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# VALIDATION REPORT

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## HEJIANG COUNTY YUANXING HYDRO PROJECT IN CHINA

REPORT No. 2007-9143

REVISION No. 03



# VALIDATION REPORT

DET NORSKE VERITAS  
CERTIFICATION AS

Veritasveien 1  
1322 Høvik  
Norway  
Tel: +47 67 57 99 00  
Fax: +47 67 57 99 11  
<http://www.dnv.com>  
Org. No: NO 945 748931 MVA

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Approved by: Mari Grooss Viddal	Organisational unit: DNV Certification AS, International Climate Change Services
Client: EcoSecurities Group plc	Client ref.: Mr. Yang Yi

**Project Name:** Hejiang County Yuanxing Hydro Project  
**Country:** China  
**Methodology:** AMS-I.D  
**Version:** 11  
**GHG reducing Measure/Technology:** Renewable power generation from hydro sources.  
**ER estimate:** 45 315 tCO<sub>2</sub>e/year

**Size**

- ☐ Large Scale  
☒ Small Scale

**Validation Phases:**

- ☒ Desk Review  
☒ Follow up interviews  
☒ Resolution of outstanding issues

**Validation Status**

- ☒ Corrective Actions Requested  
☒ Clarifications Requested  
☒ Full Approval and submission for registration  
☐ Rejected

In summary, it is DNV's opinion that the "Hejiang County Yuanxing Hydro Project" in China, as described in the PDD of version 3.0 dated 21 August 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology AMS-I.D version 11. DNV thus requests the registration of the project as a CDM project activity.

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Report title: "Hejiang County Yuanxing Hydro Project" in China		
Work carried out by: Guo Kang, Sun Shuyong, Michael Lehmann		
Work verified by: Anu Chaudhary, Qinghong (Rowena) Jiao (applicant), Kutty Mathsy (applicant)		

Key words:

Climate Change  
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 Clean Development Mechanism

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### Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification request
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EIA	Environmental impact assessment
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval.
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
NCV	Net Calorific Value
NDRC	National development and reforming commission
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PDR	Preliminary designing report
PJ	Peta joule
SCE	Standard coal equivalent
SCEPB	Sichuan Province Environmental Protection Bureau
SCPG	South China Power Grid
UNFCCC	United Nations Framework Convention on Climate Change




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Appendix A: Validation Protocol

Appendix B: Certificates of Competence



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### 1 EXECUTIVE SUMMARY – VALIDATION OPINION

*Det Norske Veritas Certification AS (DNV) has performed a validation of the “Hejiang County Yuanxing Hydro Project” in China. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.*

*The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.*

*The host Party is China and the Annex I Party is Sweden. Both Parties fulfil the participation criteria and have approved the project and authorized the project participants. The DNA of China has confirmed that the project assists in achieving sustainable development./4/*

*The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.*

*The project correctly applies AMS-I.D version 11 “Grid connected renewable electricity generation”.*

*By generating electricity from hydropower to the grid and partly displace electricity from fossil fuel, the project results in reductions of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It has been demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.*

*The total emission reductions from the project are estimated to be on the average 45 315 tCO<sub>2</sub>e per year over the selected 7 year crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change. The monitoring methodology AMS-I.D version 11 has been applied correctly. The monitoring plan has been generally identified. The procedures for monitoring, operating and maintenance have been elaborated.*

*Local stakeholders’ comments were invited through public discussion during the EIA process. All comments received and how they were or will be taken into account are included in the EIA report. Public stakeholders’ inputs have also been invited via the UNFCCC website. No comments have been received.*

*In summary, it is DNV’s opinion that the “Hejiang County Yuanxing Hydro Project” in China, as described in the PDD of version 3.0 dated 21 August 2008 meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the simplified baseline and monitoring methodology AMS-I.D version 11. DNV thus requests the registration of the “Hejiang County Yuanxing Hydro Project” as a CDM project activity.*



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## 2 INTRODUCTION

The EcoSecurities Group Plc has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the “Hejiang County Yuanxing Hydro Project” in China (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

### 2.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

### 2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, the simplified modalities and procedures for small-scale CDM project activities and the relevant decisions by the CDM Executive Board, including the approved small-scale methodology AMS I-D version 11. The validation team has, based on the recommendations in the Validation and Verification Manual /3/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs

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

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### 3 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

#### 3.1 Desk Review of the Project Design Documentation

The following table lists the documentation that was reviewed during the validation:

- /1/ Project Design Document for the “Hejiang County Yuanxing Hydro Project”, version 01 dated 13 July 2007, version 3.0 dated 21 August 2008
- /2/ AMS-I.D approved small-scale CDM baseline and monitoring Methodology “*Grid connected renewable electricity generation*” version 11 at EB31
- /3/ International Emission Trading Association (IETA) & the World Bank’s Prototype Carbon Fund (PCF): *Validation and Verification Manual*.  
<http://www.ieta.org/ieta/www/pages/index.php?IdSitePage=200>
- /4/ Letter of approval issued by DNA of China dated 10 September 2007
- /5/ Letter of approval issued by DNA of Sweden dated 27 November 2007
- /6/ Luzhou Yuyu Electricity Supply Company: PPA dated 18 December 2005
- /7/ Sichuan Yibin Hydro-power electricity development designing institute, Adjusted PDR dated 26 April 2005
- /8/ Chengdu science & technology university environmental protection institute: Adjusted EIA dated May 2006
- /9/ Luzhou Jiale yuanxing Power Development Co., Ltd.: Application for Construction Start-up dated 06 January 2006.
- /10/ Luzhou Hydro Bureau :Approval of Construction Start-up dated 16 January 2006
- /11/ Sichuan Environment Protection Bureau: EIA-approval (15MW) dated 14 June 2006
- /12/ Luzhou NDRC: adjusted PDR approval (15MW) dated 30 December 2005
- /13/ Agriculture Bank of China: Loan Intent Letter dated 10 November 2005
- /14/ Yuanxing Small Scale Hydro Calculator for IRR calculation
- /15/ Sichuan local electricity bureau: Notice for the CDM project in Sichuan province working meeting dated 26 October 2005
- /16/ Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities: *Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories*. Version 06, 30 September 2005.




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- /17/ CDM Executive Board, ACM0002 “Consolidated methodology for grid-connected electricity generation from renewable sources” version 06 of 19 May 2006
- /18/ Ministry of Water Resources, Economic evaluation code for small hydropower projects (SL 16-95)
- /19/ China Energy Statistical Yearbook 2004, 2005 and 2006
- /20/ China Electric Power Yearbook 2002, 2003, 2004, 2005 and 2006
- /21/ 2006 IPCC Guidelines for National Greenhouse Gas Inventories
- /22/ CDM Executive Board, Guidance for request for deviation titled “Application of AM0005 and AMS-I.D in China” (<http://cdm.unfccc.int/Projects/Deviations>)
- /23/ China NDRC: China's Regional Grid Baseline Emission Factors, for BM Calculation (<http://cdm.ccchina.gov.cn/website/cdm/upfile/file1374.pdf>)
- /24/ China NDRC: China's Regional Grid Baseline Emission Factors, for OM Calculation (<http://cdm.ccchina.gov.cn/website/cdm/upfile/file1358.pdf>)
- /25/ EcoSecurities Group plc : Monitoring manual for Yuanxing Hydro Power Project in Guizhou Province dated 12 December 2007
- /26/ Hejiang County Government: approval for the resettlement and compensation plan dated 26 January 2006
- /27/ The Territorial Bureau of Hejiang County: contract for the resettlement and compensation with individual person dated 12 September 2005
- /28/ Sichuan Long river accountants firm: property assessment report dated 6 September 2005
- /29/ Individual : letters to confirm receive the compensation dated 20 September 2005
- /30/ Yuanxing hydro power station: Training plan and record dated 30 March 2007
- /31/ Yuanxing hydro power project stakeholder questionnaire dated 7 June 2007
- /32/ Agriculture Bank of China: loan policy on the small scale hydro power project dated 24 June 2005, document NO. [2005]176  
The Sichuan Branch of the Agricultural Bank of China – Document (Notice) about the implementation of the document NO. [2005]176 of the Agricultural Bank of China dated 8 August 2005
- /33/ Sichuan Changjiang accounting firm: final financial audit report for the “Hejiang County Yuanxing Hydro Project” dated 11 January 2008
- /34/ Li Qidao, senior engineer <http://www.powerfoo.com/article/html/1190013626140.html>  
article about small hydropower station statistic analysis and suggestion
- /35/ Confirmation letter that electricity will be supply to SCPG issued by the grid company dated 20 March 2007
- /36/ Contract between the Project Developer and Sichuan Huayuan Rural Electrification Development Co., Ltd. in December 2005





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- /37/ Cooperation agreement between Sichuan Huayuan Rural Electrification Development Co., Ltd and EcoSecurities in November 2005
- /38/ ERPA co-signed by EcoSecurities and the Project Developer dated 19 October 2006 and two term sheets signed in January 2006 and April 2006 were substituted by terms defined in the ERPA
- /39/ Approved project list issued by DNA of China  
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1349.pdf> dated 13 July 2007.

Main changes between the version published for the 30 days stakeholder commenting period and the final version submitted for registration:

- The annex I Party has been changed from UK to Sweden.
- The data sources for the baseline emission factor calculation of South China Power Grid have been updated to the latest data that was published by Chinese DNA dated 09 August 2007.
- The project name changed from “Yuanxing Hydro project” to “Hejiang County Yuanxing Hydro Project”
- The project developer changed from Luzhou Jiale Yuanxing Electric Power Development Co., Ltd to Luzhou Jiale Yuanxing Power Development Co., Ltd. due to typo error in previous version of PDD.
- The electricity is supplied to SCPG instead of previously CCPG. The electricity generated by the project is supplied to the Guizhou Province instead of the Sichuan Province. The project is near the boarder of these two provinces and the local grid company is sending electricity to Guizhou Province. This was confirmed during validation.
- The PDD is revised according to the resolutions of CARs and CLs.

### 3.2 Follow-up Interviews with Project Stakeholders

During the date on 31 August 2007, DNV conducted the interviews and during the period from 19 – 20 September 2007, DNV conducted the site visits. Representatives from Luzhou Jiale Yuanxing Electric Power Development Co., Ltd, EcoSecurities Group Plc, National land and resource bureau of Fabao town and the local villagers were interviewed to resolve the issues identified during the desk review of the project design document. The following personnel from different organisations were interviewed:

	Date	Name	Organization	Topic
/40/	31 August 2007	Wen Qiang	Luzhou Jiale Yuanxing Electric Power Development Co., Ltd	<ul style="list-style-type: none"> <li>- Project background information</li> <li>-Project technology, operation, maintenance and monitoring capability</li> <li>-Project additionality</li> <li>-Project financial structure</li> <li>-Project monitoring and management plan</li> </ul>



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/41/	31 August 2007	Shen Yu Huan	EcoSecurities Group plc	-Project approval status
				-Stakeholder consultation process
				-Project design document
				-Baseline determination
				-Emission reductions calculation
/42/	19 September 2007	Liu Cheng	National land and resource Bureau of Fobao Town	-Project additionality
				Resettlement of the local people
/43/	19 September 2007	Xu Dechang	Luzhou Jiale Yuanxing Electric Power Development Co., Ltd Responsible for resettlement affair	
				Resettlement of the local people
/44/	19 September 2007	Zhou Huaming	Local villager's leader / Resettlement villager's representative	
				Resettlement of the local people

### 3.3 Resolution of Outstanding Issues

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol was customised for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the "Hejiang County Yuanxing Hydro Project" in China is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- mistakes have been made with a direct influence on project results;
- CDM and/or methodology specific requirements have not been met; or
- there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

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A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

<b>Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities</b>		
<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is acceptable either based on evidence provided (OK), a <b>Corrective Action Request (CAR)</b> of risk or non-compliance with stated requirements or a request for <b>Clarification (CL)</b> where further clarifications are needed.</i>

<b>Validation Protocol Table 2: Requirement checklist</b>				
<b>Checklist Question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Comment</b>	<b>Draft and/or Final Conclusion</b>
<i>The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a <b>corrective action request (CAR)</b> due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

<b>Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests</b>			
<b>Draft report clarifications and corrective action requests</b>	<b>Ref. to checklist question in table 2</b>	<b>Summary of project owner response</b>	<b>Validation conclusion</b>
<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

**Figure 1 Validation protocol tables**




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### 3.4 Internal Quality Control

This validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

### 3.5 Validation Team

<b><i>Role/Qualification</i></b>	<b><i>Last Name</i></b>	<b><i>First Name</i></b>	<b><i>Country</i></b>
Team leader, GHG auditor	Guo	Kang	China
CDM Validator	Sun	ShuYong	China
Technical reviewer	Chaudhary	Anu	India
Technical reviewer (applicant)	Jiao	Qinghong (Rowena)	China
Technical reviewer (applicant)	Kutty	Mathsy	India
Sector expert	Lehmann	Michael	Norway

The qualification of each individual validation team member is detailed in Appendix B to this report.



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### 4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation version 3.0 of 21 August 2008.

#### 4.1 Participation Requirements

The project participants are Luzhou Jiale Yuanxing Electric Power Development Co., Ltd. of China and EcoSecurities Group Plc. of Ireland. The host Party China and the participating Annex I Party Sweden meet the requirements to participate in the CDM.

The DNA of China has issued a Letter of Approval (LoA) /4/ on 10 September 2007, authorizing Luzhou Jiale Yuanxing Electric Power Development Co., Ltd as a project participant and also confirming that the project assists in achieving sustainable development.

The DNA of Sweden has also issued a Letter of Approval (LoA) /5/ on 27 November 2007, authorizing EcoSecurities Group plc as a project participant.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.

#### 4.2 Project Design

The project is located at Hejiang County, Luzhou City, Sichuan Province, People's Republic of China. The low diversion dam is located in Dacuoba Village, and the power plant was near the Yuanxing Village of Fubao Town, Hejiang County. The exact project coordinates are E 106°09'04" longitude, N28°46'11" latitude for the power plant and E 106°10'06" longitude, N28°42'07" latitude for the diversion dam.

The project is a diversion-type, run-of-river hydropower project with a total installed capacity of exactly 15MW (consisting of 3 turbine generator sets with 5 MW capacity each). The turbines are of HLA351-WJ-95 make and the associated generators are of SFW-K5000-6/1730 make. DNV was able to verify the individual rated capacity against the adjusted PDR/7/ and approval of the adjusted PDR /12/. The project consists of a gravity dam, a diversion tunnel, and the power plant. The electricity generated by the project is transmitted to the 110kV Ganyu transformer station via a 22 km transmission line and connected to the Local Yuanxing Grid, then to the Sichuan local power grid and finally into the South China Power Grid /35/(SCPG).

The project activity is not a debundled component of a larger project activity since the project participants have not registered or are not applying to register any other small-scale CDM project activity with the same project participants in the same project category and technology/measure; and registered within the previous 2 years; and whose project boundary is within 1 km of the project boundary of the Yuanxing Hydro Power Project in Sichuan Province at the closest point.

The proposed technology is similar to the technology used in existing hydropower projects and represents current good practice.



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DNV confirmed that the proposed project activity fulfils the Chinese domestic regulations and policy of promoting sustainable development. The project is in line with host-Party specific CDM requirements and the confirmation thereof by the DNA of China was issued on 10 September 2007.

The project activity got the construction permission on 16 January 2006 according to the approval letter /10/ of construction start-up and the length of the first renewable crediting period is seven years starting on 1 June 2008. Over the first crediting period (7 years), the annual power output of the project is expected to be 53,730 MWh /7/. The project's power generation will replace the power generated by the existing power plants and likely capacity additions in the SCPG resulting in estimated emission reductions of 45 315 tCO<sub>2</sub> annually.

### 4.3 Baseline Determination

The project is a renewable electricity generation for a grid project activity (Category I.D) as per appendix B of the simplified modalities and procedures for small-scale CDM project activities. The project correctly applies the simplified baseline methodologies proposed for this project activity category, i.e. AMS I.D (version 11). Its applicability has been justified by DNV due to that

- i) it is a grid-connected renewable power generation project and more specifically, diversion-type, run-of-river hydropower project, the flooded surface area is 0.219km<sup>2</sup> according to the adjusted PDR /7/, the power density is 68.49W/m<sup>2</sup>,
- ii) it is connected to a regional electricity grid (SCPG) and
- iii) the installed capacity is 15 MW.

DNV is able to verify the above information through the adjusted PDR /7/ and approval of the adjusted PDR /12/.

The baseline emissions are calculated as the electricity produced by the renewable power source multiplied by the SCPG emission factor in a transparent and conservative manner as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the approved methodology ACM0002 (version 06)/17/.

The ex-ante estimation method was selected for the OM and BM emission factor based on the most recent information available for the years 2002-2005, which was the most recent data available at the time of PDD submission. The South China Power Grid is dominated by coal-fired power plants. It is deemed likely that coal-fired power plants will continue to dominate the power sector due to the local availability of low-cost coal. It is expected that renewable capacity additions will not have significant effects on the mix of the grid during the crediting period.

After confirmation with local grid company, it is confirmed that the power plant will be connected to South China Power Grid instead of the Central China Power Grid and relevant changes are made in the final PDD. The project is near the boarder of these two provinces and the local grid company is sending electricity to Guizhou Province. DNV was able to verify the changes. The project boundaries include the physical project activity site and all the power plants connected physically to the SCPG including the Guangdong Province, Guangxi Province, Guizhou Province and Yunnan Province.





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The geographic and system boundaries of SCPG can be clearly identified. This is in line with the delineation of grid boundaries as provided by the DNA of China. The defined project boundary is in line with ACM0002 (version 06).

The application of the baseline methodology is transparent and conservative.

### 4.4 Additionality

The additionality of the project is demonstrated by applying the attachment A to the Appendix B of *the Simplified Modalities and Procedures for Small-scale CDM Project Activities*.<sup>/16/</sup>

The project proponent initially faced difficulties availing finances for the project activity. In June 2005, the Agriculture Bank of China issued a loan policy to restrict investment on the small scale hydro projects <sup>/32/</sup>. On 26 October 2005, local government who is responsible for power industry development held a meeting to introduce CDM concept to the project developer, Luzhou Jiale Yuanxing Power Development Co., Ltd. <sup>/15/</sup>. After the meeting, the project developer further explained the possibility of CER revenue if the project is registered as CDM project activity in the loan application letter to the bank. The bank finally issued Loan Intent Letter dated 10 November 2005 to grant the Project a RMB 50 million loan with setting the precondition of applying for CDM project activity <sup>/13/</sup>. After obtaining the loan permission from the bank, the project developer finally received the construction start permission on 16 January 2006 <sup>/10/</sup>. DNV was able to verify the above mentioned documents and kept copies of the documents. In DNV's opinion, the construction permission is a prerequisite for actual investment for the project and is thus representative for the date for when the final decision to proceed with the project is made. Thus it can be defined as the earliest date of implementation, construction and real action.

DNV is also able to verify In December 2005, the Project Developer signed a contract with a CDM consultancy company <sup>/36/</sup> in order to initiate the CDM process. The consultancy, which signed a cooperation agreement with EcoSecurities at the end of 2005 <sup>/37/</sup>, then put the Project Developer and EcoSecurities in touch. They started negotiating an Emissions Reduction Purchase Agreement (ERPA); two term sheets were signed in January 2006 and April 2006 and the ERPA was finally signed in October 2006 <sup>/38/</sup>. PDD development was then started. The Project was approved by the Chinese DNA for host country approval in the website information <sup>/39/</sup> and PDD submitted for web publishing in July 2007 <sup>/1/</sup>. From above documents, DNV is able to verify the project developer took continuing and real actions to secure CDM status for the Project.

An investment barrier has been used to demonstrate that the project activity is not financially attractive without CDM revenues.

An IRR of 10% has been selected as the benchmark rate, which is deemed to be reasonable for small hydropower projects in China according to the published "Economic evaluation code for small hydropower projects (SL 16-95)" by Ministry of Water Resources <sup>/18/</sup>. Since the actual electricity tariff (based on the PPA signed on 18 December 2005 <sup>/6/</sup>) was lower than the estimation in the adjusted PDR, the IRR of the project has been confirmed to be 7.37% <sup>/33/</sup> without the CER revenues, which shows that the proposed project cannot be considered financially attractive, and the project faces an investment barrier.

The data used for the IRR calculations are derived from the adjusted preliminary design report of the project <sup>/7/</sup>, which is developed by an accredited third party (Sichuan Yibin Hydro-



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power electricity development designing institute) at 26 April 2005 and approved by Luzhou NDRC of Sichuan Province on 30 December 2005/12/. A preliminary design report in China is required to be developed by a third party, accredited for this task, directly by the government. An approval letter of the preliminary design report is issued by the government after it passes the public assessment of the sector experts designated by the government. Hence, an adjusted PDR of the proposed project can in DNV's opinion be regarded as an accurate and trustworthy source of information coming from a recognized entity once it has the approval letter from the government.

The IRR input parameters used in the financial analysis are taken from the adjusted PDR, except electricity tariff. The electricity tariff is based on the power purchasing agreement with local grid company (Luzhou Yuyu Electricity Supply Company) of 18 December 2005 /6/ signed before the start date of the project activity (construction permit approval of 16 January 2006). The input parameters used in the financial analysis can thus be considered information provided by two independent and recognised sources. DNV compared the input parameters for the financial analysis included in the PDD with the parameters stated in the adjusted PDR and PPA and was able to confirm that the values applied are consistent with the values stated in the adjusted PDR and PPA.

The input parameters used in the financial analysis were compared with the data reported for 23 other similar proposed hydropower CDM projects connected to the South China Power Grid, e.g. investment costs per kWh, O&M costs per MW, electricity tariff and percentage of O&M costs relative to total investment costs. By in addition applying our sectoral competence, the input parameters used in the financial analysis are deemed reasonable.

The adjusted PDR was approved on 30 December 2005 and the PPA on 18 December 2005, and thus less than 1 month prior to the decision to proceed with the project activity (i.e. the start date of the project) which was on 16 January 2006. Given this short period of time between approval of the adjusted PDR and the decision to proceed with the project activity, it is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the adjusted PDR has been the basis of the decision to proceed with the investment in the project.

The sensitivity analysis has been assessed with regards to the total investment, annual electricity generation, annual operational costs and on-grid tariff, which shows that without the income from CER sales, the IRR of the proposed project could not reach the benchmark.

*Operation and maintenance cost:* With respect to the variation in the operation and maintenance (O&M) cost, it was noticed that even on considering zero O&M cost, the IRR did not reach the benchmark of 10%. The IRR reaches the benchmark when the O&M cost reduces by 134%, which is improbable.

*Investment cost:* The investment costs is unlikely to drop 19% since the labour cost and raw material cost have risen in recent years and this was further confirmed against the final financial audit report for the project /33/ issued by an independent accounting firm, which shows that the project investments have increased by 39% compared to what was estimated in the adjusted PDR.

*Electricity tariff:* The electricity tariff is based on the PPA/6/ and the tariff is defined as 230 RMB/MWh for the first 3,700 hours of operation and 190 RMB/MWh for the hours in excess





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of these 3,700 hours (the proposed Project is expected to operate 4,369 hours per year). The current average electricity tariff offered to small scale hydro power projects in Sichuan Province is 191 RMB/MWh, and for Guizhou Province is 178 RMB/MWh according to the website information /34/. However, the tariff used for IRR calculation is 230RMB/MWh which is already 20% higher than the average. This shows that a further 20 % increase in the electricity tariff is not a realistic variation, and the IRR is not likely to reach the benchmark.

*Electricity generation:* The annual electricity generation is related to the operating hours. The expected operating hours of the project indicated in the Preliminary Design Report was determined by kinetic calculation based on historical hydrological data, electricity demand of the grid and technical performance of installed capacity. Assuming a 19% of increase in annual operating hours is thus not reasonable, and the IRR is not likely to reach the benchmark.

The main parameters (including electricity tariff) used for the IRR calculations are derived from the adjusted preliminary design report of the project /7/ and PPA/6/. Both documents have been assessed by DNV.

In conclusion, the assessment of the arguments presented above is deemed to sufficiently demonstrate that the project activity itself is not a likely baseline scenario and that emission reductions resulting from the project are additional.

### 4.5 Monitoring

The project applies the approved monitoring methodology, AMS-I.D “Grid connected renewable electricity generation” version 11. The selected monitoring methodology is in line with the monitoring methodology provided for the relevant project category as listed in Appendix B of the Simplified Modalities and Procedures for Small Scale CDM project activities.

The monitoring methodology will give opportunity for real measurements of achieved emission reductions.

Monitoring of project emissions is not required as per AMS-I.D. version 11 for projects with power density  $> 10\text{W/m}^2$ , and thus has not been considered for the project. Leakage has not been considered for the project due to that the renewable energy technology equipment is not transferred from another activity or to another activity. A 10kV backup transmission line from the Ganyu Transformer Station will be used for emergency cases. The electricity import from the grid will be charged by the grid company in case of emergency and thus deducted from the net electricity to the grid.

Monitoring of sustainable development indicators is not required by the Chinese DNA. The environmental impacts are considered minor and will be monitored by the local environmental authority during the project lifetime.

It has been verified that the net power exported to the SCPG grid will be monitored continually and recorded on monthly basis by the project owner. In addition, the electricity sales receipts will be provided for data quality control and cross check.

Details of the data to be collected, frequency of data recording, certainty level and format and the project management responsibilities are clearly defined.



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The baseline emissions are calculated as the product of the electricity supplied to the grid and the grid emission factor of SCPG, which is determined ex-ante.

The application of the monitoring methodology is transparent and complete.

### 4.5.1 Parameters determined ex-ante

The methodology requires monitoring of the following for grid-connected hydropower projects:

- Data needed to calculate the operating margin emission factor, based on the choice of the method to determine the operating margin (OM), consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);
- Data needed to calculate the build margin emission factor consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);

The parameters determined ex-ante for calculating the emission factor are listed in the PDD and were verified by DNV.

### 4.5.2 Parameters monitored ex-post

The only data required to be monitored ex-post is the amount of the net electricity delivered to the grid, which will be continuously monitored through metering equipments installed at the project site. Designated staff will collect the measured electricity data every month and complete the report. Receipts from electricity sales will also be obtained for double checking. The data will be kept for 2 years following the end of the crediting period.

A 10kV backup transmission line from the Ganyu Transformer Station will be used for emergency cases. The electricity import from the grid will be charged by the grid company in case of emergency and thus deducted from the net electricity to the grid.

### 4.5.3 Management system and quality assurance

The project developer will establish a CDM team as described below:

The Project owner will take the responsibility of the monitoring plan implementation.

The staff from operational and financial departments will undertake the monitoring tasks including reading metering equipments daily, collecting electricity data and completing records, checking and analyzing the data, archiving relevant records, reporting to company administrator or supervisor.

The staff concerned has received training in monitoring to ensure the implementation of this monitoring plan before project operation /30/. Problems that occur in the monitoring and measurement process will be recorded and reported to the company administrator or supervisor. Consequently, a corrective action will be adopted to deal with that problem and to avoid its recurrence in the future. The Monitoring manual for Yuanxing Hydro Power Project in Guizhou Province dated 12 December 2007 /25/ is in place and checked by DNV. All paper-based information will be stored by the project owner.



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### 4.6 Estimate of GHG Emissions

The emission reductions  $ER_y$  by the project activity is calculated as the difference between baseline emissions ( $BE_y$ ), project emissions ( $PE_y$ ) and emissions due to leakage ( $L_y$ ), as follows:

- 1) Baseline emissions: Baseline emissions ( $BE_y$  in  $tCO_2$ ) are the product of the baseline emissions factor ( $EF_y$  in  $tCO_2/MWh$ ) times the electricity supplied by the project activity to the grid ( $EG_y$  in  $MWh$ ).
- 2) Project emissions: The proposed project is a run-of-river type, so that the project emissions are regarded as zero.
- 3) Leakage: No leakage has to be considered for the proposed project activity.
- 4) Emission reductions:  $ER_y = BE_y - PE_y - L_y = BE_y$ .

For the calculation of the OM emission factor, the simple OM emission factor calculation method is selected because low cost must run projects constitute less than 50% of the total grid generation and data is not available for applying the dispatch data analysis.

The aggregated generation and fuel consumption data are used as more disaggregated data are not available in the SCPG. Country specific data for the net calorific value ( $NCV_i$ ) of each type of fossil fuel, which can be obtained from the China Energy Statistical Yearbook /19/, the IPCC 2006 default values /21/ for the oxidation factor of each type of fossil fuel and the total electricity delivered to the SCPG selected are deemed reasonable. Vintage data for the years 2003, 2004 and 2005 are used for the OM emission factor calculation. This is the most recent data available at the time of PDD submission. The OM is calculated to be 1.0120  $tCO_2/MW$  as a generation-weighted average for the three years,

Because plant specific fuel consumption and electricity generation data is not publicly available in China, the EB guidance on the request for deviation titled "Application of AM0005 and AMS-I.D in China" /26/ has been applied as follows:

- Use of capacity additions for estimating the build margin emission factor for grid electricity.
- Use of weights estimated using installed capacity in place of annual electricity generation.
- Use the efficiency level of the best technology commercially available in the provincial/regional or national grid of China, as a conservative proxy, for each fuel type in estimating the fuel consumption to estimate the build margin (BM).

Following the EB's guidance the build margin is calculated with the following parameters:

- The capacity additions from the years 2003 to 2005 is chosen and reach 21.42% of total installed capacity/24/
- The weight of installed capacity additions for thermal power plant is accounted for 74.01% of total installed capacity additions.
- The standard coal consumption of 343.33 gSCE/kWh is used to determine the BM emission factor, which is deemed conservative. The coal consumption efficiency of 35.82% is defined as the best technology commercially available in China by the DNA of China /20/.



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- The local net calorie value of each kind of fuel, the local carbon content of each kind of fuel and the IPCC 2006 default value of carbon oxidization factor are used to calculate the BM /21/.
- The BM is calculated as 0. 6748 tCO<sub>2</sub>/MW

The weights  $\omega_{OM}$  and  $\omega_{BM}$  are selected as 0.5 and 0.5, respectively, as stipulated for hydropower project by ACM0002, version 06. The combined margin 0.8434 tCO<sub>2</sub>/MW is fixed *ex-ante* for the first crediting period.

The latest data used to calculate the OM & BM emission factors is derived from the China Energy Statistical Yearbooks 2004, 2005 and 2006 /19/ and China Power Electric Power Yearbooks 2002, 2003, 2004, 2005 and 2006 /20/.

The total estimated emission reductions over the first crediting period are 317,205 tCO<sub>2</sub>e. The GHG calculations and selection of the parameters are complete and transparent, and their accuracy has been verified.

### 4.7 Environmental Impacts

An environmental impact assessment (EIA) has been conducted according to Chinese laws and regulations. The potential environmental impacts have been sufficiently identified. A small number of people (11 households or 39 people) were resettled and 1,714m<sup>2</sup> of farmland was affected by the construction of the power house. The resettlement plan was made in line with the national regulations and Sichuan provincial regulation on the construction land use and resettlement. The value of individual property was assessed by Sichuan Long river accountants firm dated 6 September 2005 /27/. The resettlement plan was approved by the Hejiang County Government /26/. The Territorial Bureau of Hejiang County was responsible for carrying out all resettlement compensation measures. All the copies of the resettlement plan & approval /26/, compensation contracts /27/, assessment report /28/ and receipts /29/ are provided to DNV and verified through on site audit. No significant environmental impacts are expected from the project activity. The local Environmental Protection Bureau (EPB) approved the project activity /11/.

### 4.8 Comments by Local Stakeholders

A stakeholder consultation process was conducted as part of the EIA which is required by the local environmental laws. The stakeholders consulted were mainly local residents of the Fubao Town of Yuanxing County who were most affected by the project activity with total of 100 people. 83% participation feedback was received from the stakeholder consultation process, and the results of the survey have shown that 100% of the stakeholders who responded supported the construction of the proposed project. Overall the project will bring the social and economic benefits to the local and the minor negative impact can be mitigated through the implementation of preventive measures stated in the EIA.

In addition to the stakeholder consultation in the EIA, a CDM stakeholder consultation for the project activity was also carried out by the project developer during 25 May to 08 June 2007 to invite comments through distributing and collecting questionnaires/31/. The total of 50 questionnaires was distributed to local stakeholders, and a 100% feedback was received. All the respondents supported the project construction and believe that the proposed CDM project



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activity will have positive impacts on the local ecology, environment, employment and social life. No negative comments have been received.

DNV has checked the copies of the questionnaires received and also talked to the local residents during the on-site interview /38/ /40/. The survey shows that the proposed project receives strong support from the local people and the comments received have been taken into consideration during construction and operation to achieve environmental and social benefits. The on site interview confirmed that the representatives of local residents were satisfied with the resettlement.

### **4.9 Comments by Parties, Stakeholders and NGOs**

The PDD, version 01 dated 13 July 2007 was made publicly available on DNV's climate change website

(<http://www.dnv.com/certification/climatechange/Projects/ProjectDetails.asp?ProjectId=1358>

) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 25 July 2007 to 23 August 2007.

No comments were received.

# APPENDIX A

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## CDM VALIDATION PROTOCOL

**Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities**

Requirement	Reference	Conclusion
<b>About Parties</b>		
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	<del>CAR-1</del> OK
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	<del>CAR-1</del> OK
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK - The designated national authority of China is National Development and Reform Commission of the People's Republic of China - DNA of Sweden: Swedish

Requirement	Reference	Conclusion
		Energy Agency, Department of Energy system Analysis and Climate Change The Annex I Party changed from U.K to Sweden in the final PDD.
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK Both China and Sweden are Parties to the Kyoto Protocol and have ratified the same on 30 August 2002 and 31 May 2002, respectively.
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK
<b>About additionality</b>		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	<del>CL3</del> OK
<b>About forecast emission reductions and environmental impacts</b>		
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK



Requirement	Reference	Conclusion
<b>About small-scale project activities (if applicable)</b>		
12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords and shall not be a debundled component of a larger project activity.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK
13. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK
<b>About stakeholder involvement</b>		
15. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	<del>CL5 &amp; CL6</del> OK
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
<b>Other</b>		
17. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
18. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and	CDM Modalities and	<del>CL2</del>

Requirement	Reference	Conclusion
circumstances.	Procedures §45c,d	OK
19. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
20. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
21. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	<del>CL8</del> OK

**Table 2 Requirements Checklist**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>A. General Description of Project Activity</b> <i>The project design is assessed.</i>					
<b>A.1. Project Boundaries</b> <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?	/1/	DR	The project is located at People's Republic of China, Sichuan Province, Luzhou City, Yuanxing Town. The exact location of the project is defined using GPS coordinates: 103°29'28"E, 30°46'13"N. These GPS coordinates correspond to the Power Plant's location.		OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/ /35/	DR	<p>The project's system boundaries include the facilities in the power plant and all the power plants that are connected to the Central China Power Grid.</p> <p>The electricity generated by the project is supplied to the Guizhou Province instead of the Sichuan Province. This is updated in the latest version of the PDD. The project is near the boarder of these two provinces and the local grid company is sending electricity to Guizhou Province.</p> <p>After confirmation with local grid company, it is confirmed the power will be connected</p>		OK

\* MoV = Means of Verification, DR= Document Review, I= Interview  
 CDM Validation 2007-9143, rev.03

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			to the South China Power Grid and relevant changes are made in the final PDD. DNV was able to verify the changes.		
<b>A.2. Participation Requirements</b> <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					
A.2.1. Which Parties and project participants are participating in the project?	/1/ /4/ /5/	DR I	<p>China and United Kingdom of Great Britain and Northern Ireland are participating in the project activity. China is hosting the project and Luzhou Jiale Yuanxing Power Development Co., Ltd is the sole project participant from the host Party. United Kingdom of Great Britain and Northern Ireland is the Annex 1 Party. Eco Securities Group Plc. is the project participant from the United Kingdom.</p> <p>The Annex I Party changed from U.K to Sweden in the final PDD.</p>		OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/ /4/ /5/	DR	<p>The letter of authorisation and the letter of approval for the project and its participants from the DNA of China and United Kingdom of Great Britain and Northern Ireland need to be submitted.</p> <p>The Annex I Party changed from U.K to Sweden in the final PDD.</p>	<del>CAR1</del>	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<p>A.2.3. Do all participating Parties fulfil the participation requirements as follows:</p> <ul style="list-style-type: none"> <li>- Ratification of the Kyoto Protocol</li> <li>- Voluntary participation</li> <li>- Designated a National Authority</li> </ul>	/1/ /4/ /5/	DR	<p>Both, China and United Kingdom of Great Britain and Northern Ireland, have ratified the Kyoto Protocol. The Republic of China ratified the Kyoto Protocol on 30 August 2002, and established a DNA - National Development and Reform Commission of the People's Republic of China.</p> <p>United Kingdom has also established a DNA "DEFRA, Department for Environment, Food and Rural Affairs" on ratification of the Kyoto Protocol on 31 May 2002.</p> <p>However, the confirmation of voluntary participation by the respective parties in the project activity needs to be provided for verification.</p> <p>The Annex I Party changed from U.K to Sweden in the final PDD.</p>	<del>CAR1</del>	OK
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR	The initial validation of the project activity did not reveal any information indicating that the project can be seen as diversion of any ODA funding towards China.		OK
<p><b>A.3. Technology to be employed</b></p> <p><i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i></p>					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.3.1. Does the project design engineering reflect current good practices?	/1/ /7/ /8/	DR I	Yes. The project activity uses the widely used technology of turbines for electricity generation, which reflects the current good practice.		OK
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/ /7/ /8/	DR I	Yes, the project uses state of the art, but known technology in the electricity generation and transmission. However, detailed description of the technology needs to be provided in the PDD.	<del>CL1</del>	OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/ /7/ /8/	DR I	Yes. The essential equipment used in the project is produced domestically and the project developer is experienced in handling and operating this kind of equipment.		OK
<b>A.4. Contribution to Sustainable Development</b> <i>The project's contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/1/ /4/ /5/	DR	The letter of approval from the DNA confirming that the project assists in achieving sustainable development needs to be submitted.	<del>CAR1</del>	OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/1/ /4/ /5/	DR	Yes, the project activity will provide employment opportunities to the local population and thereby help alleviate poverty. The project also helps enhance the local investment environment and improve		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			the local economy.		
<b>A.5. Small scale project activity</b> <i>It is assessed whether the project qualifies as small-scale CDM project activity</i>					
A.5.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/1/ /2/ /35/	DR/ I	<p>The project activity is a renewable energy generation project (hydroelectric). The total installed capacity of the proposed project is 15 MW and hence it fulfils the criteria for type I small scale projects.</p> <p>The electricity generated will be supplied to Central China power grid and hence will displace fossil fuel based electricity in the grid.</p> <p>After confirmation with local grid company, it is confirmed that the power will be connected to the South China Power Grid and relevant changes are made in the final PDD. DNV was able to verify the changes.</p>		OK
A.5.2. Is the small scale project activity not a debundled component of a larger project activity?	/1/	DR/ I	<p>The project is not a part of any large scale project or program and is not a debundled component of a large project activity.</p> <p>The project participants have not registered or are not applying to register any other small-scale CDM project activity</p> <ul style="list-style-type: none"> <li>• With the same project participants;</li> <li>• In the same project category and</li> </ul>		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			technology/measure; and <ul style="list-style-type: none"> <li>• Registered within the previous 2 years; and</li> <li>• Whose project boundary is within 1 km of the project boundary of the Hejiang County Yuanxing Hydro Project at the closest point.</li> </ul>		
<b>B. Project Baseline</b> <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
<b>B.1. Baseline Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/ /2/	DR	The project activity correctly applies the approved baseline methodology AMS-I.D, version 11 – “Grid connected renewable electricity generation” proposed for the small scale project activity under category I which was valid at the time of publishing of the PDD.		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/ /2/	DR	The baseline methodology is applicable to the project activity as it satisfies the applicability criteria of being; <ul style="list-style-type: none"> <li>- A grid connected renewable energy</li> </ul>		OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>project (new reservoir hydro power station) with an installed generation capacity of 15 MW which is same as the limit of 15 MW as per the methodology.</p> <ul style="list-style-type: none"> <li>- Renewable electricity project (hydro electric)</li> <li>- Electricity generated is supplied to a grid that would have been generated by at least one fossil fuel fired generating unit.</li> </ul>		
<b>B.2. Baseline Scenario Determination</b> <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?	/1/ /2/	DR	The baseline scenario is that in the absence of the project activity, equivalent amount of energy would have been generated from the existing plants or newer plants connected to the grid		OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/ /2/	DR	<p>Four realistic and credible alternatives to the project activity are considered to investigate the baseline:</p> <p><i>Alternative 1:</i> The proposed project activity without CDM, i.e. the construction of a new hydroelectricity generation plan with installed capacity of 15 MW connected to the local grid, implemented without considering</p>		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>CDM revenues.</p> <p><i>Alternative 2:</i> Continuation of the current situation, i.e. electricity will continue to be generated by the existing generation mix operating in the grid.</p> <p><i>Alternative 3:</i> Construction of a thermal power plant with the same installed capacity or the same annual power output.</p> <p><i>Alternative 4:</i> Construction of a power plant using another renewable energy resource with the same installed capacity or the same annual power output</p> <p>Alternative 3 is not in line with applicable laws and regulations (announcement which strictly forbids the construction of thermal power stations with an installed capacity lower than 135 MW published by the State Council Office, Guo Ban Fa Ming Dian[2002] No.6).</p> <p>Sichuan Province lacks renewable sources, except water resources. According to the China Electric Power Yearbook (2003-2006), the installed capacity of wind farms and other renewable energy technologies is 0 MW. Therefore, <i>Alternative 4</i> is not realistic and credible and is not considered further.</p> <p>The barrier analysis shows that the proposed project faces an investment barrier that would</p>		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			prevent its implementation without the CDM but not the implementation of the relevant alternative 2, i.e. the continuation of the current situation. As a conclusion, alternative 2 is the baseline scenario.		
B.2.3. Has the baseline scenario been determined according to the methodology?	/1/ /2/ /35/	DR	Yes, the baseline scenario has been selected in accordance with the baseline methodology AMS-I.D. The baseline as per the methodology is the electricity generated by the project times a grid emission factor of the connected grid calculated as per the guidelines provided. As the project activity exports power to the Central China Power Grid (CCPG), the emission factor of the CCPG is selected.  After confirmation with local grid company, it is confirmed that the power will be connected to the South China Power Grid and relevant changes are made in the final PDD. DNV was able to verify the changes.		OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/ /2/	DR	Yes, the baseline scenario is arrived at based on conservative assumptions.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /2/	DR	Refer section B.2.2.		OK
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/ /2/	DR	All literature and sources have been mentioned.		OK
B.2.7. Have the major risks to the baseline been identified?	/1/ /2/	DR	Any risks associated with the chosen baseline needs to be addressed.	<del>CL2</del>	OK
<b>B.3. Additionality Determination</b> <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/1/ /16/ /2/	DR I	<p>The additionality of the project activity has been demonstrated based on the following barriers:</p> <p>Investment barrier: It has been argued that in the absence of CDM revenues, the proposed project is not viable. The project developer has chosen benchmark analysis to demonstrate the financial viability of the proposed project with and without CDM revenues. Project IRR has been selected as the financial indicator. It has been compared</p>		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>against the benchmark of expected minimum return fixed by “Economic evaluation code for small scale hydropower projects” published by Ministry of Water resources of China (for small hydro power plants less than 50 MW capacity). The Ministry has fixed 10% as the expected minimum returns in case of hydro projects less than 50 MW installed capacity. It is stated that the project IRR without CDM revenues works out to be 5.91% as against the benchmark of 10.0% considered for the proposed project activity. The project IRR improves to 11.85% with CDM revenues.</p> <p>A sensitivity analysis for the project has also been carried out to analyze the affect of variations in various parameters like investment costs, operation costs and electricity tariff has been carried out. The sensitivity analysis shows that even with about 10% variations in the above parameters, the project IRR remains below the benchmark of 10%. Hence using the benchmark analysis tool, the project developer has sufficiently demonstrated that without CDM revenues, the project returns are much below the expected minimum returns for such type of projects.</p>		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>- Financial barrier: It is argued that it is difficult for the private entities in China to obtain finance for small hydro projects. In Sichuan region, Agricultural bank of China requires the generating units to be above 5 MW to be eligible for financing. As per this requirement, even the proposed project did not fall under this limit. However, considering the benefits from CDM revenues, the Agricultural Bank of China approved a loan of RMB 50 million for the proposed project activity.</p> <p>The IRR in the adjusted PDR is different with the PDD. Please explain and justify the difference with PDD.</p> <p>Please explain why the variation of electricity generation is not considered in the sensitivity analysis. Please also justify why 10% variation is chosen for the sensitivity analysis and evidence should be provided.</p>	<del>CL10</del>	
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/ /6/ /7/ /8/ /9/ /16/	DR I	Same as above	<del>CL10</del>	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/ /6/ /7/ /8/ /9/ /16/	DR I	Yes, references to the source of information have been provided.		OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/ /6/ /7/ /8/ /9/ /16/	DR I	In version 01 of the PDD (dated 13 July 2007), the project starting date has been mentioned as 30 August 2007. However, it has been confirmed that the actual construction started 16 January 2006 and 30 August 2007 is the commissioning date of the project. Hence in accordance with EBs decision, the project starting date needs to be changed to 16 January 2006. Evidence for the project starting date may also be provided for verification.  Since the project starting date is prior to the date of validation of the project, the project developer also needs to provide an evidence for considering the benefits of CDM for the project activity.	<del>CL3</del>	OK
<b>B.4. Calculation of GHG Emission Reductions – Project emissions</b> <i>It is assessed whether the project emissions are stated</i>					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /2/	DR	For ex ante emission reduction calculations, the project emissions have been considered as zero on the basis that the project is based on zero emission source. However, the project developer needs to clarify if there is a use of any fossil fuel in emergencies/start-up. The resulting project emissions need to be considered while arriving at the final emission reduction figure.	<del>CL7</del>	OK
B.4.2. Have conservative assumptions been used when calculating the project emissions?	/1/ /2/	DR	The project developer needs to clarify the use of any fossil fuel in emergencies/start-up.	<del>CL7</del>	OK
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/1/ /2/	DR	Same as above.	<del>CL7</del>	OK
<b>B.5. Calculation of GHG Emission Reductions – Baseline emissions</b> <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /2/ /19/	DR	The baseline emissions are calculated in line with the methodology, AMS-I.D and ACM0002 (for emission factor calculation). The project has considered the Central China		OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/20/ /21/ /22/ /23/ /24/ /35/		<p>Power Grid for the estimation of the emission factor. The emission factor is estimated as an average of the operating margin and the build margin. The operating margin is calculated as the simple operating margin of 1.2908 tCO<sub>2</sub>e/MWh and is fixed <i>ex-ante</i> during the entire crediting period. The simple operating margin (a) is considered because low-cost must run resources constitute less than 50% of total grid generation.</p> <p>Also, detailed data to apply option (c) is not available.</p> <p>Since, plant specific fuel consumption and electricity generation data is not publically available in China, the project proponent adopts the deviation method as approved by the CDM EB as follows, which are deemed to applicable for this project.</p> <ul style="list-style-type: none"> <li>- Use of capacity additions for estimating the build margin emission factor for grid electricity</li> <li>- Use of weights estimated using installed capacity in place of annual electricity generation</li> <li>- Use the efficiency level of the best technology commercially available in the provincial/regional or national grid of</li> </ul>		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>China, as a conservative proxy, for each fuel type in estimating the fuel consumption to estimate the build margin (BM).</p> <p>The BM thus has been calculated to be 0.6465 tCO<sub>2</sub>e/MWh.</p> <p>Hence, the emission factor for the CCPG has been worked out to be 0.9687 tCO<sub>2</sub>e/MWh. The project developer needs to clearly state in the PDD whether the emission factor has been fixed <i>ex ante</i> or will be updated <i>ex post</i>.</p> <p>Baseline emissions have been estimated as the product of electricity generated in the project activity per year and grid emission factor of the Central China Power Grid.</p> <p>The installed capacity of project plant is 15 MW and it is expected that the proposed power plant will export approximately 53 730 MWh of electricity per year to the Central China Power Grid.</p> <p>The baseline emission calculation should be base on the latest updated information by Chinese NDRC.</p> <p>After confirmation with local grid company, it is confirmed that the power will be connected to the South China Power Grid and relevant changes are made in the final PDD.</p>	CL9	

\* MoV = Means of Verification, DR= Document Review, I= Interview  
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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			DNV was able to verify the changes.		
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/ /2/ /35/	DR	The IPCC 2006 values are considered in the emission factor calculation for CO <sub>2</sub> emission factor and oxidation factors. The grid emission factor has been sourced from the Central China power Grid. After confirmation with local grid company, it is confirmed that the power will be connected to the South China Power Grid and relevant changes are made in the final PDD. DNV was able to verify the changes.		OK
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	Any uncertainties to the baseline to be addressed.	<del>CL2</del>	OK
<b>B.6. Calculation of GHG Emission Reductions – Leakage</b> <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /2/	DR	No leakage is required to be considered since the project does not involve transfer of any energy generating equipment from another activity nor is any existing equipment transferred to another activity.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?	/1/ /2/	DR	Same as above.		OK
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/1/ /2/	DR	Same as above.		OK
<b>B.7. Emission Reductions</b> <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/ /35/	DR	The project activity is expected to result in emission reductions of 52,045 tCO <sub>2</sub> e annually through out the 7 years renewable crediting period.  The same was revised to 45 315 according to the latest data of NDRC for the SCPG in the final PDD.		OK
<b>B.8. Monitoring Methodology</b> <i>It is assessed whether the project applies an appropriate monitoring methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/ /2/	DR	Yes, the monitoring plan is in accordance with the simplified approved methodology, AMS I.D version 11.		OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of	/1/ /2/	DR	The only parameter to be monitored is the net electricity supplied to the grid and this is		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?			done by metering. It is clearly mentioned in the PDD that the monitored data will be kept for two years after the end of the crediting period.		
<b>B.9. Monitoring of Project Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/ /2/	DR	The project activity is a run-of-river renewable electricity generation and hence no project emissions are expected to result from the project activity. The power density is $> 10\text{W/m}^2$ .  However, the use of fossil fuel for emergencies/start-up needs to be clarified by the project developer. Hence, the resulting project emissions (if any) need to be monitored.	CL7	OK
<b>B.10. Monitoring of Baseline Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/ /2/	DR	For baseline calculations, electricity generated by the project activity is to be monitored. The power generated is recorded by digital meters and same will be documented.		OK
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes, the choice of baseline GHG indicator of		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/2/		CO <sub>2</sub> is reasonable.		
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/ /2/	DR	Yes.		OK
B.10.4. Is the measurement <i>equipment</i> described and deemed appropriate?	/1/ /2/	DR	Yes. Two meters, revenue and cross check meter will be installed and monitored.		OK
B.10.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/ /2/	DR	Yes. Two meters, revenue and cross check meter will be installed, every month the meter reading will be recorded and monitored. If the error of the revenue or cross check meter exceeds the allowable range specified in the national standards, the same will be replaced by new meter. The revenue meter will be sealed by the project developer and the grid company jointly.		OK
B.10.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/ /2/	DR	The measured data will be collected and recorded monthly. It is in line with the monitoring methodology.		OK
B.10.7. Is the registration, <i>monitoring, measurement</i> and <i>reporting</i> procedure defined?	/1/ /2/	DR	The procedures for records handling are identified in the monitoring plan.		OK
B.10.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/ /2/	DR	Yes, periodic checks will be conducted as per national standards. If the error of the revenue or cross check meter exceeds the allowable range specified in the national standards, the		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			same will be replaced by new meter. The PP has clearly mentioned operational procedure and responsibilities for monitoring and quality assurance.		
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/ /2/	DR	Yes. The procedures for records handling are identified in the monitoring plan.		OK
<b>B.11. Monitoring of Leakage</b> <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/ /2/	DR	No leakage is considered.		OK
B.11.2. Are the choices of project leakage indicators reasonable and conservative?	/1/ /2/	DR	Same as above.		OK
B.11.3. Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/1/ /2/	DR	Same as above.		OK
<b>B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts</b> <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over</i>					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/ /8/	DR I	Monitoring of sustainable development indicators is not required by the Chinese DNA. However, the environmental impact assessment study was carried out in year 2005. The EIA study report was approved by Environment Protection Authority of Sichuan province on 30 December 2005.		OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR I	Chinese DNA, NDRC, does not require collection and archiving of data related to environmental, social and economic impacts. The environmental impacts will be monitored by local environmental authority.		OK
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR I	Same as above		OK
<b>B.13. Project Management Planning</b> <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/1/ /25/	DR I	Yes. Authority and responsibility of the project management is described in monitoring plan.		OK
B.13.2. Are procedures identified for training of monitoring personnel?	/1/ /25/	DR I	Yes.		OK



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/ /25/	DR I	Since the project activity is a run-of-river hydro power generation, there will be no unintended emissions.		OK
B.13.4. Are procedures identified for review of reported results/data?	/1/ /25/	DR I	This is described in the PDD. Data and records will be checked prior to being stored and archived. Data from the project will be checked to identify possible errors or omissions. The data checks will include cross checks of the two electricity meters, and checks of the electricity figures on the receipts. All records will be checked for completeness.		OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/ /25/	DR I	Yes, according to the PDD, a formal set of monitoring procedures will be established prior to the start of the crediting period. The PDD does not clearly mention about the procedures for corrective action or internal audits.	<del>CL8</del>	OK
<b>C. Duration of the Project/ Crediting Period</b> <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/	DR	The initial PDD, version 01 dated 13 July 2007, mentions the project starting date as 30	<del>CL4</del>	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/10/	I	August 2007. However, it has been confirmed that the actual construction started 16 January 2006. Hence, as per EBs decision, the project starting date should be the earliest of date of implementation, construction and real action. PDD needs to be revised.		
C.1.2. Is the start of the crediting period clearly defined and reasonable?	/1/	DR I	The project developer has chosen a renewable crediting period of 7 years with the start date of the crediting period as 01 October 2007.  The start date of the crediting period needs to be changed as it should be four weeks after the date of submission of registration request.	<del>CL</del> 4	OK
<b>D. Environmental Impacts</b> <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
<b>D.1. For Small-scale projects</b>					
D.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	/1/ /8/	DR I	Yes, It is mentioned in the PDD according to the clauses 13 and 19 of the Environmental protection law of China. DNV was able to verify the “Environmental impact assessment law”. The Law requires that all construction projects must carry out an environmental impact assessment before the project starts. The project entity must analyse the		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Environmental Impacts of the project activities in China.		
D.1.2. Does the project comply with environmental legislation in the host country?	/1/ /11/ /12/ /26/ /27/ /28/ /29/	DR I	Yes. An environmental impact assessment is required by Chinese law & regulation. The EIA has been approved by Sichuan Provincial Environmental Protection Bureau (SEPB). DNV was able to verify the approval for the EIA by the SEPB dated 14 June 2006.		OK
D.1.3. Will the project create any adverse environmental effects?	/1/ /11/ /12/	DR I	No adverse environmental effects are observed as it is a small scale project activity. Some air pollution, noise pollution and land erosion will occur prior to project activity due to construction activities.		OK
D.1.4. Have environmental impacts been identified and addressed in the PDD?	/1/	DR I	Yes.		OK
<b>E. Stakeholder Comments</b> <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
E.1.1. Have relevant stakeholders been consulted?	/1/ /11/	DR I	According to the requirement by the Measures for operation and management of Clean Development Mechanism projects in	<del>CL5</del>	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/12/ /31/		China, a survey of the local villagers and residents was conducted on May 2006 during the EIA process.  In addition to the stakeholder consultation in the EIA, a CDM stakeholder consultation for the project activity took place in May 2007. The local stakeholders were invited to submit comments on the project activity filling a questionnaire sent out by the project developer on the 25 <sup>th</sup> May 2007 and collected one week after.  During the interviews dated 31 August 2007, it was apparent that there were some re-settlements due to the project activity, the details and evidences regarding the same need to be provided in the PDD.		
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ /31/	DR I	A one page questionnaire, designed to be easily filled in by stakeholders. Documentary evidence for the stakeholder consultation process conducted for the project activity needs to be provided. Copies of the letter sent out need to be provided and Minutes of meeting signed to be furnished.	CL6	OK
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out	/1/ /11/ /12/	DR I	Yes. According to the requirement by the Measures for Operation and Management of Clean Development Mechanism Projects in		OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
in accordance with such regulations/laws?	/26/ /27/ /28/ /29/ /31/		China and Environment Impact Assessment Law in China, the project needs to carry out a stakeholder consultation process.		
E.1.4. Is a summary of the stakeholder comments received provided?	/1/ /31/	DR I	Yes, the summary of the comments received from the stakeholders has been provided in the PDD.		OK
E.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR I	No negative comments were received for the project activity.		OK

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**Table 3 Resolution of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p><del>CAR1</del></p> <p>The letter of authorisation and the letter of approval for the project and its participants from the DNA of China and United Kingdom need to be submitted.</p> <p>The voluntary participation of the project needs to be confirmed in the letter of approval from the DNA.</p>	<p>A2.2 A2.3 A4.1</p>	<p>The LoA from the DNA of China has been sent to DNV with the revised PDD.</p> <p>The LoA from the DNA of Sweden has been sent to DNV with the revised PDD.</p>	<p>OK. The Annex I Party has been changed from U.K to Sweden in the final PDD.</p> <p>The LoA from Chinese DNA was issued on 10 September 2007.</p> <p>The LoA from Swedish DNA was issued on 27 November 2007.</p> <p>Both LoAs have confirmed that the two participating Parties fulfil the voluntary participation requirements.</p> <p>The CAR is closed.</p>
<p><del>CL1</del></p> <p>Please give some detailed description of how environment safe and sound technology and know-how (for example, the type of the turbine and generator) is being applied by the project activity in the PDD</p>	<p>A3.2</p>	<p>The Project will use state of the art, but known technology in electricity generation and transmission. The turbines and generators are produced by Yibin Fuyuan Electricity Generation Facilities CO., Ltd. which is proficient in producing middle and small-sized turbine generator units with a history of more than 50 years.</p> <p>Detailed information of turbine and generator has been integrated in Section A.4.2 of the PDD.</p>	<p>OK. Technical characteristics of the generating equipment have been added in the PDD.</p> <p>The CL is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p><del>CL2</del></p> <p>Any risks associated with the chosen baseline needs to be addressed.</p> <p>Any uncertainties to the baseline to be addressed.</p>	<p>B2.7</p> <p>B5.3</p>	<p>There are no significant risks to the baseline except the enforcement of the Chinese renewable law. However, this law does not need to be taken into account as it is being implemented only now i.e. after the entry into force of decision 17.CP 7.</p> <p>There is no significant uncertainties of the baseline for small-scale hydro project of China, all the data for the baseline calculation are available and conservative.</p>	<p>This can be accepted by DNV, the CL is closed.</p>
<p><del>CL3</del></p> <ul style="list-style-type: none"> <li>- The project starting date needs to be changed to the construction start date in accordance with the EBs decision.</li> <li>- Evidence for the project starting date needs to be provided.</li> <li>- Evidence for considering the CDM benefits for the project activity needs to be provided.</li> </ul>	<p>B3.4</p>	<p>The starting date of the Project activity has been modified to construction start permission date: 16 January, 2006.</p> <p>-The evidence for the project starting date “Approval for starting construction by Luzhou Water Conservancy Bureau on 16 January 2006” has been provided to DNV during the validation interview on 31 August 2007.</p> <p>- The evidence for considering the CDM has been sent to DNV including Intent letter from the Agriculture Bank of China in November 2005 and the CDM introduction meeting notice from Sichuan province electricity bureau (local government agency responsible for power industry development).</p>	<p>OK. The evidence of the project construction start permission was checked by DNV.</p> <p>The evidence of consideration of CDM was submitted to DNV and also described in the PDD.</p> <p>The CL is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p><del>CL4</del></p> <p>The start date of the crediting period needs to be changed as for small scale projects, the starting date of crediting periods should be four weeks after the submission of request of registration.</p>	<p>C1.1 C1.2</p>	<p>The starting date of the first crediting period has been modified to “The crediting period will start on 1 June, 2008, or on the date of registration of the CDM project activity, whichever is later.”</p>	<p>OK, PDD amended. The CL is closed.</p>
<p><del>CL5</del></p> <p>According to the interview dated 31 Aug. 2007, there were some resettlements due to the project activity, the detailed information should be given in the PDD, and relevant evidence for the resettlements should be provided for the validation process.</p>	<p>E1.1</p>	<p>Detailed information about resettlement has been integrated in Section D.1 of the PDD.</p> <p>On site resettlement interview has been taken on 19 September 2007. All the related documents have been provided to DNV including:</p> <ol style="list-style-type: none"> <li>1. Construction Land Use and Resettlement Plan by Territorial Bureau of Hejiang County</li> <li>2. Approval on Construction Land Use and Resettlement Plan of the Project by Hejiang County Government</li> <li>3. Assets Evaluation Report by Sichuan Changjiang Accountant Office</li> <li>4. 11 resettlement compensation contracts between the 11 households and the Land requisition office of Hejiang County which is under the Territorial Bureau of Hejiang County</li> <li>5. 11 compensation receipts signed by</li> </ol>	<p>OK. The on-site audit and interview were conducted on 19 September 2007 which evidenced all the remaining issues regarding the resettlement. The CL is closed.</p>



Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		householders.	
<p><del>CL6</del></p> <p>Documentary evidence for the stakeholder consultation process conducted for the project activity needs to be provided.</p> <p>Copies of the letter sent out need to be provided and Minutes of meeting signed to be furnished.</p>	E1.2	The local stakeholders were invited to submit comments on the project activity filling a questionnaire sent out by the project developer in June 2007. All the 50 questionnaires sent out were collected in one week to give the stakeholders full consideration time.	<p>The copy of questionnaires were provided to DNV and checked.</p> <p>The CL is closed.</p>
<p><del>CL7</del></p> <p>The use of fossil fuel for emergencies/startup needs to be clarified by the project developer. Hence, the resulting project emissions (if any) needs to be monitored.</p>	<p>B4.1</p> <p>B4.2</p> <p>B4.3</p> <p>B.9.1</p>	There isn't any emergency power generation set (Diesel Generator set) on site. A 10kV backup transmission line from the Ganyu Transformer Station will be used for emergency cases when the 110kV transmission line to the grid is broken and all the three generators are not working at the same time.	<p>The project developer declared that there is no diesel generation set on site. This can be further confirmed during the verification.</p> <p>The CL is closed.</p>
<p><del>CL8</del></p> <p>PDD does not clearly mention about the procedures for corrective action or internal audits.</p>	B13.5	The procedure for Internal audits will be developed as described in the Table entitled "CDM Monitoring System Procedures" in Annex 4. This procedure has to be followed by all CDM staff involved. The procedure will be developed and made available to the DOE at verification.	<p>This is stated in the PDD Annex 4 and in the CDM operation and monitoring manual /25/ and checked by the DNV.</p> <p>The CL is closed.</p>
<p><del>CL9</del></p> <p>PDD mentions "ex ante calculation". However, it does not mention clearly whether</p>	B5.1	Emission Factor is fixed during the first crediting period. This has been clarified in	<p>OK, the PDD is amended and ER calculation has been verified by the</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>emission factor is fixed or will be updated during the crediting period. Please make it clear in the PDD.</p> <p>The baseline emission calculation should be based on the latest updated information by Chinese NDRC.</p>		<p>Section B.6.1 of the PDD.</p> <p>The emission reduction calculation amended and latest data on the NDRC used for the calculation.</p>	<p>DNV auditor.</p> <p>The CL is closed.</p>
<p>CL10</p> <p>The IRR in the adjusted PDR is different with the PDD. Please explain and justify the difference with PDD.</p> <p>Please explain why the variation of electricity generation is not considered in the sensitivity analysis. Please also justify why 10% variation is chosen for the sensitivity analysis and evidence should be provided.</p>	<p>B3.1</p> <p>B3.2</p>	<p>The tariff excluding VAT is 0.23RMB/kWh in the PPA (signed 18 December 2005) while the estimated tariff in the adjusted PDR was 0.281 RMB/kWh.</p> <p>In the PDD version 1, insurance fee had been included in the operating costs while in the Calculator this was double counted by mistake.</p> <p>Both PDD and the Calculator have been modified accordingly. And the IRR without CDM should be 7.37%.</p> <p>The electricity generation is included in the sensitivity analysis and justification for the variation stated in the PDD.</p>	<p>Both documents have been checked and sensitivity analysis added in the PDD.</p> <p>The CL is closed.</p>

## **APPENDIX B**

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### **CERTIFICATES OF COMPETENCE**



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## CERTIFICATE OF COMPETENCE

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**Anu Chaudhary**

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

<b>GHG Auditor:</b>	Yes		
<b>CDM Validator:</b>	Yes	<b>JI Validator:</b>	Yes
<b>CDM Verifier:</b>	--	<b>JI Verifier:</b>	--
<b>Industry Sector Expert for Sectoral Scope(s):</b>	--		
<b>Technical Reviewer for (group of) methodologies:</b>			
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes		

Høvik, 26 September 2007

Einar Telnes  
*Director, International Climate Change Services*

Michael Lehmann  
*Technical Director*



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## CERTIFICATE OF COMPETENCE

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***Kang Guo***

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

<b><i>GHG Auditor:</i></b>	Yes		
<b><i>CDM Validator:</i></b>	--	<b><i>JI Validator:</i></b>	--
<b><i>CDM Verifier:</i></b>	--	<b><i>JI Verifier:</i></b>	--
<b><i>Industry Sector Expert for Sectoral Scope(s):</i></b>	--		

Høvik, 30 October 2007

*Michael Lehmann*

Michael Lehmann

*Technical Director, International Climate Change Service*



## CERTIFICATE OF COMPETENCE

### *Michael Lehmann*

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

<b>GHG Auditor:</b>	Yes		
<b>CDM Validator:</b>	Yes	<b>JI Validator:</b>	--
<b>CDM Verifier:</b>	Yes	<b>JI Verifier:</b>	--
<b>Industry Sector Expert for Sectoral Scope(s):</b>	Sectoral scope 1, 2, 3 & 9		
<b>Technical Reviewer for (group of) methodologies:</b>			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0028, AM0034	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0030	Yes
ACM0004	Yes	AM0031	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0032	Yes
ACM0007	Yes	AM0035	Yes
ACM0008	Yes	AM0038	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0041	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0034	Yes
AM0009, AM0037	Yes	AM0043	
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	AM0046	
AM0014	Yes	AM0047	
AM0017	Yes	AMS-II.A-F, AM0044	Yes
AM0018	Yes	AMS-III.A	Yes
AM0020	Yes	AMS-III.E, AMS-III.F	Yes
AM0021	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

**Einar Telnes**  
Director, International Climate Change Services

**Michael Lehmann**  
Technical Director



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## CERTIFICATE OF COMPETENCE

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***Qinghong (Rowena)Jiao***

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

<b><i>GHG Auditor:</i></b>	Yes		
<b><i>CDM Validator:</i></b>	--	<b><i>JI Validator:</i></b>	--
<b><i>CDM Verifier:</i></b>	--	<b><i>JI Verifier:</i></b>	--
<b><i>Industry Sector Expert for Sectoral Scope(s):</i></b>	--		

Høvik, 18 July 2007

Einar Telnes  
Director, International Climate Change Services

Michael Lehmann  
Technical Director



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## CERTIFICATE OF COMPETENCE

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***Shu Yong Sun***

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

<b><i>GHG Auditor:</i></b>	Yes		
<b><i>CDM Validator:</i></b>	Yes	<b><i>JI Validator:</i></b>	--
<b><i>CDM Verifier:</i></b>	--	<b><i>JI Verifier:</i></b>	--
<b><i>Industry Sector Expert for Sectoral Scope(s):</i></b>	--		

Høvik, 12 March 2007

Einar Telnes  
*Director, International Climate Change Services*

Michael Lehmann  
*Technical Director*





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## CERTIFICATE OF COMPETENCE

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***Mathsy Kutty***

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

<b><i>GHG Auditor:</i></b>	Yes		
<b><i>CDM Validator:</i></b>	Yes	<b><i>JI Validator:</i></b>	--
<b><i>CDM Verifier:</i></b>	--	<b><i>JI Verifier:</i></b>	--
<b><i>Industry Sector Expert for Sectoral Scope(s):</i></b>	--		

Høvik, 26 September 2007

Einar Telnes  
*Director, International Climate Change Services*

Michael Lehmann  
*Technical Director*