 2008)
18. China electric power yearbook (2003 to 2008)
19. Yearbook of China Water Resources 2005 - 2008
20. Carbon emission factors and oxidation rates: IPCC default values; see 2006 IPCC guidelines for national greenhouse gas inventories, Volume 2 (energy)
21. The operating margin (OM) emission factor and the build margin (BM) emission factor published by the Chinese DNA on 02 July 2009
22. EB guidance on estimating the build margin for AM0005, consolidated in ACM0002 which refers to the Tool to calculate the emission factor for an electricity system
<http://cdm.unfccc.int/UserManagement/FileStorage/6POIAMGYOEDOTKW25TA20EHEKPR4DM> and
http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_QEJWJEF3CFBP1OZAK6V5YXPQKK7WYJ
23. EIA law of P.R. China, (effective September 1, 2003)
24. DL/448-2000 is Technical administrative code of electric energy metering
25. The notice on medium-sized reservoir Fund (Cai_Zong[2007]26)
26. the Notice on Adjustment of Water Fee in Sichuan Province
(Chuan_Ban_Han[2005]110)

7.3 Appendix C: List of persons interviewed

1) Project entity: Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd

Mr. Li Jiucheng, General Manager

Mr. Chen Kai, Deputy General Engineer

Mrs. Chen Qi, Office Director

2) CER buyer and Consultant :EcoSecurities International Limited

Mr. Luo Peng, Project Manager

Mr. Zhou Jiangbo, Project Manager

Mr. Hao Han, Project Manager

3) Development and Reform Bureau of Butuo County

Mr. Jiang Ping, Deputy Director

4) Environment Protection Bureau of Butuo County

Mrs. Liang Xiaohong, Department Director

5) Butuo County Water Resource Bureau

Mr. Luo Le, Department Director

6) Xichang Grid Company

Ms. Zhang Ying, Deputy Director of Plan and Operation Department

7) Bank of China Liangshan Branch

Mrs. Cheng Qiqian, Deputy Director

Mr. Zhou Hui, Client manager

8) Representatives of local communities

Mr. Ji Bao Ha Po, villager of Qiaobian village

Mr. Shi Hei Yi Zi, villager of Qiaobian village

Mr. A Di La Qie, villager of Qiaobian village

Mr. Nai Ze Me Re Zi, villager of Zhatai village

Mrs. Nai Gu Ke Ri, villager of Zhatai village

Mr. Qu Mo Shi Hei, villager of Zhatai village

Mr. Ji Er Li Zi, villager of Yizi village

7.4 Appendix D: How due account has been taken to the public input made to the validation requirements

The PDD was made publicly available in accordance with the requirements of the Procedures for processing and reporting on validation of a CDM project activity for the period of 5 March, 2010 to 3 April, 2010 as per [http://cdm.unfccc.int/Projects/Validation/DB/II7XHDN83T4IKZW6JDEQFIVTMLDPHT/vview.html](http://cdm.unfccc.int/Projects/Validation/DB/II7XHDN83T4IKZW6JDEQFIVTMLDPHT/view.html).

1 comment was received during the period and the comments were made publicly available as per

<http://cdm.unfccc.int/Projects/Validation/DB/II7XHDN83T4IKZW6JDEQFIVTMLDPHT/vview.html>. Comments received have been taken into consideration as follows:

Submitted inputs:

The project was in operation since Dec. 26, 2009. Yearly power generation would be 445,000 MWh. The situation is different as reflected in PDD.

Submitted by: shuidian

The action taken by LRQA:

In the document review stage, the validation team, by checking the PDR, completed by Sichuan Investigation Design & Research Institute of Water Conservancy & Electric Power in April 2006, and the PDR approval approved by Development and Reform commission of Sichuan Province on 08 June 2006, confirmed that the installed capacity of the project is 100 MW and the annual generation is expected as 445,570 MWh based on the 44 hydrological years data from 1959 to 2003.

Considering the fact that the project has no storage function with only run-of-river reservoir, during the flood season, the electricity generation of the project will be limited and part of the water flow will have to be discharged directly. The effective generation of the project was estimated as 401,013 MWh, which uses 0.9 (or 90%) as effective generation factor. As requested by the validation team, the PDR designer clarified, by providing a document explanation, that the Sichuan Power Grid is composed of majority of hydro power plants and most of them are run-of-river plants without regulation ability. During the flood season, especially low power demand period at night, the grid would not intake all the generated electricity due to limited demand, which will limit the generation of hydropower plant. The effective generation factor is calculated based on the electricity balance of the predicted load of Sichuan Grid in the designing year. After deducted the self-consumption (rate of 0.5%) and line loss (rate of 0.5%), the annual power supplied to the grid was estimated as 397,013 MWh in the PDR, which is exactly the same as that reported in the GSP PDD.

During the site visit, the validation team interviewed with Ms. Zhangying, Deputy Director of Plan and Operation Department of Xichang Grid Company, and learnt that the speed of grid construction can not catch up with the speed of power station construction in local area. The current intake ability is 400MW~500MW in Xichang Grid and the aggregate generation capacity within the area is 600MW~700MW; normally, around 10% of the capacity is required to be set aside for emergency use.

Based on the fact that the generation cannot be fully accepted by the grid during the flood season and furthermore, the actual intake ability of local grid can not catch up with the power construction, the reasonableness of the selected effective power factor is confirmed.

During the visit, the validation team reviewed the operation logs of the project and confirmed that the two power generation units passed commissioning on 26 December 2009 and the project has been in commercial operation since then. The same information was presented in the revised PDD by the PP when addressing the CL03 raised by the validation team.

7.5 Appendix E: Certificate of Appointment

Validation of Sichuan Huadian Xixi River Hydro-electricity Development Co., Ltd. Diluo Hydroelectric Project

We hereby certify that the following personnel have engaged in the validation process that has fully satisfied the competence requirements of the validation of the CDM project activity.

Name of Person

Mr. Ketan S Deshmukh
Mr. Stewart Niu
Mr. Xianxin Yan
Mr. Michiaki Chiba
Mr. Andrew Ritchie

Assigned Roles

Team Leader
Team Member and Sector Expert
Technical Reviewer under training
Technical Reviewer
Decision Maker

Signed by



Andrew Ritchie

Climate Change Services Manager

Decision Maker

7.6 Appendix F: Validation findings log

1. Grade/Ref:	CAR 01	2. Date:	27/04/2010	3. Status:	Closed
4. Requirement	CDM M&P Para 37 a, 40 a; CDM VVM Version 01.2 para. 44				
5. Finding:	While all parties involved should have approved the project activity, the Letter of Approval from Annex I Party was not available.				
6. Conclusion:	The Letter of Approval from Annex I Party Ref No. ESInt/09/2011 dated 11/05/2011 was made available by the PP. The LoA states that the approval is on the basis of PDD Version 5 dated 21/02/2011 and the draft validation report No. A20054-B Version 1.3 dated 4 March 2011. According to the UK Guidance on project approval and authorisation to participate in Clean Development Mechanism issued in April 2011, a new request for LoA will need to be made when changes are made to PDD or validation report. The PDD has been revised to Version 5.1 dated 19/05/2011, hence a new request for LoA will need to be made after completion of the validation report that requires only the LoA to be finally completed. The final LoA from UK DNA was made available to the team by the PP and the validation team confirmed the content of the LoA is in line with Clarification on elements of a written approval (EB16, Annex 6) and the finding was therefore closed accordingly.				

1. Grade/Ref:	CAR 02	2. Date:	27/04/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para. 58				
5. Finding:	The PP shall provide latitude and longitude coordinates of the dam site and power house respectively in the PDD since the dam site was not the same as the power house site.				
6. Conclusion:	Both coordinates of power house (103°2'41" E, 27°34'52" N) and dam (103°2'50.43" E, 27°40'12.76" N) were included in the revised PDD. By checking against the Google Earth, both coordinates were confirmed valid to position the project. A map showing the location of the project in Butuo County, Sichuan Province, China was also added in the revised PDD. The finding was therefore closed.				

1. Grade/Ref:	CAR 03	2. Date:	27/04/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para. 58 ACM0002 Version 11 and ACM0002 Version 12.1.0				
5. Finding:	The description of the project activity was noted incorrect in the following instances: a) The source of the surface area of the full reservoir (m ²) listed in Table A.4.1 provided in the PDD was incorrect. b) The rated flow of the turbine and the type of generator listed in table A.4.2 were noted to be different from the actual nameplate of the turbine generator unit as sighted during the site visit.				
6. Conclusion:	The PDD has been revised to include (a) the correct page of PDR 9-1 as the reference source				

for the surface area and (b) the rated flow of turbine was corrected to 19.38 m³/s from 19.65 m³/s, and the generator type was revised as SF50-10/4120 from SF50-10/4250. The revision is deemed fully consistent with the actual employed equipment. The change in diameter (from 4250 to 4120) of the stator core of the generator is deemed small and not a substantial change from the PDR. The finding was therefore closed.

1. Grade/Ref:	CAR 04	2. Date:	27/04/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para. 51				
5. Finding: The name of the participant from the Annex I country, EcoSecurities Group PLC, indicated in the host country's LoA is different from the one stated in the PDD, EcoSecurities International Limited.					
6. Conclusion: Clarification was made by the PP referring to confirmation made between the Secretary of the CDM-EB and the chair of the Project Developer Forum regarding changes in Annex I Party different from HNA. The validation team confirmed that through the correspondences with the Project Developer Forum, the CDM-EB confirmed that the indication of the Annex I Party and Annex I country participant in the host country's LoA is not a requirement of CDM and it is a matter to be resolved by the host country DNA and the project developer. Based on the confirmation, the difference is not covered by the scope of validation. The finding was therefore closed.					

1. Grade/Ref:	CAR 05	2. Date:	27/04/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para. 77.; CDM VVM para. 123 (a) (ii); CDM VVM para. 123 (b)(ii) Specific guidelines for completing the Project Design Document (CDM-PDD) B.7.1 ACM0002 Version 11 and ACM0002 Version 12.1.0				
5. Finding:					
a) The $EG_{\text{facility},y}$ is required to be expressed as $EG_{\text{pj},y}$ to denote electricity generation (export to the grid) and EC_y to denote electricity consumption (import from the grid) in B.7.1 of the PDD					
b) The accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person / entity that should undertake the measurements were not stated in the table of B.7.1 of the PDD;					
c) The PP is required to clearly state the monitoring point of each meter and the procedure to make sure the net electricity supplied to the grid can be clearly identified, since it is found in the PPA that the checking point may include both electricity from the project and Lianbu power project, another proposed CDM developed by the PP.					
d) CAP_{pj} and A_{pj} should be ex-post monitored and should have been listed in B.7.1;					
6. Conclusion:					
The validation team agreed to closed the finding on the basis of					
a) The electricity export to the grid, $EG_{\text{pj},y}$ and the electricity import from the grid, EC_y had been clearly presented in B.7.1 of the revised PDD;					
b) The relevant national standards, the measurement equipment and its calibration					

procedures, measurement method and the responsible party were included in B.7.1 of the revised PDD;

c) According to the Agreement on settlement point of the project signed by the PP and Xichang Power Grid on 02/08/2010, the settlement point of the electricity supplied by the project to the grid and the electricity imported by the project from the grid is set at the project site. therefore, the net electricity supplied to the grid can be clearly identified;

d) CAP_{pj} and A_{pj} had been listed in B.7.1 of the revised PDD and will be monitored in operation year as per the methodology.

1. Grade/Ref:	CAR 06	2. Date:	27/04/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para. 110 Guidelines on the assessment of investment analysis Version 3 para. 11				
5. Finding: a) Assumptions and input data for the investment analysis in table B.5.3 should have been presented in Sub-step 2c, not in Sub-step 2d. b) The actual interest payable should be taken into account in the calculation of income tax. For carrying out the correction, the more basic input data would need to be included in the PDD or in the cash flow sheet. c) The footnote 7 is not deemed valid to support the relevant statement, since it just gave the fuel and material rising in Guangxi Province. d) The depreciation of the project was witnessed 31years in financial IRR calculation sheet;					
6. Conclusion: The validation team agreed to closed the finding on the basis of a) The table of Main parameters used in the investment analysis was confirmed as listed in Sub-step 2c, B.5 of the revised PDD; b) & d) The recalculated post-tax IRR was updated in the revised PDD to take into account the influence of actual interest in the calculation of income tax and to employ 30 years depreciation in the calculation. c) The reference website, included in the revised PDD as footnote 10, was deemed valid to justify the steel and cement price rises in the recent years.					

1. Grade/Ref:	CAR 07	2. Date:	27/04/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para 77 and 89				
5. Finding:					
a) Equation 9 in the GSP PDD showed $BE_y = EG_{pj,y} \times EF_{grid,CM,y}$ where $EG_{pj,y}$ has been denoted as the quantity of net electricity generation that is produced and fed into the grid. Considering that electricity is imported by the power plant and/ or the dam and denoted by EC_y, the net supply of electricity to the grid will be $EG_{pj,y} - EC_y$. Equation 9 & 10 will require to be suitably amended. b) The procedure for the determination of the project emission and leakage was missing in section B.6.1 of the PDD. c) $EF_{coal,Adv}$, $EF_{oil,Adv}$ and $EF_{gas,Adv}$ have been used in PDD Annex 3; however, these parameters are not listed in table B.6.2 that includes data and parameters available at validation.					
6. Conclusion:					
The validation team confirmed the relevant actions as stated below and closed the finding.					
(a) Equation 9 & 10 were suitably amended in the revised PDD.					

- (b) PDD section 6.1 now reflected the determination of project emission and leakage.
 (c) The PDD had been updated to include $EF_{coal,Adv}$, $EF_{oil,Adv}$ and $EF_{gas,Adv}$ in table B.6.2.

1. Grade/Ref:	CAR 08	2. Date:	25/05/2010	3. Status:	Closed																																													
4. Requirement	CDM VVM Version 01.2 para 120 Tool for the demonstration and assessment of additionality Version 05.2																																																	
5. Finding: By checking the provided copies of Yearbook of China Water Resources 2005 to 2008, fourteen more projects with installed capacity between 50MW and 300MW were identified. Please clearly justify why these project can not be defined as similar project with transparent evidence.																																																		
<table><tr><th>N o.</th><th>Name of power plant</th><th>Installed capacity (MW)</th></tr><tr><td>1</td><td>Mahui Power station</td><td>86.1</td></tr><tr><td>2</td><td>Chengdong Power station</td><td>84</td></tr><tr><td>3</td><td>Caoyutan Power station</td><td>75</td></tr><tr><td>4</td><td>Huaneng Dongxiguan Power station</td><td>180</td></tr><tr><td>5</td><td>Jiangkou Power station</td><td>51</td></tr><tr><td>6</td><td>Yucheng Power station</td><td>60</td></tr><tr><td>7</td><td>Tongtou Power station</td><td>80</td></tr><tr><td>8</td><td>Tongzhong Power station</td><td>57</td></tr><tr><td>9</td><td>Daqiao Shuiku Power station</td><td>100</td></tr><tr><td>10</td><td>Wanbahe Yiji Power station</td><td>69</td></tr><tr><td>11</td><td>Er Daoqiao Power station</td><td>55</td></tr><tr><td>12</td><td>Xiaotiandu Power station</td><td>240</td></tr><tr><td>13</td><td>Shaping hydro power station</td><td>162</td></tr><tr><td>14</td><td>Kaijianqiao hydro power station</td><td>52.5</td></tr></table>						N o.	Name of power plant	Installed capacity (MW)	1	Mahui Power station	86.1	2	Chengdong Power station	84	3	Caoyutan Power station	75	4	Huaneng Dongxiguan Power station	180	5	Jiangkou Power station	51	6	Yucheng Power station	60	7	Tongtou Power station	80	8	Tongzhong Power station	57	9	Daqiao Shuiku Power station	100	10	Wanbahe Yiji Power station	69	11	Er Daoqiao Power station	55	12	Xiaotiandu Power station	240	13	Shaping hydro power station	162	14	Kaijianqiao hydro power station	52.5
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6. Conclusion: The fourteen projects highlighted were confirmed as not similar to the project against the reported criteria in the PDD since the projects 1~9 were constructed before 2002 and the projects 10~14 were proposed CDM project by checking the provided reference web pages. The finding was therefore closed.																																																		

1. Grade/Ref:	CAR 09	2. Date:	25/05/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para 120; Tool for the demonstration and assessment of additionality Version 05.2				
5. Finding: a) The footnote 21, 35 and 36 in the revised PDD is protected page and not publicly available; b) The footnote 15, 22 in the revised PDD is not a valid web link; c) Feasibility Study Report of Kehe Hydropower Station is required to be provided for checking the total investment and electricity generation; d) The footnote 29 in the revised PDD is not deemed relevant to Huilongqiao power station;					
6. Conclusion: The validation team agreed to closed the finding since					

- a) the validity of footnote 21,35 and 36 were confirmed by checking the provided backup WebPages;
- b) the validity of footnote 15 and 22 were confirmed by checking the provided backup WebPages;
- c) the publicly available webpage was used to replace the said FSR of Kehe Hydro station in the revised PDD and the updated information was confirmed by checking the link;
- d) The relevant information was confirmed presented in page 37, table 1 of the document in the link of footnote 29.

1. Grade/Ref:	CAR 10	2. Date:	25/05/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para 91				
5. Finding: The employed combined margin emission factor of 0.8529 tCO ₂ /MWh in the PDD Version 1 was not deemed accurate and conservative since the calculated operating margin emission factor is 1.1255 tCO ₂ /MWh and build margin emission factor is 0.5802 tCO ₂ /MWh. In parallel of correction of the emission factor, the estimated annual emission reduction should be corrected accordingly.					
6. Conclusion: The combined margin emission factor of 0.85285 tCO ₂ /MWh was used to recalculate the annual emission reduction of the project in the revised PDD and the validation team confirmed the correctness of the calculation. The finding was therefore closed.					

1. Grade / Reference:	CAR11	2. Date:	19/05/2011	3. Status:	Closed
4. Requirement	CDM VVM, Version 01.2, para. 68.				
5. Finding: The used previously approved methodology ACM0002 (Version 11) in the GSP PDD was invalid since the project was not ready to be submitted for requesting registration before its expiring date of 17 May 2011 23:59 GMT.					
6. Conclusion: The latest available ACM0002 Version 12.1.0 was appropriately applied in the revised PDD. The team reviewed the nature of revision of the methodology from Version 11 to Version 12.1.0 and confirmed that only the definition of reservoir and exist reservoir were added and no other change happened. The team therefore accepted the revision and closed the finding.					

1. Grade/Ref:	CL 01	2. Date:	27/04/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para. 113 (b)				
5. Finding: Since the total investment in the PDR approval was found not to include transmission line investment, the PP is required to justify the amount of money spent on the same.					
6. Conclusion: The validation team confirmed, based on the provided payment documents, that the transmission line cost added up to amount of 16.717,237 RMB, was paid by the PP and The					

team also confirmed that the estimated expense on the transmission line engineering of the amount of 15,000,000 RMB in the PDR was deemed conservative to calculate IRR of the project. The finding was therefore closed.

1. Grade/Ref:	CL 02	2. Date:	25/05/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para. 98				
5. Finding: The earliest date of three construction contracts presented by the PP at the initial stage of validation was noted as 20/08/2006; however, the PP was requested to present another contract numbered XXH-DL-2006-JJ-001 for the diversion tunnel construction.					
6. Conclusion: The validation team, by checking the Civil Works Contract signed between the Project Developer and the 5th Engineering Bureau of Sinohydro Corporation (contract number of XXH-DL-2006-JJ-001 for Diversion tunnel construction) and other contracts for construction and equipment, confirmed that the signing date of the contract is 18/07/2006, which is earlier than 20/08/2006. The PP amended the starting date to 18/07/2006 in the revised PDD and the finding was therefore closed.					

1. Grade/Ref:	CL 03	2. Date:	07/09/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para. 58				
5. Finding: During on site survey, the validation team confirmed the two sets of generator units had passed the commissioning test till 26 Dec 2009, but the expected commercial operation start date was reported as 01 July, 2010 in the milestone table, page 18 of the PDD.					
6. Conclusion: The commercial operation start date was corrected as 26/12/2009 when the two set of power generation units passed the commissioning test. The finding was therefore closed.					

1. Grade/Ref:	FAR01	2. Date:	27/04/2010	3. Status:	Closed
4. Requirement	CDM VVM Version 01.2 para. 123				
5. Finding: During the site visit, it was noted that the power source for the dam is currently through the 10 KV temporary line that was used for the construction. The PP confirmed that the temporary power source of dam site was just for construction use and after all completion of construction, the electricity requirement of dam site will be satisfied by the self consumption line that is common to the power plant and the dam.					
6. Conclusion: This shall be checked by the verification DOE.					