VALIDATION REPORT

CHINA TUANJIE SMALL RUNDLE HYDROPOWER PROJECT

Report No: QT-CDM03-07 – 07/61

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2008-08-21	Project No.: QT-CDM03-07 – 07/61
Approved by: Mr. Krupp Eric	Organisational unit: TÜV NORD JI/CDM Certification Program
Client: Carbon Asset Management Sweden AB	Client ref.: Mr. Niels von Zweigbergk (President & CEO)

Summary/Opinion:

Carbon Asset Management Sweden AB has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "China Tuanjie Small Rundle Hydropower 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), the simplified modalities and procedures for small scale CDM project activities of annex II to decision 21/CP.8 and the relevant decisions by COP/MOP and CDM Executive Board.

The project activity exports electrical energy to the Central China Power Grid (CCPG). The project intends to reduce GHG emissions to the extent of equivalent electricity generated by fossil fuels based power plants of CCPG.

A risk based approach has been followed to perform this validation. In the course of the pre-validation, 8 Corrective Action Requests (CARs) and 10 Clarification Requests (CRs) were raised and successfully closed.

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 approval (HCA) has been obtained from DNA of China dated Oct. 2007, and the letter of approval from Swedish DNA (LOA) dated 20/11/2007.
- The project additionality is sufficiently justified in the 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 173,075 tCO_2e are most likely to be achieved within the 1st renewable crediting period (01/06/2008-31/05/2015).

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.

Report No.: QT-CDM03-07– 07/61	Subject Group: Environment
Report title: *China Tuanjie Small Rundle Hydropower Project*	
Work carried out by: Mr. Rainer Winter, Mr. Yong Jun LI, Mr. Martin Saalmann	
Work verified by: Mr. Krupp Eric	

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Indexing terms

Climate change
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Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CCPG	Central China Power Grid
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CP	Certification Program
CR	Clarification Request
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
GHG	Greenhouse gas(es)
HCA	Host Country Approval
IRR	Internal Rate of Returns
LoA	Letter of Approval
MP	Monitoring Plan
NCV	Net Calorific Value
NDRC	Chinese National Development and Reform Committee (DNA of China)
ODA	Official Development Assistance
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Proponent
QC/QA	Quality control/Quality assurance
QHHE	Qiyang Haojie Hydroelectric Co., Ltd
SSC	Small-Scale
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation Verification Manual

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1 INTRODUCTION

Carbon Asset Management Sweden AB has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project:

"*China Tuanjie Small Rundle Hydropower 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 assess 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; the CDM modalities and procedures as agreed in the Marrakech Accords under decision 17/CP.7; 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 11: Grid connected renewable electricity generation), which are included in the PDD and other relevant supporting documents.
The items covered in the validation are described below:

- **UNFCCC & Host Country Criteria**
  - UNFCCC/Kyoto Protocol requirements, in particular, the requirements of the CDM as set out in decision 17/CP.7 (Marrakech Accords), the present annex, and 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

- **Monitoring Plan**
  - Monitoring methodology
  - Indicators/data to be monitored and reported
  - Responsibilities

- **Background investigation and follow up interviews**

- **Stakeholder consultation**
  - Publishing the PDD on TUV NORD 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 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. TÜV NORD JI/CDM CP can not be held liable by any entities for making its validation opinion based on any false or misleading information supplied to it during the course of validation.

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(s)

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

1.3.2 Project Parties

People's Republic of China and Sweden 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 Participant 1	Qiyang county Haojie Hydroelectric Co., Ltd. 172 Taozhu Road Qiyang County Yongzhou City Hunan Province P.R.China
Contact person:	Mr. Zhijie Luo President Mobile :+86-0-139-0746-5198 Tel No: +86-746- 3227198 Fax No: +86-746- 3227198
Project Participant 2	Carbon Asset Management Sweden AB Drottninggatan 92-94 Stockholm- 11136 Sweden
Contact Person:	Niels Von Zweigbergk President & CEO Tel No: +46 8506 26396 Fax No: +46 8346080

1.3.4 Project location

The project is located in Baiguo Town, Qiyang County, Yongzhou City, Hunan Province, P. R. China.

The details of the project location are given in table 1-2:

Table 1-2: Project Location

Host Country:	Peoples Republic of China
Region:	Hunan Province
Project location address:	Baiguo Town Qiyang County Yongzhou City Hunan Province, P.R. China
The Attached Station of Second Level of Tuanjie Power Station	
Latitude: *Power House*	26°09′51″ N
Longitude: *Power House*	112°02′44″ E
The Second Level of Tuanjie Power Station	
Latitude: *Power House*	26°09′58″ N
Longitude: *Power House*	112°03′16″ E
Lengshuiyuan Power Station	
Latitude: *Power House*	26°10′18″ N
Longitude: *Power House*	112°04′28″ E

1.3.5 Technical project description

The Tuanjie Small Rundle Hydropower Project is a run-of-river bundled hydropower project located on Xiaohuangsi water system, in Hunan Province of P.R. China.

The project comprises three small power plants with capacity of 2 x 0.5 MW (the attached station of the Second Level of Tuanjie Power Station), 2 x 2 MW (the Second Level of Tuanjie Power Station) and 2 x 0.8 MW (the Lengshuiyuan Power Station) respectively.

The water from the river is led through barrage, tunnel and then led into pressure pipe to form the water head. Then water from the pressure pipe flows into the powerhouse and drives the turbines and generators to generate electricity.

The Second Level of Tuanjie Power Station generated electricity by using the tail water of the Attached Station of the Second Level of Tuanjie Power Station. The Lengshuiyuan Power Station is not connected with the other two stations.

The Attached Station of Second Level of Tuanjie Power Station (1 MW)

The expected net power generation of the Attached Station of Second Level of Tuanjie Power Station is 3,921.99 MWh per year. The rated water head is 230 m and the rated water flow is estimated to be 0.267 m^3/s. The following civil works are implemented: barrage, tunnel, penstock, pressure pipe, power house, electricity transfer station (10 kV to 35 kV).

The key parameters for the Attached Station of Second Level of Tuanjie Power Station are given in Table 1-3.

Turbine	
Type:	CJA237-W-60/1×7.5
Quantity:	2
Rated Power:	500 kW
Rated Water Head:	230 m
Rated Flow:	0.267 m^3/s
Generators	
Type:	SFW500-6/850
Quantity:	2
Rated Power:	500 kW

Table 1-3: Key parameters of the Attached Station of Second Level of Tuanjie Power Station

The Second Level of Tuanjie Power Station (4 MW)

The expected net power generation of the Second Level of Tuanjie Power Station is 15,453.18 MWh per year. The rated water head is 88 m and the rated water flow is estimated to be 2.682 m^3/s. The following civil works are implemented: barrage, tunnel, penstock, pressure pipe, power house, electricity transfer station (6.3 kV to 35 kV)

The key parameters for the Second Level of Tuanjie Power Station are given in Table 1-4.

Turbine	
Type:	HLA444-WJ-64
Quantity:	2
Rated Power:	2000 kW
Rated Water Head:	88 m
Rated Flow:	2.682 m^3/s
Generators	
Type:	SFW2000-6/1430
Quantity:	2
Rated Power:	2000 kW

Table 1-4: **Key parameters of the Second Level of Tuanjie Power Station**

The Lengshuiyuan Power Station (1.6 MW)

The expected net power generation of the Lengshuiyuan Power Station is 5,982.66 MWh per year. The rated water head is 320 m and the rated water flow is estimated to be 0.305 m^3/s. The following civil works are implemented: barrage, tunnel, penstock, pressure pipe, power house, electricity transfer station (0.4 kV to 35 kV).

The key parameters for the Lengshuiyuan Power Station are given in Table 1-5.

Turbine	
Type:	CJA237-W-70/1×7.5
Quantity:	2
Rated Power:	800 kW
Rated Water Head:	320 m
Rated Flow:	0.305 m^3/s
Generators	
Type:	SFW800-6/1180
Quantity:	2
Rated Power:	800 kW

Table 1-5: **Key parameters of the Lengshuiyuan Power Station**

The electricity generated from 3 stations will be jointly connected to Renchong Substation Transformer Substation at 35 kV and then connected to CCPG.

The project's net electricity exported to the grid is expected to be 25,357.8 MWh annually and the estimated emission reduction within the 1st renewable crediting period (01/06/2008-31/05/2015) is 173,075 tCO_2e.

2 VALIDATION TEAM

The Validation team was led by Mr. **Rainer Winter**. He works at TÜV NORD 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 global leader of the TÜV NORD JI/CDM CP. For this validation he was assisted by:

For this validation he was assisted by:

- Mr. **Yong Jun Li**, TUV 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 Manager for TÜV NORD China operation. He is an appointed assessor for JI/CDM certification program of TÜV NORD.
- Mr. **Martin Saalmann**, TÜV NORD CERT GmbH, is an appointed JI/CDM Expert in the JI/CDM Certification Program of TÜV NORD.

The validation report is verified by:

Mr. **Eric Krupp**. He is an expert in the field of environmental approval procedures as well as national and international Emission Trading. He worked in different projects in the framework of the German allocation procedure and the verification of the annual CO_2 emission reports. Mr. Krupp is an appointed JI/CDM assessor and the deputy of TÜV NORD JI/CDM certification program.

3 METHODOLOGY

The validation of the project was carried from May ’07 to April ’08. It was divided into two phases: the pre-validation and the validation phase. The pre-validation consisted of the following three phases:

- A desk review of the PDD (incl. annexes) and supporting documents with the use of a customised validation protocol 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 TUV 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.

The final validation started after issuance of proposed corrective action (CA) of these CAR and CR by the project proponent. The validator has assessed the proposed CA with a positive result and after the closure of these CAR and CR the project proponent has issued the final version of the PDD. 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 verification 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 the annex to this report, identifying 8 Corrective Action Requests and 10 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** 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/] submitted by the project participants in May 2007 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 24th August 2007, the TÜV NORD JI/CDM CP performed the on-site interviews with the project proponent, project developer, plant operating personnel and stakeholders 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	- Chronological description of the project activity - Technical details of the project realisation and Project Design Report - Host Government Approval / Annex I country approval - Approval procedures and status - Quality management system - Monitoring and measurement equipment - Crediting period and its starting date - Project activity starting date - Power purchase agreement with grid - Sustainable development benefits because of project

Interviewed Persons / Entities	Interview topics
	- Analysis of local stakeholder consultation - Operational data – technical specification (capacity of turbine), startup power supply, water availibility, plant load factor. - Training & competency of the staff members w.r.t project management, monitoring and reporting - Debundling
Project consultant representatives	- Editorial aspects of PDD - Methodology selection aspects - Baseline study, leakage and additionality - Details of emission reduction calculation
Local Stakeholders	- Stakeholder survey and consultation - Socio-economic issues / benefits because of project - Status of implementation of agreements

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 8 CARs and 10 CRs are raised.

The CARs / CRs are documented in 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. Comments on the PDD were invited within 30 days, i.e. 23/05/2007 to 22/06/2007.

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 was submitted to the project proponents. After reviewing the revised and resubmitted project documentation; resolving the CRs & CARs raised and outstanding concerns TÜV NORD JI/CDM CP issues this final validation report and opinion.

4 VALIDATION FINDINGS

In the following protocol the findings from the desk review of the draft PDD, visits, interviews and supporting documents are summarised.

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	5	3
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	3	6
Duration of the Project / Crediting Period (C)	-	1
Environmental impacts (D)	-	-
Stakeholder Comments (E)	-	-
SUM	**8**	**10**

[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). Annex also includes all CARs and CRs (Table 3).

4.1 Participation Requirements

P.R. of China as a non Annex I party meets all relevant participation requirements. In the Letter of Host Country Approval[/HCA/] dated October 2007, the Chinese DNA, Chinese National Development and Reform Committee confirmed the voluntary participation of QHHE as project participant in the CDM project activity.
In the host country approval of China, it's stated that QHHE has to comply with the following conditions:

- The project complies with the permission requirements provided for in the Measures for Operation and Management of Clean Development Mechanism project in China, and assists China in achieving sustainable development.
- QHHE is authorized as China's participants to voluntary participate in and carry out the project activity.
- QHHE is permitted to tranfer to Carbon Asset Management Sweden AB no more than 150,000 tCO_{2e} in Certified Emission Reductions (CERs).

Sweden as the Annex 1 party meets all the relevant participation requirements. In the Letter of Approval[/LOA/] dated 20/11/2007, the Swedish DNA, Swedish Energy Agency, Department of Energy system Analysis and Climate Change, confirmed the voluntary participation of Carbon Asset Management Sweden, AB as the purchaser in the CDM project activity as well as confirmed that public funding is not used for the purchase of the Certified Emission Reductions from the project.

CCAN (China Carbon Advisory Network) Consulting GmbH has declared to voluntary withdraw the participating of the project via the Voluntary Withdrawal Letter[/VWL/]. Carbon Asset Management Sweden AB has signed the Emission Reduction Purchasing Agreement[/ERPA/] to participate in the project activity as buyer.

During draft validation process CAR A1, CAR A1.1 were raised regarding the unavailability of LOA and HCA and the withdrawn of CCAN. CAR was closed after receiving the pending documents and further clarification as reflected in the Annex.

4.2 Project design

The objective of this 6.6 MW bundled hydro power project is to reduce GHG emissions by replacing electricity of the CCPG which predominantly uses fossil fuels. The project activity is estimated to reduce GHG emissions equivalent to 24,725 tCO_2e annually.

The proposed CDM project is a bundled project activity and comprises three run-of-river small power plants with capacity of 2 x 0.5 MW (the Attached Station of the Second Level of Tuanjie Power Station), 2 x 2 MW (the Second Level of Tuanjie Power Station) and 2 x 0.8 MW (the Lengshuiyuan Power Station) respectively

owned by the QHHE. The electricity is generated by state-of-art high-water head turbine generators. No technology transfer is involved in the project activity.

In terms of sustainable development, various social, economic and environmental benefits are achieved. Direct and indirect employment was obtained through implementation and operation of the project activity. Besides GHG mitigation, the project activity also leads to contribution through the improvement of local infrastructure.

To convert the kinetic energy of water into mechanical energy and subsequently into electrical energy, water from the river was led through barrage, tunnel and then led into pressure pipe to form the high water head. Then water from the pressure pipe flows into the powerhouse and drives the turbines and generators to generate electricity. According to the EIA approval from the host country, the technology used in the project activity is environmentally safe and sound. The feasibility of technology has been approved by the local development and reform committee.

The project design does reflect current good practices.

Based on the financial information furnished by the project participant, no ODA contributes to the financing of the project./IM01/

In the course of the project validation CAR A2, CAR A2.2, CAR A3 and CR A1, CR A1.1, CR B1 regarding the project design and the correct completion of the PDD - were raised and successfully closed out.

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

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 11 dated 18. May 2007).

As prescribed in small scale type I.D. baseline methodology, the emission baseline will be the kWh produced/ displaced by the renewable generating unit multiplied by an emission coefficient of the grid (measured in kg CO_2e/kWh) calculated in a transparent and conservative manner.

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 approved methodology ACM0002, version 6. Thus emission reductions for this project activity will be the

amount of electricity (kWh) supplied to the grid multiplied with the emission coefficient of CCPG.

The calculation of the gird emission factor is according to ACM0002. 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 (2003-2006) and China Electric Power Yearbook (2003-2006).[/GD/, /dna/]

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 electricity exported to the CCPG (EG_y).

The grid emission factor (EF_y) is determined ex-ante and estimated as a combined margin (CM), consisting of the weighted average of operating margin (EF_{OM}) and build margin (EF_{BM}) factors.

The calculation method of the OM and BM is derived from the guide of OM and BM calculation issued by Chinese DNA in Aug. 2007. Referring to the "Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories" and "China Energy Statistical Yearbook", the guide of OM and BM calculation was modified as following:

1. The emission factor of coke was changed from 25.8 tC/TJ to 29.2 tC/TJ, according to the value provided in IPCC 2006.
2. The emission factor of refinery dry gas was changed from 18.2 tC/TJ to 15.7 tC/TJ, according to the value provided in IPCC 2006.
3. Due to no applicable values of emission factor and of NCV defined in IPCC 2006 for "other coking products", the CO_2 emission for the 15 thousand tons of "other coking products" in Hunan province in year 2005 was ignored.

$EF_{OM,y}$ calculation: Due to the low-cost must-run resources constituting less than 50 % of the total grid generation, 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 (tCO_2/MWh) of all generating sources serving the system (not including the low-cost and must-run power plants) of three years average data (2003-2005). The $EF_{OM,y}$ is calculated to be 1.29086 tCO_2e/MWh.

***$EF_{BM,y}$* calculation:** Due to the data unavailability at the power plant level in China, according to the deviation approaches for $EF_{BM,y}$ calculation approved by CDM EB, the build margin is calculated as following:

1. The capacity addition from the years 2002-2005 is chosen, which exceed 20 % (24.59 %) of the total installed capacity.
2. According to the data in "Chinese Energy Statistical Yearbook 2006", 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 oxidisation factor 100 % are used for the BM calculation.

The BM is calculated as 0.65923 tCO_2e/MWh.

In accordance with ACM0002, weight factors of $w_{OM} = w_{BM} = 0.5$ have been used and the resultant grid emission factor (EF_y) works out as 0.97504 tCO_2e/MWh.

The calculation of EF_y is currently and publicly available and published by the Chinese DNA (national development and reform committee) on its web-site/dna/.

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

The annual electricity delivered to the grid is approximately 3,921.99 MWh from the Attached Station of the Second Level of Tuanjie Power Station, 15,453.18 MWh from the Second Level of Tuanjie Power Station and 5,982.66 MWh from the Lengshuiyuan Power Station as defined in the supplementary feasibility study report.

Altogether the project activity reduces emissions of 24,725 tCO_2e/yr and 173,075 tCO_2e over the 1st renewable crediting period (7 years).

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 individual arguments presented in the PDD to justify the additionality were summarised in table 4-2. This table also includes the assessment of the validation team.

Table 4-2: Additionality assessment

Step[1)]	Argument PP	Assessment of the validation team
a	Due to the low project IRR compared to a benchmark of 10 % which is derived from Economic Evaluation Code for Small Hydropower Projects (SL16-95) published by the Chinese government the proposed project activity is not feasible. The IRR of the Attached Station of the Second Level of Tuanjie Power Station, the Second Level of Tuanjie Power Station and the Lengshuiyuan Power Station were calculated as 7.29 %, 8.41 % and 7.70 % respectively. Sensitivity Analysis by varying ± 10 % of three critical parameters (total investment, electricity price and O&M cost) confirms that the proposed project activity is unlikely to be financially attractive.	☐ Argument not justified ☐ Argument not convincing ☐ Argument justified but not a decisive barrier ☒ Argument justified / significant barrier
Assessment of the validation team		☒ **project is additional** ☐ **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

PP has calculated IRR for the project activity on after-tax basis and compared the same with the IRR defined in the Economic Evaluation Code for Small Hydropower Projects (SL16-95)./ADD-5/

The calculation period of IRR covers the project lifetime of 20 years for all projects.

The electricity tariff and applicable tax rates used in the calculation were proved by documented evidence/SFS/.

The IRR calculation was reproduced by the validation team. The parameters used for the IRR calculation were derived from the Supplementary Feasibility Study/SFS/ which is also approved by government/PALA/ and evaluated to be credible. The decision to implement the project with CDM benefits is based on this report and the parameters included (as indicated in section "Evidence of Management Decision").

The calculation method is also consistent with national financial assessment regulations for construction projects.

The sensitivity analysis concludes that the project activity is unlikely to be financially attractive. The three parameters (total investment, electricity price and O&M cost) changed in a range of ± 10 % are well chosen. It is shown that the benchmark of 10 % is not reached. The sensitivity analysis was reproduced by the validation team and evaluated to be correct.

The below assessments are done regarding to the input values (tariff and O & M cost) and the assumption of fixed amount during the crediting period:

1. The appropriateness of electricity tariff was counterchecked by actual values which were available at the time of the CDM management decision as well as after the completion of the construction:
According to Notice regarding to electricity tariff of Tuanjie Cascade projects, Qijiage[2004]159, issued by Qiyang County Price Bureau 2004/12/28, electricity tariff of the project would be 0.25 RMB/kWh.
Latest grid-connection agreement confirms 0.25 RMB/kWh, the tariff used in IRR calculation.

2. The possibility of tariff change (variation range in sensitivity analysis) in the 1st crediting period is counterchecked by supporting document:
Clarification about electricity tariff, issued by Qiyang county Price Bureau dated 2008/08/12, shows that the electricity tariff of hydropower stations in Qiyang County has kept at the level of 0.25 RMB/kWh during the past 5 years.

3. The validation team considered publicly available sources of information such as Statistic data and National economic evaluation code, to confirm the appropriateness of O & M cost.

4. The possibility of O & M cost change (variation range in sensitivity analysis) in the 1st crediting period is counterchecked by statistic information:
Material price as well as average labor price has been increased during the past years.

Thus we conclude that the fixed amount electricity tariff and fixed amount O & M cost in IRR calculation along with the 10 % variation range in sensitivity analysis is reasonable and conservative.

For details of the assessment of the electricity tariff, O & M cost, and other financial parameters pl. refer to the "Financial Analysis Table" (Table 4 in the attached FVR).

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After checking all parameters and assumptions in the IRR, the validation team came to the conclusion that the project activity is additional.
In the course of the project validation, CAR B1, CAR B2, CAR B3, CR B2 and CR B3 regarding additionality and baseline were raised and successfully closed out.

Please refer to Table 3 of Validation Protocol for Corrective Action Request (CARs) and Clarification Request (CRs).

To assess the bank loan rejection, which is demonstrated in the PDD, the three bank loan application letters along with bank's reply are checked in detail.

On the first letter (in October 2004), reply of the bank reads: "Loan is not considered due to the fact that the internal return rate of the project is below benchmark, and that the feasibility study report is waiting for approval."

On the second letter (in January 2005), reply of the bank reads: "Disagree on the loan due to high cost, development difficulty, long return period and financial unattractiveness of the project.

On the third letter (in June 2005), reply of the bank reads: "Loan application is basically approved, considering that CDM can increase financial indicator of the project, and that the emission reduction revenue is good for social and economic benefit. Please arrange the related services as soon as possible."

In August 2005, the Bank loan agreement from Construction Bank of China was signed, after considering the benefit from CDM revenue. This document is also checked in detail.

As explained above, we assess the bank loan reject evidences as credible and reliable.

删除的内容: The sensitivity analysis concludes that the project activity is unlikely to be financially attractive. The three parameters (total investment, electricity price and O&M cost) changed in a range of ± 10 % are well chosen. It is shown that the benchmark of 10 % is not reached. The sensitivity analysis was reproduced by the validation team and evaluated to be correct.

删除的内容: A detailed evaluation of the basic parameter of the IRR calculation is provided in table 4 attached in the Annex of this report.

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Evidence of Management Decision

The project feasibility study was completed in June 2004./FS/
Considering the needs for engineering change resulted from actual geological structure of power house location, the project owner entrusted the Hunan Yongzhou Hydropower and Conservancy Design Institute to conduct the Supplementary Feasibility Study Report of the Design change/SFS/. The report was completed in May 2005. Based on the report and previous projections, the IRR of 3 hydropower stations was lower than benchmark and the project was not financially attractive.

In Feb 2005, the project proponent decided to participate in CDM activity/ADD-1/ due to the weak financial indicators, which were already introduced in the draft stage of the supplementary feasibility study report, and signed CDM development cooperation

agreement with Hunan Sci & Tech. Information Research Institute to development the project as CDM project/ADD-4/.

In October 2005, the project owner got bank loan from Qiyang Branch of China Construction Bank after the bank took CDM support into account/ADD-2/. The project started construction in October 2005/PALA-1/.

The analysis of the evidences indicated show that the proposed project was decided for implementation with serious consideration of CDM benefits.

4.4 Crediting Period

The starting date of the crediting period as mentioned in the PDD under Section C.2. is 01/06/2008 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 2008) up to 2015. The starting date of the project activity as mentioned in the PDD under Section C.1 and verified by the validation team is 08/10/2005 which is indicated in the project construction permission issued by local authority./PALA-1/ The project operational life time (20 years duration (2008 up to 2028)) indicated in the Section C.1.2 of the PDD was verified by the validation team with the turbine and generator purchasing contract/PO/, which is longer than the 1st crediting period of 7 years ending in 2015.

During on-site visit and interview the starting date of the project activity as indicated in section C.1.1. could not be confirmed. Thus CR C1 was raised and successfully closed through amendments in the final PDD.

4.5 Monitoring Plan

The project applies the monitoring methodology AMS I.D.: Grid connected renewable electricity generation: Version 11 (18/05/2007) for Small Scale CDM project activities.

The project monitoring consists of metering the electricity supplied by the project activity to the grid ($EG_{export,\ y}$) and the electricity imported from the grid ($EG_{import,y}$). Finally the net electricity supply to the grid (EG_y) will be calculated by subtracting the imports form the amount of exported electricity.

The OM and BM are calculated as fixed factors for the renewable crediting period by choosing vintages based on ex-ante data published by Chinese DNA.

The procedure for calibration, accuracy and maintenance of monitoring equipment are clearly mentioned as per QA/QC procedure in PDD and the CDM Manual for Monitoring/MON/.

Nevertheless CR B3, CR B4, CR B5 and CR B6 were raised related to the monitoring plan and tables in the PDD and were successfully closed. Please refer to Table 3 of Validation Protocol for Corrective Action Request (CARs) and Clarification Request (CRs).

4.6 Calculation of GHG Emissions

Formulae derived from AMS I.D. and ACM0002 for calculating emission reductions are documented in the PDD in corresponding section B.6. The project intends to reduce carbon dioxide (CO_2) 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 run-of-river hydropower project, the project emission is zero.

Leakage: The technology introduced is not transferred to or from another project activity. Thus leakage can be ignored.

The emission reduction calculation was reviewed by the validation team. All underlying data/ values are transparent presented and assessed to be adequate.

However, CAR B1, CAR B2 and CR B2 was raised and successfully closed.

4.7 Environmental Impacts

Social and environmental impacts of the project have been sufficiently addressed. No adverse environmental impacts as well as transboundary impacts have been envisaged from this project activity.

4.8 Comments by Local Stakeholders

QHHE informed various stakeholders such as local residents about the project details through a meeting which was conducted on 27. April 2005/SCR/.

A summary of the comments received and a note on how due account was taken of the concerns raised in the above public consultation are included in PDD. All the comments are positive.

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 on its website www.global-warming.de on 23/05/2007

and invited comments within 30 days, until 22/06/2007 by parties, stakeholders and UNFCCC accredited non-governmental organisations. No comment was received.

6 VALIDATION OPINION

Carbon Asset Management Sweden AB has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "China Tuanjie Small Rundle Hydropower 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), the simplified modalities and procedures for small scale CDM project activities of annex II to decision 21/CP.8 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 in Baiguo Town, Qiyang County, Yongzhou City, Hunan Province, P. R. China and exports electrical energy to the Central China Power Grid (CCPG). The project intends to reduce GHG emissions to the extent of equivalent electricity generated by fossil fuels based power plants of CCPG.

A risk based approach has been followed to perform this validation. In the course of the pre-validation, 8 Corrective Action Requests (CARs) and 10 Clarification Requests (CRs) were raised and successfully closed.

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 approval (HCA) has been obtained from DNA of China dated Oct. 2007, and the letter of approval from Swedish DNA (LOA) dated 20/11/2007.
- The project additionality is sufficiently justified in the 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 173,075 tCO_2e are most likely to be achieved within the 1st renewable crediting period (01/06/2008-31/05/2015).

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, 2008-08-21

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Rainer Winter

TÜV NORD JI/CDM Certification Program

7 REFERENCES

Table 7-1: Documents provided by the project proponent

Reference	Document
/ADD/	1. Board meeting where CDM application decision was taken into consideration (Feb. 2005) 2. Bank loan agreement from Construction Bank of China (considering the revenue of CDM) (Oct. 2005) 3. Notice about changing the Electricity Transmission Line of Tuanjie Rundle Hydropower Station, issued by Hunan Qiyang Power Supply Company (June 2005) 4. Letter of Intention for CDM Project Design with Hunan Sci. & Tech. Information Research Institute (Feb. 2005) 5. Document No (SL16-95) for Economic Evaluation Code for Small Hydropower Projects issued by Ministry of Water Resources
/BLJ/	Bank loan application letters to China Construction Bank Qiyang Branch, with their reply: 1. Letter in October 2004 2. Letter in January 2005 3. Letter in June 2005
/CET/	Clarification about electricity tariff, issued by Qiyang county Price Bureau dated 2008/08/12
/EIA/	Environment Impact Assessment Report (May. 2005)
/ERPA/	Emission Reduction Purchasing Agreement (Sep. 2007)
/FS/	Feasibility study (June 2004)
/GD/	1. Power generation data references viz. China Electric Yearbook 2002-2006 2. Electricity meter installation technical management code DI/T448-2000, JJG 597-89
/HCA/	Chinese Host Country Approval
/LOA/	Swedish DNA Approval
/MOC/	Modalities of communicating with the CDM EB & the UNFCCC Secretariat
/MON/	CDM Manual for Monitoring and management of Tuanjie Hydropower Station
/NET	Notice regarding to electricity tariff of Tuanjie Cascade projects,

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Reference	Document
	Qijiage[2004]159, issued by Qiyang County Price Bureau 2004/12/28
/PALA/	Project relevant approvals from Local Authority (construction, commissioning etc.) 1. Project construction permission (project starting date) (Oct. 2005) 2. Approval of EIA (June 2005) 3. Approval of land occupation 4. Approval of project feasibility study 5. Approval of supplementary feasibility study 6. Rundle Hydropower Project water and soil conservation scheme report
/PDD-1/	Project Design Document entitled "China Tuanjie Small Rundle Hydropower Project" Version 01 (hosted for public comments during 23/05/07 to 22/06/07)
/PDD-2/	Project Design Document entitled "China Tuanjie Small Rundle Hydropower Project" Version 04 (submitted on 21/08/08)
/PHT/	Photographs of progress of construction activity at the project site
/PO/	Turbine Supplier, Generator Supplier contract
/GCA/	Grid Connection agreement between Central China Power Grid (CCPG) and Qiyang County Haojie Hydropower Exploitationelectric Co. Ltd (Dec. 2005)
/SCR/	Stakeholder Consulting Records
/SFS/	Supplementary Feasibility study (May. 2005)
/VWL/	Voluntary Withdrawal Letter of project participation from CCAN
/XCS/	Supporting Excel calculation sheets for additionality IRR

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Table 7-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 06: 19 May 2006)
/AMS I.D./	"Grid connected renewable electricity generation (Version 11, EB 31)
/CIT/	Corporate Income tax Temporary Terms of People's Republic of China published on 23/12/1993

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Reference	Document
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GCP/	UNFCCC: Guidelines for completing SSC CDM-PDD (Version 04)
/IPCC-GP/	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
/IPCC-RM/	2006 IPCC Guidelines for National Greenhouse Gas Inventories
/KP/	Kyoto Protocol (1997)
/MA/	Decision 17/CP. 7 (Marrakesh – Accords & Annex to decision 17/CP.7)
/SMP/	Simplified modalities and procedures for CDM small scale project activities
/TA/	Tool for the demonstration and assessment of additionality (Ver 3).
/VVM/	IETA, PCF Validation and Verification Manual 2006 (Dec.)

Table 7-3: Websites used

Reference	Link	Organisation
/dna/	http://cdm.ccchina.gov.cn	DNA of China
/cam/	http://www.tricorona.se/cam/	Carbon Asset Management AB
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/unfccc/	http://cdm.unfccc.int	UNFCCC

Tabelle 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Luo Zhijie	Qiyan Haojie Hydroelectric Co., Ltd / general manager
/IM01/	V	☒ Mr. ☐ Ms	Jiang Taiping	Qiyan Haojie Hydroelectric Co., Ltd

Reference	MoI[1]		Name	Organisation / Function
				/ engineering command office
/IM02/	V	☒ Mr. ☐ Ms.	Zhou Wangsheng	Baiguoshi county/ major
/IM02/	V	☒ Mr. ☐ Ms.	Luo Haibin	Dayuanling village / major
/IM03/	V	☐ Mr. ☒ Ms.	Zhu Qiyan	Hunan CDM project service center/ project consulter

1) Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

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	~~CAR A1~~ OK
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	~~CAR A1~~ OK
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 Sweden have designated a national

Requirement	Reference	Conclusion
		authority for CDM.
The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	Both parties have ratified the 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 A2,~~ ~~CAR B3~~ 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	~~CAR B1, CAR B2~~ OK
Environmental impacts		
Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those	CDM Modalities and Procedures §37c	OK

Requirement	Reference	Conclusion
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.		
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 design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK, the project was published on the UNFCCC website for 30 days.
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, CAR 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
Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant	CDM Modalities and Procedures §37f	OK

Requirement	Reference	Conclusion
decisions of the COP/MOP.		
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 for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK
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, an EIA was conducted.

Table 2: Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?	/PDD/ (A.4.1.4) (B.3.)	DR	The projects' physical location description is correctly stated in section A.4.1.4 of the PDD. The unique identification of the project activity w.r.t. to Longitude and Latitude is provided. Furthermore the project boundary also includes all power plants connected physically to the electricity system that the CDM project is connected to. As described under B.3. of the PDD the Chinese Central Power Grid is also part of the project boundary. The first sentence under B.3. should be revised as the meaning/ content is not clear. The locations for each sub-bundle of the bundled power stations should be indicated separately in PDD section A.4.1.4.	~~CR A1.1~~ ~~CAR A3~~	OK OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly	/PDD/ (A.4.)	DR	The project's system spatial boundaries are described. The project includes a headrace tunnel, a pressure pipe, generators, turbines and a power house.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
defined?					
A.2. Participation Requirements *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.*					
A.2.1. Which Parties and project participants are participating in the project?	/PDD/ (A.3.)	DR	The following parties are involved in the project activity: China serves as the host country and Sweden is the Annex I - country. However, some inconsistencies acc. to the indicated project participants were identified. 1. The company KPC GmbH from Austria is introduced as project participant under A.3., while it is not indicated in Annex 1 of the PDD. 2. The name of the company from China serving as project participant is not matching with the company name in Annex 1 of the PDD. Clarification should be provided and the PDD should be revised accordingly. The name of project owner in table 2 on page 3 of the PDD is not consistent with the name in annex 1. In addition, the buyer has been changed from Austrian JI/CDM (KPC GmbH), Austrian CCAN Consuting GmbH to Sweden Carbon Asset Management AB, the voluntary withdrawn declaration from the Austrian JI/CDM (KPC GmbH), Austrian CCAN Consulting GmbH should be	~~CR A1~~ ~~CAR A1.1~~	OK OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			submitted.		
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.)	DR, I	In accordance with the CDM M&P at the time of making the PDD public 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 (pre-) validation the letters of approval of all involved parties are pending (China, Austria).	~~CAR A1~~	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: – Ratification of the Kyoto Protocol – Voluntary participation – Designated a National Authority	/LOA/ /unfccc/	DR	All parties have ratified the Kyoto Protocol (China: Ratification 2002-08-30, Austria: Ratification 2002-05-31). A DNA in all countries is established. The voluntary participation is stated in the LOA which are pending. Please refer to A.2.2	~~CAR A1~~	OK
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) /XCS/, /IM01/	DR, I	Public funding from Annex I - country is not used to finance the project activity.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.3. Technology to be employed *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.*					
A.3.1. Does the project design engineering reflect current good practices?	/PDD/ (A.4.2.)	DR, I	Yes, the project is a run-of-river hydro power project. The emission reductions result due to the displacement of the grid based power. In PDD section A.4.2 description of the technology is provided in condensed form. The technology is environmentally safe and sound and technology is of indigenous origin.	OK	
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/PDD/ (A.4.2.)	DR	Refer A.3.1.	OK	
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/PDD/ (B.7.2.) /IM01/ /IM02/	DR, I	Yes, training and maintenance needs are provided by the project proponents.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.4. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/LOA/	DR	So far the Chinese DNA has not issued the LOA, in which the contribution to sustainable development is addressed and confirmed. Please refer to CAR A1.	~~CAR A1~~	OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/PDD/, A.2.	DR	The view of the project participants on the contribution of the project activity towards sustainable development is briefly described in section A.2. The project creates mainly economic benefits through mitigating local power shortages and increasing of local income and employment possibilities.	OK	
Small scale project activity *Is it assessed whether the project qualifies as small-scale CDM project activity*					
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./ /SMP/	DR	Yes, the project meets the requirements for small scale project activities, since renewable energy technologies are used to generate electricity fed into a grid which can be clearly identified and the capacity is 6.6 MW and thus under the threshold of maximum output capacity of 15 MW.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.4.4. Is the small scale project activity not a debundled component of a larger project activity?	/PDD/ A.4.5 /IM01/, /IM02/	DR, I	The project is not a de-bundled project, as justified in PDD section A.4.5 and confirmed during on-site visit.	OK	
A.5. General Topics					
A.5.1. Has the PDD been duly filled?		DR,	Please indicate in section A.3 of PDD whether project participant is private or public entity. Cp PDD guidelines.	~~CR A1~~	OK
			In section B.1. of the PDD ACM0002, Version 6 should be also referenced since it is used to calculate the emission reductions (cp. guidelines).	~~CR A2~~	OK
			The project capacities for the second level of Tuanjie station and for the Lengshuiyuan power station described in the PDD are not matching with the capacities defined in the updated feasibility study. Thus modification is necessary.	~~CAR A2.1~~	OK
A.5.2. Has all necessary information been made available to the validator?			Several documents which are necessary to provide for a final assessment of the project activity are missing. Please refer to table 5-1 of the draft validation report. Especially the proof according to the management decision for CDM and the supplementary feasibility study should be forwarded. The CDM-SSC-BUNDLE form should also be provided.	~~CAR A2~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/PDD/ (B.1.)	DR	Yes, AMS ID, Ver. 11 (EB 31) is applicable to the project activity. This version is valid for requesting registration till 2008-04-09. The baseline is established by using the combined margin approach as stipulated in ACM0002 Ver. 6.	OK	
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/PDD/ (B.2.), /AMS I.D./	DR	The project fulfils the applicability criteria as per AMS ID. Hydropower is a renewable energy source and the generated electricity is distributed to a grid which is supplied by fossil fuel fired power plants. However, to avoid any misunderstanding section B.2. should also include that the project activity is connected to a grid.	OK ~~CR B1~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2. Baseline Scenario Determination *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.*					
B.2.1. What is the baseline scenario?	/PDD/ (B.4.)	DR,I	The baseline scenario for the hydro-power project would have been grid based power. However, the approach of the baseline scenario as provided under B.4. is not matching with the definition given in AMS I.D. The conclusion indicated is correct but the consideration of alternative scenarios is not matching with the methodology. Thus revision is necessary. Furthermore a description of the baseline should be indicated (cp. the guidelines) by giving for example a brief overview of the electricity grid and its development in the future.	~~CAR B1~~	OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/PDD/ (B.4.)	DR	According to AMS I.D. (Ver. 11) it is not necessary to consider alternative scenarios. It is clearly indicated that the baseline is the kWh produced by the renewable energy facilities times the emission coefficient of the applicable electricity grid.	OK	
B.2.3. Has the baseline scenario been determined according	/PDD/ (B.4.)	DR	Refer B.2.2, CAR B1.	~~CAR B1~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
to the methodology?					
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/PDD/ (B.4.)	DR	Refer B.2.2, CAR B1.	~~CAR B1~~	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.5.)	DR	Yes, the baseline scenario sufficiently 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.)	DR	The baseline scenario data is based on information provided by the Chinese DNA. This data is referenced in the PDD. However, the data used is not the latest. Please refer to CAR B2.	~~CAR B2~~	OK
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 *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*					
B.3.1. Is the project additionality assessed according to the methodology?	/PDD/ (B.5.) /ADD/ /SFS/ /XCS/	DR	Yes, the small scale additionality approach (attachment A to appendix B of the simplified modalities and procedures) is used in section B.5 of the PDD to proof additionality. The investment barrier is demonstrated using the guidelines stated in the large scale additionality tool (ver	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			03).		
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/PDD/ (B.5.) /ADD/ /SFS/ /XCS/	DR	The barrier considered for the project activity is an investment barrier and the justification is provided in the section B.5 of the PDD. The project participants used the benchmark analysis to show the investment barrier. The reasonable benchmark of 10 % as provided in the *Economic Assessment Rules of Small Hydropower Projects* of the Chinese government is chosen to proof that the IRR without considering CDM benefits is under this limit and can only be resolved with CDM benefits. The calculation of the IRR with and without CDM benefits should be revised: 1. The position “Other costs” should be defined and the involved parameters should be indicated. Furthermore the complete operational lifetime should be used to calculate the IRR. 2. The parameter “sale income” in the sensitivity analysis is not clear. Does the sale income will be generated out of a higher electricity supply or an increased sales price? 3. The total investment of the bundle project is inconsistent with the value defined in supplement feasibility study. Revision and IRR re-calculation are necessary. 4. The evidence of barrier of finance access (bank loan rejection) should be submitted.	~~CAR B3~~	OK
B.3.3. Is sufficient evidence provided to support the	/PDD/ (B.5.) /ADD/	DR	Most of the data used in the IRR calculation is based on values provided in the preliminary design report of the Chinese government, common tax policies and other	~~CAR B3~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
relevance of the arguments made?	/SFS/ /XCS/		additional documentation. However the IRR calculation should be corrected. Please refer to B.3.2.		
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.) /ADD/ /PALA/	DR	The starting date of the project activity is before the date of validation. A management decision/ADD-1/ was taken in February 2005 to use CDM benefits as security for bank loans, which were rejected several times. The rejections lead to a delay in the project construction period.	OK	
B.4. Calculation of GHG Emission Reductions – Project emissions *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.*					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.)	DR	The calculation of the emission reductions is according to ACM0002 (Ver. 6). As a reservoir is not implemented in the proposed project thus project emissions are not to be considered.	N/A	
B.4.2. Have conservative	/PDD/	DR	Refer B.4.1	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
assumptions been used when calculating the project emissions	(B.6.)				
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/PDD/ (B.6.)	DR	Refer B.4.1	N/A	
B.5. Calculation of GHG Emission Reductions – Baseline emissions *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.*					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.)	DR	The description of the methodological choices in B.6.1. immediately cites ACM0002 without referring to the applied methodology AMS ID; nor is the choice of using combined margin justified as required under step 9 of AMS ID. Furthermore the Grid Emission Factor should be revised as per the latest OM & BM calculation available on the China DNA web-site (version August)	~~CR B2~~ ~~CAR B2~~	OK OK
B.5.2. Have conservative assumptions been used when calculating the	/PDD/ (B.6.)	DR	Please refer to CAR B2 in section B.5.1.	~~CAR B2~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
baseline emissions					
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 *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.*					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.)	DR	Leakage is not applicable as the energy generating equipment is not transferred from another activity.	N/A	
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	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.7. Emission Reductions *The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.*					
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
B.8. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.7.)	DR	The methodology applied is AMS I.D. in connection with ACM0002. Besides the exported electricity also imports should be considered to estimate the emission reductions. Thus an additional table should be introduced in section B.7.1 considering the imports. Furthermore the calibration frequency of the energy meters should be stated in B.7.2 of the PDD (cp. PDD guidelines).	~~CR B3~~	OK
B.8.2. Will all monitored data required for verification and issuance be kept for two	/PDD/ (B.7.)	DR	Yes, in section B.7.1. it is stated that the data will be kept during the crediting period and two years after.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?					
B.9. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
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	
B.9.4. Is the measurement equipment described and	/PDD/ (B.7.)	DR	As project emissions are zero, this is not applicable.	N/A	

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	deemed appropriate?					
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	
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	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.10. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*					
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.)	DR	According to the project design imports of the electricity have to be considered and thus should be monitored. Further the calibration frequency should be included. Refer to CR B3. Under section B.7.1. it is indicated that the electricity will be metered at three points, “transformer substation exit, generator exits and within the powerhouse”, while section B.7.2. only provides information about two ammeters at “output end of substation and input end of substation”. Clarification is requested which information is correct. A simple technical drawing indicating the installed meters might be appropriate.	~~CR B3~~ ~~CR B4~~	OK 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	
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/PDD/ (B.7.)	DR	Refer to B.8.1. CR B3.	~~CR B3~~	OK
B.10.4. Is the measurement	/PDD/	DR	Refer to B.8.1. CR B3.	~~CR B3~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
equipment described and deemed appropriate?	(B.7.)				
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.)	DR	No, please refer to B.10.1. and CR B4. Furthermore even if the description of several subsections in B.7.2. seems to be detailed, the wording and chosen terms are sometimes confusing, e. g. ammeter installation, wording in first sentence under "4. Data monitoring" etc. It is recommended to remain the headlines in section B.7.2. and revise the description and explanation of the several topics in an appropriate and understandable manner.	~~CR B4~~ ~~CR B5~~	OK OK
B.10.6. Is the measurement interval for baseline data identified and deemed appropriate?	/PDD/ (B.7.)	DR	Yes, the electricity will be measured continuously and it will be recorded by the grid operator and the hydropower operator each month.	OK	
B.10.7. Is the registration, monitoring, measurement and reporting procedure defined?	/PDD/ (B.7.)	DR	Yes, the procedure is defined in section B.7. of the PDD. A "CDM Manual for Monitoring and Management of Tuanjie Hydropower Station" provides further details and responsibilities.	OK	
B.10.8. Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/PDD/ (B.7.)	DR	Refer B.8.1, CR B3	~~CR B3~~	OK
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage	/PDD/ (B.7.)	DR	Yes, a description is provided in section B.7. of the PDD and in the "CDM Manual for Monitoring and Management of Tuanjie Hydropower Station".	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
area of records and how to process performance documentation)					
B.11. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
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	See section B.6.	N/A	
B.11.2. Are the choices of project leakage indicators reasonable and conservative?	/PDD/ (B.7.)	DR	See section B.6.	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 section B.6.	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
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 and archiving of relevant data concerning environmental, social and economic impacts?	/PDD/ (B.7.)	DR	See comment above.	N/A	
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	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.13. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/PDD/ (B.7.)	DR	Yes, in section B.7. of the PDD the operation and management structure is stated. The structure is shown in a diagram. Additional to the several departments a monitoring commissioner will be appointed who will supervise the monitoring procedure. The commissioner will receive support from the Hunan CDM project service center. However, the several responsibilities can not be allocated to the several departments in the management structure. Therefore the different responsibilities should be clearly indicated to the departments.	~~CR B6~~	OK
B.13.2. Are procedures identified for training of monitoring personnel?	/PDD/ (B.7.)	DR, I	The PDD gives a brief description of the topics which will be trained.	OK	
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/PDD/ (B.7.)	DR	No emergencies are envisaged leading to higher GHG emissions.	OK	
B.13.4. Are procedures identified for review of reported results/data?	/PDD/ (B.7.)	DR	Yes.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/PDD/ (B.7.)	DR	Yes.	OK	
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/PDD/ (C.1.)	DR	The operational lifetime is 20 years. But the starting date of the project activity as indicated in section C.1.1. is not matching with the information provided during on-site visit and according to what is indicated under B.5. of the PDD. Thus revision is necessary.	~~CR C1~~	OK
C.2. Is the start of the crediting period clearly defined and reasonable?	/PDD/ (C.2.)	DR	Yes, the starting date of the renewable crediting period is 2008-06-01.	OK	
D. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					

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 section D.1. of the PDD. The effects of the project activity are addressed appropriately.	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/	DR I	Yes, an environmental impact assessment is stipulated by the host party. The EIA was approved by the local Environmental Protection Bureau.	OK	
D.3. Will the project create any adverse environmental effects?	/PDD/ (D.1.) (D.2.)	DR, I	Yes, adverse environmental impacts are expected from the project mainly during construction time, e.g. production of waste water, influence from noise etc. But these impacts 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.1.)	DR	Yes, in section D.1. several environmental impacts are addressed, e. g. impacts on water, air etc.	OK	
D.6. Does the project comply with environmental legislation in the host country?	/PDD/ (D.1.)	DR	Yes, the project activity is approved by the local government.	OK	
For Small-scale projects					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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 *The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*					
E.1. Have relevant stakeholders been consulted?	/PDD/ (E.1.)	DR	The process of inviting stakeholder comments is described in PDD section E.1. A meeting was conducted to inform the relevant stakeholders in the surrounding of the project activity. Bulletins were put up around the project site to invite interested people to join the meeting.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.2. Have appropriate media been used to invite comments by local stakeholders?	/PDD/ (E.1.)	DR	Yes, please refer to section E.1.	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	A summary of the comments received is provided in the PDD.	OK	
E.5. Has due account been taken of any stakeholder comments received?	/PDD/ (E.3.)	DR, I	Yes, section E.3. clearly indicates how due account was taken of the comments received. In summary the project owner will help to develop tourism opportunities, built traffic infrastructure, planting trees to recover the area influenced by the project activity.	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
CAR A1 At the time of the (pre-) validation the letters of approval of all involved parties are pending (China, Sweden).	A.2.2	The LoAs of China and Sweden are submitted with the revised PDD.	The HCA from Chinese DNA and LOA from Sweden DNA were submitted and reviewed by the validatlion team. thus the CAR is closed.
CAR A1.1 The name of project owner in table 2 on page 3 of the PDD is not consistent with the name in annex 1. In addition, the buyer has been changed from Austrian JI/CDM (KPC GmbH), Austrian CCAN Consulting GmbH to Sweden Carbon Asset Management AB, the voluntary withdrawn declaration from the Austrian JI/CDM (KPC GmbH), Austrian CCAN Consulting GmbH should be submitted.	A.2.1	The name of project owner is a typo. The project participant name is corrected in the revised PDD in accordance with Sweden LoA, Chinese HCA and MoC. Austrian CCAN Consulting GmbH is the only participant indicated in the Annex 1, the withdrawal letter of which is submitted with revised PDD. Austrian JI/CDM (KPC GmbH) is not the participant of the project, which is an editorial mistake of the PDD writer.	The project participant name is corrected in the revised PDD. KPC GmbH from Austria was wrongly stated as PP in section A.3. of the draft PDD. The withdrawal letter from Austrian CCAN Consulting GmbH is submitted. The related sections in PDD were revised. The Corrections are reviewed by the validators and deemed sufficient. The CAR is closed.
CAR A2 Several documents which are necessary to provide for a final assessment of the project activity are missing. Please refer to Table 5-1 of the draft validation report. Especially the proof according to the management decision for CDM should be forwarded. The CDM-SSC-BUNDLE form should also be provided.	A.5.2	The documents are submitted to DOE with the revised PDD. The CDM-SSC-BUNDLE template is adopted and submitted to DOE with the revised PDD.	All the pending documents which indicated in table 5-1 (e.g. management decision, bundle form) were submitted and reviewed by TUV-NORD. And evaluated to be

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
			sufficient. The CAR is closed.
CAR A2.1 The project capacities for the second level of Tuanjie station and for the Lengshuiyuan power station described in the PDD are not matching with the capacities defined in the updated feasibility study. Thus modification is necessary.	A.5.1	The information about actual installed capacity and net electricity generation of each station has been modified according to the *Supplementary Tuanjie Rundle Hydropower Project Feasibility Study Report*. The information is updated in the revised PDD.	The modified information were cross checked by validation team per "Supplementary Tuanjie Rundle Hydropower Project Feasibility Study Report" /SFS/ The corrections were made in the revised PDD and assessed by the validators as sufficient. The CAR is closed.
CAR A3 The locations for each sub-bundle of the bundled power stations should be indicated separately in PDD section A.4.1.4.	A.1.1	It has been specified in the revised PDD.	The locations of the bundled power stations were indicated separately in PDD. The CAR is closed.
CAR B1 The approach of the baseline scenario as provided under B.4. is not matching with the definition given in AMS I.D. The conclusion indicated is correct but the consideration of alternative scenarios is not matching with the methodology. Thus revision is necessary. Furthermore a description of the baseline should be indicated (cp. the guidelines) by giving for example a brief overview of the electricity grid and its development in the future.	B.2.1	It has been revised in the updated PDD.	OK, the corrections provided are in line with the requirements of the applicable methodology. CAR is closed.
CAR B2	B.2.6	It is updated in the revised PDD.	The emission factor is now

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
Furthermore the Grid Emission Factor should be revised as per the latest OM & BM calculation available on the China DNA web-site (version August)			calculated on the basis of the latest published data of Chinese DNA. Thus CAR is closed.
CAR B3 1. The position "Other costs" should be defined and the involved parameters should be indicated. Furthermore the complete operational lifetime should be used to calculate the IRR. 2. The parameter "sale income" in the sensitivity analysis is not clear. Does the sale income will be generated out of a higher electricity supply or an increased sales price? 3. The total investment of the bundle project is inconsistent with the value defined in supplementary feasibility study. Revision and IRR re-calculation are necessary. 4. The evidence of barrier of finance access (bank loan rejection) should be submitted.	B.3.2	1. The position "Other costs" includes the office expenses, travel expenses, and research & education fees etc. The position is derived from Table B 4.5 of *Economic Evaluation Code for Small Hydropower Projects* (SL16-95). The project lifetime 20 years is used for IRR calculation. 2. The "sale income" is related to the electricity price, which has been revised in the updated PDD. 3. It is a written mistake of the total investment, which has been revised in the PDD. 4. The related materials have been submitted to DOE.	The "other costs" defined in the *Economic Evaluation Code for Small Hydropower Projects* (SL16-95)/ADD-5/, the project lifetime and total investment in revised IRR and the document of bank loan rejection were reviewed by the validation team. The corrections made in the revised PDD and IRR were sufficient. The CAR is closed.
CR A1 Some inconsistencies acc. to the indicated project participants were identified.	A.2.1	The withdrawal letter from Austrian CCAN Consulting GmbH is submitted with revised PDD.	The withdrawal letter from Austrian CCAN Consulting GmbH is submitted and

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
1. The company KPC GmbH from Austria is introduced as project participant under A.3., while it is not indicated in Annex 1 of the PDD. 2. The name of the company from China serving as project participant is not matching with the company name in Annex 1 of the PDD. 3. Please indicate in section A.3 of PDD whether project participant is private or public entity. Cp PDD guidelines. Clarification should be provided and the PDD should be revised accordingly.		Thus, it is not listed in revised PDD. The name of the company from China is a typo. It is corrected in the revised PDD. The project participants are private entity. It is included in the revised PDD.	reviewed by the validators. The corrections were made in the revised PDD and assessed by the validators as sufficient. Thus CR is closed.
CR A1.1 The first sentence under B.3. should be revised as the meaning/ content is not clear.	A.1.1	It is corrected in the revised PDD.	OK, the corrections were made in the revised PDD and assessed by the validators as sufficient.
CR A2 In section B.1. of the PDD ACM0002, Version 6 should be also referenced since it is used to calculate the emission reductions (cp. guidelines).	A.5.1	It is corrected in the revised PDD.	OK, the corrections were made in the revised PDD and assessed by the validators as sufficient.
CR B1 To avoid any misunderstanding section B.2. should also include that the project activity is connected to a grid.	B.1.2	It is corrected in the revised PDD.	OK, the corrections were made in the revised PDD and assessed by the validators as sufficient.
CR B2 The description of the methodological choices in B.6.1. immediately cites ACM0002 without referring to the applied methodology AMS ID; nor is the choice of using combined margin justified as required under step 9 of AMS ID.	B.5.1	It is corrected in the revised PDD.	OK, the corrections were made in the revised PDD and assessed by the validators as sufficient.
CR B3	B.8.1	The table of electricity imported	Table B.7.1 was modified

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
Besides the exported electricity also imports should be considered to estimate the emission reductions. Thus an additional table should be introduced in section B.7.1 considering the imports. Furthermore the calibration frequency of the energy meters should be stated in B.7.2 of the PDD (cp. PDD guidelines).		from power grid is added into revised PDD. All the meters will be calibrated at least once per year. It is corrected in the revised PDD.	and the electricity imported was defined as the monitoring parameter. The calibration frequency is defined as once per year and is in compliance with relevant national standard. The CR is closed.
CR B4 Under section B.7.1. it is indicated that the electricity will be metered at three points, “transformer substation exit, generator exits and within the powerhouse”, while section B.7.2. only provides information about two ammeters at “output end of substation and input end of substation”. Clarification is requested which information is correct. A simple technical drawing indicating the installed meters might be appropriate.	B.10.1	The data is measured through Main Meter. It is corrected in the revised PDD.	The submitted power connection diagram was reviewed. The electricity supplied will be measured by the main meter (C1), and backup meter (C2). The revisions were assessed as sufficient.
CR B5 Furthermore even if the description of several subsections in B.7.2. seems to be detailed, the wording and chosen terms are sometimes confusing, e. g. ammeter installation, wording in first sentence under “4. Data monitoring” etc. It is recommended to remain the headlines in section B.7.2. and revise the description and explanation of the several topics in an appropriate and understandable manner.	B.10.5	It is corrected in the revised PDD.	Wordings and chosen terms are revised in PDD. The description and explanation after revision are assessed as sufficient.
CR B6 The several responsibilities can not be allocated to the several departments in the management structure. Therefore the different responsibilities should be clearly	B.13.1	It is corrected in the revised PDD.	Responsibilities are clarified in PDD and are assessed as transparent.

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
indicated to the departments.			
CR C1 The starting date of the project activity as indicated in section C.1.1. is not matching with the information provided during on-site visit and according to what is indicated under B.5. of the PDD. Thus revision is necessary.	C.1	It is corrected in the revised PDD.	Starting date of the project activity is revised according to the date indicated in Project construction permission/PALA-1/. The correction is sufficient.

Table 4-1: Validation Table for Assessment of Financial Parameters for the Attached Station of the Second Level of Tuanjie Power Station

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
Feed-in electricity	3,921.99	MWh	Supplementary Feasibility Study	/SFS/	☒	☐	The feed-in electricity is calculated based on the project capacity, annual operation time, effective power factor and line loss rate. According to Supplementary Feasibility Study, the capacity of this station is 1 MW, the annual operation time is 4210 hours, effective power factor is 95% and line loss factor is 1.938%. Based on these values, the feed-in electricity should be 3921.99 MWh. The value is deemed as credible and conservative.
Total Investment	510.22	10^4 RMB	Supplementary Feasibility Study	/SFS/	☒	☐	Total investment is comprised of fixed assets investment, interest during construction, and current funds. Fixed Asset investment is 503.10*104 RMB. Considering bank loan rate 6.12% and one year construction period, the interest during construction period is 6.12*104 RMB. Current fund is 1*104 RMB, calculated as installed capacity multiplied by rate 10 RMB/kW. Based on that, the unit cost of the

							proposed project is calculated as 5102.2 RMB/KW, low than the average unit cost 7127 RMB/KW of hydropower project in China in 2000-2005 as indicated in the <Review and Prediction of Small Hydropower project's investment>. (http://www.askci.com/freereports/2008-04/200842104856.html) Thus the value is valid and conservative.
Electricity tariff (VAT Incl.)	0.25	RMB/kWh	Supplementary Feasibility Study Notice regarding to electricity tariff of Tuanjie Cascade projects Grid Connection Agreement in 2005 Clarification about electricity tariff	/SFS/ /NET/ /GCA/ /CET/	☒	☒	The tariff is derived from Supplementary Feasibility Study, and cross-checked by three other documents: -Notice regarding to electricity tariff of Tuanjie Cascade projects, Qijiage[2004]159, issued by Qiyang County Price Bureau 2004/12/28, which indicates 0.25 RMB/kWh as the electricity tariff of the project. -Grid connection agreement signed between QHHE (the project owner) and the grid company (2005/12/06), which indicates 0.25 RMB/kWh as electricity tariff throughout the year. -Clarification about electricity tariff, issued by Qiyang county Price Bureau dated 2008/08/12, which indicates that the electricity tariff of hydropower stations in Qiyang County has kept at the level of 0.25 RMB/kWh during the past 5 years. Based on the documents above, the electricity tariff 0.25 RMB/kWh (VAT incl.) is credible and conservative.
Annual O&M costs	24.20	10^4 RMB	Supplementary Feasibility Study	/SFS/	☒	☒	The O&M consists of salary, welfare, insurance and housing fund, repair cost,

							water resource fee, and other expenses. The salary is 120,000 RMB/yr, calculated as the number of employee (8) multiplied by the average annual salary (15,000 RMB/person). The values are from Supplementary Feasibility Study The average annual salary 15,000 RMB/Employer is lower than 15,659 RBM/person, average annual salary of in-position employee in towns/cities of Hunan Province in 2005 (http://www.hntj.gov.cn/fxbg/2006fxbg/2006tjxx/200603270064.htm). The welfare is 49,200 RMB/yr, calculated as 41 % of total value of payroll. The rate 41% is from Supplementary Feasibility Study and it is close to real situation. The repair fee is 50,900 RMB/yr, calculated as the original value of fixed assets (Fixed Asset Investment + Interest during construction period) multiplied by rate of overhaul (1 %). The rate 1 % is from Supplementary Feasibility Study and it is also the default value indicated in SL16-95. The water resource fee is 3,900 RMB/yr, calculated as net electricity supply multiplied by rate of water resource fee 0.001 RMB/kWh. The rate 0.001 RMB/KWh is from Supplementary Feasibility Study. The other expenses is 18,000 RMB/yr, calculated as the installed capacity multiplied by rate of other expenses 18 RMB/kW. The rate 18 RMB/kW is from

							Supplementary Feasibility Study and it is in accordance with SL16-95. The above calculations are in compliance with the requirements defined in the "Project financial evaluation method and parameter" Ver.03 issued by National Development and Reform Committee and National Construction Ministry in July 2006 and "Economic Evaluation Code for Small Hydropower Projects"/SL16-95/, approved by Hydro Ministry in June 1995.
VAT	17	%	Supplementary Feasibility Study	/SFS/	☒	☒	The VAT is from Supplementary Feasibility Study. It is also confirmed by the opinion on electricity sales of Qiyang Company's small hydropower stations, issued by Yongzhou Electricity Bureau in 2007/01/26, which indicates that VAT of the project is 17%.
surtax for city construction	5	%	Supplementary Feasibility Study	/SFS/	☒	☒	Surtax for city construction is 5% of VAT, which is in compliance with national policy.
surtax for education expenses	3	%	Supplementary Feasibility Study	/SFS/	☒	☒	Surtax for education expenses is 3% of VAT, which is in compliance with national policy.
Income tax	33	%	Corporate Income tax Temporary Terms of People's Republic of China	/CIT/	☒	☒	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/sszsglf/xiangguanfagui/20070426/63781.html)
Depreciation rate	5	%	Supplementary Feasibility Study	/SFS/	☒	☒	The value is from Supplementary Feasibility Study.

/S

Installed capacity	1	MW	Supplementary Feasibility Study	/SFS/	☒	☒	The capacity is approved by local authority.
Project Lifetime	20	year	Supplementary Feasibility Study	/SFS/	☒	☒	The value is from Supplementary Feasibility Study. It s also in compliance with Economic Evaluation Code for Small Scale Hydropower Projects and fulfill the requirements of EB 39 Report Annex 35.

Table 4-2: Validation Table for Assessment of Financial Parameters for the second level of Tuanjie Power Station

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
Feed-in electricity	15453.18	MWh	Supplementary Feasibility Study	/SFS/	☒	☐	The feed-in electricity is calculated based on the project capacity, annual operation time, effective power factor and line loss rate. According to Supplementary Feasibility Study, the capacity of this station is 4 MW, the annual operation time is 4147 hours, effective power factor is 95% and line loss factor is 1.938%. Based on these values, the feed-in electricity should be 15453.18 MWh. The value is deemed as credible and conservative
Total Investment	2025.81	10^4 RMB	Supplementary Feasibility Study	/SFS/	☒	☐	Total investment is comprised of fixed assets investment, interest during construction, and current funds. Fixed Asset investment is $1965.79*10^4$ RMB. Considering bank loan rate 6.12% and two year construction period, the interest during construction period is $56.02*10^4$ RMB. Current fund is $4*10^4$ RMB, calculated as installed capacity multiplied by rate 10 RMB/kW. Based on that, the unit cost of the proposed project is calculated as 5064.5 RMB/KW, low than the average unit cost

							7127 RMB/KW of hydropower project in China in 2000-2005 as indicated in the <Review and Prediction of Small Hydropower project's investment>. (http://www.askci.com/freereports/2008-04/200842104856.html) Thus the value is valid and conservative.
Electricity tariff (VAT Incl.)	0.25	RMB/kWh	Supplementary Feasibility Study Notice regarding to electricity tariff of Tuanjie Cascade projects Grid Connection Agreement in 2005 Clarification about electricity tariff	/SFS/ /NET/ /GCA/ /CET/	☒	☒	The tariff is derived from Supplementary Feasibility Study, and cross-checked by three other documents: -Notice regarding to electricity tariff of Tuanjie Cascade projects, Qijiage[2004]159, issued by Qiyang County Price Bureau 2004/12/28, which indicates 0.25 RMB/kWh as the electricity tariff of the project. - Grid connection agreement signed between QHHE (the project owner) and the grid company (2005/12/06), which indicates 0.25 RMB/kWh as electricity tariff throughout the year. -Clarification about electricity tariff, issued by Qiyang county Price Bureau dated 2008/08/12, which indicates that the electricity tariff of hydropower stations in Qiyang County has kept at the level of 0.25 RMB/kWh during the past 5 years. Based on the documents above, the electricity tariff 0.25 RMB/kWh (VAT incl.) is credible and conservative.
Annual O&M costs	60.69	10^4 RMB	Supplementary Feasibility Study	/SFS/	☒	☒	The O&M consists of salary, welfare, insurance and housing fund, repair cost, water resource fee, and other expenses. The salary is 225,000 RMB/yr, calculated

							as the number of employee (15) multiplied by the average annual salary (15,000 RMB/person). The values are from Supplementary Feasibility Study The average annual salary 15,000 RMB/Employer is lower than 15,659 RBM/person, average annual salary of in-position employee in towns/cities of Hunan Province in 2005 (http://www.hntj.gov.cn/fxbg/2006fxbg/2006tjxx/200603270064.htm). The welfare is 92,250 RMB/yr, calculated as 41 % of total value of payroll. The rate 41% is from Supplementary Feasibility Study and it is close to real situation. The repair fee is 202,200 RMB/yr, calculated as the original value of fixed assets (Fixed Asset Investment + Interest during construction period) multiplied by rate of overhaul (1 %). The rate 1 % is from Supplementary Feasibility Study and it is also the default value indicated in SL16-95. The water resource fee is 15,500 RMB/yr, calculated as net electricity supply multiplied by rate of water resource fee 0.001 RMB/kWh. The rate 0.001 RMB/KWh is from Supplementary Feasibility Study. The other expense is 72,000 RMB/yr, calculated as the installed capacity multiplied by rate of other expenses 18 RMB/kW. The rate 18 RMB/kW is from Supplementary Feasibility Study and it is in accordance with SL16-95.

							The above calculations are in compliance with the requirements defined in the "Project financial evaluation method and parameter" Ver.03 issued by National Development and Reform Committee and National Construction Ministry in July 2006 and "Economic Evaluation Code for Small Hydropower Projects"/SL16-95/, approved by Hydro Ministry in June 1995.
VAT	17	%	Supplementary Feasibility Study	/SFS/	☒	☒	The VAT is from Supplementary Feasibility Study. It is also confirmed by the opinion on electricity sales of Qiyang Company's small hydropower stations, issued by Yongzhou Electricity Bureau in 2007/01/26, which indicates that VAT of the project is 17%.
surtax for city construction	5	%	Supplementary Feasibility Study	/SFS/	☒	☒	Surtax for city construction is 5% of VAT, which is in compliance with national policy.
surtax for education expenses	3	%	Supplementary Feasibility Study	/SFS/	☒	☒	Surtax for education expenses is 3% of VAT, which is in compliance with national policy.
Income tax	33	%	Corporate Income tax Temporary Terms of People's Republic of China	/CIT/	☒	☒	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/sszsglf/xiangguanfagui/20070426/63781.html)
Depreciation rate	5	%	Supplementary Feasibility Study	/SFS/	☒	☒	The value is from Supplementary Feasibility Study. /SFS/
Installed capacity	4	MW	Supplementary Feasibility Study	/SFS/	☒	☒	The capacity is approved by local authority.

Project Lifetime	20	year	Supplementary Feasibility Study	/SFS/	☒	☒	The value is from Supplementary Feasibility Study. It s also in compliance with Economic Evaluation Code for Small Scale Hydropower Projects and fulfill the requirements of EB 39 Report Annex 35.

Table 4-3: Validation Table for Assessment of Financial Parameters for the second level of the Lengshuiyuan Power Station

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
Feed-in electricity	5982.66	MWh	Supplementary Feasibility Study	/SFS/	☒	☐	The feed-in electricity is calculated based on the project capacity, annual operation time, effective power factor and line loss rate. According to Supplementary Feasibility Study, the capacity of this station is 1.6 MW, the annual operation time is 4014 hours, effective power factor is 95% and line loss factor is 1.938%. Based on these values, the feed-in electricity should be 5982.66 MWh. The value is deemed as credible and conservative
Total Investment	848.8	10^4 RMB	Supplementary Feasibility Study	/SFS/	☒	☐	Total investment is comprised of fixed assets investment, interest during construction and current funds. Fixed Asset investment is $831.9*10^4$ RMB. Considering bank loan rate 6.12% and one year construction period, the interest during construction period is $15.3*10^4$ RMB. Current fund is $1.6*10^4$ RMB, calculated as installed capacity multiplied by rate 10 RMB/kW. Based on that, the unit cost of the proposed project is calculated as 5305

							RMB/KW, low than the average unit cost 7127 RMB/KW of hydropower project in China in 2000-2005 as indicated in the <Review and Prediction of Small Hydropower project's investment>. (http://www.askci.com/freereports/2008-04/200842104856.html) Thus the value is valid and conservative.
Electricity tariff (VAT Incl.)	0.25	RMB/kWh	Supplementary Feasibility Study Notice regarding to electricity tariff of Tuanjie Cascade projects Grid Connection Agreement in 2005 Clarification about electricity tariff	/SFS/ /GCA/ /NET/ /CET/	☒	☒	The tariff is derived from Supplementary Feasibility Study, and cross-checked by three other documents: -Notice regarding to electricity tariff of Tuanjie Cascade projects, Qijiage[2004]159, issued by Qiyang County Price Bureau 2004/12/28, which indicates 0.25 RMB/kWh as the electricity tariff of the project. -New Grid connection agreement signed between QHHE (the project owner) and the grid company (2005/12/06), which indicates 0.25 RMB/kWh as electricity tariff throughout the year. -Clarification about electricity tariff, issued by Qiyang county Price Bureau dated 2008/08/12, which indicates that the electricity tariff of hydropower stations in Qiyang County has kept at the level of 0.25 RMB/kWh during the past 5 years. Based on the documents above, the electricity tariff 0.25 RMB/kWh (VAT incl.) is credible and conservative.
Annual O&M costs	28.87	10^4 RMB	Supplementary Feasibility Study	/SFS/	☒	☒	The O&M consists of salary, welfare, insurance and housing fund, repair cost, water resource fee, and other expenses.

							The salary is 120,000 RMB/yr, calculated as the number of employee (8) multiplied by the average annual salary (15,000 RMB/person). The values are from Supplementary Feasibility Study The average annual salary 15,000 RMB/Employer is lower than 15,659 RBM/person, average annual salary of in-position employee in towns/cities of Hunan Province in 2005 (http://www.hntj.gov.cn/fxbg/2006fxbg/2006tjxx/200603270064.htm). The welfare is 49,200 RMB/yr, calculated as 41 % of total value of payroll. The rate 41% is from Supplementary Feasibility Study and it is close to real situation. The repair fee is 84,700 RMB/yr, calculated as the original value of fixed assets (Fixed Asset Investment + Interest during construction period) multiplied by rate of overhaul (1 %). The rate 1 % is from Supplementary Feasibility Study and it is also the default value indicated in SL16-95. The water resource fee is 6,000 RMB/yr, calculated as net electricity supply multiplied by rate of water resource fee 0.001 RMB/kWh. The rate 0.001 RMB/KWh is from Supplementary Feasibility Study. The other expenses is 28,800 RMB/yr, calculated as the installed capacity multiplied by rate of other expenses 18 RMB/kW. The rate 18 RMB/kW is from Supplementary Feasibility Study and it is in

							accordance with SL16-95. The above calculations are in compliance with the requirements defined in the "Project financial evaluation method and parameter" Ver.03 issued by National Development and Reform Committee and National Construction Ministry in July 2006 and "Economic Evaluation Code for Small Hydropower Projects"/SL16-95/, approved by Hydro Ministry in June 1995.
VAT	17	%	Supplementary Feasibility Study	/SFS/	☒	☒	The VAT is from Supplementary Feasibility Study. It is also confirmed by the opinion on electricity sales of Qiyang Company's small hydropower stations, issued by Yongzhou Electricity Bureau in 2007/01/26, which indicates that VAT of the project is 17%.
surtax for city construction	5	%	Supplementary Feasibility Study	/SFS/	☒	☒	Surtax for city construction is 5% of VAT, which is in compliance with national policy.
surtax for education expenses	3	%	Supplementary Feasibility Study	/SFS/	☒	☒	Surtax for education expenses is 3% of VAT, which is in compliance with national policy.
Income tax	33	%	Corporate Income tax Temporary Terms of People's Republic of China	/CIT/	☒	☒	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/sszsglf/xiangguanfagui/20070426/63781.html)
Depreciation rate	5	%	Supplementary Feasibility Study	/SFS/	☒	☒	The value is from Supplementary Feasibility Study. /SFS/
Installed capacity	1.6	MW	Supplementary Feasibility Study	/SFS/	☒	☒	The capacity is approved by local authority.

Project Lifetime	20	year	Supplementary Feasibility Study	/SFS/	☒	☒	The value is from Supplementary Feasibility Study. It s also in compliance with Economic Evaluation Code for Small Scale Hydropower Projects and fulfill the requirements of EB 39 Report Annex 35.

CERTIFICATES

TÜV NORD

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

Deputy of TÜV NORD JI/CDM Certification Program
of TÜV NORD CERT GmbH

TÜV NORD

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

Head of TÜV NORD JI/CDM Certification Program
of TÜV NORD CERT GmbH

TÜV NORD

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

Head of TÜV NORD JI/CDM Certification Program
of TÜV NORD CERT GmbH

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