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Validation Report

Carbon Asset Management Sweden AB

VALIDATION OF THE CDM-PROJECT: ZHONGZHOU 16.5 MW HYDROPOWER PROJECT, CHINA

REPORT NO. 969525

2008, January 11

TÜV SÜD Industrie Service GmbH

Carbon Management Service
Westendstr. 199 - 80686 Munich – GERMANY

Industrie Service

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Subject: Validation of a CDM Project

Accredited TÜV SÜD Unit:	**TÜV SÜD Contract Partner:**
TÜV SÜD Industrie Service GmbH Certification Body "climate and energy" Westendstr. 199 - 80686 Munich Federal Republic of Germany	Jiangsu TÜV Product Service Shenzen Branch Room A01, B01 & B02, 28th Floor Anlian Building No. 4018 Jintian Road, Futian District 518026 Shenzhen P.R. China
Client: Carbon Asset Management Sweden AB Drottninggatan 92-94, 111 36 Stockholm, Sweden	**Project Site(s):** Zhongzhou Village, Sangesi Town, Longhui County, Shaoyang City

Project Title:	Zhongzhou 16.5 MW Hydropower Project, China		
Applied Methodology / Version:	ACM0002 / version 6	**Scope(s):**	1

First PDD Version:		**Final PDD version:**	
Date of issuance:	2007-01-31	Date of issuance:	2007-05-23
Version No.:	2	Version No.:	4
Starting Date of GSP	2007-02-02		

Estimated Annual Emission Reduction:	51 493 tons CO_{2e}

Assessment Team Leader:	**Further Assessment Team Members:**
Dr. Sven Kolmetz	Carl Zhou

Summary of the Validation Opinion:

☒ The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the project for registration by the CDM Executive Board in case letters of approval of all Parties involved will be available before the expiring date of the applied methodology(ies) or the applied methodology version respectively.

☐ The review of the project design documentation and the subsequent follow-up interviews have not provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. Hence TÜV SÜD will not recommend the project for registration by the CDM Executive Board and will inform the project participants and the CDM Executive Board on this decision.

Abbreviations

ACM	Approved Consolidated Methodology
AM	Approved Methodology
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CR	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
GHG	Greenhouse gas(es)
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non Governmental Organisation
PDD	Project Design Document
PP	Project Participant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

The validation objective is an independent assessment by a Third Party (Designated Operational Entity = DOE) of a proposed project activity against all defined criteria set for the registration under the Clean Development Mechanism (CDM). Validation is part of the CDM project cycle and will finally result in a conclusion by the executing DOE whether a project activity is valid and should be submitted for registration to the CDM-EB. The ultimate decision on the registration of a proposed project activity rests at the CDM Executive Board and the Parties involved.

The project activity discussed by this validation report has been submitted under the project title:

Zhongzhou 16.5 MW Hydropower Project, China

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of CDM project activities the scope is set by:

- The Kyoto Protocol, in particular § 12
- Decision 2/CMP1 and Decision 3/CMP.1 (Marrakech Accords)
- Further COP/MOP decisions with reference to the CDM (e.g. decisions 4 – 8/CMP.1)
- Decisions by the EB published under http://cdm.unfccc.int
- Specific guidance by the EB published under http://cdm.unfccc.int
- Guidelines for Completing the Project Design Document (CDM-PDD), and the Proposed New Baseline and Monitoring Methodlogy (CDM-NM)
- The applied approved methodology
- The technical environment of the project (technical scope)
- Internal and national standards on monitoring and QA/QC
- Technical guideline and information on best practice

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

Once TÜV SÜD receives a first PDD version, it is made publicly available on the internet at TÜV SÜD's webpage as well as on the UNFCCC CDM-webpages for starting a 30 day global stakeholder consultation process (GSP). In case of any request a PDD might be revised (under certain conditions the GSP will be repeated) and the final PDD will form the basis for the final evaluation as presented by this report. Information on the first and on the final PDD version is presented at page 1.

The only purpose of a validation is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

2 METHODOLOGY

The project assessment aims at being a risk based approach and is based on the methodology developed in the Validation and Verification Manual, an initiative of Designated and Applicant Entities, which aims to harmonize the approach and quality of all such assessments.

In order to ensure transparency, a validation protocol was customised for the project. TÜV SÜD developed a "cook-book" for methodology-specific checklists and protocol based on the templates presented by the Validation and Verification Manual. The protocol shows, in a transparent manner, criteria (requirements), the discussion of each criterion by the assessment team and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below.

The completed validation protocol is enclosed in Annex 1 to this report.

Validation Protocol Table 1: Conformity of Project Activity and PDD				
Checklist Topic / Question	***Reference***	***Comments***	***PDD in GSP***	***Final PDD***
The checklist is organised in sections following the arrangement of the applied PDD version. Each section is then further subdivided. The lowest level constitutes a checklist question / criterion.	*Gives reference to documents where the answer to the checklist question or item is found in case the comment refers to documents other than the PDD.*	*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. In some cases sub-checklist are applied indicating yes/no decisions on the compliance with the stated criterion. Any* ***Request*** *has to be substantiated within this column*	*Conclusions are presented based on the assessment of the first PDD version. This is either acceptable based on evidence provided (☑),* ***or a Corrective Action Request (CAR)*** *due to non-compliance with the checklist question (See below).* ***Clarification Request (CR)*** *is used when the validation team has identified a need for further clarification.*	*Conclusions are presented in the same manner based on the assessment of the final PDD version.*

Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests			
Clarifications and corrective action requests	***Ref. to table 1***	***Summary of project owner response***	***Validation team conclusion***
If the conclusions from table 1 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 1 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 1, under "Final PDD".*

In case of a denial of the project activity more detailed information on this decision will be presented in table 3.

Validation Protocol Table 3: Unresolved Corrective Action and Clarification Requests		
Clarifications and corrective action requests	***Id. of CAR/CR 1***	***Explanation of the Conclusion for Denial***
If the final conclusions from table 2 results in a denial the referenced request should be listed in this section.	*Identifier of the Request.*	*This section should present a detail explanation, why the project is finally considered not to be in compliance with a criterion.*

2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body "climate and energy". The composition of an assessment team has to be approved by the Certification Body ensuring that the required skills are covered by the team. The Certification Body TÜV SÜD operates four qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL)
- Greenhouse Gas Auditor (GHG-A)
- Greenhouse Gas Auditor Trainee (T)
- Experts (E)

It is required that the sectoral scope linked to the methodology has to be covered by the assessment team.

The validation team was consisting of the following experts (the responsible Assessment Team Leader in written in bold letters):

Name	Qualification	Coverage of technical scope	Coverage of sectoral expertise	Host country experience
Dr. Sven Kolmetz	**ATL**	☑	☑	☑
Carl Zhou	**GHG-A**	☑	☑	☑

Dr. Sven Kolmetz is physicist and auditor at the department "TÜV Carbon Management Service" located in the head office of TÜV SÜD IS GmbH in Munich. Furthermore he is officially authorized expert in the verification of GHG emissions in the framework of the European Emission Trading Scheme. Before entering TÜV SÜD he worked as energy consultant for industrial companies and as consultant for the German Federal Government on instruments for the reduction of GHG emissions.

Carl Zhou is an auditor for environmental management systems (according to ISO 14001) at Jiangsu TUV Product Service Ltd. He is based in Shenzen. In his position he is responsible for the implementation of validation, verification and certifications audits for management systems. He has received training in the CDM validation process and participated already in several CDM project assessments.

2.2 Review of Documents

The first PDD version submitted by the client and additional background documents related to the project design and baseline were reviewed as initial step of the validation process. A complete list of all documents and proofs reviewed is attached as annex 2 to this report.

2.3 Follow-up Interviews

In the period of March 14-15, 2007 TÜV SÜD performed interviews on-site with project stakeholders to confirm selected information and to resolve issues identified in the first document review. The table below provides a list of all persons interviewed in the context of this on-site visit.

Name	Organisation
Mr. Liu Jinming	Hunan Zhongzhou Hydropower Development Co., Ltd
Mr. Liu Qiye	Hunan Zhongzhou Hydropower Development Co., Ltd
Mr. Wang Yundong	Hunan Zhongzhou Hydropower Development Co., Ltd
Mr. Li Jianwei	Beijing Yizhi Rehe consultation company
Mr. Cao Xin	Beijing Yizhi Rehe consultation company

2.4 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions and clarifications and any other outstanding issues which needed to be clarified for TÜV SÜD`s positive conclusion on the project design. The Corrective Action Requests and Clarification Requests raised by TÜV SÜD were resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are summarised in chapter 3 below and documented in more detail in the validation protocol in annex 1.

2.5 Internal Quality Control

As final step of a validation the validation report and the protocol have to undergo an internal quality control procedure by the Certification Body “climate and energy”, i.e. each report has to be approved either by the head of the certification body or his deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one.

It rests at the decision of TÜV SÜD’s Certification Body whether a project will be submitted for requesting registration by the EB or not.

3 SUMMARY OF FINDINGS

As informed above all findings are summarized in table 2 of the attached validation protocol.

History of the validation process

The audit team has been provided with a draft PDD in January 2007. Based on this documentation a document review and a fact finding mission in form of an on-site audit has taken place. Afterwards the client decided to revise the PDD according to the CARs and CRs indicated in the audit process. The final PDD version submitted in May 2007 serves as the basis for the assessment presented herewith. Changes are not considered to be significant with respect to the qualification of the project as a CDM project based on the two main objectives of the CDM to achieve a reduction of anthropogenic GHG emissions by sources and to contribute to sustainable development.

Project description

The following description of the project as per the PDD could be verified during the on-site audit.

The Zhongzhou 16.5 MW Hydropower Project is sited on the mid-and-down stream of Nanshui River within Zhongzhou Village, Sangesi Town, Longhui County, Shaoyang City, Hunan Province, P.R.China. It is a 16.5 MW hydropower plant with power density of 105.7 W/m2.

Water diversion utilizing gate dam plus overflow dam in conjunction with diversion channel is adopted by the Project, in which water is diverted to the power house to generate electricity. The total installed capacity of the Project is 16.5 MW with a guaranteed output of 4.358 MW. It is estimated that the feed-in electricity to the Central China Grid is approximately 55.4 GWh per year which may achieve emission reductions of 360,448 tCO2e over the first crediting period. All the electricity generated will be delivered to the Central China Grid via a 35 kV outlet circuit.

Findings

In total the assessment team expressed 24 Corrective Action Requests.

Most of the requests addressed formal aspects and inconsistencies between the documents delivered during the audit and the PDD (CAR1 – 11, 15, 16). Besides this the project owner had to de-

liver additional documents regarding the additionality (CAR12, 13, 14) and the monitoring has to be described more detailed (CAR 17 – 20, 24). Regarding the stakeholder process additional documents had to be delivered (CAR 22, 23).

Baseline calculation

For the BM calculation the PDD adopts modified methods agreed by the EB for the approved methodologies AM0005 and AMS I.D. because plant specific data are not available in China. The emission factor of the thermal power plants is calculated by the proportion of the emissions of coal, gas and oil times the emission factor of the best available coal, gas and oil power plant as defined and published by the Chinese DNA. The new thermal capacity installation that exceeds 20% in the last years, for which data are available, is finally assessed with this factor. The emission reductions are calculated based on the IPCC1996 values and the Chinese yearbooks 2003 – 2005 as published by the Chinese DNA on December 15th 2006. These were the latest available data at the time of PDD writing. Meanwhile the new yearbooks have been published resulting in higher emission factors. Hence, the more conservative figures used in the PDD have been accepted.

Additionality

The additionality has been evidenced by investment analysis. The benchmark used (IRR) and the IRR calculation will be uploaded together with the PDD. The basic figures of the calculation have been evidenced by the Preliminary design report. The consideration of CDM before construction has been confirmed by the CDM approval of the project by the local authorities dated on August 10th, 2005.

Since all the open questions have been closed the project is in compliance with the CDM requirements.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on UNFCCC website by installing a link to TÜV SÜD's own website and invited comments by Parties, stakeholders and non-governmental organisations during a period of 30 days.

The following table presents all key information on this process:

webpage: http://www.netinform.de/KE/Wegweiser/Guide2_1.aspx?ID=2574&Ebene1_ID=26&Ebene2_ID=767&mode=1	
Starting date of the global stakeholder consultation process: 2007-02-02	
Comment submitted by: none	**Issues raised:** -
Response by TÜV SÜD: -	

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5 VALIDATION OPINION

TÜV SÜD has performed a validation of the following proposed CDM project activity:

Zhongzhou 16.5 MW Hydropower Project, China.

The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the project for registration by the CDM Executive Board.

An analysis as provided by the applied methodology demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions as specified within the final PDD version.

The validation is based on the information made available to us and the engagement conditions detailed in this report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

Munich, 2008 – 01 - 11

Certification Body “climate and energy”
TÜV SÜD Industrie Service GmbH

Munich, 2008 - 01 - 11

Assessment Team Leader

ANNEX 1: VALIDATION PROTOCOL

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Table 1 Conformity of Project Activity and PDD

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
A. General description of project activity					
A.1. Title of the project activity					
A.1.1.	Does the used project title clearly enable to identify the unique CDM activity?	1, 2	The project is titled with the name of the project location, the capacity and the energy source of the project. Hence, it can be clearly identified. The project title is Zhongzhou 16.5 MW Hydropower Project	☑	☑
A.1.2.	Are there any indication concerning the revision number and the date of the revision?	1, 2	Yes. The version number is 04, and the date of completion is on 23/05/2007	☑	☑
A.1.3.	Is this consistent with the time line of the project's history?	1, 2	**Corrective Action Request 1.** : Please provide a revision history of the PDD and indicate the difference between version 01 and version 02 (GSP) of the PDD.	CAR1	☑
A.2. Description of the project activity					
A.2.1.	Is the description delivering a transparent overview of the project activities?	1, 2	The project is described transparently and the project activities described have been proven during on-site audit. **Corrective Action Request 2.** Please provide the construction information of the project. E.g. the development party, construction party, the starting date of construction, the date of finishing planning, and the current status of the project. Please provide the data of the power density and the surface area of the reservoir or indicate that this is not necessary due to being a run-of-river plant.	CAR2	☑
A.2.2.	What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	1, 2 7, 8	The planning is described in the feasibility study. The project activity is the displacement of electricity generated by coal fired power plants with electricity generated by hydro power. The fol-	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
		9, 10	lowing data deliver evidences for the project activity: - Feasibility study - EIA and the approval of EIA from Hunan province Environmental Protection Bureau - Project approval - Approval of connection to the Grid This data have been evidenced during the audit.		
A.2.3.	Is the information provided by these proofs consistent with the information provided by the PDD?	1, 2	Yes, it is.	☑	☑
A.2.4.	Is all information presented consistent with details provided by further chapters of the PDD?	1, 2	Yes, there are no contradictions in the PDD.	☑	☑
A.3. Project participants					
A.3.1.	Is the form required for the indication of project participants correctly applied?	1, 2	The form is correctly applied. Hunan Zhongzhou Hydropower Development Co., Ltd.and Carbon Asset Management Sweden AB are considered as project participants. **Corrective Action Request 3.** Please describe the participants' roles in the PDD	CAR3	☑
A.3.2.	Is the participation of the listed entities or Parties confirmed by each one of them?	1, 2	**Open Issue**	Open issue	☑
A.3.3.	Is all information on participants / Parties provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	1, 2	Yes, it is.	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
A.4. Technical description of the project activity				
A.4.1. Location of the project activity				
A.4.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	1, 2	The project location could be identified according to the PDD. The project activity is located at Zhongzhou Village, Sangesi Town, Longhui County, Shaoyang City. **Corrective Action Request 4.** Please deliver the geographical data of the project location (power house) in longitude and latitude including minutes and seconds).	CAR4	☑
A.4.1.2. How is it ensured and/or demonstrated, that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	1, 2 7, 9	• The approval of EIA • The preliminary design report and its approval • The approval of Zhongzhou hydro power station • The business license of the developer of the proposed project The above mentioned documents demonstrate that the project owner can implement the project at this site.	☑	☑
A.4.2. Category(ies) of project activity				
A.4.2.1. To which category(ies) does the project activity belonging to? Is the category correctly identified and indicated?	1, 2	**Corrective Action Request 5.** The category is not clearly identified and indicated. Please revise it.	CAR5	☑
A.4.3. Technology to be employed by the project activity				
A.4.3.1. Does the technical design of the project activity reflect current good practices?	1, 2	Yes, the project design reflects the current good practices to use renewable resources to generate electricity. **Corrective Action Request 6.** Please describe the detailed technical information of the proposed project in this chapter. E.g. including the type of the turbine and the main transformation.	CAR6	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
A.4.3.2. Does the description of the technology to be applied provide sufficient and transparent input/ information to evaluate its impact on the greenhouse gas balance?	1, 2 11	Yes, the project activity comprises the use of water power for the substitution of grid supplied electricity mainly from coal fired plants. There is no doubt that this technology will reduce the GHG emissions significantly.	☑	☑
A.4.3.3. Does the implementation of the project activity require any technology transfer from annex-I-countries to the host country(ies)?	1, 2	No, it doesn't. There is not technology transfer from annex-I countries to China by the proposed project.	☑	☑
A.4.3.4. Is the technology implemented by the project activity environmentally safe?	1, 2	**Corrective Action Request 7.** Please describe if the technology implemented by the project activity is environmentally safe in this chapter.	CAR7	☑
A.4.3.5. Is the information provided in compliance with actual situation or planning?	1, 2	Yes. The information provided is in compliance with the actual situation.	☑	☑
A.4.3.6. Does the project use state of the art technology and / or does the technology result in a significantly better performance than any commonly used technologies in the host country?	1, 2	The common practice for electricity generation is still coal-fired power plant. Hence, the project definitely would result in a better performance than the common practice.	☑	☑
A.4.3.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1, 2	No. The life time of the project is under normal circumstances longer than the crediting period.	☑	☑
A.4.3.8. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	1, 2	**Corrective Action Request 8.** Please specify whether the project needs extensive initial training and maintenance efforts in the PDD	CAR8	☑
A.4.3.9. Is information available on the demand and requirements for training and maintenance?	1, 2	See A.4.3.8	See A.4.3.8	☑
A.4.3.10. Is a schedule available for the implementation of the project and are there any	1, 2	The planning schedule in the past and for the future was clearly described by the project owner during the audit. The main con-	CAR9	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	risks for delays?		tracts for the construction of the hydro power have already been signed and equipments have been purchased. There is no risk for delays. **Corrective Action Request 9.** The time schedule of the implementation of the project should be included into the PDD.		
A.4.4.	*Estimated amount of emission reductions over the chosen crediting period*				
A.4.4.1.	Is the form required for the indication of projected emission reductions correctly applied?	1, 2	Yes. The form is correctly applied according to the version 03.1 of CDM PDD template.	☑	☑
A.4.4.2.	Are the figures provided consistent with other data presented in the PDD?	1, 2	**Corrective Action Request 10.** The crediting period will start after the registration of this project, so the starting date of the crediting period and the estimated emission reductions of the year 2007 in Table 1 and further chapters of the PDD have to be revised.	CAR10	☑
A.4.5.	*Public funding of the project activity*				
A.4.5.1.	Is the information provided on public funding provided in compliance with the actual situation or planning as available by the project participants?	1, 2	Yes. There is no public funding necessary; all costs are covered by bank loans and private equity.	☑	☑
A.4.5.2.	Is all information provided consistent with the details given in remaining chapters of the PDD (in particular annex 2)?	1, 2	The statements are consistent within the PDD.	☑	☑
B. Application of a baseline and monitoring methodology					
B.1. Title and reference of the approved baseline and monitoring methodology					
B.1.1.	Are reference number, version number,	1, 2	The approved methodology grid-connected electricity generation	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	and title of the baseline and monitoring methodology clearly indicated?		from renewable sources, ACM0002 Version 06 is used.		
B.1.2.	Is the applied version the most recent one and / or is this version still applicable?	1, 2	Yes, it is version 06	☑	☑
B.2. Justification of the choice of the methodology and why it is applicable to the project activity					
B.2.1.	Is the applied methodology considered the most appropriate one?	1, 2	Yes. The approved methodology grid-connected electricity generation from renewable sources, ACM0002 Version 06 is exactly applicable to the hydro power project. The capacity is more than 15MW.	☑	☑
B.2.2.	Criterion 1: Type of capacity addition by renewable energy	1, 2	Applicability checklist / Yes / No Criterion discussed in the PDD? / Yes Compliance provable? / Yes Evidences provided in the PDD? / Yes Compliance verified? / Yes	☑	☑
B.2.3.	Criterion 2: Exclusion of fuel switching activities	1, 2	Applicability checklist / Yes / No Criterion discussed in the PDD? / Yes Compliance provable? / Yes Evidences provided in the PDD? / Yes Compliance verified? / Yes	☑	☑
B.2.4.	Criterion 3: Defined electricity grid boundaries	1, 2	Applicability checklist / Yes / No Criterion discussed in the PDD? / Yes Compliance provable? / Yes	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Evidences provided in the PDD? Yes Compliance verified? Yes		
B.2.5. Criterion 4: Approved inclusion in other methodologies (if applied only)	1, 2	Not applicable	☑	☑
B.3. Description of the sources and gases included in the project boundary				
B.3.1. Source: Fugitive Emissions from non-condensable gases (geothermal activities only) Gas(es): CO_2, CH_4 Type: Project Emissions		Boundary checklist: Yes / No Source and gas(es) discussed by the PDD? N/A Inclusion / exclusion justified? N/A Explanation / Justification sufficient? N/A Consistency with monitoring plan? N/A	☑	☑
B.3.2. Source: Emissions from combustion of fossil fuels (geothermal activities only) Gas(es): CO_2 Type: Project Emissions		Boundary checklist: Yes / No Source and gas(es) discussed by the PDD? N/A Inclusion / exclusion justified? N/A Explanation / Justification sufficient? N/A Consistency with monitoring plan? N/A	☑	☑
B.3.3. Source: Emissions from the reservoir (new hydroelectric activities only) Gas(es): CO_2, CH_4 Type: Project Emissions		Boundary checklist: Yes / No Source and gas(es) discussed by the PDD? N/A Inclusion / exclusion justified? N/A Explanation / Justification sufficient? N/A Consistency with monitoring plan? N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
B.3.4. Source: Emissions from electricity generation in fossil fuel fired power plants of the project electricity system Gas(es): CO_2 Type: Baseline Emissions		Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? N/A Inclusion / exclusion justified? N/A Explanation / Justification sufficient? N/A Consistency with monitoring plan? N/A	☑	☑
B.3.5. Source: Emissions from electricity generation in fossil fuel fired power plants of any connected electricity system Gas(es): CO_2 Type: Baseline Emissions		Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? Yes Inclusion / exclusion justified? Yes Explanation / Justification sufficient? Yes Consistency with monitoring plan? Yes	☑	☑
B.3.6. Source: Emissions from electricity generation in fossil fuel fired power plants of imported electricity Gas(es): CO_2 Type: Baseline Emissions	1, 2	Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? NO Inclusion / exclusion justified? NO Explanation / Justification sufficient? NO Consistency with monitoring plan? NO **Corrective Action Request 11.** The emission from power plants of imported electricity has to be included in the project boundary. If there are no imports to the Central China Grid please mention in annex 3.	CAR11	☑
B.3.7. Do the spatial and technological boundaries as verified on-site comply with the	1, 2	Yes. The project boundary for the proposed project is represented by the Central China Power Grid.	☑	

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	discussion provided by the PDD?				
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario					
B.4.1.	Is it clearly described that the baseline is represented by the combined margin of the grid the activity will be connected to?	1, 2	Yes. The project boundary for the proposed project is represented by the Central China Power Grid.	☑	☑
B.4.2.	In case of any modification or retrofit of existing facilities: Is data available to determine the historic production level?	1, 2	Not applicable.	☑	☑
B.4.3.	In case of any modification or retrofit of existing facilities: Have conservative assumptions been applied in order to estimate the point in time when the existing equipment needs to be replaced?	1, 2	Not applicable.	☑	☑
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):					
B.5.1.	In case of applying step 0 of the additionality tool: Is evidence provided, that the project's starting date is after Jan 01, 2000 and before Nov 18, 2004?	1, 2 3	The project participants will not claim emission reductions resulting from power generation dating from before the date of registration of the CDM activity, so this question is not applicable. **Corrective Action Request 12.** The description and analysis in the chapter B5 is the same with in the chapter B4. As the baseline is determined in ACM0002 precisely (grid electricity), no further differentiation is necessary in chapter B.4. In chapter B.5. the new additionality tool version 3 should be adapted. As requested in CAR9 the time table should clearly indicate that CDM has been considered before the start of construction. This should be evidenced by documentation.	CAR12	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
B.5.2.	In case of applying step 0 of the additionality tool: Is evidence provided, that CDM has been considered seriously in the decision to proceed with the project activity?	1, 2 3	See B.5.1.	See B.5.1.	☑
B.5.3.	Have realistic and credible alternatives been identified providing comparable outputs or services? (step 1a)	1, 2 3	The following baseline scenarios have been discussed: • Construction of a fossil fuel-fired power plant with equivalent amount of installed capacity or annual electricity output; • The proposed project activity not undertaken as a CDM project activity; • Construction of a power plant using other sources of renewable energy with equivalent amount of installed capacity; • Provision of equivalent amount of annual power output by the grid where the proposed project is connected with. The realistic and credible alternative is identified. And it is alternative 4), i.e. Provision of equivalent amount of annual power output by the grid where the proposed project is connected with.	☑	☑
B.5.4.	Is the project activity without CDM included in these alternatives? (step 1a)	1, 2 3	Yes.	☑	☑
B.5.5.	Is a discussion provided for all identified alternatives concerning the compliance with applicable laws and regulations? (step 1b)	1, 2 3	Yes	☑	☑
B.5.6.	In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement? (step 1b)	1, 2 3	Not applicable.	☑	☑
B.5.7.	In case of applying step 2 / investment analysis of the additionality tool: Is the analysis method identified appropriately (step 2a)?	1, 2 3	Yes. The benchmark analysis is identified appropriately.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
B.5.8.	In case of Option I (simple cost analysis): Is it demonstrated that the activity produces no economic benefits other than CDM income?	1, 2 3	NA	☑	☑
B.5.9.	In case of Option II (investment comparison analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	1, 2 3	NA	☑	☑
B.5.10.	In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	1, 2 3	Yes, the IRR indicator has been selected.	☑	☑
B.5.11.	In case of Option II or Option III: Is the calculation of financial figures for this indicator correctly done for all alternatives and the project activity?	1, 2 3	The calculation of financial figures for IRR is done for the project activity without the revenues from the sale of CERs and with the revenues from the sale of CERs. **Corrective Action Request 13.** : Please deliver the IRR calculation in PDF as well as EXCEL format. The PDF version has to be uploaded together with the PDD.	CAR13	☑
B.5.12.	In case of Option II or Option III: Is the analysis presented in a transparent manner including publicly available proofs for the utilized data?	1, 2 3	Yes. During audit on site, the available proofs have been provided and been proven.	☑	☑
B.5.13.	In case of applying step 3 (barrier analysis) of the additionality tool: Is a complete list of barriers developed that prevent the different alternatives to occur?	1, 2 3	NA	☑	☑
B.5.14.	In case of applying step 3 (barrier analysis): Is transparent and documented evidence provided on the existence and significance of these barriers?	1, 2 3	NA	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
B.5.15.	In case of applying step 3 (barrier analysis): Is it transparently shown that the execution of at least one of the alternatives is not prevented by the identified barriers?	1, 2 3	NA	☑	☑
B.5.16.	Have other activities in the host country / region similar to the project activity been identified and are these activities appropriately analyzed by the PDD (step 4a)?	1, 2 3	The common practice analysis is not sufficient. Please describe in detail how many hydro power plants are installed and why these plants are economically feasible without CDM revenue. What is the difference of the project activity and the existing projects? **Corrective Action Request 14.** The same has to be specified.	CAR14	☑
B.5.17.	If similar activities are occurring: Is it demonstrated that in spite of these similarities the project activity would not be implemented without the CDM component (step 4b)?	1, 2 3	See B.5.16	See B.5.16	☑
B.5.18.	Is it appropriately explained how the approval of the project activity will help to overcome the economic and financial hurdles or other identified barriers (step 5)?	1, 2 3	The CDM registration will make the project more financial attractive.	☑	☑
B.6. Emissions reductions					
B.6.1.	*Explanation of methodological choices*				
B.6.1.1.	Is it explained how the procedures provided in the methodology are applied by the proposed project activity?	1, 2	The calculation of the emission reduction is applied according to the steps described in ACM0002: - Calculation of the Operating Margin Emission Factor - Calculation of the Build Margin Emission Factor - Calculation of the Combined Margin Emission Factor	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		These steps are described in a transparent manner.		
B.6.1.2. Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	1, 2	Yes, it is.	☑	☑
B.6.1.3. Are the formulae required for the determination of baseline emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	1, 2	Yes, formulae to calculate the baseline emissions are correctly presented. .	☑	☑
B.6.1.4. Is the choice of options to determine the emissions factor (OM, BM) justified in a suitable and transparent manner?	1, 2	Yes. It is justified in a suitable and transparent manner/	☑	☑
B.6.1.5. In case of alternative weighing factors for the Combined Margin: Is the quantification of the alternative weighing factor justified in a suitable and transparent manner?	1, 2	Not applicable. The default weights for hydro power projects in the 6th version of ACM0002 (OM 0.5 and BM 0.5 respectively) are used.	☑	☑
B.6.1.6. In case of alternative weighing factors for the Combined Margin: Is the guidance for the PDD concerning the acceptability of alternative weights considered in the discussion?	1, 2	See B.6.1.5.	☑	☑
B.6.1.7. Are the formulae required for the determination of leakage emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	1, 2	No leakage is considered according to the methodology.	☑	☑
B.6.1.8. Are formulae required for the determination of emission reductions correctly presented?	1, 2	Yes.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
B.6.2.	*Data and parameters that are available at validation*				
B.6.2.1.	Is the list of parameters presented in chapter B.6.2 considered to be complete with regard to the requirements of the applied methodology?	1, 2	**Corrective Action Request 15.** The source parameters mentioned in the official published data, such as the NCV, OXID, COEF, GEN, F, λ etc. have to be presented and the reference should be indicated. Finally the calculation should be transparent even if the NDRC calculation is not known to the reviewer.	CAR15	☑
B.6.2.2.	Is the choice of ex-ante or ex-post vintage of OM and BM factors clearly specified in the PDD?	1, 2	Yes, the ex-ante calculation of emission factors is chosen.	☑	☑
B.6.2.3.	Parameter Title: Annual electricity supplied to the grid prior to retrofit (applicable only for retrofit and modification activities)		Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.4.	Parameter Title: Emission factor of the grid (CM)		Data Checklist / Yes / No Title in line with methodology? No Data unit correctly expressed? No Appropriate description of parameter? No Source clearly referenced? No Correct value provided? No Has this value been verified? No	See B.6.2.1.	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Choice of data correctly justified? — No Measurement method correctly described? — No See B.6.2.1.		
B.6.2.5. Parameter Title: Operating margin (OM) emission factor of the grid		Data Checklist — Yes / No Title in line with methodology? — Yes Data unit correctly expressed? — Yes Appropriate description? — Yes Source clearly referenced? — Yes Correct value provided? — Yes Has this value been verified? — Yes Choice of data correctly justified? — Yes Measurement method correctly described? — Yes	☑	☑
B.6.2.6. Parameter Title: Build margin (BM) emission factor of the grid		Data Checklist — Yes / No Title in line with methodology? — Yes Data unit correctly expressed? — Yes Appropriate description of parameter? — Yes Source clearly referenced? — Yes Correct value provided? — Yes Has this value been verified? — Yes Choice of data correctly justified? — Yes Measurement method correctly described? — Yes	☑	☑
B.6.2.7. Parameter Title: fuel consumption of each power source		Data Checklist — Yes / No Title in line with methodology? — Yes Data unit correctly expressed? — Yes Appropriate description of parameter? — Yes Source clearly referenced? — No Correct value provided? — Yes Has this value been verified? — Yes	CAR 16	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Choice of data correctly justified? — Yes Measurement method correctly described? — Yes **Corrective Action Request 16.** The latest three years data for thermal power supply shall be adopted.		
B.6.2.8. Parameter Title: emission coefficient of each fuel		Data Checklist / Yes / No Title in line with methodology? — No Data unit correctly expressed? — No Appropriate description of parameter? — No Source clearly referenced? — No Correct value provided? — No Has this value been verified? — No Choice of data correctly justified? — No Measurement method correctly described? — No See B.6.2.1.	See B.6.2.1.	☑
B.6.2.9. Parameter Title: electricity generation of each power source		Data Checklist / Yes / No Title in line with methodology? — No Data unit correctly expressed? — No Appropriate description of parameter? — No Source clearly referenced? — No Correct value provided? — No Has this value been verified? — No Choice of data correctly justified? — No Measurement method correctly described? — N/A See B.6.2.1.	See B.6.2.1.	☑
B.6.2.10. Parameter Title: surface area of full reservoir level (for new hydroelectric activities only)		Data Checklist / Yes / No Title in line with methodology? — N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A		
B.6.2.11. Parameter Title: fraction of time with low costs /must run plant at the margin (for simple adjusted OM only)		Data Checklist — Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.12. Parameter Title: electricity imports		Data Checklist — Yes / No Title in line with methodology? No Data unit correctly expressed? No Appropriate description of parameter? No Source clearly referenced? No Correct value provided? No Has this value been verified? No Choice of data correctly justified? No Measurement method correctly described? No	See B.6.2.1.	☑

<table>
<tr><th>CHECKLIST TOPIC / QUESTION</th><th>Ref.</th><th>COMMENTS</th><th>PDD in GSP</th><th>Final PDD</th></tr>
<tr><td></td><td></td><td>See B.6.2.1.</td><td></td><td></td></tr>
<tr><td>B.6.2.13. Parameter Title:
CO_2 emission coefficient of fuels used in connected grids</td><td>1, 2</td><td><table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>No</td></tr><tr><td>Appropriate description of parameter?</td><td>No</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided?</td><td>No</td></tr><tr><td>Has this value been verified?</td><td>No</td></tr><tr><td>Choice of data correctly justified?</td><td>No</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr></table>See B.6.2.1.</td><td>See B.6.2.1.</td><td>☑</td></tr>
<tr><td colspan="5">B.6.3. Ex-ante calculation of emission reductions</td></tr>
<tr><td>B.6.3.1. Is the projection based on the same procedures as used for future monitoring?</td><td>1, 2</td><td>Yes.</td><td>☑</td><td>☑</td></tr>
<tr><td>B.6.3.2. Are the GHG calculations documented in a complete and transparent manner?</td><td>1, 2</td><td>See B.3.6.</td><td>See B.3.6.</td><td>☑</td></tr>
<tr><td>B.6.3.3. Is the data provided in this section consistent with data as presented in other chapters of the PDD?</td><td>1, 2</td><td>Yes.</td><td>☑</td><td>☑</td></tr>
<tr><td colspan="5">B.6.4. Summary of the ex-ante estimation of emission reductions</td></tr>
<tr><td>B.6.4.1. Will the project result in fewer GHG emissions than the baseline scenario?</td><td>1, 2</td><td>Yes, there are no project emissions.</td><td>☑</td><td>☑</td></tr>
<tr><td>B.6.4.2. Is the form/table required for the indication of projected emission reductions correctly applied?</td><td>1, 2</td><td>Yes, the form is correctly applied according to the PDD template.</td><td>☑</td><td>☑</td></tr>
<tr><td>B.6.4.3. Is the projection in line with the envisioned time schedule for the project’s</td><td>1, 2</td><td>The time schedule is missing. See A.4.4.2</td><td>See A.4.4.2</td><td>☑</td></tr>
</table>

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
implementation and the indicated crediting period?				
B.6.4.4. Is the data provided in this section in consistency with data as presented in other chapters of the PDD?	1, 2	Yes.	☑	☑
B.7. Application of the monitoring methodology and description of the monitoring plan				
B.7.1. Data and parameters monitored				
B.7.1.1. Is the list of parameters presented by chapter B.7.1 considered to be complete with regard to the requirements of the applied methodology?	1, 2	**Corrective Action Request 17.** The measurement equipments have to be installed to ensure the availability of back-up data in the case of meter failure. If there is no electricity imported from the grid please indicate how the power house and auxiliary equipment are running if there is no electricity production.	CAR17	☑
B.7.1.2. Parameter Title: Electricity supplied to the grid	1, 2	Monitoring Checklist / Yes / No Title in line with methodology? Yes Data unit correctly expressed? Yes Appropriate description of parameter? Yes Source clearly referenced? Yes Correct value provided for estimation? Yes Has this value been verified? Yes Measurement method correctly described? Yes Correct reference to standards? Yes Indication of accuracy provided? No QA/QC procedures described? No QA/QC procedures appropriate? No During on-site audit, the detailed monitoring procedures and calibration and measurement plan of the instruments and equipments	CAR18	☑

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<tr><th>CHECKLIST TOPIC / QUESTION</th><th>Ref.</th><th>COMMENTS</th><th>PDD in GSP</th><th>Final PDD</th></tr>
<tr><td></td><td></td><td>are unavailable.
<u>Corrective Action Request 18.</u>
The above mentioned documents should be supplied to DOE.
The accuracy of the meter should be determined.</td><td></td><td></td></tr>
<tr><td>B.7.1.3. Parameter Title:
Quantity of steam produced
(for geothermal projects only)</td><td>1, 2</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>N/A</td></tr><tr><td>Data unit correctly expressed?</td><td>N/A</td></tr><tr><td>Appropriate description of parameter?</td><td>N/A</td></tr><tr><td>Source clearly referenced?</td><td>N/A</td></tr><tr><td>Correct value provided for estimation?</td><td>N/A</td></tr><tr><td>Has this value been verified?</td><td>N/A</td></tr><tr><td>Measurement method correctly described?</td><td>N/A</td></tr><tr><td>Correct reference to standards?</td><td>N/A</td></tr><tr><td>Indication of accuracy provided?</td><td>N/A</td></tr><tr><td>QA/QC procedures described?</td><td>N/A</td></tr><tr><td>QA/QC procedures appropriate?</td><td>N/A</td></tr></table></td><td>☑</td><td>☑</td></tr>
<tr><td>B.7.1.4. Parameter Title:
Fraction of CO_2 in steam produced
(for geothermal projects only)</td><td>1, 2</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>N/A</td></tr><tr><td>Data unit correctly expressed?</td><td>N/A</td></tr><tr><td>Appropriate description of parameter?</td><td>N/A</td></tr><tr><td>Source clearly referenced?</td><td>N/A</td></tr><tr><td>Correct value provided for estimation?</td><td>N/A</td></tr><tr><td>Has this value been verified?</td><td>N/A</td></tr><tr><td>Measurement method correctly described?</td><td>N/A</td></tr><tr><td>Correct reference to standards?</td><td>N/A</td></tr><tr><td>Indication of accuracy provided?</td><td>N/A</td></tr><tr><td>QA/QC procedures described?</td><td>N/A</td></tr></table></td><td>☑</td><td>☑</td></tr>
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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		QA/QC procedures appropriate? N/A		
B.7.1.5. Parameter Title: Fraction of CH_4 in steam produced (for geothermal projects only)	1, 2	Monitoring Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A	☑	☑
B.7.1.6. Parameter Title: Quantity of steam generated during well testing (for geothermal projects only)	1, 2	Monitoring Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A	☑	☑

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<tr><th>CHECKLIST TOPIC / QUESTION</th><th>Ref.</th><th>COMMENTS</th><th>PDD in GSP</th><th>Final PDD</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>B.7.1.7. Parameter Title:
Fraction of CO_2 in steam during well testing
(for geothermal projects only)</td><td>1, 2</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>N/A</td></tr><tr><td>Data unit correctly expressed?</td><td>N/A</td></tr><tr><td>Appropriate description of parameter?</td><td>N/A</td></tr><tr><td>Source clearly referenced?</td><td>N/A</td></tr><tr><td>Correct value provided for estimation?</td><td>N/A</td></tr><tr><td>Has this value been verified?</td><td>N/A</td></tr><tr><td>Measurement method correctly described?</td><td>N/A</td></tr><tr><td>Correct reference to standards?</td><td>N/A</td></tr><tr><td>Indication of accuracy provided?</td><td>N/A</td></tr><tr><td>QA/QC procedures described?</td><td>N/A</td></tr><tr><td>QA/QC procedures appropriate?</td><td>N/A</td></tr></table></td><td>☑</td><td>☑</td></tr>
<tr><td>B.7.1.8. Parameter Title:
Fraction of CH_4 in steam during well testing
(for geothermal projects only)</td><td>1, 2</td><td><table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>N/A</td></tr><tr><td>Data unit correctly expressed?</td><td>N/A</td></tr><tr><td>Appropriate description of parameter?</td><td>N/A</td></tr><tr><td>Source clearly referenced?</td><td>N/A</td></tr><tr><td>Correct value provided for estimation?</td><td>N/A</td></tr><tr><td>Has this value been verified?</td><td>N/A</td></tr><tr><td>Measurement method correctly described?</td><td>N/A</td></tr><tr><td>Correct reference to standards?</td><td>N/A</td></tr><tr><td>Indication of accuracy provided?</td><td>N/A</td></tr><tr><td>QA/QC procedures described?</td><td>N/A</td></tr><tr><td>QA/QC procedures appropriate?</td><td>N/A</td></tr></table></td><td>☑</td><td>☑</td></tr>
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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
B.7.1.9. Parameter Title: CO_2 emission coefficient of fuel used by the geothermal plant (for geothermal projects only)	1, 2	Monitoring Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A	☑	☑
B.7.2. Description of the monitoring plan				
B.7.2.1. Is the operational and management structure clearly described and in compliance with the envisoned situation?	1, 2	**Corrective Action Request 19.** The following procedures have to be described in the PDD or delivered to the DOE. - Training of monitoring personnel - The installment, calibration and maintenance of the monitoring equipment, including equipment detailed information, e.g. general location, type and accuracy classes etc. - Dealing with possible monitoring data adjustments & uncertainties - Troubleshooting allowing redundant reconstruction of data in case of monitoring problems? - Corrective actions in order to provide for more accurate future	CAR19	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		monitoring and reporting		
B.7.2.2. Are responsibilities and institutional arrangements for data collection and archiving clearly provided?	1, 2	Yes. According to the PDD, the annual output from the power plant will be monitored and recorded at the substation. The project operator is responsible for recording this set of data. Electricity sales invoices will also be obtained as an additional check. **Corrective Action Request 20.** Please define the preservation time for data records	CAR20	☑
B.7.2.3. Does the monitoring plan provide current good monitoring practice?	1, 2	Yes.	☑	☑
B.7.2.4. If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?	1, 2	NA	☑	☑
B.8. Date of completion of the application of the baseline study and monitoring methodology an the name of the responsible person(s)/entity(ies)				
B.8.1. Is there any indication of a date when the baseline was determined?	1, 2	Yes, on 23/05/2007	☑	☑
B.8.2. Is this consistent with the time line of the PDD history?	1, 2	Yes	☑	☑
B.8.3. Is the information on the person(s) / entity(ies) responsible for the application of the baseline and monitoring methodology provided consistent with the actual situation?	1, 2	Mr. Zheng Zhaoning and Ms. Pan Tao of Tuttle International Co., Ltd.determined the monitoring methodology.	☑	☑
B.8.4. Is information provided whether this per-	1, 2	Yes. The above mentioned person/entity is not project participant	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
son / entity is also considered a project participant?		listed in Annex 1		
C. Duration of the project activity / crediting period				
C.1. Duration of the project activity				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	1, 2	Yes. The operational lifetime is expected to be 30 years. And the starting date of commissioning is in Nov. 2007 .	☑	☑
C.2. Choice of the crediting period and related information				
C.2.1. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	1, 2	7 years with potential for 2 renewals is chosen as the crediting period.	☑	☑
D. Environmental impacts				
D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts				
D.1.1. Has the analysis of the environmental impacts of the project activity been sufficiently described?	1, 2	Yes, the environmental impacts of the project activity during construction and operation period have been clearly described.	☑	☑
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	1, 2 9	Yes, EIA is a must in P. R. China for new hydro power projects. The EIA of the proposed project was approved by the Hunan Environmental Protection Agency in August 2005 (Document No. Xiang Huan Ping [2005]77). The documents have been reviewed by the DOE.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
D.1.3.	Will the project create any adverse environmental effects?	1, 2 9	There are no significant impacts according to the approved EIA. **Corrective Action Request 21.** Please describe the required standards and other requirements by the host country according to the EIA or the approval of the EIA.	CAR21	☑
D.1.4.	Were transboundary environmental impacts identified in the analysis?	1, 2 9	There is no trans-boundary impact described in EIA report or approval of EIA.	☑	☑
D.2.	**If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party**				
D.2.1.	Have the identified environmental impacts been addressed in the project design sufficiently?	1, 2 9	Refer to the EIA and the approval of EIA, there is no adverse environmental impact from the project activity.	☑	☑
D.2.2.	Does the project comply with environmental legislation in the host country?	1, 2 9	Yes, the project is in conformity with the environmental legislation of P. R. China and the EIA has been approved by authorized organization.	☑	☑
E. Stakeholders' comments					
E.1.	**Brief description how comments by local stakeholders have been invited and compiled**				
E.1.1.	Have relevant stakeholders been consulted?	1, 2	**Corrective Action Request 22.** The support letter for the project described in the PDD was unavailable during the audit. Please deliver to the DOE:	CAR 22	☑
E.1.2.	Have appropriate media been used to invite comments by local stakeholders?	1, 2	A survey was conducted in Jul. of 2006 by Hunan Zhongzhou Hydropower Development Co., Ltd..	☑	☑
E.1.3.	If a stakeholder consultation process is	1, 2	According to EIA regulation the stakeholder consultation should be carried out during EIA. This stakeholder consultation has been	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?		carried out.		
E.1.4.	Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	1, 2	Yes. The process is described in a complete and transparent manner.	☑	☑
E.2. Summary of the comments received					
E.2.1.	Is a summary of the stakeholder comments received provided?	1, 2	Yes, the PDD give a summary of stakeholder comments	☑	☑
E.3. Report on how due account was taken of any comments received					
E.3.1.	Has due account been taken of any stakeholder comments received?	1, 2	**Corrective Action Request 23.** Please describe how due account was taken of the comment, in which one person wishes the occupied land can be compensated as business land.	CAR 23	☑
F. Annexes 1 – 4					
Annex 1: Contact Information					
F.1.1.	Is the information provided consistent with the one given under section A.3?	1, 2	Yes.	☑	☑
F.1.2.	Is the information on all private participants and directly involved Parties presented?	1, 2	The information about Hunan Zhongzhou Hydropower Development Co., Ltd. and Carbon Asset Management Sweden AB are presented.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
Annex 2: Information regarding public funding					
F.1.3.	Is the information provided on the inclusion of public funding (if any) in consistency with the actual situation presented by the project participants?	1, 2	Yes. There is no public funding necessary; all costs are covered by bank loans and private equity.	☑	☑
F.1.4.	If necessary: Is an affirmation available that any such funding from Annex-I-countries does not result in a diversion of ODA?	1, 2	See F.1.3	☑	☑
Annex 3: Baseline information					
F.1.5.	If additional background information on baseline data is provided: Is this information consistent with data presented by other sections of the PDD?	1, 2	Yes	☑	☑
F.1.6.	Is the data provided verifiable? Has sufficient evidence been provided to the validation team?	1, 2	Yes	☑	☑
F.1.7.	Does the additional information substantiate / support statements given in other sections of the PDD?	1, 2	Yes	☑	☑
Annex 4: Monitoring information					
F.1.8.	If additional background information on monitoring is provided: Is this information consistent with data presented in other sections of the PDD?	1, 2	Yes.	☑	☑
F.1.9.	Is the information provided verifiable? Has sufficient evidence been provided to the	1, 2	**Corrective Action Request 24.**	CAR24	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	validation team?		A diagram of the location of the power meters should be included. It should be transparent that for the calculation of the emission reduction only the electricity produced in the project boundary will be used (net electricity).		
F.1.10.	Do the additional information and / or documented procedures substantiate / support statements given in other sections of the PDD?	1, 2	Yes	☑	☑

Industrie Service

Table 2 Resolution of Corrective Action and Clarification Requests

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion
Corrective Action Request 1. : Please provide a revision history of the PDD and indicate the difference between version 01 and version 02 (GSP) of the PDD.	A.1.3.	PDD version 01 has been submitted to the DNA. It has been revised based on DNA's recommendations as version 02 and submitted to DOE for public comments. Based on DOE's CARs, PDD version 03 has been prepared and submitted to the DOE in mid April. In order to reflect all CARs and change the contact info of buyer, PDD version 04 is prepared and submitted to the DOE in mid May.	☑
The project is described transparently and the project activities described have been proven during on-site audit. **Corrective Action Request 2.** Please provide the construction information of the project. E.g. the development party, construction party, the starting date of construction, the date of finishing planning, and the current status of the project. Please provide the data of the power density and the surface area of the reservoir or indicate that this is not necessary due to being a run-of-river plant.	A.2.1.	Construction information of the Project are added in Section A.2. Data of power density and the surface area of the reservoir are provided in Section A.2 and Section A.4.1.	☑

The form is correctly applied. Hunan Zhongzhou Hydropower Development Co., Ltd.and Carbon Asset Management Sweden AB are considered as project participants. **Corrective Action Request 3.** Please describe the participants' roles in the PDD	A.3.1.	Revision has been done to Section A.3 to describe the participants' roles.	☑
The project location could be identified according to the PDD. The project activity is located at Zhongzhou Village, Sangesi Town, Longhui County, Shaoyang City. **Corrective Action Request 4.** Please deliver the geographical data of the project location (power house) in longitude and latitude including minutes and seconds).	A.4.1.1	Geographical data of the project location (power house) in longitude and latitude including minutes and seconds has been added into Section 4.1.4 of PDD.	☑
Corrective Action Request 5. The category is not clearly identified and indicated. Please revise it.	A.4.2.1.	Revision has been done to Section A.4.2 to give clear identification.	☑
Yes, the project design reflects the current good practices to use renewable resources to generate electricity. **Corrective Action Request 6.** Please describe the detailed technical information of the proposed project in this chapter. E.g. including the type of the turbine and the main transformation.	A.4.3.1	Detailed technical information of the Project has been provided in Section A.4.3.	☑
Corrective Action Request 7. Please describe if the technology implemented by the project activity is environmentally safe in this chapter.	A.4.3.4	It is added in Section A.4.3 to make clear that the technology implemented by the Project is environmentally safe.	☑

Corrective Action Request 8. Please specify whether the project needs extensive initial training and maintenance efforts in the PDD	A.4.3.8	Revision has been done to Section A.4.3 to provide details.	☑
Corrective Action Request 9. The time schedule of the implementation of the project should be included into the PDD.	A.4.3.10	The time schedule of the Project has been provided in Section A.2.	☑
Corrective Action Request 10. The crediting period will start after the registration of this project, so the starting date of the crediting period and the estimated emission reductions of the year 2007 in Table 1 and further chapters of the PDD have to be revised.	A.4.4.2	Emission reductions of the year 2007 in Table 1 and further chapters of the PDD have been revised in accordance with the revision of the starting date of crediting period.	☑
Corrective Action Request 11. The emission from power plants of imported electricity has to be included in the project boundary. If there are no imports to the Central China Grid please mention in annex 3.	B.3.6.	Revision has been written into the PDD as “Since there exists no net electricity imports in the Central China Grid, the emission factor(s) of other grid is not considered in the Project.”	☑

The project participants will not claim emission reductions resulting from power generation dating from before the date of registration of the CDM activity, so this question is not applicable. **Corrective Action Request 12.** The description and analysis in the chapter B5 is the same with in the chapter B4. As the baseline is determined in ACM0002 precisely (grid electricity), no further differentiation is necessary in chapter B.4. In chapter B.5. the new additionality tool version 3 should be adapted. As requested in CAR9 the time table should clearly indicate that CDM has been considered before the start of construction. This should be evidenced by documentation.	B.5.	Revision has been done to Section B.4 to simplify the analysis. Time table shows that CDM has been considered before the start of construction is provided in Section A.1. Relevant evidenced has been provided. **DOE´s First Response**: There are no changes in B.4. and the documents quoted in annex 2 show that the starting date of construction was 15/09/2005 but the decision for consideration of CDM was made in 4/3/2006. **Response:** B.4 Has been revised and the evidence has been delivered to the DOE. **DOE´s Second Response**: The document is still missing. The evidence should be available translated in English. **Response:** The new evidences have been delivered to the DOE. The translation of the evidences is available.	

The calculation of financial figures for IRR is done for the project activity without the revenues from the sale of CERs and with the revenues from the sale of CERs. **Corrective Action Request 13.** : Please deliver the IRR calculation in PDF as well as EXCEL format. The calculation has to be uploaded together with the PDD.	B.5.11	IRR calculation in PDF to be uploaded together with the PDD, as well as EXCEL format, is provided to DOE. **DOE´s First Response**: Multiplying the bus bar tariff with the electricity production results in revenues of 16.675 Mio. RMB and an IRR of 10,4%. Moreover, the approved price according to annex 2 and the price used in the calculation is not identical. The IRR Calculation is not clear. **Response:** It has been revised and the IRR has delivered to the DOE **DOE´s First Response**: Yes, but the calculation of the sales revenue is still not clear. Moreover the IRR in the PDD and the IRR of the Excel sheet is not identical **Response:** As according to Approval of the electricity price, issued by Hunan province price bureau, Xiangjiazhong(2005)183, dated on Dec. 26, 2005. the price of the proposal project is 0.316yuan/kwh(including VAT), and the total feed-in electricity is limited as 55.40GWh.per year So the sales revenue is 55.40*(0.316/1.06)=16.52million Yuan. The IRR has been revised.	☑.

The common practice analysis is not sufficient. Please describe in detail how many hydro power plants are installed and why these plants are economically feasible without CDM revenue. What is the difference of the project activity and the existing projects? **Corrective Action Request 14.** The same has to be specified.	B.5.16	Revision has been done to Step 4a to give the criteria applied to identify similar project activities. The differences between the project activity and the existing projects are concentrated in annual operation hour and per unit investment as described in Step 4b. **DOE´s First Response**: What is the reason for comparing only projects built after 2000 and with installed capacity between 15 MW and 30 MW? **Response:** The common practice analysis has been revised.	☑ Due to the change in the Chinese energy regulations in 2001 the justification has been accepted. The limits are justified by the limits of CDM small scale projects (15 MW) and the limit of small hydropower projects in the Chinese legislation (50 MW).
Corrective Action Request 15. The source parameters mentioned in the official published data, such as the NCV, OXID, COEF, GEN, F, λ etc. have to be presented and the reference should be indicated. Finally the calculation should be transparent even if the NDRC calculation is not known to the reviewer.	B.6.2.1.	Detailed information of data used in OM and BM calculation has been added into Section B.6.2.	☑
Corrective Action Request 16. The latest three years data for thermal power supply shall be adopted.	B.6.2.7	Since China Energy Statistical Yearbook with data of year 2005 has not been published during the time of PDD writing, 2002~2004 with public available data are considered as the latest three years.	☑ This can be considered to be conservative as well due to the increasing coal consumption in 2005.
Corrective Action Request 17. The measurement equipments have to be installed to ensure the availability of back-up data in the case of meter failure. If there is no electricity imported from the grid please indicate how the power house and auxiliary equipment are running if there is no electricity production.	B.7.1.1.	Information on backup ammeter has been added into Section B.7.1.	☑

During on-site audit, the detailed monitoring procedures and calibration and measurement plan of the instruments and equipments are unavailable. **Corrective Action Request 18.** The above mentioned documents should be supplied to DOE. The accuracy of the meter should be determined.	B.7.1.2.	Accuracy of the meters has been added into Section B.7.2. Detailed monitoring procedures and calibration and measurement plan please refer to the draft CDM manual.	☑
Corrective Action Request 19. The following procedures have to be described in the PDD or delivered to the DOE. - Training of monitoring personnel - The installment, calibration and maintenance of the monitoring equipment, including equipment detailed information, e.g. general location, type and accuracy classes etc. - Dealing with possible monitoring data adjustments & uncertainties - Troubleshooting allowing redundant reconstruction of data in case of monitoring problems? - Corrective actions in order to provide for more accurate future monitoring and reporting	B.7.2.1.	The draft CDM manual on implementation of monitoring is submitted to DOE which includes the information required.	☑ Verified by the local auditor, Carl Zhou.

Yes. According to the PDD, the annual output from the power plant will be monitored and recorded at the substation. The project operator is responsible for recording this set of data. Electricity sales invoices will also be obtained as an additional check. **Corrective Action Request 20.** Please define the preservation time for data records	B.7.2.2.	Information on the preservation time for data records has been added into Section B.7.2.	☑
Corrective Action Request 21. Please describe the required standards and other requirements by the host country according to the EIA or the approval of the EIA.	D.1.3.	Revision has been done to Section D.1.	☑
Corrective Action Request 22. The support letter for the project described in the PDD is unavailable.	E.1.1.	The support letter for the project described in the PDD is submitted for validation.	☑ Verified by the local auditor, Carl Zhou.
Corrective Action Request 23. Please describe how due account was taken of the comment, in which one person wish the occupied land can be compensated as business land	E.3.	Revision has been done to the PDD with occupation agreement submitted for validation.	☑
Corrective Action Request 24. A diagram of the location of the power meters should be included. It should be transparent that for the calculation of the emission reduction only the electricity produced in the project boundary will be used (net electricity).	F.1.9.	The diagram of the location of the power meters has been added into Annex 4 of PDD.	☑

ANNEX 2: INFORMATION REFERENCE LIST

Reference No.	Document or Type of Information
1.	Project Design Document for CDM project "Zhongzhou 16.5 MW Hydropower Project", version 02, submitted on Feb.1st 2007
2.	Consolidated baseline methodology for grid-connected electricity generation from renewable sources, ACM0002, version 06
3.	Tool for the demonstration and assessment of additionality, version 02
4.	Participant list of on-site interview, signed on March 15, 2007
5.	On-site interviews at the project site in Zhongzhou Village, Sangesi Town, Longhui County, Shaoyang City, Hunan Province, P.R.China, conducted on March 14-15, 2007 by auditing team of TÜV SÜD: Validation team: Mr. Carl Zhou CDM Auditor, TUV SÜD Industries Service GmbH Interviewed persons: Mr. Liu Jinming — Hunan Zhongzhou Hydropower Development Co., Ltd. — Chairman of the board Mr. Liu Qiye — Hunan Zhongzhou Hydropower Development Co., Ltd. — General manager Mr. Wang Yundong — Hunan Zhongzhou Hydropower Development Co., Ltd. — Leader of financial dept. Mr. Li Jianwei — Beijing Yizhi Rehe consultation company — Assistant of general manager Mr. Cao Xin — Beijing Yizhi Rehe consultation company — technical dept.
6.	Approval of Feasibility Study Report for CDM project "Zhongzhou 16.5 MW Hydropower Project", issued by the development and reform committee in Hunan province, Xiangfagaijiaoneng(2005)709, dated on August 30, 2005.
7.	Initial design report for CDM project "Zhongzhou 16.5 MW Hydropower Project", written by the survey and design institute for water conservancy and power in Xiangtan city Hunan province, dated May 2006
8.	Approval of initial design report, issued by the Hunan province water conservancy department, Xiangshuixu(2006)35, dated in May, 2006.
9.	EIA Report for CDM project "Zhongzhou 16.5 MW Hydropower Project", dated in August 2005, written by the environmental protection institute in Shaoyang city Hunan province.
10.	Approval of EIA Report for CDM project "Zhongzhou 16.5 MW Hydropower Project", issued by Environmental Protection Bureau of Hunan province, Xianghuanping(2005)77, dated on August 10 2005.
11.	Decision for implementing CDM project, written by Hunan province Zhongzhou hydropower development Co., Ltd. dated on March 4, 2006.
12.	Economic Evaluation Code for Small Hydropower Projects, P.R.China Industry Standard, standard no. SL16-1995(The financial

Reference No.	Document or Type of Information
	benchmark IRR of total investment is 10%.)
13.	Water Conservation and Hydro Power Engineering Classification and Floodwater Standard, standard no. SL252-2000 (The hydro power with less than 50MW in rural areas of China belongs to the small scale hydropower project.)
14.	Approval of the electricity price, issued by Hunan province price bureau, Xiangjiazhong(2005)183, dated on Dec. 26, 2005. the price of the proposal project is 0.316yuan/kwh
15.	Purchasing contract of generation units with Chongqing city turbines machine factory Co., Ltd. No. 2005Chongxiao07, dated on May 16, 2005.
16.	Local Stakeholder Comments Questionnaire Sample
17.	Evidence of the capital source
18.	The license of the company, issued on Nov. 23, 2005.
19.	The design report of occupied land and immigrant resettlement, dated on Nov. 2006.
20.	Approval of water conservation design, issued by Hunan province water conservancy department, dated on July 19, 2005.
21.	Approval of pre-utilization land, issued by Hunan province land resources department, dated on Sept. 12, 2005.
22.	The evidence of consideration CDM before starting construction project: The directorate decision of Hunan Zhongzhou Hydropower Development Co., Ltd about implementing CDM for Zhongzhou project. Dated on Sept. 15 2005. submitted on July 1, 2007
23.	The support letter for Zhongzhou CDM project by Longhui government, dated on August 8 2005. submitted on July 1 2007
24.	The support letter for Zhongzhou CDM project by Longhui water power bureau, dated on August 10 2005, submitted on July 1 2007.
25.	CDM manual , dated on April 14 2007.
26.	The translation of the evidence of consideration CDM before starting construction project: The directorate decision of Hunan Zhongzhou Hydropower Development Co., Ltd about implementing CDM for Zhongzhou project. Dated on Sept. 15 2005. submitted on July 26, 2007
27.	The translation of economic evaluation according to the PDR, submitted on July 26, 2007.
28.	The final IRR calculation table in the form of excel and pdf. Submitted in June 2007.
29.	the Economic Evaluation Code for Small Hydropower Projects issued by the Ministry of Water Resources in 1995 (Document No. SL16-95)
30.	State Planning Committee, Notice on Standardizing Electricity Tariff Management (No. 701 Jijiage[2001])
31.	China Water Resources Yearbook (2006);
32.	Hunan Hydro & Power Design Institute, Investigation Report on Hydropower Plants with Installed Capacity of over 15MW Constructed since 2002 in Hunan Province.

Reference No.	Document or Type of Information
33.	The Notification on Determining Baseline Emission Factor of China’s Grid
34.	The references of data sources in the PDD