VALIDATION REPORT

28 MW JINKOUBA HYDROPOWER PROJECT

Report No: QT-CDM01-06 – 06/57

Date: 2009- February-02

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Date of first issue: 2008-02-21	Project No.: QT-CDM01-06 – 06/57
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Client: Center for Development and Promotion of Science and Technology of Gansu Province	Client ref.: Mr. LIU Jin

Summary/Opinion:

The Center for Development and Promotion of Science and Technology of Gansu Province has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "*28 MW Jinkouba Hydropower Project*", with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords), and the relevant decisions by COP/MOP and CDM Executive Board.

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

A risk-based approach has been followed to perform this validation. In the course of the draft validation 7 Corrective Action Requests (CARs) and 10 Clarification Requests (CRs) were raised and successfully closed.

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

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (China) and all relevant UNFCCC requirements for CDM. Project activity approvals have been obtained from National CDM Authority i.e. DNA of China in the form of Letter of Approval (LOA) on 07. November 2006. The project is a unilateral project and the participants from the Annex 1 counrty will be identified after the registration.
- The project additionality is sufficiently justified in the final PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 1,086,890 tCO_{2e} is most likely to be achieved within the fixed 10 years crediting period (01/04/2008 - 31/03/2018)

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

Report No.: QT-CDM01-06– 06/57	Subject Group: Environment	
Report title: 28 MW Jinkouba Hydropower Project		
Work carried out by: Rainer Winter Martin Saalmann LI Yong Jun		
Work verified by: Eric Krupp		
Date of this revision: 2009-02-02	Rev. No.: 0	Number of pages: 70

Indexing terms

Climate change

CDM

Validation

Kyoto Protocol

Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CR	Clarification Request
DNA	Designated National Authority
DR	Document Review
DRC	Development and Reform Committee
EB	CDM Executive Board
EIA	Environmental Impact Assessment
GHG	Greenhouse gas(es)
GWh	Giga Watt Hour
LOA	Host Government Approval
I	Interview
IPCC	Intergovernmental Panel on Climate Change
JHPC	Jintai Hydropower Co. Ltd of Wen County in Gansu province
MW	Megawatt
MWh	Megawatt hour
NWPG	Northwest China Power Grid
ODA	Official Development Assistance
PDD	Project Design Document
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change

Table of Contents *Page*

1 INTRODUCTION

The Center for Development and Promotion of Science and Technology of Gansu Province on behalf of the project participant the Jintai Hydropower Co. Ltd of Wen County in Gansu province has commissioned the JI/CDM Certification Program (CP) of TÜV NORD CERT GmbH to validate the project:

"28 MW Jinkouba Hydropower Project"

with regard to the relevant requirements for CDM project activities.

1.1 Objective

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

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

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

1.2 Scope

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan (based on ACM0002, Version 06: "Consolidated monitoring methodology for zero-emissions 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)/MA/,
    - 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

- **Project Additionality**

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

- **Background investigation and follow up interviews**

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

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

1.3 GHG Project Description

1.3.1 Project Scope

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

Table 1-1: Project Scope

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

1.3.2 Project Parties

China as a non Annex-I party is involved in the project activity.

The participant from the Annex-I party will be identified after the registration.

1.3.3 Project Entities

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

Project Proponent:	Jintai Hydropower Co. Ltd of Wen County in Gansu province Chengguan Dongbaxing Village No.187 Wen County, LongNan City Gansu province ZIP - 747000, People's Republic of China.
Contact person:	Mr. Lin Fanyou (Director) +86 939-5527798 linfanyou@163.com
Project Consultant:	Gansu Huike Center for Technology Transferring on Resource and Environment Qingyang Road No. 174, Lanzhou city, Gansu Province, China., People's Republic of China
Contact Person:	Mr. Jin Bowen +86-931-8826221 jinbw@lzb.ac.cn

1.3.4 Project location

The project site is located in Wen County in the southern part of the Gansu Province. The project activity is constructed close to the village Jinkouba at the Baishuijiang River. The detailed project location is indicated in the Table 1-2.

Table 1-2: Project Location

No.	Project Scope
Host Country	China
Region:	Gansu Province
Project location address:	Wen County, Longna City, Gansu Province, P.R.China.
Latitude:	32°50'52"N
Longitude:	104°53'18" E

1.3.5 Technical project description

The proposed project activity is a run-of-river hydroelectric power plant; the installed capacity is 28MW, served by two 14MW turbines. Main construction of the project including: gravity dam, penstock, tunnel, powerhouse, booster station and tail water ditch. The expected average annual generated electricity is 150,960 MWh, of which 127,900 MWh is feed into the Northwest Power Grid (NWPG), which includes the Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang Grid. There is no electricity exchange between the NWPG and other regional grids in China.

As the newly-built run-of-river hydropower project is a renewable energy project, it is intended to reduce CO_{2e} emissions through displacing the electricity generated by fossil fuel based power plants connected to the NWPG.

The estimated amount of emission reductions over the chosen 10-year crediting period is **1,086,890 tCO_{2e}** (acc. to the final PDD on 22. Jan. 2008) during 01/04/2008 to 31/03/2018. The project activity leads to 108,689 tCO_{2e} emission reductions annually.

2 VALIDATION TEAM

The Validation team was led by:

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

For this validation he was assisted by:

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

- **Martin Saalmann**, TÜV NORD CERT GmbH, is an appointed JI/CDM Expert in the JI/CDM Certification Program of TÜV NORD.

The validation report is verified by:

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

3 METHODOLOGY

The validation of the project was carried from September ’06 to January ’08. It was divided into two phases: the pre-validation and the validation phase. The pre-validation consisted of the following three phases:

- A desk review of the PDD/PDD1/ (incl. annexes) and supporting documents with the use of a customised validation protocol/CPM/ according to the Validation and Verification Manual/VVM/;
- Back ground investigation and follow-up interviews with personnel of the project proponent, the consultant, legal authorities and other stakeholders;
- Reporting of validation findings taking into account the public comments received on TUV NORD website.

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

A **Corrective Action Request** is established if

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

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

The final validation started after performance of proposed corrective action (CA) of these CAR and CR by the project proponent. The validators had assessed the proposed CA with a positive result and after the closure of these CAR and CR the project proponent had issued the final version of the PDD/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 validation and the results from pre-validating the identified criteria. The validation protocol serves the following purposes:

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

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

The completed validation protocol is enclosed in Annex to this report identifying 7 Corrective Action Requests and 10 Clarification Requests.

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

Validation Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below). **Clarification** is used when the validation team has identified a need for further clarification.*

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

3.2 Review of Documents

The draft PDD[/PDD1/] and final PDD[/PDD2/] submitted by JHPC in September 2006 and in December 2007 and supporting background documents related to the project design and baseline were reviewed.

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

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

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

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

3.3 Follow-up Interviews

On 7th November 2006, the TÜV NORD JI/CDM CP performed the on-site interviews with the project proponent, project developer, plant operating personnel and local villagers to confirm selected information and to resolve issues identified in the document review.

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

Table 3-1 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives	- Chronological description of Project with documents of key steps - Technical details of the project realisation- project feasibility, designing, engineering, operational life time - Host Government Approval - Likely involvement of Annex-I Party - Approval procedures and status - Quality and environmental management system - Monitoring and measurement equipment - Financial aspects- Government Incentives for Hydel based projects - Crediting period and its starting date - Project activity starting date.

Interviewed Persons / Entities	Interview topics
	- Power Purchase Agreement - Sustainable development issues - Hydro geological survey - Analysis of local stake holder consultation process - Roles & responsibilities of the staff members w.r.t project management, monitoring and reporting - Technical specification data: capacity of turbines, power evacuation and transmission, expected PLF, energy generation - QC testing and calibration procedures and facility
Consultant (Gansu Huike Center for Technology Transferring on Resource and Environment)	- Editorial aspects of PDD/PDD1/ - Methodology selection aspects - Base line study, project emissions, leakage and additionality - Details of emission reduction calculation
Local Villager	- Stakeholder consultation - Environmental issues like water availibility - Socio-economic issues / benefits because of project

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

3.4 Resolution of Clarification and Corrective Action Requests

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

In this validation report 7 CARs and 10 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 web site www.global-warming.de. Comments on the PDD/PDD1/ were invited within 30 days, i.e. 2006-09-08 to 2006-10-08.

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 raised and outstanding concerns, TÜV NORD JI/CDM CP issues this final validation report and opinion.

In the course of this validation the most recent version of the CDM-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) - Project boundaries - Participation requirements - Technology to be employed - Contribution to sustainable development	-	1
Project baseline (B) - Baseline Methodology - Baseline scenario determination - Additionality determination - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Emission reductions - Monitoring Methodology - Monitoring of Project emissions Baseline emissions Leakage Sustainable development indicators / environmental impacts - Project management planning	6	7
Duration of the Project / Crediting Period (C)	1	1
Environmental impacts (D)	-	-
Stakeholder Comments (E)	-	1
SUM	**7**	**10**

[1)] The letters in brackets refer to the validation protocol

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

4.1 Participation Requirements

China as a non Annex I party meets all relevant participation requirements. The Letter of Approval[/LOA/] dt. 07/11/2006, was issued by the China DNA, National development and reform committee.

No Annex-I party was identified by the project participant however the same will be identified in due time, as per the post registration involvement by Annex I party provisions (no. 57) made in 18th EB meeting.

4.2 Project design

The project activity is a newly built run-of-river hydroelectric power plant and intends to reduce CO_2 emissions through displacing the electricity generated by fossil fuel based power plants connected to the NWPG. There is no electricity exchange from the other regional grids in China to NWPG.

The employed technology e.g. turbines and generators are available in China. The project activity does not involve any transfer of technology. The technology being used is environmentally safe and sound.

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

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

The geographical scope (Wen County, Longnan City, Gansu Province, P.R.China) and the renewable crediting period (01/04/2008-31/03/2018), as well as the operational lifetime (30 years) are clearly defined.

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

4.3 Baseline and Additionality

The selected baseline methodology is the approved baseline methodology "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ACM0002 Ver.06).

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

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

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

The calculation method of the OM and BM is derived from the guide of OM and BM calculation issued by Chinese DNA in Aug. 2007.

$EF_{OM,y}$ calculation: Due to the fact that low-cost must run resources constitute less than 50% of the total grid generation and that data to apply for dispatch data analysis OM is not available, the simple OM emission factor ($EF_{OM,y}$) calculation method is chosen; the OM factor is calculated as generation-weighted average emissions per electricity unit (tCO_2/MWh) of all generating sources serving the system (not including the low-cost and must run power plants), of three years average data (2003-2005). The $EF_{OM,y}$ is calculated to be 1.1257 tCO_{2e}/MWh.

***$EF_{BM,y}$* calculation:** Due to the data unavailability at the power plant level in China, the calculation of the build margin was conducted according to the deviation approaches for $EF_{BM,y}$ calculation in the 22nd CDM EB meeting:

1) The capacity addition from the years 2002-2005 is chosen and exceeds 20% (24.59%) of the total installed capacity.
2) According to the data in "Chinese Energy Statistical Yearbook 2006" the weighted averages of the newly added coal based capacity, newly added gas based capacity and newly added oil based capacity are used to calculate $EF_{BM,y}$.
3) The coal emission factor 25.8 tC/TJ, gas emission factor 15.3 tC/TJ and oil emission factor 21.1 tC/TJ as well as the IPCC 2006 default value of carbon oxidization factor 100 % are used for the BM calculation.
4) The BM is calculated as 0.5739 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 0.8498 tCO2e/MWh.

The calculation of EF_y is currently and publicly available and published by the Chinese DNA (national development and reform committee) on its web-site/dna/. The validation team is convinced of the result of the emission coefficient calculation. It is deemed to be adequate and transparent.

Project emission and leakage: The proposed project is a run-of-river hydropower station. According to baseline methodology ACM0002 project emissions and leakage can be ignored.

The net generated electricity is estimated to be 127,900 MWh annually.

Altogether the project activity reduces emissions of 108,689 tCO_{2e}/yr.

Nevertheless, CAR B6, CR B5 – CTR B6 had to be raised and were successfully closed (ref Annex: Validation Protocol - Table 3).

Additionality

In accordance with ACM0002, the additionality was demonstrated acc. to the valid version (ver 3) of the "Tool for demonstration and assessment of additionality".

The arguments 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	Possible alternatives for the project activity are: 1. The project activity not undertaken as a CDM project; 2. Construction of a fossil fuel-fired power plant with equivalent annual electricity; 3. Equivalent annual electricity supplied by NWPG (continuation of current practice).	The alternative 3 could be justified as a realistic and credible alternative to the PP. The other alternatives given in the step 1a cannot be considered as realistic alternatives as: Alternative 1 faces several barriers as given in steps 2 and 3. The alternative 2 is not in compliance with Chinese laws. So only alternative 3 remains as a plausible and credible alternative for the PP.	☒ step passed ☐ step not passed ☐ not applicable
1b	The alternatives 1&3 mentioned above are in compliance with the applicable legal and regulatory requirements.	Alternatives 1, 3 are in line with the national regulations.	
2a	Option III: bench mark analysis is selected for the investment analysis.	In accordance with the Additionality Tool, the option III is selected and the options I to II were not applied.	
2b	IRR of 8%, defined in "Economical Assessment and Parameters for Construction Project, 3rd edition", China Planning Press, 2006, issued by Chinese Ministry of Construction and National Development and Reform Committee, has been identified as a financial indicator for bench mark analysis. The document is the valid since 03. July 2006.	The identification of financial indicator as benchmark is OK.	☒ step passed ☐ step not passed ☐ not applicable (step 2 or 3 has to be passed)
2c	The project IRR (without CDM revenue) is 7.1% which is less than bench mark return 8%	Project IRR is one of the accepted financial indicators for establishing additionality. PP has calculated IRR for the project activity on after-tax basis and compared the same with after-tax IRR defined in Economical Assessment and Parameters for Construction Project, 3rd edition, which is the benchmark. Based on the above analysis, PP	

Step[1)]	Argument PP	Assessment of the validation team	
		has established that IRR is less than the benchmark and hence the project is additional. The argument is convincing as the provided IRR calculation was checked by the validation team.	
2d	Sensitivity Analysis by varying ± 10 % of three critical parameters (annual output, total investment and annual O&M cost) confirms that the proposed project activity is unlikely to be finically attractive.	The IRR calculation was reproduced by the validation team. The parameters used for the IRR calculation were evaluated to be credible and were proved by documented evidence. The sensitivity analysis shows that if the investment will be decreased by 7.7 % and the annual output will increase by 8.3 % the benchmark of 8 % will be reached. However the validation team comes to the conclusion that this will unlikely to be happen, since the investment was increased compared to the feasibility study, which is the basis for the financial evaluation, and long term hydrological assessments show that an increase of output up to 8.3 % are unlikely.	
3a	**Technological and Geological-Construction Barriers:** According to the geology report provided by the project construction supervisor (3rd party), uncertainties in geology and lack of skilled labors and engineering equipments for tunnel digging, leads to postponement and cost increase.	☐ Argument not justified ☐ Argument not convincing ☒ Argument justified but not decisive ☐ Argument justified / significant	

Step[1)]	Argument PP	Assessment of the validation team	
	Other Barriers: Finance barrier: Due to the increased cost of transmission line construction and the project engineering change (change from the reservoir plant to run-of river plant), the project faced barriers to overcome the increased investment comparing with the finance evaluation in project feasibility study. To be conservative, the increased investment was not included in the IRR calculation.	☐ Argument not justified ☐ Argument not convincing ☒ Argument justified but not decisive ☐ Argument justified / significant	☐ step passed ☐ step not passed ☒ not applicable (step 2 or 3 has to be passed)
3b	The above mentioned barriers however do not prevent alternative 3 (Equivalent annual electricity supplied by grid (NWPG)). Alternative 3 is the most likely baseline scenario.	It can be assessed that the barriers would not prevent alternative 3 as given in step 1. As alternative 3 is the perpetuation of the status quo, the given barriers do not prevent this alternative.	
		Due to the fact that step 2 of the additionality test was already passed, step 3 must not be applied. However the project participant decided to conduct an assessment with step 3. The arguments were assessed as not significant.	

Step[1)]	Argument PP	Assessment of the validation team	
4 a, b	The officially published statistics information on websites of *Gansu Daily*, *China Power bid, and China hydraulics and hydro power equipment* were used for the common practice analysis, 7 hydropower plants with capacity 25-250 MW operated after 2000 in province Gansu were identified for the analysis. The analysis shows that the identified projects were developed by the state companies and had attractive financial indicator (the highest unit cost was 8571 RMB/kW). This is less than the unit kW investment of proposed project (8855 RMB/kW).	☐ Argument not justified ☐ Argument not convincing ☐ Argument justified but not decisive ☒ Argument justified / significant The limit of the common practice analysis to projects commissioned after 2000 is chosen due to the consideration of reformation of electric power sector in China in 2002 [1]. After 2002, the private capital was allowed to invest in hydropower development. As the proposed project was developed by the private entity, the projects commissioned after 2002 can be considered as with the similar regulatory framework, investment climate, access to technology, access to financing investment and comparable with the proposed project. And the limit of commissioned after 2000 is determined as conservative consideration. The limit of the common practice analysis to the capacity range of 25-250 MW is determined according to the classification of hydropower project in China. As the capacity of proposed project (28MW) belongs to the defined mid-scale (25-250MW) scope, the chosen limit is reasonable to identify and analyze similar projects with the similar scale considering the host county industry policy. The statistics presented clearly indicates that the proposed project is not a common practice in this region (Gansu province) at the time of PDD preparation and submission. The information sources were verified by validation team and evaluated to be credible.	☒ step passed ☐ step not passed ☐ not applicable

[1] State Council, Notice on Electric Power System Reform Scheme (No. 5 Guofa [2002])

Step[1)]	Argument PP	Assessment of the validation team
Assessment of the validation team		☒ **project is additional** ☐ **project is not additional**

1) acc. to Additionality Tool

The additionality of the project has been demonstrated by the "Investment Analysis" and "Barrier Analysis" approaches. The benchmark analysis along with sensitivity analysis confirms that the project activity (w/o CDM benefits) is unlikely to be financially attractive. Various project implementation associated risks like technological/ geological, finance investment are elaborated with arguments. The risks associated with finance barrier are assessed as significant barrier.

The official statistics presented under steps 4a) and 4b) of the PDD clearly indicates that carrying out a project similar to the proposed project as a private entity is not a common practice at the time of the PDD preparation.

The validation team arrived at the opinion that the project activity can be assessed to be additional and is not a BAU case.

Nevertheless, CAR B1-B6, CR B1-B4 had to be raised and were successfully closed (ref Annex: Validation Protocol – Table 3).

Evidence of Management Decision

The project engineering modification was optimized in Mar. 2005. The increased investment made the proposed project financially unattractive. In April 2005 the PP had decided to implement the project as CDM activity/CDMD/. Considering the potential profit from CDM the project was started in Nov. 2005/PCP/.

The analysis of the evidences indicated that the proposed project was decided for implementation with serious consideration of CDM benefits. The related evidences were checked and confirmed by the validation team.

Time gap between the FSR and investment decision:

The FSR is finalized by the authorized third party the "*Institute of Reconnaissance and Design of Sinohydro Engineering Bureau No.7".* The institute was qualified by the national ministry of construction for hydropower project design and construction. Also the project FSR has been approved by local development and reform committee on 03.Oct. 2004, in consultation with sectoral experts. The input values indicated in FSR were assessed as appropriate by the government.

The time period between the finalization of the project feasibility study (FSR) and the start of the project was checked by the validation team. As time period from FSR to project starting date is 1 year i. e. from Oct. 2004 to Nov. 2005.

The validation team has concluded that material changes during this time period are not likely thus the input estimations in FSR are still valid at the time of project start.

Assessment on key parameters:

Annual Power generation

Total investment:
TÜV NORD had verified the "Audit report on financial report forms of Jinkouba hydropower project in 2007" which was made by authorizied 3rd party (Shaanxi Xinda Certified Public Accountants Ltd. dated on17th April 2008) and contracts for key equipment purchasing and construction (See attachment 1 of PPs Comments), the actual investment of the project reached at 245.117215 million RMB by the end of 2007, which is more than the estimated investment cost (235.196 million RMB) calculated in financial analysis of PDD.
Hence, the applied value for the investment costs in the PDD can be considered as conservative at the time of the investment decision

Tariff
As justified, in the region (Gansu province) the tariff from the year 1996 to 2004 was fixed to be 0.16 RMB/kWh (including 6% VAT[2]), and increased to 0.18 RMB/kWh (including 6% VAT) and 0,227 RMB/kWh (including 17% VAT) in year 2005 and year 2008. The average annual increase rate of the tariff after VAT for the hydropower project below 50MW is calculated as 2.37% during the past twelve years (1996-2008).

The actual tariff (0.227 RMB/kWh including 17% VAT) for the project is approved by the local government in Aug.2007. The tariff without VAT is calculated to be 0.1940 RMB/kWh, which is still lower than the tariff 0.22 RMB/kMh with 6%VAT (without VAT 0.2075 RMB/kWh) which applied in the IRR calculation in PDD. Hence, the input value for the tariff also can be considered as conservative at the time of the investment decision.

O&M costs
The O&M calculations are in compliance with the requirements defined in the Economic Evaluation Code for Small Hydropower Projects issued by Chinese Ministry of Water Conservation and the Economical Assessment and Parameters for Construction Project issued by Chinese Ministry of Construction and National Development and Reform Committee, the input value of O&M costs is calculated out about 2.15% comparing with the average value of O&M in 1 - 4 %.[3] The O&M costs can be considered as also appropriate and realistic.

In conclusion, based on specific local and sectoral expertise after careful and detailed assessment of these parameters/assumptions used in the PDD, the validation team was convinced and come to the opinion that the input values from the FSR were valid and applicable at the time of the investment decision. The requirements of EB 38 paragraph 54(c) guidance are fully met.

[2] Please kindly note, the VAT was calculated neutrally in the IRR.
[3] Cp. Renewable Energy – Technology, Economics and Environment, page 376, 2007

4.4 Crediting Period

The intended crediting period of the project is fixed from 01/04/2008 to 31/03/2018. The starting date of the crediting period is 01/04/2008 or a date not earlier than the date of registration in accordance with § 12 of CDM modalities and procedures.

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

4.5 Monitoring Plan

The project applies the monitoring methodology ACM0002 for grid-connected electricity generation from renewable sources.

This methodology stipulates that monitoring shall consist of metering the net electricity supplied by the project activity to the grid (EG_y). This parameter is derived from the electricity which is exported to the grid (EG_{EX}) and the electricity imported from the grid (EG_{IM}). The difference between EG_{EX} and EG_{IM} is the net electricity supplied to the grid (EG_y).

The OM and BM are calculated as fixed factors for the crediting period by choosing data vintages based on ex-ante data published by Chinese DNA in Aug. 2007.

The procedure for calibration, accuracy and maintenance of monitoring equipment are clearly mentioned as per QA/QC procedure of PDD/PDD2/.

Nevertheless, CR B7 had to be raised and was successfully closed (ref Annex: Validation Protocol – Table 3).

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 newly built hydroelectric project.

There are no GHG emissions arising from the project. As per the methodology ACM0002, project participants do not need to consider the emission sources of leakage in applying this methodology. Therefore no emissions related to leakage have been considered.

The calculations of the baseline emission and emission reduction are documented in section B.6.3. and in Annexure 3 of PDD. For assessment please refer to section 4.3 of this report.

Acc. to the final PDD the project is expected to reduce emissions of **1,086,890 tCO_{2e}** in the fixed crediting period (10 years).

4.7 Environmental Impacts

Environmental impacts of the project activity 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

Stakeholders (including local residents, government officials and migrants) have been directly asked to comment on the project through the questionnaire in April 2005 /SHCQ/.

A summary of the comments received and a note on how these concerns are addressed are included in the PDD.

Nevertheless, CR E1 had to be raised and was successfully closed (ref Annex: Validation Protocol – Table 3).

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[/PDD1/] on its website www.global-warming.de on 2006-09-08 and invited comments within 30 days, until to 2006-10-08 from parties, stakeholders and UNFCCC accredited non-governmental organisations. No comment was received.

6 VALIDATION OPINION

The Center for Development and Promotion of Science and Technology of Gansu Province has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "*28 MW Jinkouba Hydropower Project*", with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords), and the relevant decisions by COP/MOP and CDM Executive Board.

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

A risk-based approach has been followed to perform this validation. In the course of the draft validation 7 Corrective Action Requests (CARs) and 10 Clarification Requests (CRs) were raised and successfully closed.

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

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (China) and all relevant UNFCCC requirements for CDM. Project activity approvals have been obtained from National CDM Authority i.e. DNA of China in the form of Letter of Approval (LOA) on 07. November 2006. The project is a unilateral project and the participants from the Annex 1 counrty will be identified after the registration.
- The project additionality is sufficiently justified in the final PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 1,086,890 t CO_{2e} is most likely to be achieved within the fixed 10 years crediting period (01/04/2008 - 31/03/2018)

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

Essen, 2009-02-02

Rainer Winter

TÜV NORD JI/CDM Certification Program

7 REFERENCES

Table 7-1: Documents provided by the project proponent

Reference	Document
/AEIA/	Assessment report of EIA No. 2004-69, on 24. Nov. 2004
/AFSS/	Assessment report of feasibility study No. 2004-799, on 03.Oct. 2004
/AWSR/	Assessment report of water and soil maintenance report No. 2005-27, on 15. April 2005
/CDMD/	CDM Decision on 08. April 2005
/CERE/	Certificate of employees
/EIA/	Environment impact assessment in Nov. 2004
/FIA/	Preliminary design report for electricity grid input system in Dec. 2004
/FSS/	Feasibility study in Oct. 2004
/LOA/	Letter of approval by DNA (date: 2006-11-07)
/LOC/	Land occupation contract
/PAL/	Project approval by local government
/PCP/	Project Construction Permission (dt. 23/11/2005, issued by the project construction monitor)
/PDD1/	Draft PDD: 28 MW Jinkouba Hydropower Project, China (date 2006-08-10)
/PDD2/	Final PDD: 28 MW Jinkouba Hydropower Project, China (date 2008-12-23)
/PHT/	Photographs of progress of construction activity at the project site
/PPA/	Electricity purchasing price letter of Gansu province
/SHCQ/	CDM stakeholder survey
/SLO/	Site layout
/TD/	Technical description provided in the feasibility study Page 1-27

Reference	Document
/WSR/	Water and soil maintenance report in Mar. 2005

Table7-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 06: 19 May 2006)
/BGC/	Baseline Guidelines from Chinese DNA
/CAB/	Loan Policy of the China Agricultural Bank
/CES/	China Energy Statistics Yearbook
/CEY/	China Electric Power Yearbook 2005
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/EPB/	Environment protection bureau of Gansu province
/GCP/	UNFCCC: Guidelines for completing CDM-PDD and CDM-NM (Version 06)
/HL/	CDM Highlights from GTZ Germany
/IPCC-GP/	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
/IPPC-RM/	Revised 1996 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)
/NREL/	Chinese National Renewable Energy laws
/TA/	Tool for the demonstration and assessment of additionality (Ver. 3).
/VVM/	IETA, PCF Validation and Verification Manual (V. 4)
/XCS/	Supporting Excel calculation sheets baseline & emission reduction

Table 7-3: Websites used

Reference	Link	Organisation
/dna/	http://cdm.ccchina.gov.cn/english/index.asp	National Development and Reform Commission (DNA of China)
/gsep/	www.gsep.gansu.gov.cn	Environment protection bureau Gansu province
/hvdc/	http://hvdc.chinapower.com.cn	National power monitoring commission
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/shc/	www.cqvip.com	Strehthening the Study on the Hydropower Project Cost to ensure the Essence Safety of Construction Project
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Jiang	Jintai Hydropower Co. Ltd / Vice GM
/IM02/	V	☒ Mr. ☐ Ms.	Dr. Jin Bowen	CDM office of Gansu Province / CDM Specialist
/IM03/	V	☒ Mr. ☐ Ms.	Ren Shang Xian	Resident of Jinkouba village / Stakeholder

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

ANNEX

Validation Protocol

ANNEX : VALIDATION PROTOCOL

Table 1: Mandatory Requirements for (CDM) Project Activities

Requirement	Reference	Conclusion
Parties		
The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2.	OK (unilateral project)
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK, the declaration is available in LOA.
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	OK (unilateral project)
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	OK, the LOA (including confirmation of sustainable development) from the Chinese DNA is available
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	No public funding involved
Parties participating in the CDM shall designate a national authority for the	CDM Modalities and Procedures §29	OK, China has appointed

Requirement	Reference	Conclusion
CDM.		a DNA.
The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK, China is a Party to the Kyoto Protocol and has ratified the Protocol on 30 August 2002. An Annex I Party will be identified in due time.
The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	Not applicable (unilateral project)
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	Not applicable (unilateral project)
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 B2-B6~~ OK
Forecast emission reductions and environmental impacts		

Requirement	Reference	Conclusion
The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	~~CAR B9~~ OK
Environmental impacts (only for large scale projects)		
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, the EIA is submitted and approved by provincial environment protection bureau on 24. Nov. 2004
Stakeholder involvement		
Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	~~CR E1~~ OK
Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK, The PDD was made available for public commenting on www.global-warming.de from 08 Sep. to 09 Oct. 2006, no comment has been

Requirement	Reference	Conclusion
		received.
Other		
The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK, Approved methodology ACM0002 Ver.06 is used.
A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	~~CAR B1, B7, B8~~ 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 PDD used is the recent version 03 (28. July 2006)
Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK
Requirements for small-scale projects only		
The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords and shall not be a debundled component of a larger project activity.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	Not applicable
The proposed project activity shall confirm to one of the project categories	Simplified Modalities and Procedures	Not applicable

Requirement	Reference	Conclusion
defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	for Small Scale CDM Project Activities §22e	
If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	Not applicable

Table 2: Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?	/PDD/	DR	The project activity is located at the Baishuijiang River in Wen County of Gansu Province, China. The project site is 28 km away from Wen City. Please provide the values for longitude and latitude under section A.4.1.4 for the project activity and if possible the full address.	~~CR A1~~	OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/PDD/ /BGC/	DR, I	The system boundaries of the project are clearly defined. All operations, activities, physical sites and facilities involved in net displacement of grid electricity are included	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			in the project boundary. The spatial extent of the project boundary includes the project site and all power plants connected physically to the electricity system, the Northwest Power Grid of China.		
A.2. Participation Requirements *Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.*					
A.2.1. Which Parties and project participants are participating in the project?	/PDD/ /LOA/	DR I	The project is a unilateral project. The project party and participant are: P. R. China (host party) and Jintai hydropower Co., Ltd (private entity)	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/ /LOA/	DR, I	The Chinese DNA issued the approval letter on 07. Nov. 2006 and the Jintai hydropower Co., Ltd is authorized as China's sole participant.	OK	
A.2.3. Do all participating Parties fulfil the participation requirements as follows: – Ratification of the Kyoto Protocol – Voluntary participation – Designated a National Authority	/PDD/ /LOA/	DR	China ratified the Kyoto Protocol on 30. Aug. 2002. The DNA in China is the National Development and Reform Commission. In the LOA the voluntary participation is confirmed.	OK	
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/PDD/ /IM01/	I	No public funding is involved.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.3. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.3.1. Does the project design engineering reflect current good practices?	/PDD/ (A.4.3.) /TD/ /IM01/	DR, I	Yes, the hydropower project intends to incorporate the latest/state-of-the-art technologies. E.g. turbine No. ZZ507-LH-320, (refer to Chinese national standard) rated water head 22 m, rated capacity 14.58 MW, designed operation lifetime 30 years. Feasibility study on appropriateness of the employed technology and hydro geological study has been undertaken before project design stage. The project design reflects current good practice.	OK	
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/PDD/ (A.4.3.) /IM01/ /FSS/	DR I	The project uses the state of the art technology.	OK	
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/PDD/ (B.7.2.) /IM01/	DR, I	Yes, training and maintenance needs are provided by the project participation.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.4. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/LOA/	DR	Yes, the Chinese DNA confirmed that the project contributes to sustainable development in China	OK	
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/PDD/ /FSS/ /IM03/	DR I	Yes, the proposed project will push the local and regional economy through providing electricity, giving job opportunities and invest in infrastructure measures like building bridges and a road. Taxes will further increase the income of the local community. Furthermore the project activity leads to pollution reduction through the substitution of coal-fired power plant within Gansu Province.	OK	
Small scale project activity *Is it assessed whether the project qualifies as small-scale CDM project activity*					
A.4.3. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?			Not applicable		
A.4.4. Is the small scale project activity not a debundled component of a larger project activity?			Not applicable		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.5. General Topics					
A.5.1. Has the PDD been duly filled?	/PDD/	DR	Yes. The PDD is duly filled.	OK	
A.5.2. Has all necessary information been made available to the validator?	/PDD/	DR	Please refer to CAR B2, B3 and B5.	~~CAR B2, B3 and B5~~	OK
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/PDD/ (B.1., B.4.) /ACM0002/	DR	Yes, the project applies baseline methodology ACM0002 Version 06: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources."	OK	
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/PDD/ (B.2.) /ACM0002/	DR	Yes, the justification is as following: 1. The proposed project is run-of-river hydro power project and the power density is greater than 4 W/m². 2. The geographic and system	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			boundaries of the project can be clearly identified. 3. The proposed project activity is a grid-connected renewable electricity generation facility. 4. It does not involve switching from fossil fuels to renewable energy at the site of the project activity. Thus all applicability criteria are fulfilled.		
B.2. Baseline Scenario Determination *The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.*					
B.2.1. What is the baseline scenario?	/PDD/ (B.4.)	DR	The baseline scenario involves all power plants which are connected to the Northwest Region Power Grid (NWPG) of China.	OK	
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/PDD/ (B.4.) /ACM0002/ /TA/	DR	3 alternatives were considered: 1) To develop the proposed hydropower project but not as a CDM project activity. 2) To develop other plausible and credible alternatives with comparable quality, properties and area, e. g. to construct a coal-fired power plant. 3) Equivalent capacity or electricity		OK

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				service provided by the NWPG. The alternative 2 under step 1 of the assessment and demonstration of additionality is questionable since the company would not invest in coal and wind for example, because they are specified in hydropower. Please refer to footnote 3 in the Additionality Tool (Ver.3). Furthermore a coal fired power plant would not comply with the China legal requirement (Capacity less than 135 MW coal-fired power plant is prohibited).	~~CAR B1~~	
B.2.3.	Has the baseline scenario been determined according to the methodology?	/PDD/ (B.4.) /ACM0002/	DR	Yes, the baseline scenario is determined according to Methodology ACM0002 (Ver.6)	OK	
B.2.4.	Has the baseline scenario been determined using conservative assumptions where possible?	/PDD/ (B.4.) /ACM0002/	DR	Yes, conservative baseline assumptions were chosen.	OK	
B.2.5.	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/PDD/ (B.4.) /ACM0002/	DR	Yes, all relevant policies, trends and aspirations were taken into account.	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/ /BGC/	DR	Yes, the data in the PDD is derived from China Electricity Power Yearbook and China Energy Statistic Yearbook in year 2006 which are the latest sources to	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/CES/ /CEY/		determine the baseline.		
B.2.7. Have the major risks to the baseline been identified?	/PDD/ (B.4.) /ACM0002/	DR	No major risk to the baseline is identified.	OK	
B.3. Additionality Determination *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*					
B.3.1. Is the project additionality assessed according to the methodology?	/PDD/ (B.5.), /IM01/ /TA/ /ACM0002/ /FIA/ /FSS/ /LOC/ /PAL/ /PPA/	DR	The project additionality is demonstrated by applying the "Tool for the demonstration and assessment of additionality (Ver.03)" as stipulated in the applied methodology. ***Step 1 identification of the alternatives to the project activity consistent with the current laws and regulations.*** The identified alternatives included: 1) To develop the proposed project without CDM activity. 2) To develop other plausible and credible alternatives with comparable quality, properties and applicable area. (e.g. fuel-fired power plant or commercial wind power project). 3) To provide equivalent capacity or electricity from the NWPG.		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The realistic and credible alternative is scenario 3). ***Step 2 Investment analysis*** The investment calculation is not transparent; it is not possible to reconstruct the IRR calculation as pointed out in the guidelines. In addition, please explain and specify why the expenses increase, due to the optimizing of the preliminary design. Further more the adopted public document for the project Economical Assessment and Parameters for Construction Project, 2nd edition China Planning Press 1993 was invalid after 03/07/2006. Revision is necessary. ***Step3 barrier analysis*** Please submitted evidence to prove the "additional investment" Please submit detailed evidence to verify the argument regarding "lack of professionals and experiences", "lack of technical guidance and reference of the turbine and generator" and "uncertainties in geology" under "Technological Barriers".	~~CAR B2~~ ~~CAR B3~~ ~~CR B1~~	

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				The tariff under "Barriers due to prevailing practice" needs clarification. If the lower tariff is prevailing practice, why was the higher tariff assumed in the "Preliminary Engineering Design"? ***Step 4 common practice analysis*** The power plants applying for CDM should be excluded. Please provide sufficient evidence to verify that the statement "high investment over unit kW" The content of the last passage under sub-step 4b is not clear. Revision for clarification is necessary.	~~CR B2~~ ~~CAR B4~~ ~~CR B3~~ ~~CR B4~~	
B.3.2.	Are all assumptions stated in a transparent and conservative manner?	/PDD/ (B.5.)	DR	Please refer to B.3.1.	~~CAR B1-B4 CR B1-B4~~	OK
B.3.3.	Is sufficient evidence provided to support the relevance of the arguments made?	/PDD/ (B.5.)	DR	Please refer to B.3.1.	~~CAR B1-B4 CR B1-B4~~	OK
B.3.4.	If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive	/PDD/ (B.5.) /CDMD/	DR	The starting date of the project activity is before the date of the validation. Sufficient evidence was not provided to show that		OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
from the CDM was seriously considered in the decision to proceed with the project activity?			CDM benefits were considered before project starting date. Thus the following CAR was raised: More information on CDM Management decision requested.	~~CAR B5~~	
B.4. Calculation of GHG Emission Reductions – Project emissions *It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.) /FSS/ /ACM0002/	DR	The proposed project is run-of-river project. Thus project emission are not considered.	OK	
B.4.2. Have conservative assumptions been used when calculating the project emissions	/PDD/ (B.6.) /FSS/ /ACM0002/	DR	N/A		
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/PDD/ (B.6.) /FSS/ /ACM0002/	DR	N/A		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.5. Calculation of GHG Emission Reductions – Baseline emissions *It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.) /ACM0002/ /BGC/ /CES/ /CEY/ /IPCC-RM/ /XCS/	DR	The baseline emissions are calculated as the net electricity supplied to the North West Regional Grid of China times the relevant emission factor. The emission factor is calculated as a combined margin in accordance with the methodology ACM0002. The operating margin (OM) and build margin (BM) are weighted as ω_{OM} (50%) and ω_{BM} (50%). The chosen data for the calculation is the most recent available while submission of PDD. Data that is calculated with equations provided in the methodology should not be included in B.6.2. of the PDD. So the OM and BM values must be described and calculated in section B.6.1. If data provided by the Chinese DNA is used, the related sections in the Annex of	~~CR B5~~ ~~CAR B6~~	OK

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				the PDD should be used for publishing to ensure that the process is as transparent as possible. Please refer to the guidelines and do necessary corrections. Please detail the description of the baseline scenario under section B.4. of the PDD. Especially the first passage under B.4. should be revised since the baseline scenario is not clearly described.	~~CR B6~~	
B.5.2.	Have conservative assumptions been used when calculating the baseline emissions	/PDD/ (B.6.) /ACM0002/ /BGC/ /CES/ /CEY/ /IPCC-RM/ /XCS/	DR	Coal emission factor 25.8 tC/TJ, gas emission factor 15.3 tC/TJ and oil emission factor 21.1 tC/TJ as well as the IPCC 2006 default value of carbon oxidisation factor 100% are used to calculate the CO_2 coefficient and were assessed as conservative. For the BM calculation the fuel consumption efficiency of 343.33 g standard coal equivalents (SCEs) was used.	OK	
B.5.3.	Are uncertainties in the baseline emission estimates properly addressed?	/PDD/ (B.6.) /ACM0002/ /BGC/ /CES/ /CEY/ /IPCC-RM/	DR	The project use the method which is published and approved by Chinese DNA to calculate the CM.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/XCS/				
B.6. Calculation of GHG Emission Reductions – Leakage *It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.6.) /ACM0002/ /FSS/	DR	Leakage emissions are not to be considered for run-of-river project according to ACM0002.	N/A	
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?	/PDD/ (B.6.) /ACM0002/ /FSS/	DR	N/A		
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/PDD/ (B.6.) /ACM0002/ /FSS/	DR	N/A		
B.7. Emission Reductions *The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.*					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/PDD/ (B.6.)	DR	The purpose of the project activity is to displace electricity produced by fossil fuels with electricity of a hydro power plant. The expected annual emission reductions are 108,689 tCO_2.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.8. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/PDD/ (B.7.) /ACM0002/	DR	The determination of the grid emission factor as a combined margin is only once ex-ante. Therefore it is fixed over the crediting period. According to the methodology the monitoring requires to measure the electricity supplied to the grid. The PP includes in the monitoring the measurement of electricity exports and imports to calculate the net electricity which is the basis for deriving emission reductions.	OK	
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/PDD/ (B.7.)	DR	Yes, it is stated that the data will be kept two years after the last issuance of the CERs.	OK	
B.9. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting	/PDD/ (B.7.)	DR	Since no project emissions occur, this section is not applicable.	N/A	

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	period?					
B.9.2.	Are the choices of project GHG indicators reasonable and conservative?	/PDD/ (B.7.)	DR	Not applicable	N/A	
B.9.3.	Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	/PDD/ (B.7.)	DR	Not applicable	N/A	
B.9.4.	Is the measurement equipment described and deemed appropriate?	/PDD/ (B.7.)	DR	Not applicable	N/A	
B.9.5.	Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/PDD/ (B.7.)	DR	Not applicable	N/A	
B.9.6.	Is the measurement interval identified and deemed appropriate?	/PDD/ (B.7.)	DR	Not applicable	N/A	
B.9.7.	Is the registration, monitoring, measurement and reporting procedure defined?	/PDD/ (B.7.) /IM01/	DR I	Not applicable	N/A	
B.9.8.	Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/PDD/ (B.7.)	DR	Not applicable	N/A	
B.9.9.	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/PDD/ (B.7.)	DR	Not applicable	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.10. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/PDD/ (B.7.) /ACM0002/	DR	The amount of electricity supplied to the NWPG will be monitored by meters and checked via invoice of electricity sold.		
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/PDD/ (B.7.) /ACM0002/	DR	Yes, the choice of the baseline indicators is in line with the methodology ACM0002.	OK	
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/PDD/ (B.7.) /ACM0002/	DR	Yes, the electricity delivered to the NWPG will be monitored and measured directly via the ammeter.	OK	
B.10.4. Is the measurement equipment described and deemed appropriate?	/PDD/ (B.7.) /ACM0002/	DR	Yes.	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.) /ACM0002/	DR	Yes, the amount of electricity supplied to the NWPG will be monitored by the ammeters and checked via the invoice of electricity sold. But more information on the procedures of control erroneous measurement could be submitted.	~~CR B7~~	OK
B.10.6. Is the measurement interval for baseline data identified and deemed appropriate?	/PDD/ (B.7.) /ACM0002/	DR	Yes, the electricity supplied to the NWPG will be measured continuously.	OK	
B.10.7. Is the registration, monitoring, measurement and reporting procedure	/PDD/ (B.7.)	DR	No, more information on the registration, monitoring, measurement and reporting	~~CR B7~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
defined?	/ACM0002/		procedure could be submitted.		
B.10.8. Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/PDD/ (B.7.) /ACM0002/	DR	The calibration intervals of the ammeter were defined according to the national regulation i.e. annually. More information on the maintenance of monitoring equipment and installations procedure could be submitted.	~~CR 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.) /ACM0002/	DR	More information on day-to-day records handling procedure could be submitted.	~~CR B7~~	OK
B.11. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/PDD/ (B.7.)	DR	N/A	N/A	
B.11.2. Are the choices of project leakage indicators reasonable and conservative?	/PDD/ (B.7.)	DR	N/A	N/A	
B.11.3. Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/PDD/ (B.7.)	DR	N/A	N/A	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/PDD/ (B.7.) /EIA/	DR	The monitoring of the sustainable development indicators is not required by the Chinese DNA. The environmental impacts will be monitored by the local environmental authority.	OK	
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/PDD/ (B.7.) /EIA/	DR	The environment impacts will be monitored by the local environmental authority. Thus the PP is not responsible for monitoring and relevant parameters are not included in the monitoring plan.	OK	
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/PDD/ (B.7.) /LOA/	DR	Yes, the letter of approval was issued to the project participant on 7th November 2006.	OK	
B.13. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/PDD/ (B.7.)	DR	Yes, project will be implemented by Jintai Hydropower Co. Ltd. Responsibility of project management is briefly described in the PDD.	OK	
B.13.2. Are procedures identified for training of	/PDD/	DR	The procedure for training of monitoring	~~CR~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
monitoring personnel?	(B.7.)		personnel was not identified.	~~B7~~	
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/PDD/ (B.7.)	DR	The procedures for emergency preparedness for cases where emergencies can cause unintended emissions were not identified.	~~CR B7~~	OK
B.13.4. Are procedures identified for review of reported results/data?	/PDD/ (B.7.)	DR	The procedure for review of reported results/data was not identified.	~~CR 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	The procedure for corrective actions in order to provide for more accurate future monitoring and reporting was not identified.	~~CR B7~~	OK
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/PDD/ (C.1.)	DR	The project's construction permission should be submitted to evidence the starting date. The projects operational lifetime is 30 years.	~~CR C1~~	OK
C.2. Is the start of the crediting period clearly defined and reasonable?	/PDD/ (C.2.)	DR	The start of the crediting period should be revised.	~~CAR C1~~	OK
D. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.1.	Has an analysis of the environmental impacts of the project activity been sufficiently described?	/PDD/ (D.1.) /EIA/	DR	Yes, the analysis of the environmental impacts of the project activity was sufficiently described according to EIA.	OK	
D.2.	Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/PDD/ (D.1.) /EIA/ /AEIA/	DR I	Yes, an EIA was required by Chinese DNA. The EIA was approved by province environment authority on 24.11.2004.	OK	
D.3.	Will the project create any adverse environmental effects?	/PDD/ (D.1.) /EIA/	DR	The project is a run-of-river hydro project. It is deemed that the project will not create any significant adverse effects.	OK	
D.4.	Are transboundary environmental impacts considered in the analysis?	/PDD/ (D.1.) /EIA/	DR	According to the EIA, there are no transboundary environmental impacts created by the project activity.	OK	
D.5.	Have identified environmental impacts been addressed in the project design?	/PDD/ (D.2.) /EIA/	DR	Yes, identified environmental impacts have been addressed in the project design.	OK	
D.6.	Does the project comply with environmental legislation in the host country?	/PDD/ (D.1.) /EIA/ /AEIA/	DR	Yes, the project complies with environmental legislation in host country (China).	OK	
For Small-scale projects						

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.7.	Does host country legislation require an analysis of the environmental impacts of the project activity?			N/A		
D.8.	Does the project comply with environmental legislation in the host country?			N/A		
D.9.	Will the project create any adverse environmental effects?			N/A		
D.10.	Have environmental impacts been identified and addressed in the PDD?			N/A		
E. Stakeholder Comments *The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*						
E.1.	Have relevant stakeholders been consulted?	/PDD/ (E.1.) /SHCQ/	DR	Please provide further documentation which proofs the application of a sufficient stakeholder commenting process	~~CR E1~~	OK
E.2.	Have appropriate media been used to invite comments by local stakeholders?	/PDD/ (E.1.) /SHCQ/	DR	Please provide further documentation which proofs the application of a sufficient stakeholder commenting process	~~CR E1~~	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?			Stakeholder consultation process is not required by regulations/laws in host country (China).	N/A	
E.4.	Is a summary of the stakeholder comments	/PDD/	DR	Please provide further documentation	~~CR E1~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
received provided?	(E.2.) /SHCQ/		which proofs the application of a sufficient stakeholder commenting process		
E.5. Has due account been taken of any stakeholder comments received?	/PDD/ (E.3.)		Please provide further documentation which proofs the application of a sufficient stakeholder commenting process	~~CR E1~~	OK

Table 3: Resolution of Corrective Action and Clarification Requests

Draft report clarification requests and corrective action requests by validation team	Ref. To checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR B1 The alternative 2 under step 1 of the assessment and demonstration of additionality is questionable since the company would not invest in coal and wind for example, because they are specified in hydropower. Please refer to footnote 3 in the Additionality Tool (Ver.3). Furthermore a coal fired power plant would not comply with the China legal requirement (Capacity less than 135 MW coal-fired power plant is prohibited).	B.2.2	The description of the alternative 2 was modified. And the local legal requirements of the fossil fuel dominated power plants were considered.	The correction made in the revised PDD is adequate.
CAR B2 The investment calculation is not transparent; it is not possible to reconstruct the IRR calculation as pointed out in the guidelines. In addition, please explain and specify why the expenses increase, due to the optimizing of the preliminary design. Further more the adopted public document for the project Economical Assessment and parameters for Construction Project, 2nd edition China Planning Press 1993 was invalid after 03/07/2006. Revision is necessary.	B.3.1	The IRR calculation in excel document was submitted to DOE. The documents for benchmark were changed and the Economical Assessment and parameters for Construction Project, 3rd edition (published on 03.July.2007) was used.	The correction made in the revised PDD is adequate.
CAR B3 Please submitt evidence to prove the “additional investment”	B.3.1	The proof of “additional investment” on electricity transmission line was submitted. The PDD was revised accordingly.	The correction made in the revised PDD is adequate. And the submitted documents were checked and evaluated credible.
CAR B4 The power plants applying for CDM common practice	B.3.1	The projects applying for CDM were excluded in the revised PDD	The correction made in the revised PDD is

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
analysis should be excluded.			adequate.
CAR B5 More information on CDM Management decision requested.	B.3.4	The information on CDM management decision was submitted.	The submitted documents were checked and evaluated credible.
CAR B6 The OM and BM values must be described and calculated in section B.6.1. If data provided by the Chinese DNA is used the related sections in the Annex of the PDD should be used for publishing to ensure that the process is as transparent as possible. Please refer to the guidelines and do necessary corrections.	B.5.1	The calculation of OM and BM were revised it in the most recent PDD according to the guidance from Chinese DNA.	The correction made in the revised PDD is adequate.
CAR C1 The start of the crediting period should be revised. The date must be after the date of registration.	C.2.	The starting date of the crediting period was revised in the PDD.	The chosen starting date 01/04/2008 or the date after the registration is reasonable.
CR A1 Please provide the values for longitude and latitude under section A.4.1.4 for the project activity. And if possible the full address.	A.1.1.	The exactly longitude and latitude in the revised PDD.	The correction made in the revised PDD is adequate.
CR B1 Please submit detailed evidence to verify the argument regarding “lack of professionals and experiences” , “lack of technical guidance and reference of the turbine and generator ” under “Technological Barriers”	B.3.1.	Wen County which the project activity located in is China western underdeveloped area. Wen County had been recognized as one of State Key Poverty Alleviation Counties (SKPAC) by the Chinese government as early	The justification is convincing.

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
		as in 1986, then it had been affirmed and reaffirmed as one of 592 SKPAC for the second and third time in 1994 and 2002 respectively. Therefore we have the argument regarding "lack of professionals and experiences", "lack of technical guidance and reference of the turbine and generator".	
CR B2 The tariff under "Barriers due to prevailing practice" needs clarification. If the lower tariff is prevailing practice, why was the higher tariff assumed in the "Preliminary Engineering Design"?	B.3.1.	In the "Feasibility study" the experts foresee only when the tariff more than 0.227 RMB Yuan/kwh (excluding taxes), the IRR of the project can reach the benchmark of 8%. But according prevailing practice, the tariff applied to the project not more than 0.220 RMB Yuan/kwh (including taxes), therefore without CDM support the proposed project is the economically or financially less attractive.	The submitted documented evidence for electricity tariff (0.220 RMB) issued by Gansu price bureau was checked by the validation team and evaluated to be credible.
CR B3 Please provide sufficient evidence to verify that the statement "high investment over unit kW"	B.3.1.	According to the research results by senior engineer Wang Minhao, the averaged investment over unit kW in China from 2001 to 2005 amount to 7992 RMB. (it was submitted with the final PDD) but the investment of the project over	The research result was publicly available on the website www.cqvip.com. Article No. 0559-9342(2007)03-0005-04/shc/ and widely

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
		unit kW amount to 8,855 RMB Yuan.	adopted in hydropower project evaluations in China. The justification is convincing.
CR B4 The content of the last passage under sub-step 4b is not clear. Revision for clarification is necessary.	B.3.1.	The description was revised in the final PDD.	The correction made in the revised PDD is adequate.
CR B5 Data that is calculated with equations provided in the methodology should not be included in B.6.2. of the PDD (i.e. the OM, BM).	B.5.1.	The data were excluded in the table B.6.2. in revised PDD.	The correction made in the revised PDD is adequate.
CR B6 Please detail the description of the baseline scenario under section B.4. of the PDD. Especially the first passage under B.4. should be revised since the baseline scenario is not clearly described.	B.5.1.	The description of the baseline was revised in the final PDD.	The correction made in the revised PDD is adequate.
CR B7 1) More information on the procedures of control erroneous measurement could be submitted. 2) More information on the registration, monitoring, measurement and reporting procedure could be submitted. 3) More information on the maintenance of monitoring equipment and installations procedure could be submitted. 4) The procedure for training of monitoring personnel was not identified. 5) The procedure for emergency preparedness for cases where emergencies can cause unintended		The procedures were submitted with the revised PDD..	The submitted documents were checked by the validation team. The corrective action is adequate.

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
emissions was not identified. 6) The procedure for review of reported results/data was not identified. 7) The procedure for corrective actions in order to provide for more accurate future monitoring and reporting was not identified.			
CR C1 The project's construction permission should be submitted to evidence the starting date.	C.1.	The project construction permission was submitted.	The submitted permission was issued by the local authority. It was evaluated to be convincing.
CR E1 Please provide further documentation which proofs the application of a sufficient stakeholder commenting process.	E.1	The questionnaires of the stakeholder consulting were submitted to the validation team.	The submitted questionnaires were checked by the validation team. The corrective action is adequate.

Validation Table for Assessment of Financial Parameters

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
Net electricity supplied to Grid	127,900	MWh	Project Feasibility Study Report/1-19 /	/FSS/	☒	☒	The value is calculated based on the statistic information of average water resource availability in past 30 years and project technical/equipment information. As indicated in the FSR, the annual operation time of project is estimated to be 5230 hours. And the annual electricity supplied is estimated as 127, 900MWh. The FSR was finalized in Oct. 2004, the decision for CDM activity was made in April 2005 and the project construction is started in Nov. 2005. As the value is derived from the 30 years water resource statistic, the value is assessed to be credible and valid during the CDM consideration.
Static total investment	235.196	Million RMB	Project Feasibility Study Report/12-2/	/FSS/	☒	☒	The unit cost of the proposed project is 8855 RMB/KW, which is higher than the average unit cost 7127 RMB/KW of hydropower project in China in 2000-2005 as indicated in the <Review and Prediction of Small Hydropower project's investment> http://www.askci.com/freereports/2008-04/200842104856.html , the proposed project isn't the most financial attractive project. Also considering the increase of material/equipment price in China, the value is valid and conservative.
Electricity tariff (VAT Incl.)	0.22	RMB/kWh	Electricity tariff document issued by local price bureau	/PPA/	☒	☒	The tariff is derived from local Electricity tariff document from Price Bureau in Gansu Province (No. as [2005]-312) in 2005. Comparing with average electricity tariff 0.18 RMB/KWh, issued by the local government in Nov. 2004, the applied tariff in IRR is conservative and

							reasonable. **Justification on the possibility of tariff increase during the project lifetime.** It is well-known that the tariff is strictly regulated and controlled by relevant authorities in China, also as per the national financial assessment regulation "*Economical Assessment and Parameters for Construction Project, 3rd edition"*, the fixed tariff should be used for project financial analysis and will be justified in the sensitivity analysis. As demonstrated in sensitivity analysis, the IRR will be kept below the benchmark rate (8%) in case the tariff increased 10% and even in case of increasing 20% in the future, using a fixed tariff in the whole investment period. After checking and verifying the evidences submitted, the validation team concluded that, the calculations are conducted correctly and the justification based on the tariff variation (+/-10% and 20%) is in compliance with the guidance for sensitivity analysis per EB 41 report annex 45 for investment analysis. However, as requested by EB for assessment on the tariff change in future, based on the available tariff information in Gansu Province in the past 12 years (1996-2008), which was issued by local government agency who is responsible for pricing policy, an estimated annual increased tariff rate (2.37%) was used for tariff forecasting in the project lifetime, it shows that the tariff without VAT would reach at 0.383 RMB/kWh in the 30th calculated year, which is almost twice as current tariff, but the calculated IRR (7.8%) also can not reach benchmark rate. Please refer to the table 1 for tariff changes in project

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<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>lifetime.
<table><tr><td>Year</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>Tariff</td><td>0.194</td><td>0.199</td><td>0.203</td><td>0.208</td><td>0.213</td></tr><tr><td>Year</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>Tariff</td><td>0.218</td><td>0.223</td><td>0.229</td><td>0.234</td><td>0.240</td></tr><tr><td>Year</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr><tr><td>Tariff</td><td>0.245</td><td>0.251</td><td>0.257</td><td>0.263</td><td>0.269</td></tr><tr><td>Year</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>Tariff</td><td>0.276</td><td>0.282</td><td>0.289</td><td>0.296</td><td>0.303</td></tr><tr><td>Year</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr><tr><td>Tariff</td><td>0.310</td><td>0.317</td><td>0.325</td><td>0.332</td><td>0.340</td></tr><tr><td>Year</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>Tariff</td><td>0.348</td><td>0.357</td><td>0.365</td><td>0.374</td><td>0.383</td></tr><tr><td>Year</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr><tr><td>Tariff</td><td>0.310</td><td>0.317</td><td>0.325</td><td>0.332</td><td>0.340</td></tr><tr><td>Year</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>Tariff</td><td>0.348</td><td>0.357</td><td>0.365</td><td>0.374</td><td>0.383</td></tr></table>Average tariff: 0.278</td></tr>
<tr><td>Annual O&M costs</td><td>5.054</td><td>Millon RMB</td><td>Project Feasibility Study Report/12-3/</td><td>/FSS/</td><td></td><td></td><td>The O&M consists of payroll (including employee welfare), repair and insurance cost, other expenses, material cost and maintenance fund.

The payroll is 1.0152 million RMB /yr, calculated as the number of employee (60) multiplied by the average annual salary (16,920 RMB/person). The values are from PSS page 12-3.
The average annual salary 16,920 RMB/Employer is lower than 17,986 RBM/person, average annual salary</td></tr>
</table>

							of in-position employee in Gansu Province in 2004 (http://www.gansudaily.com.cn/20051016/201/2005A16A00462006.htm). The repair and insurance is calculated as 1.25% of fixed asset investment, the values are from FSS page 12-3(cost and benefit) Other expenses are 0.672 million RMB/yr, calculated as the installed capacity multiplied by rate of other expenses 24 RMB/KW. The rate 24 RMB/KW is from FSS page 12-3. The material is 140,000 RMB/yr, calculated as capacity multiplied by rate of material cost 5RMB/kW. The rate 5 RMB/KW is from FSS page 12-3. The maintenance cost is 127,900 RMB/yr, calculated as power supplied multiplied by rate of maintenance cost 0.001 RMB/kWh. The rate 0.001 RMB/KWh is from FSS page 12-3. The above calculations are in compliance with the requirements defined in the Economical Assessment and Parameters for Construction Project, 3rd edition", China Planning Press, 2006, issued by Chinese Ministry of Construction and National Development and Reform Committee In conclusion the O&M costs are in average less than 2% of total investment, the this can be considered as conservative.
Value added tax (VAT)	6	%	Project Feasibility Study Report/12-4/	/FSS/	☒	☒	The value is derived from the document No.[1994]004, issued by the National Financial Ministry and National

							Revenue Ministry, which was also confirmed in document [1998]843 and [2006]47 issued by National Revenue Ministry. Comparing with VAT (17%) in year 2004 and 2005, the applied value is conservative.
City maintenance & construction tax	3	%	Project Feasibility Study Report/12-4/	/FSS/	☒	☒	Surtax for city construction is 5% of VAT, which is in compliance with national policy.
Surtax for education expenses	5	%	Project Feasibility Study Report/12-4/	/FSS/	☒	☒	Surtax for city construction is 5% of VAT, which is in compliance with national policy.
Income tax	33	%	Project Feasibility Study Report/12-4/	/FSS/	☒	☒	The value is derived from Corporate Income tax Temporary Terms of People's Republic of China published on 23/12/1993 which is valid until year 2007. (http://www.lawtime.cn/zhishi/sszsglf/xiangguanfagui/20070426/63781.html). According to the encouraging policy for development of the small hydro power project which was published by national government, the income tax was 100% exempted in the first 2 operational years and 50% exempted in the subsequent 3 operational years.
Depreciation rate	4	%	Project Feasibility Study Report/12-4/	/FSS/	☒	☒	The depreciation rate is calculated as integrated depreciation rate, and the value is derived from PSS page 12-4
Installed capacity	28	MW	Project Feasibility Study Report/1-19/	/FSS/	☒	☒	The capacity is approved by local authority/AFSS/.
Project Lifetime	33	year	Project Feasibility Study Report/12-2/	/FSS/	☒	☒	The value is from FSS. It s also in compliance with Economical Assessment and Parameters for Construction Project, 3rd edition. and comparing with requirements of EB 39 Report Annex 35, the applied value is conservative.

CERTIFICATES

TÜV NORD

CERTIFICATE OF APPOINTMENT

Mr. Dipl-Ing. Rainer Winter

born on 1963-02-21

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

TÜV NORD JI/CDM Senior Assessor

The present appointment will terminate on 2010-07-05

Certification registration No. 04 02 154-03

Essen, 2007-07-06

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

TÜV NORD

CERTIFICATE OF APPOINTMENT

Mr. Dipl.-Ing. Eric Krupp

born on 1971-06-25

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

TÜV NORD JI/CDM Senior Assessor

The present appointment will terminate on 2010-07-05

Certification registration No. 06 05 01 - 017

Essen, 2007-07-06

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

TÜV NORD

CERTIFICATE OF APPOINTMENT

Mr. 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

TÜV NORD

CERTIFICATE OF APPOINTMENT

Mr. Martin Saalmann

born on 1976-02-23

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

TÜV NORD JI/CDM Expert

The present appointment will terminate on 2009-06-14

Certification registration No. 06 06 15 - 22

Essen, 2006-06-15

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