



VALIDATION REPORT

ZHILENGHE 24MW HYDROPOWER PROJECT IN YUNNAN

Report No: QT-CDM26-07 - 07/171

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Approved by: Mr. Eric Krupp	Organisational unit: TÜV NORD JI/CDM Certification Program
Client: Carbon Asset Management Sweden AB	Client ref.: Mr. Wang Xia
<p>Summary/Opinion:</p> <p>Farsighted Group Cleanergy Investment Service (Beijing) Co., Ltd has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "Zilenghe 24MW Hydropower Project in Yunnan Province" with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board.</p> <p>The project activity exports the electrical power from a renewable energy source to the China Southern Power Grid (CSPG). The project intends to reduce GHG emissions to the extent of equivalent electricity generated by fossil fuels based power plants of CSPG.</p> <p>A risk based approach has been followed to perform this validation. In the course of the pre-validation 10 Corrective Action Requests (CARs) and 2 Clarification Requests (CRs) were raised and successfully closed.</p> <p>The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.</p> <p>In detail the conclusions can be summarised as follows:</p> <ul style="list-style-type: none"> - The project is in line with all relevant host country criteria (China) and all relevant UNFCCC requirements for CDM. Project activities approvals have been obtained from DNA of China vide the Letter of Approval (HCA) dated January 2008 and from DNA of Netherlands dated 28/03/2008. - 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 582,841 tCO₂e are most likely to be achieved within the 1st renewable crediting period (November 2008-October 2015). <p>The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.</p>	

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Report title: <i>Zilenghe 24WM Hydropower Project in Yunnan Province</i>	
Work carried out by: Mr. Rainer Winter, Mr. Yong Jun Li, Mr. Martin Saalman, Mr. Jochen Schubert	
Work verified by: Mr. Eric Krupp	
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Indexing terms

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Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO₂	Carbon dioxide
CO₂e	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
CSPG	China Southern Power Grid
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation Verification Manual
FHHD	Fugong Hengda Hydropower Development Co., Ltd.

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1 INTRODUCTION

Farsighted Group Cleanergy Investment Service (Beijing) Co., Ltd has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project:

“Zilenghe 24MW Hydropower Project Yunnan Province”

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 ACM0002 / Version 06: Consolidated baseline methodology for grid-connected electricity generation from renewable sources), which are included in the PDD^{/PDD2/} 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
 - Additionality
- **Monitoring Plan**
 - Monitoring methodology
 - Indicators/data to be monitored and reported
 - Responsibilities
- **Background investigation and follow up interviews**
- **Stakeholder consultation**
 - Publishing the PDD ^{/PDD1/} on TUV NORD website
 - Review of comments
- **Draft validation reporting with CARs & CRs, if any**
- **Final validation reporting.**

The information included in the PDD ^{/PDD1//PDD2/} 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 Netherlands 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 Fugong Hengda Hydropower Development Co., Ltd.
Lawu Village, Shangpa Town
Fugong County, Nujiang Lisu Autonomous Prefecture
Yunnan Province
People's Republic of China

Contact person: Guoping Hu
General Manager
Tel No: (86) 886 3412609
Fax No: (86) 886 3412609
Email: hgp123450@163.com

Project Participant 2 Cabon Asset Management Sweden AB
Drottninggatan 92-94
Stockholm – 111136
Sweden

Contact Person: Mr. Niels von Zweigbergk
President & CEO
Tel No: (46) 8 506 263 96
Fax No: (46) 8 34 60 80
Email: nvz@tricornase.se

1.3.4 Project location

The project is located at Pihe Town, Fugong Country, Nujiang Lisu Autonomous Prefecture. The hydro project uses three small dams to divert water flow from Zileng River. The unique identification is provided in table 1-3.

Table 1-3: Project Location

Item	Location
Host Country	Peoples Republic of China
Region	Yunnan Province
Project location address	Zileng River, Pihe Town, Fugong County, Nujiang Lisu Autonomous Prefecture, Yunnan Province People's Republic of China

Coordinates	
Latitude: Dam 1#	26°37'33"N
Longitude: Dam 1#	98°57'39"E
Latitude: Dam 2#	26°37'20"N
Longitude: Dam 2#	98°57'28"E
Latitude: Dam 3#	26°36'33"N
Longitude: Dam 3#	98°57'32"E
Latitude: Power Plant	26°34'56"N
Longitude: Power Plant	98°54'21"E

1.3.5 Technical project description

The Zilenghe 24MW Hydropower Project is a run-of-river hydropower plant located at the Zileng River in Yunnan Province of P.R. China.

The rated water head of the proposed project activity is about 662 m and the rated water flow is estimated to be 4.83 m³/s. Following civil works are implemented: three intake dam, diversion tunnel, a powerhouse, a booster station and transmission line.

The key parameters for the proposed project are given in tables 1-3:

Table 1-3: Key parameters of the proposed CDM project activity

Turbine	
Type:	CJA475-W-136/2×8.5
Quantity:	4
Rated Rotation Speed:	750 r/min
Rated Power:	7,312 KW
Rated Water Head:	662 m
Rated Flow:	1.24 m ³ /s
Manufactory:	Hunan Lingling Hengyuan Electricity Generation Equipment Co, Ltd.,
Generator	
Type:	SFW6000-8/2150
Quantity:	4
Rated Rotation Speed:	750 r/min
Rated Power:	6,000 KW
Rated Voltage:	10.5 kV
Power Factor:	0.8
Manufactory:	Hunan Lingling Hengyuan Electricity Generation Equipment Co, Ltd.,

The total installed capacity of the project is 24 MW. The annual generation from the project is expected to be 132,300 MWh. The net power exported to the grid is 98,729 MWh. The total estimated annual emission reductions are 83,263 tCO₂e.

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:

- **Mr. Yong Jun Li**, TÜV NORD – Shanghai, China. Mr. Li, Dipl. in Environment Technology, is a TÜV-CERT Lead auditor for ISO 9001/14001 and OHSAS 18001. Currently he is In-charge-CDM 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.
- **Mr. Dr. Jochen Schubert**, 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 CO₂ emission reports. Mr. Krupp is an appointed JI/CDM assessor and the deputy of TÜV NORD JI/CDM certification program.

3 METHODOLOGY

The (pre-) validation of the project was carried out from October 2007 to August 2008. The 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;
- 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 report includes Corrective Action and Clarification Requests (CAR and CR) identified in the course of this validation.

A **Corrective Action Request** is established if

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

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

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

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^{/PDD2/}. 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 10 Corrective Action Requests and 2 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^{/PDD1/} and the final PDD^{/PDD2/} submitted by Cleanergy Investment Service (BJ) Co., Ltd in October 2007 and July 2008 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 2nd November 2007, the TÜV NORD JI/CDM CP performed interviews with the project proponent and project developer to confirm selected information and to resolve issues identified in the document review. Further to these interviews the mentioned parties were contacted by e-mail to provide further clarifications.

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

Table 3-1 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives /IM01/	<ul style="list-style-type: none"> - Chronological description of the project activity - Technical details of the project realisation and Project Design Report - Host Country Approval / Annex I country approval (Netherlands) - 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

Interviewed Persons / Entities	Interview topics
	<ul style="list-style-type: none"> - Sustainable development benefits because of project - Analysis of local stakeholder consultation - Operational data – technical specification (capacity of turbine), start up power supply, water availability, plant load factor. - Training & competency of the staff members w.r.t project management, monitoring and reporting
Project consultant representatives /IM02/	<ul style="list-style-type: none"> - Editorial aspects of PDD - Methodology selection aspects - Baseline study, leakage and additionality - Details of emission reduction calculation

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. These requests can be resolved or “closed out” by the project proponent by providing the corresponding response in column 3 of table three as meant in Figure 1 and submission of revised PDD and supporting documents.

In this (pre-) validation report 10 CARs and 2 CRs are raised.

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

3.5 Public Stakeholder Comments

The PDD was made publicly available through TÜV NORD JI/CDM CP website www.global-warming.de. Comments on the PDD were invited within 30 days, i.e. 23/10/2007 to 22/11/2007.

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 containing a set of CARs & CRs was submitted to the project proponent. The project design document was revised addressing the CARs & CRs issued by TÜV NORD JI/CDM CP. After reviewing the revised and resubmitted project documentation^{/PDD2/}; resolving the CRs & CARs rose and outstanding concerns, TÜV NORD JI/CDM CP issues this final validation report and opinion.



In the course of this validation the most recent version of the CDM-PDD template, i.e. Ver. 03.1; the valid version (Ver. 06) of the applied methodology ACM0002 are used and form the basis of the validation opinion.

4 VALIDATION FINDINGS

In the following paragraphs the findings from the desk review of the draft PDD^{/PDD1/}, visits, interviews and supporting documents are summarised. This also includes the corresponding corrective action taken by the client and its final assessment.

The results are shown in table 4-1:

Table 4-1: Summary of CAR and CR issued

Validation topic ¹⁾	No. of CAR	No. of CR
General description of project activity (A) <ul style="list-style-type: none"> - Project boundaries - Participation requirements - Technology to be employed - Contribution to sustainable development 	2	2
Project baseline (B) <ul style="list-style-type: none"> - Baseline Methodology - Baseline scenario determination - Additionality determination - Calculation of GHG emission reductions <ul style="list-style-type: none"> Project emissions Baseline emissions Leakage - Emission reductions - Monitoring Methodology - Monitoring of <ul style="list-style-type: none"> Project emissions Baseline emissions Leakage Sustainable development indicators / environmental impacts - Project management planning 	7	-
Duration of the Project / Crediting Period (C)	-	-
Environmental impacts (D)	-	-
Stakeholder Comments (E)	1	-
SUM	10	2

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 January 2008, the Chinese DNA, Chinese National Development and Reform Committee confirmed the voluntary participation of the Fugong Hengda Hydropower Development Co., Ltd. (FHHD) as project participant in the CDM project activity.

Netherlands as an Annex I party meets all relevant participation requirements. The Letter of Approval^{/LOA/} (dt. 28/03/2008) was issued by the DNA of the Netherland.

4.2 Project design

The objective of the Zilenghe 24 MW Hydropower Project is to reduce GHG emissions by replacing electricity of the CSPG which predominantly uses fossil fuels. The project activity is estimated to reduce GHG emissions equivalent to 83,263 tCO_{2e} annually.

The proposed CDM project is a run-of river small power plant with a capacity of 24 MW respectively owned by the Fugong Hengda Hydropower Development Co., Ltd. (FHHD). 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.

To convert the kinetic energy of water into mechanical energy and subsequently into electrical energy, the proposed project activity is fed by water from Zileng River. The water is diverted by 3 small dams into water intake diversion tunnel and penstock to form the high water head. Then the water from the penstock flows into the powerhouse and drives the turbines and generators to generate electricity.

According to the EIA approval^{/AEIA/} from the host country, the technology used in the project activity is environmentally safe and sound. The feasibility of technology has been approved^{/ADFS/} by the local development and reform committee.

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

In the course of the project validation CAR A2 and CR A2 regarding technology description and sustainable development were raised and closed, as requested modifications were made in the PDD and evidences were provided.^{/EBS/}

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 ACM0002. – Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 06).

As prescribed in 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 CO₂e/kWh).

In this project, the grid emission coefficient is calculated by “combined margin method” consisting with 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 CSPG.

The calculation of the grid emission factor is in line with 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 and China Electric Power Yearbook.

The emission reductions (ER_y) of the project activity during the crediting period are 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 CSPG (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 OM and BM is derived from the guidance 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 guidance of OM and BM calculation was modified by the PP as following to apply the latest IPCC values:

- 1) The emission factor of coke was changed from 25.8 tC/TJ to 29.2tC/TJ, according to the value provided in IPCC 2006.
- 2) The emission factor of refinery dry gas was changed from 18.3 tC/TJ to 15.7 tC/TJ, according to the value provided in IPCC 2006.

EF_{OM,y} calculation: Due to the fact that the low-cost/must-run resources constituting less than 50% to the total grid generation and that the data for "Dispatch Data Analysis" is not available, the simple OM emission factor(EF_{OM,y}) calculation method is applied. The OM factor is calculated as 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 1.0119 tCO_{2e}/MWh and will not be changed during the first crediting period.

EF_{BM,y} calculation: Due to the data unavailability at the power plant level in China and in accordance to the "clarification on use of approved methodology AM0005 for several projects in China" from EB, the build margin is calculated as following:

- 1) The capacity addition from the years 2003-2005 is chosen and exceed 20% (21.42%) 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 capacity and newly added oil based capacity are used to calculate EF_{BM,y}.
- 3) The coal emission factor 25.8 tc/TJ, gas emission factor 15.3 tc/TJ and oil emission factor 21.1 tc/TJ as well as the IPCC 2006 default value of carbon oxidization factor 100% are used for the BM calculation.
- 4) The BM is calculated as 0.6748 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 0.8434 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^{/GEF/}.

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

The power generated by the hydropower station is first transferred to the Yagu substation through two sets of 110/10.5kV transformers, and then to Yunnan Power Grid and China Southern Power Grid. The net annual electricity generated and delivered to the grid is approximately 98,729 MWh as defined in the project feasibility study^{/FSR/}. It was also proofed by Electricity Sales Contract^{/ESC/} and Description of the selection of Electricity Efficiency Factor^{/DSEEF/} issued by design institute.

Altogether the project activity reduces emissions of 83,263 tCO_{2e}/yr and 582,841 tCO_{2e} over the 1st renewable crediting period (7 years).

However during validation process CAR B1 was raised due to inconsistency of establishing baseline compared to requirements of Guidelines for completing the project design document (CDM-PDD) . The CAR was successfully closed.

Additionality

The additionality was demonstrated acc. to the valid version 4 of the "Tool for demonstration and assessment of additionality".

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
1a	<p>Possible alternatives for the project activity are:</p> <ol style="list-style-type: none"> 1. The project activity not undertaken as a CDM project; 2. Construction of a fossil fuel-fired power plant with equivalent annual electricity; 3. Construction of a power plant using other renewable energy to supply equivalent annual electricity generation; 4. Equivalent annual electricity supplied by CCPG (continuation of current practice). 	<p>The alternative 4 is assessed as a realistic and credible alternative. The other alternatives given in step 1a cannot be considered as realistic alternatives because:</p> <p>Alternative 1 faces several barriers as given in step 2.</p> <p>The alternative 2 is not in compliance with Chinese laws.</p> <p>The alternative 3 was excluded due to non availability of renewable resources (e.g. photovoltaics, tidal/wave, hydro, geothermal and renewable biomass etc) at the project site.</p> <p>In conclusion only alternative 4 remains as a plausible and credible alternative.</p>
1b	The alternatives 1, 3 and 4 mentioned above are in compliance with the applicable legal and regulatory requirements.	<p>Alternatives 1, 3 & 4 are in line with the national regulations.</p>
2a	Option III: bench mark analysis is selected for the investment analysis.	In accordance with the Additionality Tool, the option III is selected and deemed to be appropriate.
2b	The benchmark of 10 % expected Internal Rate Return (IRR) after tax of total investment as defined in the "Economic Evaluation Code for Small Hydropower Projects (SL16-95)" approved by Water Resources Ministry of P. R. China, has been identified as financial indicator for benchmark analysis.	<p>The document was assessed to be appropriate as source for benchmark. According to Chinese legislation all hydro power stations below 50 MW capacity are defined to be small and thus apply the benchmark of 10 %. Also hydro projects registered under CDM applying this benchmark.</p>

☒ step passed
☐ step not passed
☐ not applicable

☒ step passed
☐ step not passed
☐ not applicable
 (step 2 or 3 has to be passed)

Step ¹⁾	Argument PP	Assessment of the validation team
2c	The project IRR (without CDM revenue) is 6.99 % which is less than the identified benchmark of 10 %.	<p>The project IRR is one of the accepted financial indicators for assessing Additionality.</p> <p>PP has calculated IRR for the project activity on after-tax basis and compared the same with the IRR of 10 % defined in the "Economic Evaluation Code for Small Hydropower Projects (SL16-95)", which is the benchmark.</p> <p>The interest rate (6,12 %) on the loan contracted by the PP was considered in the tax calculation.</p> <p>The IRR calculation was reproduced by the validation team. The parameters used for the IRR calculation were derived from the Projects' Feasibility Study Report /FSR/ and Design Modification Report^{/DMRER/} and evaluated to be credible and were proved by documented evidence.</p>
2d	Sensitivity Analysis by varying of three critical parameters (project income, total investment and annual O&M cost) confirms that the proposed project activity is unlikely to be financially attractive.	<p>The sensitivity analysis concludes that the project activity is unlikely to be financially attractive.</p> <p>The sensitivity analysis was reproduced by the validation team and evaluated to be correct.</p>

Step ¹⁾	Argument PP	Assessment of the validation team	
4 a, b	<p>For the common practice analysis, the officially published statistics in "China Water Resource Yearbook 2006" and web links were used to identify hydropower projects with a similar capacity (15 MW to 50 MW).</p> <p>18 hydropower plants operated after 1988 with a capacity of 25MW up to 48MW and were identified for the analysis.</p> <p>The analysis shows that most of identified projects were developed by state-owned companies.</p> <p>The statistics presented above clearly indicates that the proposed project is not a common practice in this region (Yunnan province) at the time of PDD preparation.</p>	<input type="checkbox"/> Argument not justified <input type="checkbox"/> Argument not convincing <input type="checkbox"/> Argument justified but not decisive <input checked="" type="checkbox"/> Argument justified / significant	<input checked="" type="checkbox"/> step passed <input type="checkbox"/> step not passed <input type="checkbox"/> not applicable
Assessment of the validation team		<input checked="" type="checkbox"/> project is additional <input type="checkbox"/> project is not additional	

¹⁾ acc. to Additionality Tool

Investment barrier

The PP calculated the project IRR of the proposed activity and compared it to a benchmark. The benchmark is derived from the "Economic Evaluation Code for Small Hydropower Projects (SL-16-95)" issued by Ministry of Water Resources.^{/ADD/} The document was provided to the validator and was assessed to be appropriate as source for benchmark.

Furthermore the IRR calculation was checked by the validation team. Each parameter was evidenced with an adequate source (mainly from feasibility study report^{/FSR/} and design modification report^{/DMRER/}). The calculation is based on the project lifetime of 20 years and an electricity price of 0.18 Yuan RMB/kWh.^{/FSR/} All values provided in the FSR and the design modification report^{/DMRER/} are reasonable and adequate. Without considering CERs the project IRR of hydropower station is 6.99% which is lower than the benchmark of 10 %.

A detailed evaluation of the basic parameter for IRR calculation is provided in table 4 attached in the Annex of this report.

In addition a sensitivity analysis was conducted to check the robustness of the calculated IRR against alteration of ± 10 % of the following parameters:

- Total investment

- Annual Operation & Maintenance cost
- Project income

The sensitivity analysis was checked and assessed to be correct as well. Neither the increase nor the decrease of 10 % of any of the parameters cross or is nearby the benchmark. The parameters used for the sensitivity analysis have a material impact on the IRR and thus are reasonable chosen for sensitivity analysis.

The common practice analysis presented under step 4a) and 4b) of the PDD clearly indicates that carrying out a project similar to the proposed project is not a common practice at the time of the PDD preparation.

However during validation process CAR B4 and CAR B5 were raised and successfully closed. The validation team justified that the project could be assessed as additional.

Evidence of Management Decision

In April 2006 the feasibility study report was approved by Yunnan Nujiang Lishu Autonomous Prefecture Development and Reform Commission^{/ADFS/}. Considering the unstable geological structure discovered during construction period, the project owner decided to modify the original design and add the investment to avoid the collapse of tunnel^{/DMRER/}. The Request for investment adjustment was approved by local authority in October 2006^{/ADIA/}. The IRR was calculated to be 6.99% with the new total investment, which is lower than the benchmark rate of 10% as defined in "Economic Evaluation Code for small hydropower project"^{/ADD/}.

Considering the unattractive financial index, the project proponent decided to participate in CDM activity on general meeting of shareholders on June 18, 2006^{/DMM/}. The project proponent signed the cooperation agreement^{/CDMCA/} with CDM adviser (Cleanergy Investment Service) in June, 2006. The construction of project was restarted on August, 25th 2006^{/PCSP/}. In addition, the approval letter for additional loan from the Fugong subbranch of agriculture bank of china^{/LOAAL/} also provide the evidence for the consideration of CDM by project owner.

All the evidences to support the CDM management decision have been verified by validation team. The analysis of the evidences indicated that the proposed project was decided for implementation with serious consideration of CDM benefits.

Nevertheless, CAR B3 was raised due to insufficient information of Management Decision provided in PDD. The CAR was successfully resolved (referred to Annex).

4.4 Crediting Period

The starting date of the crediting period as mentioned in the PDD under Section C.2. is 01/11/2008 or the registration date, whichever is later. The intended crediting period of the project is for a renewable period of seven years. The restarting date of the project activity as mentioned in the PDD under Section C.1 and verified by the validation team is 25/08/2006 which is indicated in the project construction permission issued by construction monitoring party^{/PCSP/}. The project 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^{/TGC/}, which is longer than the 1st crediting period of 7 years ending in 2015.

4.5 Monitoring Plan

The project applies the monitoring methodology ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable source (Version 06).

In accordance with the methodology the net electricity (EG_y) which is supplied to the grid shall be monitored. Thus the net electricity supply (EG_y) which is the basis for emission reduction calculation will be calculated by subtracting the electricity imports (EG_{y-im}) from the electricity exports (EG_{y-ex}). EG_{y-im} and EG_{y-ex} will be measured continuously and recorded monthly.

The OM and BM are calculated ex-ante and remain fixed throughout the crediting period.

The procedure for calibration, accuracy and maintenance of monitoring equipment and the responsibilities are clearly mentioned in section B.7 of the PDD.

The monitoring as described in PDD section B.7 is assessed to be sufficient and correct.

Nevertheless CAR B6 and CAR B7 were raised related to the monitoring plan and monitored parameter in the PDD and were successfully closed.

4.6 Calculation of GHG Emissions

Methodologies for calculating emission reductions are documented. The project intends to reduce carbon dioxide (CO_2) emissions by generating electricity from a run-of-river hydroelectric project, which will be exported to the CSPG.

Project emission: The proposed project is a newly-built run of river hydropower project and no reservoir will be formed due to the project activity. According to ACM 0002 the project emission should not be taken into consideration.

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.

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

FHHD informed various stakeholders such as local governmental officials, local residents and related employees about the project details through questionnaires ^{/SSR/}

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. No negative comments were identified.

However, CAR E1 was raised due to insufficient description in PDD section E.1. and was successfully closed.

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 23/10/2007 and invited comments within 30 days, until 22/11/2007 by parties, stakeholders and UNFCCC accredited non-governmental organisations. No comment was received.

6 VALIDATION OPINION

Farsighted Group Cleanergy Investment Service (Beijing) Co., Ltd has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "Zilenghe 24MW Hydropower Project in Yunnan Province" with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board.

The project activity exports the electrical power from a renewable energy source to the China Southern Power Grid (CSPG). The project intends to reduce GHG emissions to the extent of equivalent electricity generated by fossil fuels based power plants of CSPG.

A risk based approach has been followed to perform this validation. In the course of the pre-validation 10 Corrective Action Requests (CARs) and 2 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 activities approvals have been obtained from DNA of China vide the Letter of Approval (HCA) dated January 2008 and from DNA of Netherlands dated 28/03/2008.
- 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 582,841 tCO₂e are most likely to be achieved within the 1st renewable crediting period (November 2008-October 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, 2008-08-11



Rainer Winter
TÜV NORD JI/CDM Certification Program
Validation Team Leader

Essen, 2008-08-11



Eric Krupp
TÜV NORD JI/CDM Certification Program
Senior Assessor

7 REFERENCES

Table 7-1: Documents provided by the project proponent

Reference	Document
/ADD/	Document No (SL16-95) for Economic Evaluation Code for Small Hydropower Projects issued by Ministry of Water Resources
/ADIA/	Approval Document of Investment Adjustment [2006] 358, on 27. Oct. 2006
/AEIA/	Approval Document of EIA [2006] 59, on 16. June. 2006
/ADFS/	Approval Document of Feasibility Study [2006] 139, on 30.April, 2006
/CDMCA/	CDM Development Cooperation Agreement
/DMM/	Directorate Meeting Minutes on 18.06.2006
/DMRER/	Design Modification Report and Economic Reassessment.
/DSEEF/	Description of the selection of electricity efficiency factor issued by design institute.
/EBS/	Evidences of Benefit Sharing with local villagers
/EGA/	Export to Grid Agreement
/EIA/	Environmental impact assessment
/ESC/	Electricity Sales Contract
/FSR/	Feasibility Study Report
/HCA/	Host Country Approval on 20.12.2007
/IRRC/	Project Finance Evaluation & IRR Calculation
/LOA/	Letter of approval by DNA of Netherlands on 28. 03. 28
/LOAAL/	Letter of approval to the application for added loan issued by Fugong subbranch of agriculture bank of china.
/MOC/	Modalities of Communication
/PCSP/	- Project Construction Starting Permission by Construction Monitoring Party on

Reference	Document
	02 06 2006 - Project Construction Restarting Permission by Construction Monitoring Party on 25.08.2006
/PDD1/	Draft PDD: Zilenghe 24MW Hydropower Project in Yunnan Province Ver. 02; 26/09/2007
/PDD2/	Final PDD: Zilenghe 24MW Hydropower Project in Yunnan Province Ver. 04; 04/07/2008
/PHT/	Photographs of progress of construction activity at the project site
/SSR/	CDM stakeholder survey record: Questionnaire samples.
/TGC/	Turbine Supplier, Generator Supplier contract

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)
/CPM/	TÜV Nord JI / CDM CP Manual (incl. CP procedures and forms)
/GCP/	Guidelines for completing the Project Design Document (CDM-PDD), and the proposed new baseline and monitoring methodologies (CDM-NM) Version 06,2
/GEF/	Official data sources for Grid Emission Factor (CSPG Grid) published by the Chinese DNA.
/IPCC-GP/	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
/IPCC-RM/	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual
/KP/	Kyoto Protocol (1997)
/MA/	Decision 17/CP. 7 (Marrakesh – Accords & Annex to decision 17/CP.7)

Reference	Document
/TA/	Tool for the demonstration and assessment of additionality (Ver 4)
/VVM/	IETA, PCF Validation and Verification Manual (V.4)

Table 7-3: Websites used

Reference	Link	Organisation
/dna/	http://cdm.ccchina.gov.cn	DNA of China
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/unfccc/	http://cdm.unfccc.int	UNFCCC

Tabelle 7-4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Huang Guoping	Fugong County Hengda Hydropower Development Co., Ltd./general manager
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Chen Tie Xiong	Zilenghe powerstation/station manager
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Li Cuiping	Clearnergy Investment Ltd. Project Manager
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Shi Lei	Clearnergy Investment Ltd. Project Manager
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Xu Zhengduo	Small Hydro Association of Fugong County, Chief secretary
/IM03/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Zhao Mao Rui	Hydro Bureau, Fugong County./ Officer
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Zhou Chunlin	Environment Monitoring Group, Fugong County

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

ANNEX

Validation Protocol

ANNEX : VALIDATION PROTOCOL

Table 1: Mandatory Requirements for (CDM) Project Activities

Requirement	Reference	Conclusion
Parties		
The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	CAR A1
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	CAR A1
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
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
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 Netherland have designated a national authority for CDM.

Requirement	Reference	Conclusion
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-B1 CAR-B2 CAR-B3
Forecast emission reductions and environmental impacts		CAR-B4
The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	
Environmental impacts		
Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
Stakeholder involvement		

Requirement	Reference	Conclusion
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	CAR-E1
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. (from 23/10/2007 to 22/11/2007)
Other		
The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK. It used approved methodology ACM0002. Ver.06
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	OK
The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK, the latest version of the PDD (Ver.03.1) is used.
Provisions for monitoring, verification and reporting shall be in accordance with the	CDM Modalities and Procedures §37f	OK

Requirement	Reference	Conclusion
modalities described in the Marrakech Accords and relevant 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	N/A
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	N/A
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	N/A

Table 2: Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?	/PDD/ (A 4.1.4), (B.3.) /dna/	DR	Yes, the project located Pihe Town, Fugong County, Nujiang Lisu Autonomous Prefecture, Yunnan province, P.R.China The unique identification of the project activity (26°34'56"N-98°54' 21"E) is described in section A.4.1.4 of the PDD. The project boundary includes all power plants connected physically to the China Southern Power Grid (CSPG) as well as the proposed project.	OK	OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/PDD/ (A.4.3)	DR	The project's system boundary should be provided in the PDD.	GRA1	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2. Participation Requirements <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					
A.2.1. Which Parties and project participants are participating in the project?	/PDD/ (A.3.), (Annex 1)	DR	The following parties are involved in the project activity: China (Host Party), Netherlands The following participants are involved in the project activity: Fugong Hendga Hydropower Development Co.,Ltd. (the project owner) Carbon Asset Management Sweden AB (the buyer).	OK	OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/PDD/ (A.3.) /LOA/	DR, I	In accordance with the CDM M&P at the time of making the PDD 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. The HCA from the Chinese DNA and LOA from the DNA of Netherland were not available during the pre-validation.	CAR A1	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: – Ratification of the Kyoto Protocol	/LOA/ /unfccc/	DR	Both parties have ratified the Kyoto Protocol. DNA in both countries has been established. But the HCA from the Chinese DNA and LOA from the Netherland DNA were not available during the pre-validation. Refer to CAR A1.	CAR A1	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<ul style="list-style-type: none"> – Voluntary participation – Designated a National Authority 					
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 & Annex 2)	DR /IM01/	Public funding from Annex I - country is not used to finance the project activity.	OK	OK
A.3. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.3.1. Does the project design engineering reflect current good practices?	/PDD/ (A.4.3.)	DR, I	<p>Yes, the project is a run-of-river hydro power project. The emission reductions result due to the displacement of the fossil fuel dominated power plants in CSPG.</p> <p>The project technical description should be detailed. E.g. the main constructions of the project, how is the high water head achieved. Furthermore the used</p>	CAR A2	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			environmentally safe and sound technology should be justified.		
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.4.3.) /FS/	DR	According to the project feasibility study, The components utilized are new and state of the art. All technologies and facilities of the project are domestic. There is no technology transfer.	OK	OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/PDD/ (B.7.2.)	DR, I	Yes, the trainings for the operation, maintenance and the monitoring will be provided.	OK	OK
A.4. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/LOA/	DR	The contribution of the proposed project to sustainable development is addressed and confirmed in LOA issued by Chinese DNA, which is not available during pre-validation. Refer to CAR A1	CAR A1	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/PDD/ (A.2.)	DR /IM03/	Yes, beside the GHG emission reduction, the project will also create social benefit through job position provision as well as environmental benefit e.g. reduction of SO ₂ and NO _x due to the displacement of the fossil fuel dominated powerplants in CSPG. However, the description of sustainability in PDD section A.2. is not sufficient. Further information on the contributions of local economy and social sustainable development should be described.	CRA2	OK
Small scale project activity <i>Is it assessed whether the project qualifies as small-scale CDM project activity</i>					
A.4.3. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/PDD/ (B.2.)	DR	N/A	N/A	N/A
A.4.4. Is the small scale project activity not a debundled component of a larger project activity?	/PDD/ A.4.5	DR, I	N/A	N/A	N/A

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.5. General Topics					
A.5.1. Has the PDD been duly filled?	/PDD/	DR	Please refer to CAR B1 and CAR B2	CAR B1-B2	OK
A.5.2. Has all necessary information been made available to the validator?		DR, I	Yes, the necessary information e.g. project feasibility study, IRR calculation. CDM management decision and stakeholder etc. were made available to the validator during pre-validation. But more information on common practice analysis should be provided. Please Refer to CAR B2-B4	CAR B2-B4	OK
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/PDD/ (B.1) /ACM0002/	DR	Yes, the project applies the consolidated approved methodology ACM0002 Version 6.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/PDD/ (B.2.), /ACM0002/	DR	Yes. 1) The project is a run-of-river hydropower project; 2) it doesn't involve switching from fossil fuels to renewable energy at project site; 3) the project is connected to the CSPG and the geographic and system boundaries can be clearly identified, with characteristics information available.	OK	OK
B.2. Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?	/PDD/ (B.4.) /ACM0002/	DR	<p>In section B.4. of the PDD four possible baseline scenarios are considered.</p> <ul style="list-style-type: none"> (1) Proposed project not as CDM project activity. (2) Thermal power generation with the same installed capacity as the project activity (3) Power generation by another renewable energy source (4) Equivalent electricity supply by CSPG. <p>In conclusion, the fourth alternative is regarded as the most feasible one.</p> <p>Please explain and justify all the key assumptions and rationale used to determine the baseline emissions</p>	CAR B4	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			(variables, parameters, data sources etc.) preferably in a tabular form.		
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/PDD/ (B.4.) /ACM0002/	DR	<p>The first alternative scenario: <i>(Proposed project not as CDM project activity)</i> is not feasible because of poor total investment's internal rate of return without CDM income (lower than financial IRR benchmark).</p> <p>The second alternative scenario: <i>(Thermal power generation with the same installed capacity as the project activity)</i> is excluded due to not in compliance with national law of China.</p> <p>The third alternative scenario: <i>(Power generation by another renewable energy source)</i> is not feasible because there is no sufficient resource of solar, biomass, wave and tidal, or geothermal nearby.</p> <p>The fourth alternative scenario: <i>(Equivalent electricity supply by CSPG)</i> don't face the financial and other barriers and also compliance with the legal requirements and policy in China. Thus, the fourth alternative scenarios is considered the most likely one.</p>	OK	OK
B.2.3. Has the baseline scenario been determined according to the methodology?	/PDD/ (B.4.), /ACM0002/	DR	The baseline scenario was determined according to the methodology ACM0002 Ver.06, and the baseline scenario was determined according to the methodology and based on information provided by the Chinese DNA please refer to CAR B1	CAR B1	OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where	/PDD/ (B.4.), /ACM0002/	DR	<p>The baseline scenario was determined according to the methodology and based on information provided by the Chinese DNA.</p> <p>The weighted average fuel consumption for power generation of 600 MW sub-critical coal-fired power</p>	CAR B1	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
possible?			generators (343.33 gCe/kWh) and the 200 MW oil/gas based combined cycle power generators (258 gCe/kWh) are taken as the efficiency level of the best technology commercially available in China. Please refer to CAR B1		
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/PDD/ (B.4.), /ACM0002/	DR	Yes, the renewable energy laws, sectoral and industry policy and tendency have been taken into account..	OK	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.) /ACM0002/ /dna/	DR	The data of Chinese energy yearbook 2003-2005 and Chinese electric power yearbook 2003-2006. But the most recently value e.g. the value defined in 2006 IPCC Guidelines for National Greenhouse Gas Inventories for emission factor of coke and refinery dry gas should be used. Revision is necessary.	CAR B2	OK
B.2.7. Have the major risks to the baseline been identified?	/PDD/ (B.4.)	DR	No major risks were identified nor to be expected.	OK	OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality	/PDD/	DR	Yes, the additionality analysis is demonstrated according	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
assessed according to the methodology?	(B.5.), /ACM0002/		to the step-wise approach as additionality tool (Ver.04). the barrier was justified through Investment barrier.		
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/PDD/ (B.5.)	DR	<p>The investment barrier is based on the calculation of the total investment's Internal Rate of Return (IRR) compared to national benchmark. The benchmark of 10 % is referenced from Economic Evaluation Code for Small Hydropower Projects issued by the Ministry of Water Resources (Document No. SL 16-95). The estimated project lifetime is 20 years.</p> <p>The basic parameters of the IRR calculation are provided in table form (Table 2 in Section B.5). However:</p> <p>1) The values of annual O&M cost (343.05 million RMB) in the table 2 B.5 is not correct. Revision is necessary.</p> <p>2) The calculation of income tax in the IRR calculation should be clearly referred.</p>	CAR B4	OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/PDD/ (B.5.)	DR, I	Also, the description of the analysis of other similar projects and the justification of similar options occurring in common practice in PDD section B.5. step 4 were not sufficient, revision is requested.	CAR B5	OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the	/PDD/ (B.5.)	DR, I	<p>The project activity started construction on 15/08/06, which is before the date of validation.</p> <p>To justify the seriously consideration of CDM, more and detailed information on CDM Management decision in</p>	CAR B3	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
incentive from the CDM was seriously considered in the decision to proceed with the project activity?			PDD section B.5. is requested. Refer to CAR A3		
B.4. Calculation of GHG Emission Reductions – Project emissions <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.)	DR	The project is a run-of-river project, thus project emission is not considered.	OK	OK
B.4.2. Have conservative assumptions been used when calculating the project emissions	/PDD/ (B.6.)	DR	N/A	N/A	N/A
B.4.3. Are uncertainties in the project emission estimates properly	/PDD/ (B.6.)	DR	N/A	N/A	N/A

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
addressed?					
B.5. Calculation of GHG Emission Reductions – Baseline emissions <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.) /ACM0002/ /dna/	DR	<p>Yes, the baseline emissions are calculated according to ACM0002 Ver.06, the combined margin approach was adopted to calculate the emission coefficient of the CSPG.</p> <p>The combined margin is a combination (CM) of the operating margin (OM) and the built margin (BM). The approach of the calculation is based on data published by the Chinese DNA.</p> <p>The simple OM approach is used and well substantiated and the built margin is calculated according to the provision of the EB to the deviation AM0005 which is consolidated under ACM0002.</p> <p>The electricity imports from the Central China Grid was considered in calculating OM.</p>	OK	OK
B.5.2. Have conservative	/PDD/	DR	Data published by the Chinese DNA on August 9 th 2007 is	CAR	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
assumptions been used when calculating the baseline emissions	(B.6.)		adopted to determine the baseline emission factor: The OM emission factor (<i>OM y EF</i> ,) of CSPG is 1.0119 tCO ₂ e/MWh, and the build margin emission factor (<i>BM y EF</i> ,) of CSPG is 0.6748 tCO ₂ e/MWh. But the most recently data of IPCC2006 should be used, please refer to CARB2	B2	
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	OK
B.6. Calculation of GHG Emission Reductions – Leakage <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.)	DR	According to ACM0002 leakage must not be considered.	OK	OK
B.6.2. Have conservative	/PDD/	DR	N/A.	N/A	N/A

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
assumptions been used when calculating the leakage emissions?	(B.6.)				
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/PDD/ (B.6.)	DR	N/A	N/A	N/A
B.7. Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/PDD/ (B.6.)	DR	The CARs/CRs given in section B have to be closed satisfactorily before forming an opinion.	Not yet OK	OK
B.8. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved	/PDD/ (B.7.)	DR	The methodology applied is ACM0002 (Ver. 6) "Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
methodology and in a complete and transparent manner?			<p><i>sources</i>". According to the methodology, "<i>Monitoring shall consist of metering the electricity generated by the renewable technology.</i>" In Section B.7.1,</p> <p>But the electricity imported from the grid annually and the Net electricity supplied to the grid ($EG_{y-ex} - EG_{y-im}$) should be defined as the monitoring parameter in the table in B.7.1..</p> <p>Furthermore, the description of the monitoring plan in PDD section B.7.2. is not sufficient, more detailed information e.g. meters location, calibration and accuracy should be provided. Furthermore, the data management and QA procedures should be submitted.</p>	<p>CAR B6</p> <p>CAR B7</p>	OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/PDD/ (B.7.2.)	DR	Yes, the data will be kept during the crediting period and two years after the end of the crediting period. This is indicated in B.7.2. "2. Monitoring of the net electricity by the project" of the PDD.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/PDD/ (B.7.)	DR	The project activity is run-of-river project. According to ACM0002 project emission must not be considered. Monitoring of project emission is not applicable.	N/A	N/A
B.9.2. Are the choices of project GHG indicators reasonable and conservative?	/PDD/ (B.7.)	DR	N/A	N/A	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	N/A	N/A	N/A

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.4. Is the measurement equipment described and deemed appropriate?	/PDD/ (B.7.)	DR	N/A.	N/A	N/A
B.9.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/PDD/ (B.7.)	DR	N/A.	N/A	N/A
B.9.6. Is the measurement interval identified and deemed appropriate?	/PDD/ (B.7.)	DR	N/A	N/A	N/A
B.9.7. Is the registration, monitoring, measurement and reporting procedure defined?	/PDD/ (B.7.) /IM01/	DR I	N/A.	N/A	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	N/A	N/A	N/A

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/PDD/ (B.7.)	DR	N/A	N/A	N/A
B.10. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/PDD/ (B.7.)	DR	No, kindly refer to CAR B6 and CAR B7	CAR B6-B7	OK
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/PDD/ (B.7.)	DR	Please refer to CAR B6	CAR B6	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/PDD/ (B.7.)	DR	No, kindly refer to CAR B6 and CAR B7	CAR B6-B7	OK
B.10.4. Is the measurement equipment described and deemed appropriate?	/PDD/ (B.7.)	DR	No, kindly refer to CAR B6 and CAR B7	CAR B6-B7	OK
B.10.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/PDD/ (B.7.)	DR	Please refer to CAR B7	CAR B7	OK
B.10.6. Is the measurement interval for baseline data identified and deemed appropriate?	/PDD/ (B.7.)	DR	Please refer to CAR B6	CAR B6	OK
B.10.7. Is the registration, monitoring, measurement and reporting procedure defined?	/PDD/ (B.7.)	DR	Yes. The procedure was established and the staff from the operational and financial departments will undertake the monitoring tasks including collecting measurement data, keeping record and reporting.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.10.8. Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/PDD/ (B.7.)	DR	No, the procedures for maintenance of monitoring equipment and installations are not properly identified. Refer to CAR B7 Calibration interval is indicated as “annually at least”.	CAR B7	OK
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/PDD/ (B.7.)	DR	Yes, the procedure was established, the daily operation and monitoring records will be stored in form of hardcopy and softcopy and will be kept 2 years after the credit period.	OK	OK
B.11. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/PDD/ (B.7.)	DR	As leakage is not to be considered, monitoring is not necessary.	N/A	N/A
B.11.2. Are the choices of project	/PDD/	DR	See comment above.	N/A	N/A

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
environmental, social and economic impacts?					
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/PDD/ (B.7.)	DR	See comment in B.12.1.	N/A	N/A
B.13. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/PDD/ (B.7.)	DR	Yes, according to PDD section B.7.2, staff from the operational and financial departments will be responsible for monitoring related work.	OK	OK
B.13.2. Are procedures identified for training of monitoring personnel?	/PDD/ (B.7.)	DR	Yes. Staff in charge of monitoring receives training both before project operation and during project operation based on real situation.	OK	OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can	/PDD/ (B.7.)	DR	No emergencies are envisaged leading to higher GHG emissions.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
cause unintended emissions?					
B.13.4. Are procedures identified for review of reported results/data?	/PDD/ (B.7.)	DR	Electricity delivered will be monitored through metering equipments; data will be cross-checked against relevant electricity sales receipts and/or records from the grid. However, this is not clear. Detailed data management and QA procedures should be submitted Refer to CAR B7	CAR B7	OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/PDD/ (B.7.)	DR	Procedures are identified in case of erroneous and accidents. But it is too general. More information should be provided. Refer to CAR B7.	CAR B7	OK
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
C.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/PDD/ (C.1.)	DR	The expected operational lifetime is 20 years. The start of the construction of the project activity is 25/08/2006.	OK	OK
C.2. Is the start of the crediting period clearly defined and reasonable?	/PDD/ (C.2.)	DR	Yes. The starting of crediting period is 01/11/2008.	OK	OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.1.	Has an analysis of the environmental impacts of the project activity been sufficiently described?	/PDD/ (D.1.)	DR	Yes, environmental impacts possibly cause by the project activity are summarized in section D.1. The effects of the project activity are addressed appropriately and are assessed as not significant.	OK	OK
D.2.	Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/PDD/ (D.1.) /EIA/	DR I	Yes, an environmental impact assessment is stipulated by the host party. The EIA was approved by the Environmental Protection Bureau in June, 2006.	OK	OK
D.3.	Will the project create any adverse environmental effects?	/PDD/ (D.1.)	DR	Yes. There is some adverse environmental effects, such as, waster water and solid waste during construction and operation; air pollution during construction. And evaluated as non-significant effects. The treatment method is identified in Section D.1.	OK	OK
D.4.	Are transboundary environmental impacts considered in the analysis?	/PDD/ (D.1.)	DR	No transboundary effects are expected.	OK	OK
D.5.	Have identified environmental impacts been addressed in the project design?	/PDD/ (D.1.)	DR	Yes, in section D.1, treatment method of the adverse environmental impacts is provided.	OK	OK
D.6.	Does the project comply with environmental	/PDD/ (D.1.)	DR	Yes, EIA of the project activity was approved in June, 2006. The project activity is approved by the	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
legislation in the host country?			Environmental Protection Bureau		
For Small- scale projects					
D.7. Does host country legislation require an analysis of the environmental impacts of the project activity?			N/A	N/A	N/A
D.8. Does the project comply with environmental legislation in the host country?			N/A	N/A	N/A
D.9. Will the project create any adverse environmental effects?			N/A	N/A	N/A
D.10. Have environmental impacts been identified and addressed in the PDD?			N/A	N/A	N/A
E. Stakeholder Comments <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.1.	Have relevant stakeholders been consulted?	/PDD/ (E.1.)	DR	The description of the stakeholder consulting in PDD section E.1. is not sufficient, it was adopted from the stakeholder consulting process in EIA. More detailed information on the investigation of social related aspects should be submitted. Furthermore the involved participants in the consulting process should clearly indicated.	CAR E1	OK
E.2.	Have appropriate media been used to invite comments by local stakeholders?	/PDD/ (E.1.)	DR	Yes. A survey was carried out by means of questionnaire.	OK	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	OK
E.4.	Is a summary of the stakeholder comments received provided?	/PDD/ (E.2.)	DR	Yes. A summary of the comments received is provided in the PDD section E.2.	OK	OK
E.5.	Has due account been taken of any stakeholder	/PDD/ (E.3.)		There is no negative comment received. However, stakeholders do have concerns about land	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
comments received?			occupation. As due account, the project owner signed land occupation agreement with residents influenced by the project according to the statute, local regulation and negotiation with local residents.		

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 The HCA from the Chinese DNA and LOA from the Sweden DNA were not available during the pre-validation.	A.2.2	The HCA from the Chinese DNA and LOA from Netherlands DNA instead of Sweden DNA have been provided. Netherlands is a Annex I Party as well as a Party to the Kyoto Protocol.	OK, The HCA and LOA have been submitted to the validation team.
CAR A2 The project technical description should be detailed. E.g. the main constructions of the project, and how the high water head is achieved. Furthermore the used environmentally safe and sound technology should be justified.	A.3.2	The project technical description such as main project constructions and their technical parameters has been detailed in the revised PDD.	OK, more detailed description has been given in PDD A.4.3
CAR B1 Please explain and justify all the key assumptions and rationale used to determine the baseline emissions (variables, parameters, data sources etc.) preferably in a tabular form.	B.2.1.	All the key assumptions and rationale used to determine the baseline emissions have been explained in Section B.6.1 of the PDD and the data used to calculate the baseline emissions have been attached in tabular form in the	OK, justification of the key assumptions is sufficient.

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
		Annex 3 of the PDD.	
CAR B2 The most recently value e.g. the value defined in 2006 IPCC Guidelines for National Greenhouse Gas Inventories for emission factor of coke and refinery dry gas should be used. Revision is necessary.	B.2.6.	The requested correction has been finished in the revised PDD.	OK, the latest value has been used in the revised PDD.
CAR B3 To justify the seriously consideration of CDM, more and detailed information on CDM Management decision in PDD section B.5. is requested. Moreover, more evidence of CDM management should be provided (eg. from government or other independent party).	B.3.4	The CDM Management decision of the Project has been described in section B.5 of the revised PDD. The scanned copies of related files have been provided.	OK, the consideration of the CDM revenue in management decision has been described in revised PDD. Meanwhile relevant documented proof was submitted.
CAR B4 1) The values of annual Annual O&M cost (343.05 million RMB) in the table 2 B.5 is not correct. Revision is necessary. 2) How the income tax is calculated from should be made clear in the IRR calculation sheet.	B.3.2	1) The values of Annual O&M cost are in taken from <i>Design Change Report</i> which had been checked by the validation team. 2) More detailed spreadsheet with links to demonstrate transparently how the income tax is calculated from has been provided.	OK, related evidence has been verified by validation team.
CAR B5 The description of the analysis of other similar projects and the justification of similar options occurring in common practice in PDD section B.5. step 4 were not	B.3.3	The description of the analysis of other similar projects and the justification of similar options occurring in common practice in	OK, relevant revision has been made as request.

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, revision is requested.		PDD section B.5 Step 4 have been revised according to the <i>Tool for the Demonstration and Assessment of Additionality</i> .	
CAR B6 The electricity imported from the grid annually and the Net electricity supplied to the grid (EG y-ex-EG y-im) should be defined as the monitoring parameter in the table in B.7.1.	B.8.1	The electricity imported from the grid and the Net electricity supplied to the grid annually have been defined as monitoring parameters. The table in PDD section B.7.1 has been revised accordingly.	OK
CAR B7 The description of the monitoring plan in PDD section B.7.2. was not sufficient, more detailed information e.g. meters location, calibration and accuracy. Furthermore, the data management and QA procedures should be submitted.	B.8.1	The information on the aspects of meters location, calibration and accuracy has been detailed in the monitoring plan in section B.7.2 of the revised PDD.	OK
CAR E1 The description of the stakeholder consulting in PDD section E.1. is not sufficient, it was adopted from the stakeholder consulting process in EIA. More detailed information on the investigation of social related aspects should be submitted. Further more the involved participants in the consulting process should be clearly indicated.	E.1	The information on the investigation of social related aspects and the involved participants has been provided in the revised PDD.	OK
CR A1 The project's system boundary should be provided in the PDD	A.1.2	The project's system boundary has been updated in the revised PDD.	OK
CR A2: The description of sustainability in PDD section A.2. is not sufficient. Further information on the contributions of	A.4.2	More detailed information on the contributions of social sustainable development such as new	OK

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
local economy and social sustainable development should be described.		schoolhouses and water supply facilities built by the project owner for local community has been supplemented into section A.2 of the revised PDD.	
Additional remarks / minor or editorial mistakes			
The title of the applied methodology ACM0002 should be indicated in PDD section B.1.		The title of the applied methodology ACM0002 has been added into section B.1 of the revised PDD.	OK

Table 4: Assessment of Financial Parameters

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
Net electricity supplied to Grid	98,729	MWh	-Feasibility Study Report -Electricity Sales Contract -Description of the selection of Electricity Efficiency Factor	/FSR/ /ESC/ /DSEEF/	☒	☒	The net electricity supplied to grid is defined as effective produced electricity minus internal consumption. The effective produced electricity is calculated as total generated electricity multiplied by electricity efficiency factor. According to DSEEF, the electricity efficiency factor was selected as 0.75 and the internal consumption rate was 0.5% due to the restriction of power generation during the flooding season. The net electricity was also proved by ESC. Therefore the value was assessed to be reasonable by validation team.
Total generated electricity	132,300	MWh	Feasibility Study Report	/FSR/	☒	☒	Total generated electricity is calculated as the product of installed capacity and annual

							operation time.
Installed capacity	24	MW	Approval Document of Feasibility Study	/ADFS/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The installed capacity is approved by local government
total investment	11,986.55	10 ⁴ RMB	- Design Modification Report and Economic Reassessment -Approval Document of Investment Adjustment	/DMRER/ /ADIA/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Due to the very unstable geological situation, which will lead to tunnel collapse, discovered during the construction period the design was modified by PP and the total investment was adjusted accordingly. The design modification was undertaken by design institute and approved by local government.
Electricity tariff (VAT Incl.)	0.18	RMB/k Wh	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The Electricity Tariff used in IRR calculation is derived from feasibility study, which was in line with the tariff standard applied for middle and small scale grid connected hydropower station in Nujiang Lisu Autonomous Prefecture.
Annual O&M costs	343.05	10 ⁴ RMB	Design Modification Report and Economic Reassessment	/DMRER/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>The O&M consists of repairs, salary, welfare, materials and other fees.</p> <p>The cost of repairs calculated as 1% of fixed asset value.</p> <p>The salary is calculated as the number of employee (45) multiplied with the average annual salary (12,000 RMB/Employer).</p> <p>The total welfare is calculated as 93 % of total salary.</p> <p>The insurance is calculated as 0.25 % of fixed asset value.</p> <p>The material cost is calculated as 5 RMB/KWh.</p> <p>Water charge is calculated as 0.004 RMB/KWh.</p> <p>Other fees is calculated as 12 RMB/KW.</p> <p>The calculations of employees' welfare, insurance, material cost and other cost are in compliance with the requirements defined in the "Construction project economic evaluation</p>

							method and parameter”, issued by National Development and Reform Committee.
Value added tax (VAT)	6	%	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Tax policy applicable to small hydropower project issued by China Finance Ministry in 1994.
City maintenance & construction tax	5	%	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Calculated as 5% of VAT, the value is derived from the document “Construction Project economic evaluation method and parameter” issued by National Development and Reform Committee.
Surtax for education expenses	3	%	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Calculated as 3 % of VAT, the value is derived from the document “Construction Project economic evaluation method and parameter” issued by National Development and Reform Committee.
Income tax	33	%	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	In accordance with income tax policy issue by local government.
Depreciation rate	5	%	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	In accordance with “Economic evaluation regulation for small hydropower construction project” (SL16-95) the applied depreciable period is 20 years and no residual value remains.
Project Lifetime	20	year	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The value is proofed by/in equipment purchasing contract
Loan interest	6.12	%	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The value is derived from Bank loan policy 2006.

CERTIFICATES



CERTIFICATE OF APPOINTMENT

Mr. Dipl.-Ing. Rainer Winter

born on 1963-02-21

satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby appointed as

TÜV NORD JI/CDM Senior Assessor

The present appointment will terminate on 2010-07-05
Certification registration No. 04 02 154-03

Essen, 2007-07-06

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



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



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

* MoV = Means of Verification, DR= Document Review, I= Interview



CERTIFICATE OF APPOINTMENT

Mr. Yong Jun Li

born on 1974-03-03

satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby appointed as

TÜV NORD JI/CDM Assessor

The present appointment will terminate on 2010-02-15

Certification registration No. 06 05 01 - 39

Essen, 2007-06-27



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



CERTIFICATE OF APPOINTMENT

Mr. Dr. Jochen Schubert

born on 1970-12-24

satisfies the requirements as specified in the TÜV NORD
JI/CDM CP directives and is hereby appointed as

TÜV NORD JI/CDM Expert

For the following scopes: 1, 2, 3, 6, 7, 13, 15

The present appointment will terminate on 2011-07-22

Certification registration No. 08 07 02 - 56

Essen, 2008-07-23


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