



VALIDATION REPORT

SICHUAN XIBA SMALL HYDRO POWER PROJECT

Report No: QT- EC0710-08-08/262

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Approved by: Mr. Rainer Winter	Organisational unit: TÜV NORD JI/CDM Certification Program
Client: Carbon Resource Management Ltd	Client ref.: Mr. Nicholas A Clarke
<p>Summary/Opinion:</p> <p>The Carbon Resource Management Ltd has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "<i>Sichuan Xiba Small Hydro Power Project</i>", with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords), and the relevant decisions by COP/MOP and CDM Executive Board.</p> <p>The purpose of this project activity is to generate renewable electricity using hydro power available from the water flowing over Moxi River and export it to the connected Central China Power Grid, thereby displacing the grid generated electricity.</p> <p>A risk-based approach has been followed to perform this validation. In the course of the draft validation 7 Corrective Action Requests (CARs) and 8 Clarification Requests (CRs) were raised, CARs and CRs had been successfully closed in the course of the validation.</p> <p>The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.</p> <p>In detail the conclusions can be summarised as follows:</p> <ul style="list-style-type: none"> - The project is in line with all relevant host country criteria (China) and all relevant UNFCCC requirements for CDM. Project activity approvals have been obtained from National CDM Authority i.e. DNA of China in the form of Letter of Approval (LOA) on 28/10/2008, English version No. 1460. The project is a bilateral project and the LOA from UK as the Annex 1 country dated 27/11/2008. - The project additionality is sufficiently justified in the final PDD. - The monitoring plan is transparent and adequate. - The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 35,352 tCO₂e annually is most likely to be achieved within the first renewable 7-year crediting period (01/09/2009 - 31/08/2016) <p>The conclusions of this report show that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.</p>	

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Work carried out by: Mr. Martin Saalman Mr. Li Yong Jun	
Work verified by: Mr. Eric Krupp	
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Indexing terms

Climate change
CDM
Validation
Kyoto Protocol

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Abbreviations

CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CCPG	Central China Power Grid
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CR	Clarification Request
DEFRA	Department for Environment Food and Rural Affairs
DNA	Designated National Authority
DR	Document Review
EB	CDM Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWh	Giga Watt Hour
I	Interview
IPCC	Intergovernmental Panel on Climate Change
LKHP	Leshan Kaiyuan Hydro Power Co., Ltd.
LOA	Letter of Approval
MW	Megawatt
MWh	Megawatt hour
NDRC	National Development and Reform Commission
ODA	Official Development Assistance
PDD	Project Design Document
PP	Project Participant
QC/QA	Quality Control/Quality Assurance
SPDR	Supplementary Preliminary Design Report
SSC	Small-scale project activities
UNFCCC	United Nations Framework Convention on Climate Change

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1 INTRODUCTION

Carbon Resource Management Ltd has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project:

“Sichuan Xiba Small Hydro Power Project”

with regard to the relevant requirements for CDM project activities.

1.1 Objective

The purpose of this validation is to have an independent third party assessment of the project design. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 12 of the Kyoto Protocol^{/KP/};
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 17/CP.7^{/MA/}; the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board;
- other relevant rules, including the host country (China) legislation and sustainability criteria

are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan (based on AMS I.D. Version 13: “Grid-connected renewable electricity generation”), which are included in the PDD^{/PDD-2/} and other relevant supporting documents.

The items covered in the validation are described below:

- **UNFCCC & Host Country Criteria**

- UNFCCC/Kyoto Protocol requirements, in particular,
 - o the requirements of the CDM as set out in decision 17/CP.7 (Marrakech Accords)^{/MA/},
 - o the present annex, and
 - o relevant decisions by COP/MOP & CDM Executive Board
- Host country requirements / criteria

- **CDM Project Description**

- Project design
- Project boundaries
- Predicted CDM project GHG emissions

- **Project Baseline**
 - Baseline methodology
 - Baseline GHG emissions
- **Project Additionality**
- **Monitoring Plan**
 - Monitoring methodology
 - Indicators/data to be monitored and reported
 - Responsibilities
- **Background investigation and follow up interviews**
- **Global Stakeholder consultation**
 - Publishing the PDD^{/PDD-1/} on TÜV NORD website (linked to UNFCCC website)
 - Review of comments
- **Draft validation reporting with CARs & CRs, if any**
- **Final validation reporting.**

The information included in the PDD and the supporting documents were reviewed against the requirements and criteria mentioned above. The TÜV NORD CERT GmbH JI/CDM CP has, based on the recommendations in the Validation and Verification Manual^{/VVM/}, employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs. The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

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

1.3 GHG Project Description

1.3.1 Project Scope

The considered GHG project can be classified as a CDM project in the sector given in Table 1-1 (according to List of Sectoral Scopes of UNFCCC).

Table 1-1: Project Scope

No.	Project Scope
1	Energy Industries (renewable - / non-renewable sources)

1.3.2 Project Parties

People's Republic of China and UK are the two parties involved in the project activity.

1.3.3 Project Entities

The following entities are involved in the developing of the project:

Project Proponent 1 Leshan Kaiyuan Hydro Power Co., Ltd.
Project Owner:
No.274, Chunhua Road, Shizhong District,
Leshan City
Sichuan Province
P. R. China
Contact person: Mr. Zhu Weiguo
Tel No: +86 883 2020030
Fax No: +86 883 2020056
Email: songys0105@vip.sina.com

Project Proponent 2 Carbon Resource Management Ltd.
CER Buyer:
49 St. James's Street
London SW1A 1JT
United Kingdom
Contact Person: Mr. Nicholas A Clarke
Tel No: +44 20 7016 1420
Fax No: +44 20 7016 1421
Email: nac@carbonresource.com

1.3.4 Project location

The following table shows the project location details.

Table 1-2: Project Location

Host Country	Peoples Republic of China
Region	Sichuan Province
Project location address	Xiba Town, Wutongqiao District, Leshan City
Power House Coordinates	
Latitude	29°22'31"N
Longitude	103°47'35"E

1.3.5 Technical project description

The proposed project activity is a low-head power plant in the river channel located in Xiba Town. The installed capacity is 5MW (2×2.5MW). Main construction of the project includes a barrage and a powerhouse.

As the proposed project is a renewable energy project, the project is intended to reduce CO₂ emissions to displace the electricity generated by mostly fossil fuel based power plants connected to the Central China Power Grid (CCPG). The estimated amount of electricity delivered to the CCPG is 36,315 MWh per year.

The estimated amount of emission reductions over the renewable 7-year crediting period is 247,464 tCO_{2e} during 2009 to 2016 (i.e. 35,352 tCO_{2e} annually, expected start of operation from 01/09/2009)^{/PDD-2/}.

The key parameters for the proposed project activity are given in the following tables.

Table 1-3. Key technical indicators

Turbines	
Type:	GD1250a-WP-300
Manufacturer:	Guangdong Shaoguan Zongli Generating Equipment Co., Ltd.
Quantity:	2
Rated Capacity:	2.5 MW
Water Head:	4.6 m
Rated Flow	51 m ³ /s
Rated Rotation Speed:	136.4 r/min
Generators	
Type:	SFWG2005-44/3300
Manufacturer:	Guangdong Shaoguan Zongli Generating Equipment Co., Ltd.
Quantity:	2
Rated Capacity:	2.5 MW
Rated Voltage:	6.3 kV

2 VALIDATION TEAM

The Validation team was led by:

- **Yong Jun Li**, TÜV NORD – Shanghai, China. Mr. Li, Dipl. in Environment Technology, is a TÜV-CERT Lead auditor for ISO 9001/14001 and OHSAS 18001. Currently he is In-charge-CDM Services for TÜV NORD China operation. He is an appointed assessor for JI/CDM certification program of TÜV NORD CERT GmbH and participated already in several CDM project (pre-) validations.

For this validation he was assisted by:

- **Martin Saalman**, TÜV NORD CERT GmbH, is an appointed JI/CDM Assessor for scope 1 in the JI/CDM Certification Program of TÜV NORD.

The validation report is verified by:

- **Eric Krupp**. Mr. Krupp works at TÜV NORD as an approved emission verifier within the European Emission Trading Scheme. Mr. Krupp is an authorized JI/CDM assessor and deputy head of the JI/CDM Certification Program of TÜV NORD.

The validation report is approved by:

- **Rainer Winter**. Mr. Winter works at TÜV NORD CERT GmbH as ISO 9001/14001 Auditor and environmental verifier for EMAS. He is also an approved emission verifier within the European Emission Trading Scheme. Mr. Winter is an authorized JI/CDM assessor and is in charge of the TÜV NORD JI/CDM Certification Program.

3 METHODOLOGY

The validation of the project was carried from August 2008 to June 2009. It was divided into two phases: the pre-validation and the final validation phase.

The pre-validation consisted of the following three sub-phases:

- A desk review of the PDD^{/PDD-1/} (incl. annexes) and supporting documents with the use of a customised validation protocol^{/CPM/} according to the Validation and Verification Manual^{/VVM/};
- Back ground investigation and follow-up interviews with personnel of the project proponent, the consultant, legal authorities and other stakeholders;
- Reporting of validation findings taking into account the public comments received on TÜV NORD website.

The draft validation report includes Corrective action and Clarification Requests (CAR and CR) identified in the course of this validation.

A **Corrective Action Request** is established if

- mistakes have been made in assumptions or the project documentation which directly will influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions cannot be verified and certified.

A **Clarification Request** is issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

After resolution of these CARs and CRs by the project proponent the validator issues the (final) validation report and opinion.

The final validation started after performance of proposed corrective action (CA) of these CAR and CR by the project proponent. The validators had assessed the proposed CA with a positive result and after the closure of these CAR and CR the project proponent had issued the final version of the PDD^{/PDD-2/}. On the basis of this the final validation report and opinion were issued.

3.1 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol was used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements that a CDM project is expected to meet;

- It ensures a transparent validation process where the independent entity will document how a particular requirement has been validated and the result of the determination.

The validation protocol consists of three tables: Table 1 (Mandatory Requirements); Table 2 (Requirement Checklist); and Table 3 (Resolution of Corrective Action and Clarification Request) as described in Figure 1.

The completed validation protocol is enclosed in Annex to this report identifying 7 Corrective Action Requests and 8 Clarification Requests.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	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.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification (CR) is used when the validation team has identified a need for further clarification.

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

Figure 1: Validation protocol tables

3.2 Review of Documents

The draft PDD^{/PDD-1/} and final PDD^{/PDD-2/} submitted by Carbon Resource Management Ltd in August 2008 and in January 2009 and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The documents that were considered during the validation process are given in chapter 7 of this report. They are listed as follows:

- Documents provided by the project proponent (Table 7-1)
- Background investigation and assessment documents (Table 7-2)
- Websites used (Table 7-3).

In order to ensure the transparency of the decision making process, the reference codes listed in tables 7-1 to 7-3 are used in the validation protocol and – as far applicable – in the report itself.

3.3 Follow-up Interviews

On 14th-15th Aug 2008, the TÜV NORD JI/CDM CP performed the on-site interviews with the project proponent, project developer, plant operating personnel and local villagers to confirm selected information and to resolve issues identified in the document review.

The key interviewee and main topics of the interviews are summarised in Table 3-1.

Table 3-1 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives /IM01/	<ul style="list-style-type: none"> - Chronological description of Project with documents of key steps - Technical details of the project realisation- project feasibility, designing, engineering, operational life time - Host Government Approval - Likely involvement of Annex-I Party - Approval procedures and status - Quality and environmental management system - Monitoring and measurement equipment - Financial aspects- Government Incentives for Hydro based projects - Crediting period and its starting date - Project activity starting date. - Power Purchase Agreement

Interviewed Persons / Entities	Interview topics
	<ul style="list-style-type: none"> - Sustainable development issues - Hydro geological survey - Analysis of local stakeholder consultation process - Roles & responsibilities of the staff members w.r.t project management, monitoring and reporting - Technical specification data: capacity of turbines, power evacuation and transmission, expected PLF, energy generation - QC testing and calibration procedures and facility
Consultant /IM02/	<ul style="list-style-type: none"> - Editorial aspects of PDD^{/PDD-1/} - Methodology selection aspects - Base line study, project emissions, leakage and additionality - Details of emission reduction calculation
Local Villager /IM03/	<ul style="list-style-type: none"> - Stakeholder consultation - Environmental issues like water availability - Socio-economic issues / benefits because of project

A detailed list including the functions or designations of the interviewed persons is given in chapter 7 (see. Table 7-4). This table also includes reference codes to be used in the validation protocol.

3.4 Resolution of Clarification and Corrective Action Requests

In order to remedy any mistakes, problems or any other outstanding issues which needed to be clarified for positive conclusion on the project design, CARs and CRs were raised.

In this validation report 7 CARs and 8 CRs are raised.

The FAR/CARs/CRs are documented in the Annex and addressed in section 4.

3.5 Public Stakeholder Comments

The PDD was made publicly available through TÜV NORD JI/CDM CP website www.global-warming.de. It is linked to UNFCCC website. Comments on the PDD^{/PDD-1/} were invited within 30 days, i.e. 06/08/2008 to 05/09/2008.

No comments were received. In case comments would have been received, they would have also been made publicly available on this web site.

3.6 Finalising the report

The draft validation report containing a set of CARs & CRs was submitted to the project proponent. The project design document was revised addressing the CARs & CRs issued by TÜV NORD JI/CDM CP. After reviewing the revised and resubmitted project documentation^{/PDD-2/}; resolving the CRs & CARs raised and outstanding concerns, TÜV NORD JI/CDM CP issues this final validation report and opinion.

In the course of this validation the most recent version of the CDM-SSC-PDD template, i.e. Version 03; the valid version (Version 13) of the applied methodology AMS I.D. are used and form the basis of the validation opinion.

4 VALIDATION FINDINGS

In the following paragraphs the findings from the desk review of the draft PDD^{/PDD-1/}, visits, interviews and supporting documents are summarised. This also includes the corresponding corrective action taken by the client and its final assessment.

The results are shown in table 4-1:

Table 4-1: Summary of CAR and CR issued

Validation topic ¹⁾	No. of CAR	No. of CR
General description of project activity (A) - Project boundaries - Participation requirements - Technology to be employed - Contribution to sustainable development	1	4
Project baseline (B) - Baseline Methodology - Baseline scenario determination - Additionality determination - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Emission reductions - Monitoring Methodology - Monitoring of Project emissions Baseline emissions Leakage Sustainable development indicators / environmental impacts - Project management planning	5	2
Duration of the Project / Crediting Period (C)	1	1
Environmental Impacts (D)	-	-
Stakeholder Comments (E)	-	1
SUM	7	8

¹⁾ The letters in brackets refer to the validation protocol

For an in depth evaluation of all validation items it should be referred to the validation protocol (Annex). The Annex also includes all CARs and CRs (Table 3).

4.1 Participation Requirements

China as a non Annex I party meets all relevant participation requirements. The Letter of Approval^{/LOA/} dated 28/10/2008 (its English version is numbered 1460), the

Chinese DNA, Chinese National Development and Reform Committee confirmed the voluntary participation of Leshan Kaiyuan Hydro Power Co., Ltd. (LKHP) as project participant in the CDM project activity.

UK serves as the Annex-I party. The LOA dated 27/11/2008, was issued by the DNA in UK, Department for Environment, Food and Rural Affairs (DEFRA), confirms authorisation of Carbon Resource Management Ltd's participation.

Thus CAR A1 had to be raised in the course of the validation and was successfully closed (ref Annex: Validation Protocol - Table 3).

4.2 Project design

The Carbon Resource Management Ltd has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "*Sichuan Xiba Small Hydro Power Project*", with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords), and the relevant decisions by COP/MOP and CDM Executive Board.

The purpose of this project activity is to generate renewable electricity using hydro power available from the water flowing over Moxi River and export it to the connected Central China Power Grid, thereby displacing the grid generated electricity.

The project uses state of the art technology. Please refer to the technical description in the PDD which has been verified by the validation team during on-site visit.

The project activity does not involve any transfer of technology. The technology being used is environmentally safe and sound.

According to sustainable development various social, economic and environmental benefits are achieved. The project activity would result *inter alia* in greenhouse gas emission reductions, while also enhances the employment of the local people during the construction and operation period and improves local infrastructure.

Based on the financial information provided by the project participants, no ODA contributes to the financing of the project.

The location (Xiba Town, Wutongqiao District, Leshan City, Sichuan Province, P. R. China) and the 7 years crediting period, as well as the operational lifetime (20 years) are clearly defined and could be verified by the validation team.

4.3 Baseline and Additionality

The selected baseline methodology is in line with the approved baseline methodology AMS I.D. – Grid connected renewable electricity generation (Version 13).

As prescribed in small scale type I.D. baseline methodology, the emission baseline will be the net kWh produced/ displaced by the renewable generating unit multiplied by an emission coefficient of the grid (measured in tCO₂e/kWh).

In this project, the grid emission coefficient is calculated by “combined margin method” consisting of the combination of “operating margin (OM)” and “build margin (BM)” according to the procedures prescribed in the latest version of “Tool to calculate the emission factor for an electricity system”. Thus emission reductions for this project activity will be the amount of net electricity (kWh) supplied to the grid multiplied with the emission coefficient of CCPG.

The operating margin as well as the built margin are determined ex-ante and thus remain fixed throughout the crediting period. This approach does not call for reviewing the grid emission co-efficient every year. All the required data for baseline emission coefficient are sourced from China Energy Statistical Yearbook and China Electric Power Yearbook.

The ER_y of the project activity during the crediting period is the difference between the baseline emission (BE_y), project emission (PE_y) and leakage (L_y).

Baseline emission: BE_y is calculated by multiplying the electricity baseline emission factor or grid emission factor (EF_y) and the net electricity exported to the CCPG (EG_y).

The calculation method of the OM and BM is mainly derived from the guide of OM and BM calculation issued by Chinese DNA (NDRC).

NDRC issued the values of OM and BM on 18/07/2008 when the PDD^{/PDD-1/} was published (from 06/08/2008 to 05/09/2008). The data source is China Energy Statistics Yearbook 2005-2007 and China Electric Power Yearbook 2005-2007. However, the Build Margin was re-calculated by Chinese DNA on 30/12/2008, which leads to a more conservative value (from 0.7156 tCO₂/MWh to 0.6687 tCO₂/MWh). Therefore, the updated BM has been used in the final PDD^{/PDD-2/}.

EF_{OM,y} calculation:

Due to the fact that low-cost must run resources constitute less than 50% of the total grid generation and that data to apply for dispatch data analysis OM is not available, the simple OM emission factor (EF_{OM,y}) calculation method is chosen; the OM factor is calculated as generation-weighted average emissions per electricity unit (tCO₂/MWh) of all generating sources serving the system (not including the low-cost and must run power plants), of three years average data (2004-2006). The EF_{OM,y} is calculated to be 1.2783 tCO₂e/MWh.

EF_{BM,y} calculation:

Due to the data unavailability at the power plant level in China, the calculation of the build margin was conducted according to the deviation approaches for EF_{BM, y} calculation:

- 1) The capacity addition from the years 2004-2006 is chosen and exceeds 20% of the total installed capacity.

- 2) According to the data in “Chinese Energy Statistical Yearbook 2005-2007” the weighted averages of the newly added coal based capacity, newly added gas based capacity and newly added oil based capacity are used to calculate $EF_{BM,y}$.
- 3) The coal emission factor 25.8 tC/TJ, gas emission factor 15.3 tC/TJ and oil emission factor 21.1 tC/TJ as well as the IPCC 2006 default value of carbon oxidization factor 100 % are used for the BM calculation.
- 4) The BM is calculated as 0.6687 tCO₂e/MWh.

In accordance with the “Tool to calculate the emission factor for an electricity system” weight factors of $w_{OM} = w_{BM} = 0.5$ have been used and the resultant grid emission factor (EF_y) works out as 0.9735 tCO₂e/MWh.

The calculation of EF_y is currently and publicly available and published by the Chinese DNA (national development and reform Commission) on its web-site^{/GEF/}.

The validation team is convinced of the result of the emission coefficient calculation. It is deemed to be adequate and transparent.

The annual net electricity delivered to the grid is approximately 36,315 MWh from the project, as defined in the project feasibility study.

Based on the calculations above, the project activity reduces emissions of 35,352 tCO₂e/yr and 247,464 tCO₂e over the 1st renewable crediting period (7 years).

The emission reduction factor calculation and tables in the PDD^{/PDD-2/} are correct and are verified to be more conservative than the published one.

Additionality:

The additionality was demonstrated acc. to § 28 of the simplified modalities and procedures for small-scale CDM project activities in connection with attachment A to appendix B as a barrier analysis.^{/SMP/}

The argument presented in the PDD to justify the additionality is summarised in table 4-2. This table also includes the result of the assessment of the validation team.

Table 4-2: Additionality assessment

Step ¹⁾	Argument PP	Assessment of the validation team
a	Investment barrier: As calculated during the project feasibility study, the project IRR (after tax) was 8.18 % ^{/IRR/} without CDM revenue, and is lower than the industry benchmark rate 10 % according to <i>Economic Evaluation Code for Small Hydropower Projects</i> (No. L16-95) issued by the Ministry of Water Resources ^{/EEC/}	<input type="checkbox"/> Argument not justified <input type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not a decisive barrier <input checked="" type="checkbox"/> Argument justified / significant barrier
Assessment of the validation team		<input checked="" type="checkbox"/> project is additional <input type="checkbox"/> project is not additional

- 1) Classification acc. to Attachment A to Appendix B of the simplified modalities and procedures
a) investment barrier; b) technological barrier; c) barrier due to prevailing practice; d) other barriers

The additionality is justified by providing sufficient evidences regarding attachment A to appendix B as follows:

Investment Barrier

The additionality of the project has been demonstrated by the “Investment Analysis” routes. The benchmark analysis along with sensitivity analysis confirms that the project activity (w/o CDM benefits) is unlikely to be financially attractive. The risks associated with financial barrier are assessed as significant barrier.

The values applied for IRR calculation are applied from Supplementary Preliminary Design Report^{/SPDR/} which serves as the basis for applying CDM. The decision to implement the project was taken in the same month when the SPDR was approved, i. e. July 2007. Hence the validation team can confirm that the period is sufficiently short that it is very unlikely that values materially change (EB 38, para 54 (a)). Furthermore the DOE confirms that the values applied to calculate the IRR are fully in compliance with SPDR (EB 38, para 54 (b)) and that the input values are valid and applicable (EB 38, para 54 (c)). Please also refer to table 4 in the Annex for further evaluation.

The IRR (after tax) of the project is 8.18 % without CDM revenue^{/IRR/}, and according to Economic Evaluation Code for Small Hydropower Projects^{/EEC/} issued by the Ministry of Water Resources (Document No. SL16-95), the benchmark IRR of small hydropower project (less than 25 MW) is 10 %. SL16-95 has been listed in the valid regulation issued by the Ministry of Water Resources of the P. R. China file: No [2009]01, it is indicated on website on 24/04/2009:

http://slt.zj.gov.cn/pages/document/65/document_506.htm.

Accordingly, if the IRR of total investment of the project is lower than the benchmark rate of 10 %, the project is not an economically attractive course of action and fulfils the requirement of additionality. Therefore the validation team obtains the opinion that the project activity can be assessed to be additional.

A sensitivity analysis on the IRR parameters is provided transparently, which shows the benchmark will not be reached even the key parameters varying by $\pm 10\%$. Also, values in investment analysis have been checked according to the guidance provided in EB41, Annex 45. Please also refer to table 4 of the protocol <Validation Table for Assessment of Financial Parameters> for detailed investment assessment.

CAR B1-B4 and CR B1-B2 were raised related to Baseline, Additionality, IRR calculation, and tables in the PDD and were successfully closed.

Evidence of Management Decision

The Supplementary Preliminary Design Report (SPDR) of the project was completed in June 2007 by Sichuan University Engineering Design Institution^{/SPDR/} and approved by Leshan Development and Reform Commission on 06/07/2007^{/ASP/}. The IRR (after tax) was calculated to be 8.18 %^{/SPDR/}, which is lower than the benchmark rate of 10 % as indicated in "Economic Evaluation Code for Small Hydropower

Projects" issued by Ministry of Water Resources of P. R. China. A board meeting considering CDM was held on 26/05/2007^{/CMD-1/}, SPDR completed in June 2007 also had suggested the project proponent to take part in CDM^{/CMD-2/}. The project proponent decided to implement this project as CDM activity and the board resolution of CDM participation was made on 20/07/2007^{/CMD-3/}. Following the Project Developer's consideration of CER revenues, Hydraulic Generator Set business contract was signed on 06/08/2007^{/CON/}, and later the construction of the project was started on 28/12/2007^{/CSD/}. The validation team is convinced that the investment decision and followed investment action^{/CON/} are based on SPDR, CDM benefits were seriously considered in the decision to proceed with the project activity by the information and description provided in the section above.

The validator confirms that all requirements as set out in EB41, Annex 46, paragraph 5 are fully met to ensure that CDM was seriously considered in the decision to implement the project activity.

Nevertheless CAR B5 was raised related to CDM management decision in the PDD and were successfully closed.

4.4 Crediting Period

The starting date of the project activity is 06/08/2007, on which the Hydraulic Generator Set business contract was signed^{/CON/}, and the construction of the project was started on 28/12/2007^{/CSD/}. The earliest date of project real action was chosen, which met the requirement of CDM Glossary of terms and EB41, Para 67. The expected operational lifetime of the project activity is 20 years.

The starting date of the crediting period is 01/09/2009 or a date not earlier than the date of registration. The intended crediting period of the project is for a renewable period of seven years i.e. starting from the date of registration (in 2009) up to 2016.

In the context of starting date of the project activity and the crediting period CAR C1 and CR C1 were raised and successfully closed (ref Annex: Validation Protocol – Table 3).

4.5 Monitoring Plan

The project applies the monitoring methodology AMS ID: Grid connected renewable electricity generation (Version 13) for small scale CDM project activities.

The project category is the renewable electricity generation for a grid system having installed capacity less than 15 MW. The proposed CDM project falls under category I.D. – Grid connected renewable electricity generation.

The project monitoring consists of metering the electricity supplied by the project activity to the grid and the electricity imported from the grid to derive the net electricity generation.

The OM and BM are calculated as fixed factors for the renewable crediting period by choosing data based on ex-ante data published by Chinese DNA (NDRC), thus don't need to be monitored during the first crediting period.

QA/QC procedures are described briefly in PDD^{/PDD-2/}, which is in compliance with the relevant regulation, e.g. Technology & Management Regulations for Power Metering Devices (DL/T448-2000) is considered, and the accuracy of the meters will be 0.5s. The description is considered to be appropriate.

4.6 Calculation of GHG Emissions

Methodologies for calculating emission reductions are documented. The project intends to reduce carbon dioxide (CO₂) emissions by generating electricity from a run-of-river hydroelectric project, which would be exported to the CCPG.

Project emission: The proposed project is a new built hydropower project, the project emission is zero.

Leakage: As per methodology, leakage can be ignored as the equipment was not transferred from another project activity.

The emission reduction calculation was reviewed by the validation team. All underlying data/ values are transparent presented and assessed to be adequate. No mistakes have been observed.

Acc. to the final PDD^{/PDD-2/} the project is expected to reduce emissions of 247,464 tCO₂e in the first 7-years crediting period of the project.

4.7 Environmental Impacts

No adverse environmental impacts as well as transboundary impacts have been envisaged from this project activity.

The analysis of the environmental impacts of the project activity was sufficiently described according to EIA. Environmental impacts of the project activity have been sufficiently addressed in revised PDD^{/PDD-2/}. The records of project environmental check and acceptance was submitted, its approval dated 19/03/2005^{/AEIA/}.

Social and environmental impacts of the project have been sufficiently addressed. As indicated in the environmental impact assessment^{/EIA/} and its approval^{/AEIA/}, no significant adverse environmental impacts as well as transboundary impacts have been envisaged from this project activity.

4.8 Comments by Local Stakeholders

Stakeholders (including local residents, government officials and migrants) have been directly asked to comment on the project through the questionnaire on 10/06/2007^{/SCD/}.

A summary of the comments received and a note on how these concerns are addressed are included in the PDD. The information on the stakeholder consulting process is transparent. No significant negative social impacts have been addressed during the stakeholder assessment. Some benefits have been identified like the generation of new jobs. Only some concerns have been raised about the environmental impact. There is no rare and endangered vegetation or animal species found in the project area and rehabilitation of vegetation will be conducted on the project site. The construction of the Project has been implemented strictly as per the instructions of the EIA.

5 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the validation of CDM projects, TÜV NORD JI/CDM CP published the draft PDD^{/PDD-1/} on its website www.global-warming.de on 2008-08-06 and invited comments within 30 days, until to 2008-09-05 from parties, stakeholders and UNFCCC accredited non-governmental organisations. No comment has been received.

6 VALIDATION OPINION

The Carbon Resource Management Ltd has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "*Sichuan Xiba Small Hydro Power Project*", with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords), and the relevant decisions by COP/MOP and CDM Executive Board.

The purpose of this project activity is to generate renewable electricity using hydro power available from the water flowing over Moxi River and export it to the connected Central China Power Grid, thereby displacing the grid generated electricity.

A risk-based approach has been followed to perform this validation. In the course of the draft validation 7 Corrective Action Requests (CARs) and 8 Clarification Requests (CRs) were raised, CARs and CRs had been successfully closed in the course of the validation.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (China) and all relevant UNFCCC requirements for CDM. Project activity approvals have been obtained from National CDM Authority i.e. DNA of China in the form of Letter of Approval (LOA) on 28/10/2008, English version No. 1460. The project is a bilateral project and the LOA from UK as the Annex 1 country dated 27/11/2008.
- The project additionality is sufficiently justified in the final PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 35,352 tCO₂e annually is most likely to be achieved within the first renewable 7-year crediting period (01/09/2009 - 31/08/2016)

The conclusions of this report show that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Essen, 2009-06-29



LI Yong Jun

TÜV NORD JI/CDM Certification Program
Validation Team Leader

Essen, 2009-06-29



Eric Krupp

TÜV NORD JI/CDM Certification Program
Senior Assessor

7 REFERENCES

Table 7-1: Documents provided by the project proponent

Reference	Document
/AEIA/	Approval of EIA by Environmental Protection Bureau of Leshan County, Le Shi Huan Jian [2005] No.33, on 19/03/2005
/AP/	Approval of the project construction permission by Development and Reform Committee of Leshan City, Sichuan Province: Le Fa Gai Neng Jiao [2007] No.729, on 01/11/2007.
/APP/	<ol style="list-style-type: none"> 1. Approval of PDR by Development and Reform Committee of Leshan City, Sichuan Province: Le Fa Gai Neng Jiao [2006] No.110, on 20/03/2006; 2. Approval of Tariff by Leshan Grid Co., Ltd: Le Dian Si Han [2006] No.13, on 08/05/2006; 3. Approval of Temporary Land Use by Leshan Territorial Source: Le Wu Guo Tu Zi Lin [2007] No.2, 27/08/2007; 4. Approval of Land Use by Leshan Territorial Source: Le Shi Guo Tu Zi Han [2007] No.157, on 24/10/2007; 5. Approval of Grid Connection by Leshan Grid Co., Ltd: Le Dian Si [2007] No.149, on 25/12/2007; 6. Approval of Flood Protection Plan: Hua Da Jian [2008] No.008, on 29/04/2008.
/ASPI/	Approval of SPDR by Development and Reform Committee of Leshan City, Sichuan Province: Le Fa Gai Neng Jiao [2007] No.456, on 06/07/2007
/CDM/	<p>CDM demonstration</p> <ol style="list-style-type: none"> 1. CDM consideration meeting held by the Board of Directors of LKHP, Kai Yuan [2007]No. 012 on 26/05/2007; 2. CDM suggested in SPDR (which was completed in Jun. 2007); 2. Management decision made by the Board of Directors of LKHP, Kai Yuan [2007] No.021, on 20/07/2007.
/CON/	<p>Contracts</p> <ol style="list-style-type: none"> 1. Loan contract with Leshan City Commercial Bank: Le Shang Yin Wu Zhi Jie [2007] No. 026, on 25/12/2007; 2. Loan contract with Leshan City Commercial Bank: Le Shang Yin Wu Zhi Jie [2007] No. 027, on 27/08/2007; 3. Hydraulic Generator Set business contract with Guangdong Shaoguan Zongli Generating Equipment Co., Ltd., No. 2007 Zong Li Jing Zi 08, signed on 06/08/2007.

Reference	Document
/CSD/	Construction Starting Date: Approval of Construction to Guangdong Tianyuan Engineering Corporation by Leshan Kaiyuan Hydro Power Co., Ltd.: Jian Li [2007] No.01: LSXB/I, on 28/12/2007.
/DRA/	Drawing: 1. Project site layout; 2. Power connection diagram-
/EIA/	Environment Impact Assessment Report by National Environmental Protection Bureau in Mar. 2005
/FPP/	Flood Protection Plan by Guangdong Shaoguan Zongli Generating Equipment Co., Ltd. on 25/04/2008
/GRA/	Geological Risk Assessment by Leshan geological reconnaissance institution of Sichuan Province, in Oct. 2007
/IRR/	IRR Calculation spreadsheet
/LOA/	Letter of Approval 1. Host Government Approval from DNA in China on 28/10/2008, English version No. 1460. 2. Annex I Country Approval from DNA in UK on 27/11/2008.
/MOC/	Modalities of communication
/PDD-1/	Project Design Document titled "Sichuan Xiba Small Hydro Power Project" Version 02; 28/07/2008, (hosted for public comments during 06/08/2008 to 05/09/2008)
/PDD-2/	Project Design Document titled "Sichuan Xiba Small Hydro Power Project" Version 04; 04/01/2009
/PT/	Personnel Training plan issued by LKHP
/QA/	Quality Assurance and monitoring related procedures 1. Monitory Manual drafted and will be implemented by LKHP; 2. Monitoring report by environmental protection bureau
/SCD/	Stakeholder Consultation Documentation collected on 10/06/2007.
/SPDR/	Supplementary Preliminary Design Report by Sichuan University Engineering Design Institution, in Jun. 2007.

Reference	Document
/TI/	Technical information of low noise machine
/WSC/	Water and Soil Conservation plan by Leshan Water and Soil Conservation Ecology Monitoring Station in Mar. 2005.

Table7-2: Background investigation and assessment documents

Reference	Document
/AMS I.D./	Grid-connected renewable electricity generation (Version 13)
/CPM/	TÜV Nord JI / CDM CP Manual (incl. CP procedures and forms)
/EEC/	Economic Evaluation Code for Small Hydropower Projects (No. SL16-95)
/GCSCP/	UNFCCC: Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for submissions on methodologies for small-scale CDM project activities (F-CDM-SSC-Subm)
/GEF/	Official data sources for Grid Emission Factor (CCPG Grid) published by the Chinese DNA.
/IPCC-GP/	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
/IPCC-RM/	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual
/KP/	Kyoto Protocol (1997)
/MA/	Decision 17/CP. 7 (Marrakesh – Accords & Annex to decision 17/CP.7)
/SL16-95/	Economic Evaluation Code for Small Hydropower Projects (No. SL16-95) was issued by the Ministry of Water Resources of People's Republic of China
/SMP/	Simplified modalities and procedures for small-scale clean development mechanism project activities (Annex II to Decision 21/CP.18)
/TEF/	Tool to calculate the emission factor for an electricity system (Version 1.1)
/VVM/	CDM Validation and Verification Manual (Version as per EB 44)

Table 7-3: Websites used

Reference	Link	Organisation
/dna/	http://cdm.ccchina.gov.cn/english/index.asp	National Development and Reform Commission (DNA of China)
/gsep/	http://www.schj.gov.cn/	Sichuan Environment Protection Bureau
/hvdc/	http://hvdc.chinapower.com.cn	National power monitoring commission
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	ZHU Wei Guo	Leshan Kaiyuan Hydro Power Co., Ltd. / General Manager
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	TUO Chao Hong	Leshan Kaiyuan Hydro Power Co., Ltd. / Chief Engineer
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	SONG Yang Sheng	Leshan Kaiyuan Hydro Power Co., Ltd. / Vice General Manager
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	LI Ge	Leshan Kaiyuan Hydro Power Co., Ltd. / Accountant
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	ZHU Qi Yan	Carbon Resource Management / Project Manager
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	XIAO Zuo Wen	Guangdong Tianyuan Engineering Corporation / Chief Engineer
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	QI Wei Dong	Development and Reform Department of Leshan / Vice Director
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	DENG Yong Kun	First Group, Minquan Village / Villager
/IM03/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	XIAO Li	Second Group, Minquan Village / Villager
/IM03/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	LI Lan	Second Group, Minquan Village / Villager

Reference	Mol ¹		Name	Organisation / Function
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	ZHANG Zhong Wei	Third Group, Minquan Village / Villager
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	ZHAO Fei Zhong	Third Group, Minquan Village / Villager

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)

ANNEX

Validation Protocol

ANNEX: VALIDATION PROTOCOL

Table 1: Mandatory Requirements for (CDM) Project Activities

Requirement	Reference	Conclusion
Parties		
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	UK is supposed to the Annex I country
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	China is the host Country
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	CAR A1 OK
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	CAR A1 OK
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	Public funding from Annex I countries is not included in project financing
Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	Both parties, i.e. China and UK have designated their national authority for CDM.
The host Party and the participating Annex I Party shall be a Party to the Kyoto	CDM Modalities §30/31a	Both parties have ratified the

Requirement	Reference	Conclusion
Protocol.		Kyoto Protocol
The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
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
Additionality		
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	CAR-B3-B5 OK
Forecast emission reductions and environmental impacts		
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
Environmental impacts		
Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
Stakeholder involvement		
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	OK
Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project	CDM Modalities and Procedures §40	OK, the project was published

Requirement	Reference	Conclusion
design document and comments have been made publicly available.		on the UNFCCC website for 30 days. From 06/08/2008 to 05/09/2008
Other		
The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
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 circumstances.	CDM Modalities and Procedures §45c,d	CAR-B1-B2 OK
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
The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK, the latest version of the SSC PDD is used.
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	OK
Requirements for small-scale projects only		
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
The proposed project activity shall confirm to one of the project categories defined	Simplified Modalities and Procedures for	OK

Requirement	Reference	Conclusion
for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Small Scale CDM Project Activities §22e	
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

Table 2: Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <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?	/PDD/ (A 4.1.4) /SPDR/ /APP-5/ /APP-6/	DR	<p>The project is located in the river channel in Xiba town. The description of the location of the project activity is not clear. The following has to be clarified:</p> <ul style="list-style-type: none"> The name of river channel is not indicated. The coordinates of the project activity is not in compliance with information as per on-site visit. 103°46'30" east longitude and 29°22'42" north latitude is indicated in the PDD, but the east longitude is out of the scale approved by land use permission, which refers 103°47'19" to 103°47'26" east longitude. Clarification is requested. <p>Electricity generated by the project activity is sent to Sichuan Grid which is part of the Central China Grid (including Jiangxi Province, Henan Province, Hubei Province, Hunan Province, Sichuan Province and Chongqing Municipality Power Grid.).</p>	CR A4	OK
A.1.2. Are the project's system boundaries (components and facilities used to	/PDD/ (A.4.2) (B.3.)	DR	Main components and facilities used to mitigate GHGs are defined, and most of the technical parameters of the project		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
mitigate GHGs) clearly defined?	/CON-3/		are listed in Table A.4.1. However, there is no description about barrage. E.g. its height, gate number and its function, etc. Also, the manufacture information of the turbine and generator should be provided.	CR A2	
A.2. Participation Requirements <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?	/PDD/ (A.3.), (Annex 1)	DR	The following parties are involved in the project activity: China (Host Party) and United Kingdom. The project participants are: Leshan Kaiyuan Hydro Power Co., Ltd. (LKHP) and Carbon Resource Management Ltd.	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?	/PDD/ (A.3.) /LOA/	DR I	In accordance with the CDM M&P at the time of making the PDD publishing and at the stage of validation a Party involved may or may not have provided its approval. At the time of requesting registration the approval of the Parties involved is required. At the time of the validation the letter of approval from China and UK are not available.	CAR A4	OK
A.2.3. Do all participating Parties fulfil the participation	/LOA/ /unfccc/	DR	All parties have ratified the Kyoto Protocol (China: Ratification 2002-08-30, UK: Ratification 2002-05-31).		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<p>requirements as follows:</p> <ul style="list-style-type: none"> – Ratification of the Kyoto Protocol – Voluntary participation – Designated a National Authority 			<p>The DNA in China is the National Development and Reform Commission (NDRC).</p> <p>The DNA in UK is Department for Environment, Food and Rural Affairs (DEFRA).</p> <p>The voluntary participation is stated in the LOAs, which are pending. Please refer to A.2.2.</p>	CAR A4	
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/PDD/ (A.4.4)	DR	Public funding from an Annex I - country is not used to finance the project activity. This could be confirmed by means of interview with the project owner and by reviewing the investment analysis.	OK	OK
<p>A.3. Technology to be employed</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>					
A.3.1. Does the project design engineering reflect current good practices?	/PDD/ (A.4.2.) /PDR/	DR I	<p>The project is a newly built run-of-river hydropower project, which is located at Moxi River as per on-site information.</p> <p>However, the description of project design engineering and</p>		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			its generation technology is insufficient. E.g. the process of water utilization, manufacture of equipment, etc. Additional statement is requested.	GR A3	
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?	/PDD/ (A.4.2.) /CON-3/	DR	Hydro power is a technology to generate GHG emission free electricity. According to contract signed between LKPH and Guangdong Shaoguan Zongli Generation Equipment Co., Ltd. the components utilized are new and state of the art. All components are of Chinese origin, thus a technology transfer doesn't happen.	OK	
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/PDD/ (B.7.2.) /IM01/ /PT/	DR I	The personnel training plan for meeting training and maintenance needs is available according to the interview of stakeholders in LKHP. The project owner will organise training for all the related staff. The training program contains CDM knowledge, the operational regulations, the quality control (QC) standard flows, the data recording requirements and the management rules.	OK	
A.4. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project	/LOA-1/ /dna/	DR	Hydropower project is considered as a sustainable development element as per the interview of government	CAR A4	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
assists it in achieving sustainable development?			officer. However, the LOA from Chinese DNA is pending.		
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/PDD/ (A.2.) /IM03/	DR I	The view of project participant on the contribution of the project activity towards sustainable development is briefly described in section A.2. The information had been validated during on-site visiting. However, the statement of environmental or social benefits in PDD is insufficient, e.g. the contribution to the local infrastructure should be specialized, and also the evidence of 15 permanent job positions is pending.	CR A4	OK
Small scale project activity <i>Is it assessed whether the project qualifies as small-scale CDM project activity</i>					
A.4.3. 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?	/PDD/ (B.2.) /AMS I.D./ /CPM/ /SMP/ /SPDR/	DR I	Yes, the total installed capacity of the proposed project is 5 MW (2×2.5MW) and thus under the limit of 15 MW. Furthermore hydropower is a renewable energy source. Hence it meets the requirements.	OK	
A.4.4. Is the small scale project activity not a debundled component of a larger project activity?	/PDD/ (A.4.5)	DR I	Yes, around 1km of the proposed project in previous 2 years, the project owner hasn't owned or operated any other small scale projects for CDM, therefore the project is not a debundled component of a large scale project activity. This was cross-checked by analysing the CDM pipeline of UNEP.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Furthermore the project owner orally confirmed this.		
A.5. General Topics					
A.5.1. Has the PDD been duly filled?	/PDD/	DR	The PDD revision is requested referring to the CARs raised.	Not yet OK	OK
A.5.2. Has all necessary information been made available to the validator?			Several documents which are necessary to provide a final assessment of the project activity are pending. Please refer to table 7-1 of the validation report.	Not yet OK	OK
B. Project Baseline <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.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/PDD/ (B.1) (B.4.) /AMS I.D./	DR	Yes, AMS I.D., Ver. 13 (EB 36) is applicable to the project activity. This version is valid for requesting registration since 14 th December 2007.	OK	
B.1.2. Are the applicability criteria in the baseline	/PDD/ (B.2.)	DR	In section B.2. of the PDD, it is explained why the project activity refers to AMS I.D. The installed capacity is 5MW,	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
methodology all fulfilled?	/AMS I.D./		which is lower than the threshold of 15 MW. Furthermore the generated electricity is supplied to a grid which is also served by fossil fuel fired power plants. Information about the characteristics of the grid are publicly available.		
B.2. Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?	/PDD/ (B.4.) (B.6.) /AMS I.D./ /GCSCP/ /dna/	DR	<p>In Section B.4 it is clearly indicated that the baseline scenario is the electricity generated by the proposed renewable electricity generating unit multiplied by an emission coefficient, which is in compliance with AMS I.D.</p> <p>According to specific guidelines for completing CDM-SSC-PDD (Version 03, dated 22 Dec 2006), in Section B.4, key parameters used to determine the baseline emissions, i.e. emission factor of OM, BM, CM and annual electricity supply to grid are provided in a table form, its source and calculation procedure is available in section B.6.</p>	OK	
B.2.2. What other alternative scenarios have been considered and why is	/PDD/ (B.4.) (B.5.)	DR	However, as per AMS I.D., the baseline scenario is clearly defined. It is not necessary to include an alternative scenario approach. Therefore revision is needed to follow	CAR B4	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
the selected scenario the most likely one?	/AMS I.D./ /dna/		the methodology requirements.		
B.2.3. Has the baseline scenario been determined according to the methodology?	/PDD/ (B.4.) / AMS I.D./	DR	Yes, the baseline is determined as electricity produced by the proposed renewable electricity generating unit multiplied by an emission coefficient, which is in compliance with AMS I.D.	OK	
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/PDD/ (B.4.) /AMS I.D./ /dna/ /ipcc/		Yes, the baseline scenario was determined according to approved methodology AMS I.D. version 13. Key assumptions and rationale used to determine the baseline emissions are from Chinese DNA. Therefore the assumptions made are assessed to be conservative.	OK	
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/PDD/ (B.4.)	DR	Yes, the baseline scenario takes into account relevant national and/or sectoral policies, macro-economic trends and political aspirations.	OK	
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/PDD/ (B.4.) (B.6.) /AMS I.D./ /dna/ /SPDR /	DR	The baseline scenario determination is compatible with data issued by China DNA on 18 July 2008. The available data source during GSP should be referred to, i.e. EF calculation according to China Energy Statistics Yearbooks 2005-2007, China Electric Power Yearbooks 2003-2007, IPCC 2006. Furthermore a transparent calculation spreadsheet should be provided.	CAR B2	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.7. Have the major risks to the baseline been identified?	/PDD/ (B.4.)	DR	No major risks were identified and are not to be expected.	OK	
B.3. Additionality Determination <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?	/PDD/ (B.5.), /AMS I.D./ /SMP/	DR	Yes, in section B.5 of the PDD the additionality is justified with the investment barrier approach according to attachment A to appendix B of the simplified modalities and procedures.	OK	
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/PDD/ (B.5.)	DR	The investment barrier is based on the calculation of the Internal Rate of Return (IRR) compared to a benchmark. Benchmark IRR is chosen as 10 %, which is benchmark of small scale hydropower project with capacity less than 25MW. It is indicated in Economic Evaluation Code for Small Hydropower Project(SL16-95), which is approved to be valid by the Ministry of Water Resources of the People's Republic of China..	OK	
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/PDD/ (B.5.) /SPDR/	DR	Without CDM revenue, IRR of the project is 8.18 %, which is lower than benchmark value. Sensitivity analysis show that even if the investment decrease by 10 %, tariff increase by 10 %, operation hour increase by 10 %, or O& M cost decrease by 10 %, the IRR benchmark still won't be reached. Thus conclusion is made that the proposed project activity without CDM is not a financially attractive option and the		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>additionality requirement is fulfilled.</p> <p>However, the data source of IRR is Supplementary Primary Design Report (SPDR, in Jun. 2007), which is drafted less than two years after original PDR (Oct. 2005), both of the design reports suggest the same capacity and operation hour, the reason of redesign should be provided.</p> <p>The data used in IRR spreadsheet should be substantiated with documented evidences.</p> <p>Also, the description of sensitivity analysis is insufficient</p> <ul style="list-style-type: none"> - The IRR value of the trend line should be presented; - The possibility of 10 % variation should be analyzed. 	<p>CR B4</p> <p>CAR B3</p> <p>CAR B4</p>	
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?	/PDD/ (B.5.) /CDM/	DR	<p>In interview during on-site visit it was confirmed orally by the project owner, that incentive from CDM were seriously considered in the decision to proceed with the project activity.</p> <p>CDM consideration meeting is held on 26/05/2007.</p> <p>CDM management decision made by the Board of Directors of LKHH on 20/07/2007 is before the start of validation (August 2008).</p> <p>However, evidence of CDM consideration should be provided in PDD section B.5. A time table of the project key events is preferred.</p> <p>Also, the English version of CDM management decision should be submitted.</p>	CAR B5	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.4. Calculation of GHG Emission Reductions – Project emissions <i>It is assessed whether the project 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.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.) /AMS I.D./	DR	According to AMS I.D. project emissions must not be considered.	N/A	
B.4.2. Have conservative assumptions been used when calculating the project emissions	/PDD/ (B.6.)	DR	Refer B.4.1	N/A	
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/PDD/ (B.6.)	DR	Refer B.4.1	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.5. Calculation of GHG Emission Reductions – Baseline emissions <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?	/PDD/ (B.6.) /TEF/	DR	<p>The calculations and formulae provided in section B.6.1. are in accordance to AMS I.D. The approach to calculate the baseline emission factor as a Combined Margin as stated in “Tool to calculate the emission factor for an electricity system (Version 01)” is correct.</p> <p>Operating Margin and Built Margin are calculated ex-ante and thus remain fixed over the seven years crediting period. The simple OM approach is Based on data of the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system, i.e. $EF_{OM}=1.2783 \text{ tCO}_2\text{e/MWh}$</p> <p>The built margin is calculated according to TEF. i.e. $EF_{BM}=0.6687 \text{ tCO}_2\text{e/MWh}$ Both margins are weighted 50:50 as indicated in TEF. i.e. $EF_{CM}= 0.9735 \text{ tCO}_2\text{e/MWh}$. The detailed assessment of the values is indicated in section 4 of this report.</p>		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			Furthermore the CCPG is chosen to calculate the emission factor with the latest available data from the Chinese DNA and IPCC 2006 values for fuel's emission factor. However, since EF should be calculated, therefore, it should not be listed in PDD section B.6.2.	CR B2	
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/PDD/ (B.6.) (Annex 3)	DR	The emission factor of coke and emission factor of refinery gas applied revised using IPCC 2006 value.	OK	
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/PDD/ (B.6.)	DR	No uncertainties are expected in estimating the baseline emissions.	OK	
B.6. Calculation of GHG Emission Reductions – Leakage <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	/PDD/ (B.6.) / AMS I.D./	DR	Yes, according to AMS I.D., leakage must not be considered.	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
transparent manner?					
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?	/PDD/ (B.6.)	DR	Not applicable since leakage is not considered.	N/A	
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/PDD/ (B.6.)	DR	Not applicable since leakage is not considered.	N/A	
B.7. Emission Reductions <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.	/PDD/ (B.6.)	DR	The CARs/CRs given in section B have to be closed satisfactorily before forming an opinion.	Not yet OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.8. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.7.) / AMS I.D./	DR	Yes, the methodology applied is AMS I.D. The net electricity supplied to the grid (EG_y) will be calculated by the electricity supply to the grid ($EG_{export,y}$) subtract import from grid ($EF_{import,y}$). The meters are bi-directional and of 0.5S accuracy.	OK	
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/PDD/ (B.7.)	DR	Yes, the data will be archived during the crediting period and two years afterwards. This is indicated in B.7.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9. Monitoring of Project Emissions <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?	/PDD/ (B.7.)	DR	As project emissions are zero, this is not applicable.	N/A	
B.9.2. Are the choices of project GHG indicators reasonable and conservative?	/PDD/ (B.7.)	DR	As project emissions are zero, this is not applicable.	N/A	
B.9.3. Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	/PDD/ (B.7.)	DR	As project emissions are zero, this is not applicable.	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.4. Is the measurement equipment described and deemed appropriate?	/PDD/ (B.7.)	DR	As project emissions are zero, this is not applicable.	N/A	
B.9.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/PDD/ (B.7.)	DR	As project emissions are zero, this is not applicable.	N/A	
B.9.6. Is the measurement interval identified and deemed appropriate?	/PDD/ (B.7.)	DR	As project emissions are zero, this is not applicable.	N/A	
B.9.7. Is the registration, monitoring, measurement and reporting procedure defined?	/PDD/ (B.7.) /IM01/	DR I	As project emissions are zero, this is not applicable.	N/A	
B.9.8. Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/PDD/ (B.7.)	DR	As project emissions are zero, this is not applicable.	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/PDD/ (B.7.)	DR	As project emissions are zero, this is not applicable.	N/A	
B.10. Monitoring of Baseline Emissions <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?	/PDD/ (B.7.1)	DR	Yes, all the required data are defined in monitoring plan, i.e. electricity supply to grid and import from grid, as well as the net electricity generation. The procedures of monitoring the main meter are defined, and QC considers calibration and treatment of errors. All the monitoring data and records will be archived during the crediting period of the project activity and at least for two years afterwards.	OK	
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/PDD/ (B.7.)	DR	Yes, the only considered GHG is CO ₂ .	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/PDD/ (B.7.)	DR	Yes, net generated electricity will be the difference between electricity exported to grid and electricity imported from grid, measurement method and QA/QC procedures are defined appropriate.	OK	
B.10.4. Is the measurement equipment described and deemed appropriate?	/PDD/ (B.7.2)	DR	Yes, each of the main meters and back-up meters are bi-directional meters, recording exports and imports. The electricity meters will be installed according to Technology & Management Regulations for Power Metering Devices (DL/T448-2000). The meters will be examined and accepted by the project owner and the grid before the project is put into operation.	OK	
B.10.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/PDD/ (B.7.2.)	DR	Yes, the accuracy of the meters are 0.5s, it matches the regulation DL/T448-2000. Regarding to erroneous, back-up meter will be used in case of main meter went wrong. When both back-up and main meter goes error, a conservative measure will be used according to negotiation between project proponent and grid company.	OK	
B.10.6. Is the measurement interval for baseline data identified and deemed appropriate?	/PDD/ (B.7.) /IM-1/	DR	Yes, data from meters will be recorded and cross-checked monthly.	OK	
B.10.7. Is the registration, monitoring, measurement and	/PDD/ (B.7.)	DR	As per on-site information, the monitoring will be start from the day electricity generation, registration maybe no earlier than operation, and the monitoring report will be provided to	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
reporting procedure defined?			DOE.		
B.10.8. Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/PDD/ (B.7.)	DR	Yes, calibration and repair will be conducted by a third party, e.g. a qualified calibration organisation. And the calibration intervals it is designed to comply with national standard and sectional regulations	OK	
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)	/PDD/ (B.7.)	DR	Yes, data will be recorded and be kept for a period of 2 years following the end of the crediting period.	OK	
B.11. Monitoring of Leakage <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?	/PDD/ (B.7.)	DR	As leakage is not to be considered, monitoring is not necessary.	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.11.2. Are the choices of project leakage indicators reasonable and conservative?	/PDD/ (B.7.)	DR	See comment above.	N/A	
B.11.3. Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/PDD/ (B.7.)	DR	See comment above.	N/A	
B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/PDD/ (B.7.)	DR	No, the monitoring of sustainability indicators is not necessary according to Chinese legislation.	OK	
B.12.2. Does the monitoring plan provide for the collection	/PDD/ (B.7.)	DR	See comment above.	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
and archiving of relevant data concerning environmental, social and economic impacts?					
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/PDD/ (B.7.)	DR	See comment in B.12.1.	N/A	
B.13. Project Management Planning <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?	/PDD/ (B.7.2)	DR	Yes, the authority and responsibility of overall project management clearly described. A management structure had been provided, in addition to a normal management structure, a CDM director is appointed for the CDM issues.	OK	
B.13.2. Are procedures identified for training of monitoring personnel?	/PDD/ (B.7.2) /PT/	DR	There is a plan for training of monitoring personnel. Details of procedure is pending, refer to table 7-1.	Not yet OK	OK
B.13.3. Are procedures identified for emergency	/PDD/ (B.7.2)	DR	No emergencies are envisaged leading to higher GHG emissions.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
preparedness for cases where emergencies can cause unintended emissions?					
B.13.4. Are procedures identified for review of reported results/data?	/PDD/ (B.7.2)	DR	Yes, it is indicated in B.7.2 that data from main meter will be cross-checked against backup meter and relevant electricity sales receipts / invoices.	OK	
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/PDD/ (B.7.)	DR I	Yes, 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 crosschecks of the electricity figures on the receipts. All relevant records will be checked for completeness.	OK	
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
C.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/PDD/ (C.1.) /CON/ /SPDR/	DR I	The lifetime clearly defined as 20 years in SPDR. The starting date of the project activity is presented as 2007-11-01. However, the genset purchase contract signed earlier than 2007-11-01, the starting date should be considered as per CDM glossary.	CAR C4	OK
C.2. Is the start of the crediting period clearly defined and reasonable?	/PDD/ (C.2.)	DR I	Since the validation is still on-going on 2009-01-01, the start of the crediting period should be revised.	CR C4	OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.1.	Has an analysis of the environmental impacts of the project activity been sufficiently described?	/PDD/ (D.1.)	DR	Yes, several topics of the EIA are summarized in PDD section D.1. The effects of the project activity are addressed appropriately. However, the evidence of adoption of low noise technology to alleviate the project impacts should be submitted. Refer to table 7-1.	Not yet OK	OK
D.2.	Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/PDD/ (D.1.) /EIA/ /AEIA/	DR I	Yes, an environmental impact assessment is stipulated by the host party. The EIA was approved by the Environmental Protection Bureau of Leshan County, Le Shi Huan Jian [2005] No.33, on 2005-03-19.	OK	
D.3.	Will the project create any adverse environmental effects?	/PDD/ (D.1.) /EIA/	DR	Yes, several topics of the EIA are summarized in PDD section D.1. The effects of the project activity are addressed appropriately and are assessed as not significant.	OK	
D.4.	Are transboundary environmental impacts considered in the analysis?	/PDD/ (D.1.)	DR	No transboundary effects are expected.	OK	
D.5.	Have identified environmental impacts been addressed in the project design?	/PDD/ (D.2.) /EIA/	DR	Yes, adverse environmental impacts are expected from the project mainly refers to water, air, human health, noise, ecological, etc., which were assessed as not significant.	OK	
D.6.	Does the project comply	/PDD/ (D.1.)	DR	Yes, the project activity is approved by the Chinese government. Refer to D2.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
with environmental legislation in the host country?	/APP-1/				
For Small- scale projects					
D.7. Does host country legislation require an analysis of the environmental impacts of the project activity?			Refer D.2	OK	
D.8. Does the project comply with environmental legislation in the host country?			Refer D.6	OK	
D.9. Will the project create any adverse environmental effects?			Refer D.3	OK	
D.10. Have environmental impacts been identified and addressed in the PDD?			Refer D.5	OK	
E. Stakeholder Comments <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>					

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.1.	Have relevant stakeholders been consulted?	/PDD/ (E.1.)	DR I	Yes, a questionnaire was sent to 40 stakeholders. The questionnaires were distributed covered local residents, and village leaders.	OK	
E.2.	Have appropriate media been used to invite comments by local stakeholders?	/PDD/ (E.1.)	DR I	Yes, project owner used questionnaire to invite comments by local stakeholders.	OK	
E.3.	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?			The Chinese regulation doesn't include requirements for stakeholder consultation processes.	OK	
E.4.	Is a summary of the stakeholder comments received provided?	/PDD/ (E.2.)	DR I	A summary of the comments received is provided in the PDD. However, the percentage of stakeholders in summary is not reasonable, i. e. 98 % of 40 person result as a decimal. So as 93 % followed.	CR E4	OK
E.5.	Has due account been taken of any stakeholder comments received?	/PDD/ (E.3.)	DR	Yes, though there is no serious negative comments received, project proponent will take action to create a better situation around project.	OK	

Table 3: Resolution of Corrective Action and Clarification Requests

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CAR A1</p> <p>At the time of the validation the letter of approval from China and UK are not available.</p>	<p>A.2.2. A.2.3.</p>	<p>The letter of approval from China and UK are both obtained. The documents have been submitted to DOE.</p>	<p>The NDRC issued LOA on 28/10/2008, and the DEFRA issued LOA on 27/11/2008. Both documents have been checked and confirmed that parties are participating voluntarily. The Chinese DNA confirms that the project supports the country in achieving sustainable development needs. The LOAs meet all requirements as set out in the CDM VVM. This has been checked by the DOE. Therefore the CAR is closed.</p>
<p>CAR B1</p> <p>As per AMS I.D., the baseline scenario is clearly defined. It is not necessary to include an alternative scenario approach. Therefore revision is needed to follow the methodology requirements.</p>	<p>B.2.2.</p>	<p>OK. The discussion of alternatives to the project activity is deleted.</p>	<p>The correction made in the revised PDD is adequate and follows completely the applied methodology. According to the revised PDD the baseline refers to clause 9 (a) of the methodology. This is</p>

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
			assessed to be appropriate and hence CAR is closed.
CAR B2 The available data source during GSP should be referred to, i.e. EF calculation according to China Energy Statistics Yearbooks 2005-2007, China Electric Power Yearbooks 2003-2007, IPCC 2006. Furthermore a transparent calculation spreadsheet should be provided.	B.2.6.	The EF 0.9969 tCO ₂ e/MWh in the GSP PDD was in accordance with the value published by Chinese DNA on 18 July 2008. The EF was updated to 0.9735 tCO ₂ e/MWh by the Chinese DNA on 30 Dec 2008. Therefore, the EF value in the final PDD adopts 0.9735 tCO ₂ e/MWh, which is more conservative.	The spreadsheet is checked. Data source and calculation are correct. The BM emission factor now reflects the more conservative value and thus is accepted by the validation team. Hence CAR is closed.
CAR B3 The data used in IRR spreadsheet should be substantiated with documented evidences.	B.3.3.	The data used in the IRR spreadsheet are totally based on Supplementary Preliminary Design Report (SPDR) completed by Sichuan University Engineering Research Institute (Certificate No. 221047, Grade B) which is an independent third party authorized by the Ministry of Construction of the People's Republic of China. Thus the data in the SPDR is reasonable and credible.	The validation team concludes that all the data are based on SPDR, which are considered to be valid at the time of board decision to proceed with construction of the project activity. For the analysis of the data it should be referred to table 4 in this report. CAR is closed.
CAR B4 The description of sensitivity analysis is insufficient - The IRR value of the trend line should be presented;	B.3.3.	More details on the sensitivity analysis are included in the updated PDD. <ul style="list-style-type: none"> When the total investment reduces 	The correction made in the revised PDD is appropriate. The sensitivity analysis has

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<ul style="list-style-type: none"> - The possibility of 10% variation should be analyzed. 		<p>by 13.8%, the IRR of the project can hit the benchmark of 10%, however, as the SPDR estimate was done at the time when the equipment contract was being discussed and the costs known, making up a major part of the total project costs. Moreover, the market price for raw materials like steel and construction materials has kept increasing and this trend is expected to be remained for a certain period.</p> <ul style="list-style-type: none"> ○ When the electricity tariff increases by 14.8%, the IRR of the project can hit the benchmark of 10%. As the tariff was agreed and fixed in the approval of tariff authorized by the power grid company on May 8, 2006, therefore, it is unlikely for the tariff to increase. ○ When the power generation increases by 14.8%, the IRR of the project can hit the benchmark of 10%. The generation is already high, with a load factor of 91.7%, based on accurate and long-term water flow studies. A 10% increased load factor would higher than 100%, which is not feasible with the operation of the plant reliant on 	<p>been checked Therefore the CAR is closed.</p>

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>variable rainfall, as shown in the SPDR.</p> <ul style="list-style-type: none"> Even when the O & M costs reduce to zero, the IRR can not hit the benchmark, so the annual O & M costs is not considered sensitive. 	
<p>CAR B5 The evidence of CDM consideration should be provided in PDD section B.5. A time table of the project key events is preferred. Also, the English version of CDM management decision should be submitted.</p>	B.3.4.	<p>The timeline is included in the PDD. Evidence provided to DOE.</p>	<p>The revision made in the revised PDD is adequate. All documented evidences have been forwarded to the validation team and were checked. A detailed description and assessment is provided in section 4 of this report. Furthermore the English translation of the CDM management decision has been provided for uploading on UNFCCC website. CAR is closed.</p>
<p>CAR C1 The starting date of the project activity is presented as 2007-11-01. However, the genset purchase contract signed earlier than 2007-11-01, the starting date should be considered as per CDM glossary.</p>	C.1.	<p>According to the glossary, the starting date of the project activity should be the earliest date at which either the implementation or construction or real action of a project activity begins. Therefore, 06/08/2007, the date of the</p>	<p>The correction made in the revised PDD is adequate. It now reflects the earliest date as defined by the CDM Glossary of Terms.</p>

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		equipment purchase contract is considered as the starting date of the project. The date the government issued the construction permission was 01/11/2007, while real construction started from 28/12/2007.	Therefore TÜV NORD came to the conclusion that the CAR is closed.
CR A1 The description of the location of the project activity is not clear. The following has to be clarified: <ul style="list-style-type: none"> The name of river channel is not indicated. The coordinates of the project activity is not in compliance with information as per on-site visit. 103°46'30" east longitude and 29°22'42" north latitude is indicated in the PDD, but the east longitude is out of the scale approved by land use permission, which refers 103°47'19" to 103°47'26" east longitude. Clarification is requested. 	A.1.1.	The project is located on the lower reach of Moxi River in Xiba Town, Wutongqiao District, Leshan City, Sichuan Province. There is a written mistake in the east longitude in the PDD, not 103°46'30" but 103°47'30". The precisely coordination of the dam and power house have been added in the revised PDD.	The correction is cross-checked with documentation and memo made on-site. The revision is correct and acceptable. CR is closed.
CR A2 There is no description about barrage. E.g. its height, gate number and its function, etc. Also, the manufacture information of the turbine and generator should be provided.	A.1.2.	The detailed information of the barrage and main equipments has been added in the updated PDD. The reservoir is mainly used for electricity generation.	The revision is correct and acceptable. The information given in the PDD is in accordance with the documents provided by the client. Therefore the CR is closed.
CR A3	A.3.1.	It is revised in the updated PDD.	The revision is correct

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
The description of project design engineering and its generation technology is insufficient. E.g. the process of water utilization, manufacture of equipment, etc. Additional statement is requested.			and acceptable. Necessary information are now included in the PDD and provides a better view on the projects activity. Hence DOE assessed the CR to be closed.
CR A4 The statement of environmental or social benefits in PDD is insufficient, e.g. the contribution to the local infrastructure should be specialized, and also the evidence of 15 permanent job positions should be provided.	A.4.2.	The statement of environmental or social benefits has been revised in the updated PDD. Once operational, the project will employ a total of 23 people, which is determined based on the capacity and the type of the project. The 15 person mentioned in the PDD only includes the staff in the operation and maintenance departments.	The PDD was sufficiently revised by the client. The information regarding job opportunities was confirmed by the project owner during on-site visit and was assessed to be reliable. Hence TÜV NORD concluded that the CR is closed.
CR B1 The data source of IRR is Supplementary Preliminary Design Report (SPDR, in Jun. 2007), which is drafted less than two years after original PDR (Oct. 2005), both of the design reports suggest the same capacity and operation hour, the reason of redesign should be provided.	B.3.3.	The main revision in the SPDR is as follow: <ul style="list-style-type: none">○ The PDR was completed in Oct 2005 using an estimated electricity tariff of 0.292 yuan/kWh. However, the final tariff was approved by Leshan Grid Co., Ltd on 8 May 2006, and is 0.25 yuan/kWh.○ In addition, the type of the barrage	Both PDR and SPDR are checked, the redesign and explanation provided by the project participant is reasonable. Hence CR is closed.

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>was changed in the SPDR. A fabric dam was chosen in the PDR while a bulkhead sluice gate in the SPDR. While quicker and cheaper to build a fabric dam, the aging of the fabric leads to a shorter lifetime and threaten to the safety of the dam. Therefore a bulkhead sluice gate was chosen in the SPDR to ensure the stability of the dam.</p> <p>The SPDR was needed to re-assess the economic feasibility of the project following these changes just before a final decision to go ahead was made by the developer.</p>	
<p>CR B2 Since EF should be calculated, therefore, it should not be listed in PDD section B.6.2.</p>	B.5.1.	The PDD has been revised accordingly.	OK, the section B.6.2. includes all the parameter which are necessary to calculate the EF. Now the section is filled in accordance to the guidelines for completing PDD. Therefore the CR is closed.
<p>CR C1 Since the validation is still on-going on 2009-01-01, the start of the crediting period should be revised.</p>	C.2	The start date of the first crediting period has been changed to 2009-09-01 due to the actual process of the project activity.	The revised value is more reasonable than the one indicated in the

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
			draft PDD. CR is closed.
CR E1 The percentage of stakeholders in summary is not reasonable, i. e. 98 % of 40 person result as a decimal. So as 93 % followed.	E.4.	Rounded to whole percentage points, the PDD correctly stated 98% and 93%. However, the exact percentages are 97.5% and 92.5%, respectively, which are now included in the updated PDD.	OK, revision is assessed to be appropriate. Hence CR is closed.

Table 4: Validation Table for Assessment of Financial Parameters

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
Installed capacity	5	MW	SPDR, page 3	/SPDR/ /ASP/ /AP/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	It is designed by Sichuan University Engineering Design Institution, authorized by National Development and Plan Commission: http://www.soci.com.cn/company/shop/103035.html It could provide the service with the necessary expertise. Also the installed capacity of the project is 5MW, which is confirmed by the local government in project's approval ^{/AP/} .
Project Lifetime	20	year	Economic Evaluation Code for Small Scale Hydropower Projects	/SL16-95/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The value is from Economic Evaluation Code for Small Scale Hydropower Projects. The project IRR calculations reflect the period of expected operation of the underlying project activity (technical lifetime), therefore It is also in compliance with EB 41 Annex 45.
Net annual electricity generation	36,315	MWh	SPDR, page 3	/AP/ /SL16-95/ /SPDR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The net annual electricity generation is calculated based on the installed capacity, annual operation time, and effective rate of power generation. The calculation is estimated as follows: $40,170\text{MWh} \times 93\% \times (1-0.3\%) \times (1-2.5\%) = 36,315\text{MWh}$ Where: 40,170MWh is gross electricity generation; it is estimated based on hydrologic data from 1937 to 1979, totally 43 years; 93% is Effective Power Coefficient (EPC), it is estimated based on hydro information, water head loss caused by the project, and power efficiency from turbine and generator. As per on-site interviewing, the project has seasonal regulation capacity. As per SL16-95, the EPC of this type could be 0.9~0.95. it is reasonable to estimate the project as 93%;

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
							0.3% is internal use, and 2.5% is line loss rate. To test IRR with EPC of 100%, the IRR will be 9.11%, which is still lower than benchmark 10%. Provided that all of electricity generation sent to grid, i.e. EPC is 100%, and there was no internal use or line loss, the IRR will be 9.49%, which is still lower than benchmark of 10%. It is concluded that the project is additional and the estimation is reasonable.
Total Investment	5985.65	10 ⁴ RMB	SPDR, page 136	/SPDR/ /CON/	☒	☒	Total investment is comprised of fixed assets investment and influent capital. Fixed Asset investment is estimated to be 5882.67*10 ⁴ RMB and the interest during construction period (97.98*10 ⁴ RMB). Where the interest is calculated by considering bank loan rate 6.12% and one year construction period. The influent capital of the project is 5*10 ⁴ RMB. The total investment has been cross checked with the unit capacity cost of hydropower projects in Central China Region. The unit costs of the proposed project is calculated as 11,971 RMB/kW, which is slightly higher than the average unit cost 11,828 RMB/kW of hydropower project in Central China Region in 2000-2005 as indicated in the <i>Review and Prediction of Small Hydropower project's investment</i> . http://www.askci.com/freereports/2008-04/200842104856.html Considering the material price increasing from year 2005 (statistics finalized year) to year 2007 (SPDR finalized year) Thus the estimation is considered to be

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
							conservative. Since the project is not completed yet, only part of the contracts is available. After checking the main equipment purchase contracts and part of construction contracts available during validation, the investment already reaches 70% of the estimation, therefore the estimation is reasonable.
Annual O&M costs	124.71	10 ⁴ RMB	SPDR, page 132-133	/SPDR/ /SL16-95/	☒	☒	<p>The O&M consists of payroll, cost of overhaul, other expenses, water charges. $124.71 = 59.81 + 48.65 + 3.63 + 3.63 + 9.0$ Where 59.81-- The cost of overhaul is 1% of fix asset, including Total Static Investment and t, including Fixed Asset investment and interest during construction. It is an amortized repair cost and in compliance with SL16-95.</p> <p>48.65--salary & social welfare, calculated by $23 \times 1.5 \times (1 + 41\%)$ Where 23 is number of people will be employed during operation period, which is determined based on the capacity and the type of the project. The 15 person mentioned in the PDD only includes the staff in the operation and maintenance departments. The remaining 8 employees belong to service and management.</p> <p>1.5×10^4 RMB/yr*person in the SPDR (finalized in 2007) is lower than average salary of Sichuan province 18,279 RMB/yr*person in 2007, the information is quoted from province statics: http://www.scbid.com/zh/asite37/web_show_305491.shtml</p>

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
							<p>The estimation is considered to be conservative.</p> <p>41% is Social welfare ratio (of staff salary) is a sum up of the following items: the basic welfare of 14%, labor insurance of 17% and house fund of 10%.</p> <p>The estimation is considered to be appropriate.</p> <p>3.63-- Water resource fee and Reservoir maintenance fee are 0.001 RMB /kWh respectively, as per on-site interviewing to expert, the estimation is appropriate;</p> <p>9.0-- other cost based on 18 RMB /kW. As per SL16-95, it is suggested to be 18~21.6 RMB/KW with the capacity between 0.5MW and 6MW. It is conservative to estimate of 18 RMB/KW.</p> <p>In total the O&M takes 2% of Total Investment, it is appropriate.</p> <p>It is concluded that the calculation is transparent and appropriate.</p>
Electricity tariff (VAT incl.)	0.25	RMB /kWh	SPDR, page 132	/SPDR/ /APP-5/	☒	☒	<p>The tariff is derived from Grid connection agreement signed between the project owner and the grid company for the project. Refer to Grid-connected tariff approval, refer No. Le Dian Si Han [2006]13 on 08 May 2006.</p> <p>The tariff will be fixed except government adjusts tariff policy. Therefore it is hard to estimate the variation. However, an assessment of the registered hydro CDM projects in the respective province was conducted. It shows that prices for tariffs between 0.18 RMB/kWh to 0.29 RMB/kWh (incl. VAT) are applied. Considering this range and that the applied value is in the upper level the validation team is convinced that the price is chosen reasonable and appropriate.</p> <p>Further, as per sensitive analysis, when the tariff varies</p>

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
							within 10%, IRR is still below the benchmark. Validation team come to conclusion that the tariff used in IRR is valid.
Depreciation rate (of total investment)	5	%	SPDR, page 132	SPDR /SL16-95/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Depreciation rate use average depreciation in the project lifetime. With the project lifetime of 20 years, and residual value recovery rate of 0, the depreciation rate is 5%.
Value-added tax (VAT)	6	%	SPDR, page 132	SPDR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The values are derived from the document No [1994]004, issued by the National Financial Ministry and National Revenue Ministry, which was also confirmed in document [1998]843 and [2006]47 issued by National Revenue Ministry.
City build tax (of value-added tax)	5	%	SPDR, page 132	SPDR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	According to local accounting regulations, city build tax is 5% of VAT.
Education added tax	3	%	SPDR, page 132	SPDR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Education added tax is based on VAT, which is 3% of VAT for this project.
Income tax	33	%	SPDR, page 132	SPDR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The value is derived from Corporate Income tax Temporary Terms of People's Republic of China published on 23/12/1993 which is valid until end of year 2007. (http://www.lawtime.cn/zhishi/sszsghf/xiangguanfaui/20070426/63781.html) The validation confirms that the value was valid and applicable at the time of preparing the SPDR.
Loan interest rate	6.12	%	SPDR, page 130	/SPDR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Comparing the long-term loan interest rate in Jul 2007, which is 7.02, refer to http://www.boc.cn/finadata/lilv/fd32/200809/t20080918_2401.html The estimation in SPDR (finalized in Jun 2007) is conservative.



CERTIFICATES

 CERTIFICATE OF APPOINTMENT Mr. Dipl.-Ing. Rainer Winter born on 1963-02-21 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as TÜV NORD JI/CDM Senior Assessor The present appointment will terminate on 2010-07-05 Certification registration No. 04 02 154-03 Essen, 2007-07-06  <small>Deputy of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small>	 CERTIFICATE OF APPOINTMENT Mr. Martin Saalmann born on 1976-02-23 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as TÜV NORD JI/CDM Expert The present appointment will terminate on 2009-06-14 Certification registration No. 06 06 15 - 22 Essen, 2006-06-15  <small>Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small>	 CERTIFICATE OF APPOINTMENT Mr. Dipl.-Ing. Eric Krupp born on 1971-06-25 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as TÜV NORD JI/CDM Senior Assessor The present appointment will terminate on 2010-07-05 Certification registration No. 06 05 01 - 017 Essen, 2007-07-06  <small>Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small>	 CERTIFICATE OF APPOINTMENT Mr. Yong Jun Li born on 1974-03-03 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as TÜV NORD JI/CDM Assessor The present appointment will terminate on 2010-02-15 Certification registration No. 06 05 01 - 39 Essen, 2007-06-27  <small>Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH</small>
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