



VALIDATION REPORT

Sichuan Yanyuan Yongning River Hydropower Station in China

REPORT No. 2007-9089

REVISION No. 02



VALIDATION REPORT

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Approved by: Mari Grooss Viddal, Manager Approval Centre	Organisational unit: Climate Change Services
Client: ENEL Trade S.p.A	Client ref.: Mr. Lee Soon Sheng

DET NORSKE VERITAS
CERTIFICATION AS
Veritasveien 1,
1322 HØVIK, Norway
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11
http://www.dnv.com
Org. No: NO 945 748 931 MVA

Project Name: Sichuan Yanyuan Yongning River Hydropower Station
Country: China
Methodology: ACM 0002
Version: 6
GHG reducing Measure/Technology: Renewable power generation from hydro sources.
ER estimate: 176 224 tCO₂e over the seven year crediting period.

Size

- ☒ Large Scale
☐ Small Scale

Validation Phases:

- ☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Validation Status

- ☐ Corrective Actions Requested
☐ Clarifications Requested
☒ Full Approval and submission for registration
☐ Rejected

In summary, it is DNV's opinion that the "Sichuan Yanyuan Yongning River Hydropower Station" in China, as described in the PDD of 14 May 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002, version 6. DNV thus requests the registration of the project as a CDM project activity.

Report No.: 2007-9089	Date of this revision: 13 August 2008	Rev. No. 02
Report title: Sichuan Yanyuan Yongning River Hydropower Station Project in China		
Work carried out by: Murali Govindarajulu, Elfride Covarrubias, Sharmistha Shome (applicant), Yang Yi, Michael Lehmann		
Work verified by: Kumaraswamy Chandrashekara		

Key words:

Climate Change
 Kyoto Protocol
 Validation
 Clean Development Mechanism

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
HSD	High Sulphur Deisel
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
CCPG	Central China Power Grid



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1 EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the “Sichuan Yanyuan Yongning River Hydropower Station” project in China, on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

The project participants are Yanyuan Yongning River Hydro-electric Development Co., Ltd (as the project owner) and ENEL Trade S.p.A (as the CER buyer). The host Party, China and the Annex I Party, Netherlands meets all participation requirements. The DNA of China and DNA of Netherlands have approved the project. The DNA of China has confirmed that the project assists in achieving sustainable development and has accorded the approval for the project on 13 December 2006.

The validation has confirmed that the project is a grid connected renewable energy project and correctly applies ACM0002, version 6. The determination of the baseline is well elaborated, transparent and sufficiently supported with facts. The selected baseline scenario is reasonable for the selected 7 year crediting period..

The validation did not reveal any information indicating that the project can be seen as a diversion of ODA funding towards China.

The project results in the reduction of GHG emissions those are real, measurable and give long-term benefits and that are additional to what would have occurred in the absence of the project. The total emission reductions from the project are estimated to be on the average 176 224 tCO₂e per year over the selected 7 year crediting period. The emission reduction forecast has been checked and is deemed likely that the state amount is achieved given that the underlying assumptions do not change. Adequate training and monitoring procedures have been implemented.

The monitoring plan makes sufficient provision for monitoring relevant project and baseline emission indicators. Responsibilities and authorities for project management, monitoring and reporting and QA/QC procedures have also been addressed.

A local stakeholder consultation process has been carried out by the project participant. DNV published the PDD and comments by Parties, stakeholders and UNFCCC accredited NGOs were invited through the CDM web site.

In summary, it is DNV’s opinion that the project, as described in the project design document of 14 May 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the approved consolidated baseline and monitoring methodology ACM0002, version 6. Hence, DNV requests the registration of the “Sichuan Yanyuan Yongning River Hydropower Station” project as a CDM project activity.



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2 INTRODUCTION

ENEL Trade S.p.A has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the *Sichuan Yanyuan Yongning River Hydropower Station Project* (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

2.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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



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3 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

This validation report summarizes the findings after phase I, II and III of the validation.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ CDM PDD of: “*Sichuan Yanyuan Yongning River Hydropower Station*” version 3 dated 14 May 2008 and its previous versions
- /2/ DNA of China: Letter of Approval dated 13 December 2006
- /3/ DNA of Netherlands: Letter of Approval dated 27 March 2008
- /4/ International Emission Trading Association (IETA) & the World Bank’s Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /5/ ACM0002, version 6: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”
- /6/ CDM EB, answer to DNV’s request for deviation of Chinese project activities from AM0005, received on 1st December 2005.
<http://cdm.unfccc.int/Projects/Deviations/index.html>
- /7/ China Energy Statistical Yearbook 2000-2002, 2004, and 2005
- /8/ China Electric Power Yearbook 2004, 2005 and 2006
- /9/ 2006 IPCC Guidelines for National Greenhouse Gas Inventories
- /10/ Bank Credit Policy Direction, 2005
- /11/ China NDRC: China's Regional Grid Baseline Emission Factors, for BM Calculation (<http://cdm.ccchina.gov.cn/website/cdm/upfile/file1374.pdf>)
- /12/ China NDRC: China's Regional Grid Baseline Emission Factors, for OM Calculation (<http://cdm.ccchina.gov.cn/website/cdm/upfile/file1358.pdf>)
- /13/ Letter of Approval of Environmental Impact Assessment issued by Liangshan Yi Minority Autonomous Prefecture dated 23 October 2004
- /14/ Detail Financial analysis.xls
- /15/ Second Feasibility Study Report Approval, 07-12-2004, from Development and Reform Commission of Liangshan Yi Prefecture.
- /16/ Approval letter of Construction Start-up, dated 26 February 2004 issued by Sichuan Xichang Electricity Co., Ltd; and the approval for the restart of the project dated 20



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- July 2005 issued by the Yanyuan County People's Government.
- /17/ Application of Yanyuan Yongning River Third level Hydropower station as a CDM project prepared by the project owner to the Government of Changbo Town of Yanyuan county– dated 08-07-2005
 - /18/ Approval to the Application of Yanyuan Yongning River Hydropower station issued by the Government of Changbo Town of Yanyuan county– dated 12-07-2005
 - /19/ Economic Evaluation Code for Small Hydropower Projects (SL16-95), published by the Ministry of Water Resources of the People's Republic of China
 - /20/ Almanac of China's Water Power (2005)
 - /21/ Monitoring Plan
 - /22/ Loan agreement letter for Yongning hydropower station dated 01.06.2006
 - /23/ Yanyuan Yongning River Hydro-electric Development Co., Ltd., Agreement of the Board for applying for CDM for Sichuan Yongning River Hydropower Station, dated 6 July 2005
 - /24/ Yanyuan Yongning River Hydro-electric Development Co., Ltd., Agreement of the Board for stopping construction of the Sichuan Yongning River Hydropower Station, dated 17 August 2004
 - /25/ *CDM EB: Tool for the Demonstration and Assessment of Additionality (version 4)*
 - /26/ Source - <http://www.ches.org.cn/jishubiaozhun/001.asp> - Chinese Hydraulic Engineering Society (CHES) confirming the benchmark
 - /27/ Supplementary Financial Evaluation of the Feasibility study report by Survey and Design Institute of Water Resources and Electric Power of Liangshan Prefecture, dated February 2005
 - /28/ Power invoice addressing the grid price for the Yongning River Hydropower Station – 30 November 2007
 - /29/ National Bureau of Statistics - <http://www.cefs.ac.cn/express/reports/final/2007%C4%EA%CF%C2%B0%EB%C4%EA%CE%EF%BC%DB%D4%A4%B2%E2%B1%A8%B8%E6.pdf> - source confirming the average price fluctuations.
 - /30/ Power connection agreement stipulating the conditions of agreement – 14 August 2006.
 - /31/ General Office of the State Council – The circular on strictly forbidden the thermal power plant construction with installed capacity is 13.5 ten thousand kW and less, dated 15/04/2002.
 - /32/ Memorandum of understanding between the consultant company with Enel (MOU): April 20, 2005
 - /33/ Formal commission contract between the project owner and the consultant: August 18, 2005
 - /34/ ERPA dated 10 August 2006
 - /35/ DNV proposal for validation of the project to ENEL, dated 22 March 2007
 - /36/ DNV Contract signed with ENEL for validation of the project activity, dated 5 April 2007



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- /38/ First feasibility study report prepared in June 2003, by Survey and Design Institute of Water Resources and Electric Power of Liangshan Prefecture, prior to the construction of the project.
- /39/ Capital Verification Report published by chartered specialist on 5 July 2005.
- /40/ Agreement of Yanyuan Yongning River Hydropower Station to cooperate with the Sichuan Xichang Electricity Co. Ltd. for the restart the project – 13 May 2005.
- /41/ for Distribution of Wind Resources in China -

http://www.creia.net/cms/_code/chinese/industry/detail_info.php?column_id=67&item_id=247

for Availability and Distribution of Solar resources on the Sichuan Province

http://www.creia.net/cms/_code/chinese/industry/detail_info.php?column_id=68&item_id=113

for Geothermal

http://www.creia.net/cms_eng/_code/english/industry/detail_info.php?column_id=72&item_id=181

Information on the availability cost of Biomass technology in China - The world's new energy network

http://www.86ne.com/Biomass/200712/Biomass_103227.html

3.2 Follow-up Interviews with Project Stakeholders

DNV performed interviews with project stakeholders on 25, 26 and 27 April 2008 to confirm selected information and to resolve issues identified in the document review. Representatives of the project owner, Yanyuan Yongning River Hydro-electric Development Co., Ltd. were interviewed. The main topics of the interviews are summarised in Table 1.

	Date	Name	Organization	Topic
1.	25, 26 & 27 April 2007	Liu Rongju, Chen Changyuan, Chenjing	ENEL Trade S.p.A	<ul style="list-style-type: none"> ➤ Project Technology and additionality ➤ Estimated emission reductions. ➤ Calculation of CEF. ➤ Technology applied and operational lifetime. ➤ Monitoring and reporting procedures. ➤ Calibration, internal audit and corrective action procedures. ➤ Provisions for training, operation and maintenance. ➤ Environmental compliance
2.	25, 26 & 27 April 2007	Tracy Yuan,	Beijing Tianqing Power	<ul style="list-style-type: none"> ➤ Estimated emission reductions. ➤ Monitoring and reporting



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		Kathy Liu	International CDM Consulting Co., Ltd.	procedures. ➤ Environmental compliance ➤ PDD information ➤ IRR calculations
3	25, 26 & 27 April 2007	Carlo Ferrara	Enel Trade, S.p.A.	➤ Estimated emission reductions. ➤ Environmental compliance ➤ PDD information

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency, a validation protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of two tables. The different columns in these tables are described in the figure below. The completed validation protocol for the *Sichuan Yanyuan Yongning River Hydropower Station* is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- mistakes have been made with a direct influence on project results;
- CDM and/or methodology specific requirements have not been met; or
- there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

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Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities				
Requirement	Reference	Conclusion		
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), a Corrective Action Request (CAR) of risk or non-compliance with stated requirements or a request for Clarification (CL) where further clarifications are needed.</i>		

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>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.</i>	<i>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.</i>	<i>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). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

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
<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

Figure 1 Validation protocol tables



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3.4 Internal Quality Control

The draft validation report, including the initial validation findings, underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3.5 Validation Team

Role/Qualification	Last Name	First Name	Country
Project Manager / CDM Validator	Covarrubias	Elfride	DNV, Italy.
GHG Validator	Govindrajulu	Murali	DNV, India
GHG Auditor (Applicant)	Shome	Sharmistha	DNV, India
GHG Auditor	Yi	Yang	DNV, China
CDM Validator / Sector expert	Lehmann	Michael	DNV, Oslo
Technical reviewer	Chandrashekara	Kumaraswamy	DNV, India

The qualification of each individual validation team member is detailed in Appendix B to this report.



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4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation of 14 May 2008.

4.1 Participation Requirements

The host Party, China and the participating Annex-I Party, Netherlands fulfill the requirements for participating in the CDM project activity. China has ratified the Kyoto Protocol on 30 August 2002 and established The National Development and Reform Commission as its DNA. Netherlands has ratified the Kyoto Protocol on 31 May 2002 and established as its Designated National Authority – The Ministry of Housing, Spatial Planning and the Environment (VROM). The project participants are Yanyuan Yongning River Hydro-electric Development Co., Ltd. from China (as the project owner) and ENEL Trade SpA, authorized from the Netherlands.

The DNA of China has issued a Letter of Approval (LoA) /2/ on 13 December 2006, authorizing Yanyuan Yongning River Hydro-electric Development Co., Ltd. as a project participant and confirming that the project assists in achieving sustainable development. The DNA of the Netherlands, Ministry of Housing, Spatial Planning and the Environment (VROM) has approved the project on 27 March 2008 confirming their voluntary participation and the authorization of ENEL Trade SpA as project participant/3/.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.

4.2 Project Design

The objective of the proposed project is to produce electricity through a run-of-river hydropower station located in the lower reach of Yongning River, which is in Changbai Village Yuanyuan County in the southwest of Liangshan Yi Minority Autonomous Prefecture.

The total installed capacity of the power station is 50 MW with expected average annual working hours equal to 4 633 and a net electricity supply to the grid of about 201 390 MWh. The power generated by the proposed project will be transmitted to the Xichang grid, thus easing the demand for power supply in the Xichang district, and also substitute equivalent generation from the fossil fuel fired thermal plants of the central China grid. Power is generated by a combination of two turbines with an installed capacity of 25 MW each. No technology transfer is envisaged in the project activity as these are available indigenously. Power density of the project plant has been established to be 1 923 W/m² as per the surface area given in the FSR. As the project will produce electricity with zero carbon emissions, the project activity promotes use of renewable energy and also enables contribution to the



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sustainable development initiatives in China. The information stated above have been checked and verified by DNV against the Feasibility Study Report /15/.

The starting date of the project is 18 July 2005 which is the date of the permit to re-commencement of the project construction /16/. This was following the approval by the Government of Changbo Town of Yanyuan county for the project activity to be taken up as a CDM project on 12 July 2005 /18/. The operational lifetime is expected to be 25 years as per the FSR. A renewable crediting period has been chosen with the start date of the crediting period expected to be 1 January 2009.

The estimated amount of emission reductions over the first crediting period (7 years) is 176 224 tCO₂e per year.

4.3 Baseline Determination

The project applies the approved baseline methodology ACM0002, version 06, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”. The baseline methodology adopted is appropriate, applicable and justified as the proposed power generation project is a grid connected renewable power generation activity, utilizing the hydro potential available in the Yongning river.

The project activity proposes utilization of renewable power generation potential - a low dam diversion hydropower station with a high water-head. Power generated is fed to a grid whose geographic and system boundaries can be clearly identified and information regarding its characteristics is available. Moreover,

- Proposed project is a run-of-river hydropower capacity addition and is a grid-connected electricity generation project
- Proposed project has a power density greater than 4 W/m²
- Project does not involve switching from fossil fuel to renewable energy at the site of the project activity
- The geographic and system boundaries of the grid system can be clearly identified and information on the characteristics of the grid is available

The project boundary includes the project plant site and electricity systems connected to the hydropower plant. The system boundary is defined as the central China power grid (CCPG) to which the project plant will be connected through the transmission line.

For the project activity, four potential baseline scenarios have been identified:

Scenario 1 - the proposed hydropower activity, without support of CDM:

This scenario is in compliance with relevant laws, however an investment analysis has evidenced that IRR of the project without CDM revenue is equal to 7.59%, which is lower than the threshold of 10% (benchmark rate for financial evaluation of Chinese Power System). Hence this scenario is deemed not feasible.

Scenario 2: Thermal power generation with equivalent power generation:

Chinese regulations prevent establishment of coal-fired power plants with installed capacity lower than 135MW /31/ in urban districts and also thermal units under 100MW /19/ are



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strictly controlled by authorities. Given that the project activity has an installed capacity equal to 50 MW this scenario is not feasible.

Scenario 3: Other renewable power plant with equivalent power installed capacity:

In the project activity area it has been addressed that there are no exploitable wind, solar, or geothermal sources capable of generating similar amount of energy. Hence it is deemed that this scenario is also not feasible /41/.

Scenario 4: The electricity is supplied by the central China grid (CCPG):

This scenario is in compliance with Chinese laws and regulations, and consequently achievable.

Therefore it is concluded that the baseline scenario is about an equivalent amount of electricity that would, in absence of the project activity, have been generated by the operation of the grid-connected thermal power plants belonging to the central China grid

The selection of the central China regional grid as the grid system boundary for the project activity is in line with the recent EB guidance for large countries such as China. The baseline emission factor for the central China regional grid is established based on the approved methodology ACM0002 using the combined margin approach. The weighted average of the “operating margin” (OM) and the “build margin” (BM) emission coefficient for the central China regional grid has been estimated ‘ex-ante’ to be 0.87504 kg CO₂e / kWh. All the data resources used in the determination of the OM and BM, such as the *China Electric Power Yearbook* (2001-2006) /8/ and *China Energy Statistical Yearbook* (figures are for 2000-2006) /7/, have been verified.

4.4 Additionality

The additionality of the project has been established using the “Tool for the demonstration and assessment of additionality” approved by the CDM-EB /25/. The project activity primarily demonstrates the additionality through the investment analysis.

The project activity was initially conceptualized for 25MW without CDM contribution and construction has commenced in February 2004 /16/. However, the same had to be stopped in August 2004, as the project participant realized that the economic indicators were far too low to realize adequate returns /24/.

It has been demonstrated subsequently that the project proponent had considered CDM to revive the project activity and prior to getting all the relevant Government approvals and restart of the construction of the project activity; therefore the project proponent decided to apply for CDM and to increase the project activity capacity from 25MW to 50MW as it is the current project status.

Consideration of CDM, prior to the date of restart of construction of 50MW power plant instead of the original 25MW power plant is demonstrated through the Yanyuan Yongning River Hydro-electric Development Co., Ltd. Directorate decision, dated 6 July 2005 /23/ and approval from the local government to proceed with the application of the project under CDM, dated 12 July 2005 /18/.

The detailed chronology of events is presented below:



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Date	Key Event
February 2004	The project construction preparation started and the permit to start constructions was received /16/ (25MW power plant)
July 2004	Second Feasibility Study Report was approved taking into account the change of capacity from 25MW to 50MW and with an IRR of 7.59%/15/
August 2004	The project construction had to be stopped because of additional preparing site works needed due to bad geological situation, and consequent additional related costs; and the decision to transfer the company to another PP /24/
July 6, 2005	The project owner made a board decision to apply for CDM in order to improve the economic indicators of the project /23/
July 12, 2005	The project owner received the approval from the local government to proceed with the application of the project under CDM /17/, /18/
July 18, 2005	Project construction restarted and the permit to restart constructions as a 50MW hydropower plant was received /16/
August 2005	Project owner signed development contract with CDM advisors and started preparation of CDM application /33/
August 2006	ERPA between project developer and ENEL Trade SpA dated 10 August 2006 /34/
November 2006	Approval by China DNA and receipt of Letter of Approval (LOA) in December 2006 /2/
March 2007	DNV proposal for validation of the project to ENEL /35/
April 2007	Contract signed with ENEL for validation of the project activity /36/

STEP 1: Four alternatives to the project activity have been identified.

- The specific project activity undertaken without being registered as a CDM project activity;
- Thermal power plant generation with equivalent power generation;
- Other renewable sources power plant generation with equivalent power generation;
- The equivalent electricity is supplied by the central grid

Apart from the second alternative, all the other alternatives comply with all applicable laws and are thus possible baseline scenarios.

However, as detailed in section 4.3, scenario 4, i.e, equivalent electricity supplied by central China power grid has been identified as the baseline scenario as it does not encounter investment barriers.

STEP 2:

The project proponent has carried out the IRR analysis based on the prevailing tariff structure, investment cost and cost of production /14/. In China an internal rate of return (IRR) of 10% on the total investment of a project is regarded as benchmark for investments in hydropower plants with installed capacity less than or equal to 50MW in rural areas. DNV was able to verify the chosen benchmark against the “Economic evaluation code for small hydropower project (SL16-95)”, issued by Ministry of Water Resource of China /19/. The benchmark is also advocated by Chinese *Economic evaluation code for small hydropower projects*. This benchmark internal rate of return (IRR) is widely accepted and applied in the Chinese small hydropower industry. A publicly available source from the Chinese Hydraulic Engineering



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Society (CHES) confirms that this benchmark is still in effect /26/. The project is located in rural areas and the benchmark is deemed applicable to the project.

A feasibility study report (FSR) in China is required to be developed by a third party, accredited for this task, directly by the government. Furthermore, an approval letter for the FSR is issued by the government, only after it passes an assessment by the sector experts designated by the government. The FSR can therefore be considered an independent and recognized source.

It is to be noted that the first feasibility study report for 25MW power plant was prepared in June 2003, by Survey and Design Institute of Water Resources and Electric Power of Liangshan Prefecture, prior to the construction of the project, on behalf of the then PP, Sichuan Xichang Electricity Power Co. Ltd/38/. In this first FSR, it is confirmed that the IRR of the project activity was determined to be 15.7% and therefore attractive, as it was higher than the benchmark of 10%. After commencement of construction in February 2004, it was realized by the PP that due to rising prices, geological and hydro geological reasons and increased investment requirements, the project was no longer feasible, leading to stoppage of the project /38/ /15/. Agreement by the Board to stop the construction in this regard has been verified by DNV /24/

Simultaneously, a second FSR was prepared in 2004 for 50MW power plant by the Survey and Design Institute of Water Resources and Electric Power of Liangshan Prefecture and approved by the Development and Reform Commission of Liangshan Yi Prefecture, The Water Resources Bureau of Liangshan Yi Prefecture on 7 December 2004 /15/. The second FSR clearly states an increased project cost of 234.169 million Yuan and change of capacity from 25MW to 50MW. The details and input parameters presented in this approved second FSR has been used in the IRR analysis.

Consequently the then PP (Sichuan Xichang Electric Power company) decided to sell the project to a daughter company, Yanyuan Yongning River Hydro-electric Development Co. Ltd. This is verified from the agreement signed between the two companies /40/. It is confirmed that Yanyuan Yongning River Hydro-electric Development Co. Ltd is the PP now for the project activity and correctly addressed in the PDD.

Upon receipt of the CDM approval by the local government /18/ the project has recommenced the construction work on July 18, 2005 /17/ /18/. The government letter acknowledging the stoppage and re-start of construction has been provided to demonstrate that there was no activity from August 2004 to the restart in July 2005 /18/. The 18 July 2005 is defined as the project start date.

Based on the data in the revised FSR /15/ minus initial investment of 2,000 ten thousand Yuan /39/, the project without CER revenues has been estimated to be 8.64% /14/, which shows that the project is not financially attractive compared to the benchmark in the absence of CDM benefits. According to the Annex 45 EB41 meeting, the 7th clause, in the case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM, the investment analysis should reflect the economic decision making context at point of the decision to recommence the project. Therefore capital costs incurred prior to the revised project activity start date can



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be reflected as the recoverable value of the assets, which are limited to the potential reuse/resale of tangible assets.

The capital verification report /39/ was completed by chartered specialist, and confirms that the initial investment of 2,000 ten thousand Yuan was utilized for geological and soil preparation, have not been considered in the financial analysis and IRR calculation.

The main parameters used for IRR calculation, including the IRR calculation sheet have been reviewed by DNV and deemed acceptable /14/ /15/. This analysis has been performed for the operational life of the project (20 years) and considering annual operational costs, taxes, investments, revenue due to power generation, etc. DNV was also able to confirm that all the data pertaining to the presented analysis have been verified from the second FSR/15/, such as Installed capacity (50MW), Annual Power supplied to Grid (MWh), Static Total Investment (without 2,000 ten thousand Yuan of the first investment), Estimated Grid Price (Yuan RMB/kWh, with VAT), Operation Period (years), taxes and annual operating costs.

During validation, DNV was able to verify that each parameter used in the PDD, is in line with the FSR /15/. DNV was able to confirm that the period of time between the finalization and approval of the FSR (December 2004) and the investment decision (6 July 2005) is sufficiently short (6 months) thereby, confirming that it is unlikely in the context of the underlying project activity that the input values would have materially changed.

The input parameters used in the financial analyses were compared with the data reported for other similar hydropower CDM projects in Sichuan Province, comparing the investment costs per MW, electricity tariff, percentage of O&M costs relative to total investment costs, etc. By applying our sectoral competence, DNV was able to confirm that the input parameters used in the financial analysis are reasonable and adequately represent the economic situation of the project.

A sensitivity analysis has been carried out for parameters contributing more than 20% to revenues or costs. None of the parameters in the sensitivity analysis are considered to have any significant positive correlation.

The sensitivity analysis has been performed in order to check the influence of the following factors used during the IRR calculations (without CDM contributions):

- Static total investment,
- Annual operation costs,
- Grid Price
- Electricity supplied to grid

This sensitivity analysis confirms that project crosses the benchmark of 10% as follows:

Total static investment: The project IRR touches the benchmark of 10% if this parameter is reduced by 10.42%. It has been verified from the Feasibility Study Report /20/ that the expense of construction engineering, mechanical and electrical equipment and metal equipment accounts for a large portion of the total static investment. It has been demonstrated and confirmed from the statistics of the National Bureau of Statistics /29/ that the average price fluctuation of CPI and industrial products had been increasing since 2002. Thus, it can be concluded that decrease in static investment by 10.42% is deemed unlikely.

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Annual output: It has been demonstrated that 23% increase in the annual output shall result in project IRR equal to the applied benchmark of 10%. However, it has been justified and confirmed from the 46 years hydrological data and the project hydro-energy parameter provided in the feasibility study report /20/ that the increase in annual output by 23% is deemed unlikely.

Feed in tariff: It has been demonstrated that the project IRR improves to applied benchmark of 10% if the feed-in tariff increases by 23%. Given that the grid price is fixed at 0.167 Yuan RMB/ kWh for the project activity for the next few years, the increase in feed in tariff by 23% is deemed unlikely.

Operation and maintenance costs: It has been demonstrated that by decreasing the operation and maintenance expenses by 10% of the applied value, the project IRR improves to only 8.79%. The applied value of O&M costs have been confirmed from the Feasibility Study Report. Given the trends in general price rise in China, a large decrease of operation and maintenance costs is not possible and thus, this is deemed unlikely.

The results of the sensitivity analysis show that without the income from CERs sale, the proposed project is not deemed the most financially attractive option.

STEP 3: Barrier analysis:

The project proponent has addressed that due to the policies of the grid company, the project encounters uncertainty in electricity sale and the grid price offered. It has been verified from the electricity purchasing contract /28/ and Interconnections Agreement documents /30/ that the electricity sale and grid price of electricity depends on the actual demand and supply. The grid company distributes the electricity supplied to the grid in accordance to the operating schedule of the hydro power plant, thus creating constraint and uncertainty in electricity sale, which is deemed to be a barrier to the project activity.

STEP 4: Common practice analysis:

A comprehensive list of hydro projects (26 projects, in the range of capacity 20MW to 50MW, sourced from *Yearbook of China Water Resources 2006* has been addressed and demonstrated that

- Three projects - Tongkou Hydropower Station, Zhongzui Hydropower Station, Waner Hydropower Station and Huilongqiao Hydropower Station are applying CDM
- Of the remaining 22 projects, 10 projects /20/ such as Wenfeng Power Plant, Huaneng Mingzhi Power Plant, Luosichi Power Station, Damo Power Station, Huangdan Hydropower Station, Sijiutan Hydropower Station, Caopo Hydropower Station, Shapai Hydropower Station, Lixian Hydropower Station, Ganbao Hydropower Station, have been installed prior to 2000, were developed by the state under a market environment that is substantially different from the current market environment, which is, for independent power producers at least, considerably less attractive.
- Of the remaining 12, nine projects have been developed by the state owned company
- The other three projects (i.e. Huatan, Yongle and Baishuihe Hydropower Station) sell electricity at a grid price of 0.28 Yuan RMB/kWh or 0.288Yuan RMB/kWh, which is higher than the grid price of 0.167Yuan RMB/kW paid to the Yongning River project.



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Therefore it can be concluded that investment and operation of hydro power plant by private enterprise is not a common practice in the region.

In conclusion, the assessment of the arguments presented above is deemed to sufficiently demonstrate that the project is not a likely baseline scenario, and the emission reductions resulting from the project are additional.

4.5 Monitoring

The project applies the approved monitoring methodology ACM0002, version 6, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”

Given that the emission factor is calculated ex-ante and according to the monitoring methodology ACM0002, version 6, the only data to be monitored is the electricity supplied to the grid by the project. It has been verified that the net power exported to the CCPG will be monitored continually and recorded on monthly basis by the project owner. Ammeters used for monitoring will be calibrated as per the national electricity standards and regulations. In addition, the electricity sales receipts will be provided for data quality control and cross check. Details of the data to be collected, the frequency of data recording and its format are clearly described in the monitoring plan. The authority and responsibility for project management, monitoring, measurement, review and reporting has been established. Data collected will be kept for two years after the completion of crediting period. Detailed monitoring plan developed by the project proponent has been provided and verified by DNV. Leakage has not been considered for the project due to that the renewable energy technology equipment is not transferred from another activity or to another activity.

4.5.1 Parameters determined ex-ante

The methodology requires monitoring of the following for grid-connected hydropower projects:

- Data needed to calculate the operating margin emission factor, based on the choice of the method to determine the operating margin (OM), consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);
- Data needed to calculate the build margin emission factor consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);

The parameters determined ex-ante for calculating the emission factor are listed in the PDD and were verified by DNV.

4.5.2 Parameters monitored ex-post

The parameters monitored ex-post are:

- The net electricity supplied to the grid, and
- The electricity use within the power plant premises supplied by the grid
- The surface are at full reservoir level when the project becomes operational.

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It has been established that monitoring the power supplied to the grid ($EG_{s,y}$) and the electricity use of power plant supplied by the grid ($PE_{g,y}$), shall yield the net power supplied to the grid (EG_y) ($EG_y = EG_{s,y} - PE_{g,y}$). The electricity delivered to the grid will be continuously measured and recorded on a monthly basis. Receipts from electricity sales will also be obtained for double check. The data will be kept for 2 years following the end of the crediting period

4.5.3 Management system and quality assurance

The monitoring plan submitted clearly describes the authority and responsibility of overall project management, the procedures for training of the operating personnel; calibration; internal review; corrective and preventive actions.

4.6 Estimate of GHG Emissions

The project boundary is well defined in PDD /1/. The power generated from the project is connected to the Yanyuan 220kV switch station through a 220kV transmission line. This is further connected to the Xichang grid, then to the Sichuan grid, and finally to the central China grid.

The emission reductions (ER_y) by the project activity during a given year y is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (L_y)

$$ER_y = BE_y - PE_y - L_y$$

No leakage effects are required to be considered for the project activity as per the methodology. Hence leakage is taken as zero, $L_y = 0$. Also, there is no auxiliary fuels utilized at the project site due to the project activity and the power density is greater than 10 W/m^2 , and hence the project emissions are regarded as zero, $PE_y = 0$.

Therefore, the emission reductions of the proposed project are estimated as follows:

$$ER_y = BE_y$$

Where, the baseline emissions (BE_y in tCO₂) are the product of the baseline emissions factor (EF_y in tCO₂/MWh) times the electricity supplied by the project activity to the grid (EG_y in MWh)

$$BE_y = EG_y \times EF_y$$

The baseline emission factor is calculated on the basis of the central China grid.

The baseline emission factors will be calculated according to the procedures prescribed in the approved baseline methodology ACM0002 version 06; and in accordance to ACM0002, the electricity baseline emission factor is determined ex-ante as a combined margin consisting of

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the weight average of the operating margin emission factor (EF_{OM}) and the build margin emission factor (EF_{BM}).

Considerations about EF_{OM} : the simple OM emission factor calculation method is selected due to low-cost must-run projects are lower than 50% (respectively: 36.76% in 2001, 35.95% in 2002, 34.43% in 2003, 38.54% in 2004 and 38.18% in 2005) of the total grid generation. The “ex-ante vintage data” will be employed for the OM calculation of the project.

The EF_{OM} for 2003, 2004 and 2005 are calculated as a three year full generation weighted average of the emission factors, consequently the Operating Margin Emission Factor is 1.29092tCO₂e/MWh. The operating margin emission factor (EF_{OM}) is calculated *ex-ante* and will not be reviewed in the first crediting period of the project activity.

Considerations about EF_{BM} : the *ex-ante* BM emission factor calculation option has been chosen, it is calculated as the most recent information available on plants already built – a sample of group of plants at the time of PDD submission (5 plants most recently built, or the power plant capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently). Considering that plant specific fuel consumption and electricity generation data is not publicly available in China, DNV requested guidance from the CDM Executive Board for a deviation of the baseline methodology of AM0005 and received the following answers, which are deemed to be applicable for this project:

- Use of capacity additions for estimating the build margin emission factor for grid electricity;
- Use of weights estimated using installed capacity in place of annual electricity generation;
- Use the efficiency level of the best technology commercially available in the provincial, regional or national grid of China, as a conservative proxy, for each fuel type in estimating the fuel consumption to estimate the build margin (BM).

Since AM0005 has been replaced by ACM0002, the application of the above confirmation from EB to the project is deemed to be acceptable.

Following the EB’s guidance the build margin is calculated with the following parameters:

- The capacity additions from the years 2002 to 2005 is chosen to reach 21.42% of total installed capacity
- The weight of installed capacity additions for thermal power plant is accounted for 74.01% of total installed capacity additions.
- The standard coal consumption of 336.66 gce/kWh is used to determine the BM emission factor, which is deemed conservative. The coal consumption efficiency of 36.53% is defined as the best technology commercially available in China by the DNA of China /7/.
- The local net calorie value of each kind of fuel, the local carbon content of each kind of fuel and the IPCC 2006 default value of carbon oxidization factor are used to calculate the BM /9/.

However, according to the deviation for the BM calculation, since no plant specific generation data are available for the China grid, the capacity addition from one year to another is used as basis for determining the build margin. But according to the documents that were published by China NDRC /11/, the weight average of the CO₂ emissions was used to



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calculate the capacity addition of oil and natural gas plant, which is not in line with neither ACM0002 nor the deviation. The calculated build margin emission factor (EF_{BM}) is 0.45916tCO_{2e}/MWh.

Thus the weighted average of the “operating margin” (OM) and the “build margin” (BM) emission coefficient for the southern China regional grid has been estimated ‘ex-ante’ to be 0.87504 kg CO_{2e} / kWh.

4.7 Environmental Impacts

The Environmental Impact Assessment (EIA) of the project has been approved by the Environmental Protection Bureau of Liangshan Yi Minority Autonomous Prefecture on 23 October 2004 /13/. According to the EIA only minor unfavourable effects will occur during the construction and operation period of the project. Information and data of the EIA have been sufficiently addressed in the PDD. No significant environmental impacts are expected during the project activity.

4.8 Comments by Local Stakeholders

Questionnaires were distributed to identified local residents to seek their opinion on the project activity. Moreover, a special stakeholder consultation meeting for the parties interested in the project was organized on May 18, 2006 at Yanyuan Town, Sichuan Province. Yunnan Yingjiang Mangya River Hydropower development Co., Ltd. had published a bulletin for the stakeholders’ meeting in *Liangshan Daily Paper* on 17 May, 2006, and the same was also publicized the meeting bulletin via their website www.tqcdmchina.com.

All the stakeholders have welcomed the project activity. The questionnaires were verified during the site visit and no negative comments were received.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD of April 12, 2007 was made publicly available on DNV’s climate change website (<http://www.dnv.com/certification/climatechange/index.asp>) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 19 April 2007 to 18 May 2007.

No comments were received.



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APPENDIX A

CDM VALIDATION PROTOCOL



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Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion
About 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. Netherlands is the Annex I Party.
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2. (Table 2, Section A.3)	OK
The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a. Letters of Approvals from the DNA of Netherlands has not been obtained.	OK Approval letter by Chinese DNA has been obtained
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 Approval letter by Chinese DNA has been obtained
In case public funding from Parties included in Annex I is used for the project	Decision17/CP.7,	The validation did not reveal any



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Requirement	Reference	Conclusion
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.	CDM Modalities and Procedures Appendix B, § 2	information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards the China
Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29 DNA of China is Office of National Coordination Committee on Climate Change.	OK Chinese DNA is the National Development and Reform Commission
The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a. China ratified the Kyoto Protocol on 30 August 2002.	OK China ratified the Kyoto Protocol on 30 August, 2002
The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	Netherlands's assigned amount is 92% of the emission in 1990.
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	According to the UNFCCC's web site, Netherlands has in place a national system for estimating GHG emissions and reports annually its national GHG inventory to the



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Requirement	Reference	Conclusion
		UNFCCC
About 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	OK
About forecast emission reductions and environmental impacts		
The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
For large-scale projects only		
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
About stakeholder involvement		
Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project	CDM Modalities and	OK



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Requirement	Reference	Conclusion
design document and comments have been made publicly available.	Procedures §40	The PDD of the Sichuan Yanyuan Yongning River Hydropower Station was made publicly available on www.dnv.com/certification/climatechange and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during the period from 19 April 2007 to 18 May 2007.
Other		
The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK



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Table 2 Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?	/1/	DR	Yes. The project is located in the reach of Yongning River in the area of Changbai Town, Yanyuan County.		OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/	DR	Yes. The system boundary comprises of the water retaining dam, auxiliary dam, pressure tunnel, pressure-regulating well, pressure pipe, main and auxiliary workshop, booster station and tailrace. The Sichuan grid and the Central China grid is also included in the boundary		OK
A.2. Participation Requirements <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.1. Which Parties and project participants are participating in the project?	/1/	DR	China is the Host country and Netherlands from the Annex I country.		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?	/1/	DR	The LOA from the Government of Netherlands shall be provided.	CAR-1	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	/1/	DR	<p>China: The Designated National authority of China is the National Development and Reform Commission. China ratified the Kyoto Protocol on 30 August 2002.</p> <p>Annex 1 Party: Netherlands The Designated National authority of Netherlands is - Ministry for the Environment and Territory, Department for Global Environment, International and Regional Conventions Netherlands Ratified the Kyoto protocol on 31 May 2002.</p>		OK



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR, I	The project does not involve any public funding from an Annex I Party.		OK
A.3. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.3.1. Does the project design engineering reflect current good practices?	/1/	DR I	Yes. The project design engineering reflects the current good practice in China		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?	/1/	DR	Yes. The technology employed is commonly used technologies in China.		OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	Though not specifically addressed in the PDD, the project will require minimal additional training and maintenance efforts, as this involves setting up of a small hydro project using indigenous technologies, simple to operate and maintain		OK



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.4. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>						
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?		/1/	DR, I	Yes. The LOA from the Government of China has been obtained on 13 December 2006		OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?		/1/	DR	Yes. The project activity will create employment opportunities in the area, apart from contributing to reduced emissions due to renewable energy project and aid in economic development of the region		OK
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>						
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>						
B.1.1. Does the project apply an approved methodology and the correct version thereof?		/1/	DR	The project applies the consolidated methodology ACM0002, "Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from		OK



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			renewable sources”, version 6, dated 19 May 2006.		
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/	DR	<p>The project fulfils the conditions under ACM 0002.</p> <p>The project activity proposes utilisation of renewable power generation potential - a low dam diversion hydropower station with high water-head. Power generated is fed to a grid whose geographic and system boundaries can be clearly identified and information regarding its characteristics is available</p> <ul style="list-style-type: none">• Proposed project is a run-of-river hydropower capacity addition and is a grid-connected electricity generation project• Proposed project does not require any new reservoir• Project does not involve switching from fossil fuel to renewable energy at the site of the project activity• The geographic and system boundaries of the grid system can be clearly identified and information on the characteristics of		OK



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			the grid is available.		
B.2. Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?	/1/	DR	The baseline scenario is the continued use of power from the Central China electricity grid and the addition of new generation sources to meet electricity demand..		OK
B.2.2. Has the baseline scenario been determined according to the methodology?	/1/	DR	Four scenarios have been identified as realistic and credible alternatives to the project activity: <ul style="list-style-type: none"> • The specific project activity undertaken without being registered as a CDM project activity; • The equivalent annual power generation is delivered by a new thermal power plant; • The equivalent annual power generation is delivered by other renewable sources plant; 		OK



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<ul style="list-style-type: none">The equivalent power is delivered by the Central China Grid It has been demonstrated that the only realistic and credible alternative for the baseline scenario is the continued use of power from the Central China electricity grid		
B.2.3. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Yes. The baseline scenario has been determined using conservative assumptions.		OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Yes. The renewable energy law, sectoral policy and development trends in Central China electricity grid have been taken into account.		OK
B.2.5. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	Yes.		OK
B.2.6. Have the major risks to the baseline been identified?	/1/	DR	Yes. All the possible alternatives have been discussed in the PDD.		OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.3.1. Is the project additionality assessed according to the methodology?	/1/	DR	<p>The project has used the “<i>Tool for the Demonstration and Assessment of Additionality</i>”</p> <p>The identified alternatives are in line with the current laws and regulations.</p> <p><u>Investment Analysis:</u></p> <p>It has been demonstrated that the IRR of the project is 7.53% without CDM revenues, which is lower than the benchmark rate of 10%. The benchmark revenue rate determined to be 10% is derived from the <i>Chinese Economic evaluation code for small hydropower projects</i></p> <p>A sensitivity analysis has also been done (Variations of $\pm 10\%$) for indicators such as total investment; annual operation & maintenance cost; estimated grid price and demonstrated that the IRR is always less than the benchmark</p> <p>However following has not been addressed clearly:</p> <p>The indicators identified for the sensitivity</p>	CL+	OK



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>analysis lacks clarity. Net Power export from the plant has not been identified as one of the indicators.</p> <p>Proof of grid price consideration or the power purchase agreement shall be provided.</p> <p><u>Barrier analysis:</u></p> <p>It has been argued that since the project does not have price support from the government, acquiring loans from the bank has proved difficult. This shall be substantiated with evidence.</p> <p>Argument that uncertainties in electricity sale due to poor hydrological conditions and no off-take by the grid authorities in case of excess power generation during monsoon also shall be justified</p> <p><u>Common practice Analysis:</u></p> <p>Arguments presented under common practice analysis are not substantiated with clear supporting references and evidence. The data pertaining to hydro power projects in the region presented all have a PLF that is higher</p>		



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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			than the project activity. If this be the case, it remains to be demonstrated how the location of the project activity has affected the PLF to be considered only at around 50%. Source of the data presented shall also be made clear.		
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/	DR	Same as in B.3.1.	CL1	OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR I	Same as in B.3.1.	CL1	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 from the CDM was seriously considered in the decision to proceed with the project activity?	/1/	DR	The starting date for the project activity is 31 December 2006, which was before the date of validation. The documents for demonstrating that CDM was considered at the stage of conceiving the project shall be provided. Evidences shall be provided in English	CL2	OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
C. Calculation of GHG Emissions by Source <i>It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.</i>					
C.1. Calculation of GHG Emission Reductions – Project emissions <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
C.1.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	No project emissions are likely as this is a hydro power project		OK
C.2. Calculation of GHG Emission Reductions – Baseline emissions <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
C.2.1. Are the calculations documented according to the approved methodology and in a complete and	/1/	DR	Baseline emissions have been calculated in accordance with ACM 0002. Taking into		OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
transparent manner?				consideration the “Request for guidance” from DNV to the CDM EB dated 7 October 2005. According to the <i>Bulletin on the baseline emission factor of the Chinese Electricity Grid</i> , this has been published by the Chinese DNA (Office of National Coordination Committee on Climate Change) on Oct. 16. 2006, the operating margin emission factor (EF_{OM}) of the Central China Grid is 1.2526tCO ₂ e/MWh and, according to the calculation in Annex 3, the build margin emission factor (EF_{BM}) is 0.6346tCO ₂ e/MWh. The combined baseline emission factor of the Central China Grid corresponds to 0.9436tCO ₂ e/MWh.		
C.2.2. Have conservative assumptions been used when calculating the baseline emissions?		/1/	DR I	The data resources for calculating OM and BM are: 1. Installed capacity, power generation and the rate of internal electricity consumption of thermal power plants Source: <i>China Electric Power Yearbook</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			(2000-2005) 2. Fuel consumption and the net caloric value of thermal power plants Source: <i>China Energy Statistical Yearbook</i> (figures are for 2000-2005) 3. Carbon emission factor and carbon oxidation factor of each fuel Source: <i>Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook</i> , Table 1-2 of Page 1.6 and Table 1-4 of Page 1.8 in Chapter one.		
C.2.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	Yes		OK
C.3. Calculation of GHG Emission Reductions – Leakage <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
C.3.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	According to ACM0002, there is no leakage to be considered		OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
C.4.Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
C.4.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	Yes, the project will result in fewer GHG emissions than the baseline scenario.		OK
D. Monitoring Plan <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).</i>					
D.1.Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	The monitoring plan is in accordance to the approved monitoring methodology ACM 002 version 6. It is summarised in B.7.2. of the PDD.		OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			It has been established that monitoring the power supplied to the grid ($EG_{s,y}$) and the electricity use of power plant supplied by the grid $PE_{g,y}$, and according to the two data, the net power supplied to the grid(EG_y) will be calculated($EG_y = EG_{s,y} - PE_{g,y}$).		
D.1.2. 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?	/1/	DR	Yes.		OK
D.2. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	No project emissions are likely as this is a hydro power project and power density is greater than 10 W/m ² .		OK
D.3. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	Yes. The project uses the <i>ex-ante</i> determination of emission factor for grid electricity. Only electricity generated will be monitored and double checked with the electricity sales receipts.		OK
D.3.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes. The baseline indicators chosen are in accordance to ACM 0002.		OK
D.3.3. Is the measurement <i>method</i> clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR I	Measurement methods are specified in the Monitoring Plan, B.7 in the PDD.		OK
D.3.4. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR I	Monitoring data will be checked for consistency. Provisions have been made in the Monitoring plan to cross check the readings.		OK
D.3.5. Are the <i>registration, monitoring, measurement</i> and <i>reporting</i> procedures defined?	/1/	DR I	General descriptions of these procedures are shown in Section B.7.2 of the PDD. The responsibilities for carrying out each component of monitoring plan have also been defined.		OK
D.3.6. Are procedures identified for day-to-day records handling (including what records to keep, storage	/1/	DR I	Data will be archived at the end of each month using the electronic spreadsheet. The		OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
area of records and how to process performance documentation)			electronic files will be stored on hard disk and cd-rom. In addition a hard copy printout will be archived. The project owner will in addition collect sales receipts for the power delivered to the grid as a cross-check. At the end of each crediting year, a monitoring report will be compiled detailing the metering results and evidence (i.e. sales receipts). All data records will be kept until 2 years after the end of the crediting period.		
D.4. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	According to ACM0002, there is no leakage to be considered		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
D.5.1. Is the monitoring of sustainable development	/1/	DR	Chinese DNA does not require collection and		OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
indicators/ environmental impacts warranted by legislation in the host country?			archiving of data related to environmental, social and economic impacts. The environmental impacts will be monitored by local environmental authority.		
D.6. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.6.1. Is the authority and responsibility of overall project management clearly described?	/1/	DR I	A monitoring officer will be appointed by the project owner, who supervise and verify metering and recording, collect data (sales / billing receipts), calculate emission reductions and prepare monitoring report The authority and responsibility of overall project management has not been formalised.	CL-3	OK
D.6.2. Are procedures identified for training of monitoring personnel?	/1/	DR I	The procedures for training of the operating personnel to be formalised.	CL-3	OK
D.6.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR I	No emergencies are foreseen		OK
D.6.4. Are procedures identified for review of reported results/data?	/1/	DR I	Procedures for internal review need to be formalised.	CL-3	OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.6.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR I	Procedures for corrective and preventive actions need to be formalised.	CL-3	OK
E. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
E.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/	DR	The starting date of the project as per the PDD is 31 December 2006, while its operational lifetime is expected to be 25 years. It remains to be clarified whether this is the start of the construction or commissioning date with evidences	CL-4	OK
E.1.2. Is the start of the crediting period clearly defined and reasonable?	/1/	DR	A renewable crediting period has been chosen with the start date of the crediting period expected to be 1 July 2007. This needs to be revised to a later date	CL-5	OK
F. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	Yes. The project participant has done an EIA and the impacts have been outlined in the PDD.		OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR I	EIA has been carried out and the impacts have been highlighted in the PDD. The same has been approved by the approved by the Environmental Protection Bureau of Liangshan Yi Minority Autonomous Prefecture.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	The project is not expected to create adverse environmental effects.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	There are no adverse transboundary environmental impacts		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR I	Main assessment conclusions of the EIA has been provided		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	Yes.		OK
G. Stakeholder Comments <i>The validator should ensure that stakeholder comments have been</i>					



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>invited with appropriate media and that due account has been taken of any comments received.</i>						
G.1.1. Have relevant stakeholders been consulted?	/1/	DR		Local stakeholders were invited to comment on the project during a stakeholder consultation meeting held on 18 May 2006.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR I		An announcement was made in the local newspaper on 19 September 2006 to invite local stakeholders to comment on the project. The invite was also published on the website www.tqcdmchina.com . It remains to be clarified on the exact date of the stakeholder meeting as it is claimed that while the announcement was made in the local newspaper on 19 Septemebr 2006, the meeting actually took place on 18 May 2006	CL-6	OK
G.1.3. 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?	/1/	DR		No. This is not warranted		OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR		Yes. It is incorporated into Section E.2 of the PDD		OK
G.1.5. Has due account been taken of any stakeholder	/1/	DR		Yes. It is incorporated into Section E.3 of the		OK



VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
comments received?			PDD		



VALIDATION REPORT

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 1 : The LOA from the Government of Netherlands has not been obtained.	Table 1.	The LoA from the DNA of the Netherlands has been obtained and submitted to DNV	The LoA from the DNA of the Netherlands has been verified. CAR is closed
CL 1: The following shall be addressed clearly: The indicators identified for the sensitivity analysis lacks clarity. Net Power export from the plant has not been identified as one of the indicators. It has been argued that since the project does not have price support from the government, acquiring loans from the bank has proved difficult. This shall be substantiated with evidence. Argument that uncertainties in electricity sale due to poor hydrological conditions and no off-take by the grid authorities in case of excess power generation during monsoon also shall be justified Arguments presented under common practice analysis are not substantiated with clear supporting references and evidence. The data	B.3.1	<ul style="list-style-type: none"> ➤ The net power supplied has been identified as one of the indicators in PDD, P12, and P13. ➤ Now, although, acquiring loans from the bank is difficult, but it has already got loans, so the barrier has been deleted. ➤ Please see the power generation dispatch agreement and Interconnections Agreement documents, from the two documents, the uncertainties can be proved ➤ The similar projects for the common practice analysis are included in the PDD, p15-18 shown to the validator. Also the relative data sources have been provided in the PDD. 	<p>Net electricity supplied to the grid has been included in the sensitivity analysis. Barrier due to acquiring loan has been omitted from the revised PDD.</p> <p>It has been verified from the electricity purchasing contact and Interconnections Agreement documents that the project encounters uncertainties due to poor hydrological conditions or excess generation of electricity. The electricity price depends on the demand of electricity and the Grid company distributes the electricity supplied according to the operating schedule of hydro power plant.</p> <p>A comprehensive list of hydro projects (26 projects, in the range of capacity 20MW to 50MW, sourced from <i>Yearbook of China Water Resources 2006</i> has been addressed and</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>pertaining to hydro power projects in the region presented all have a PLF that is higher than the project activity. If this be the case, it remains to be demonstrated how the location of the project activity has affected the PLF to be considered only at around 50%. Source of the data presented shall also be made clear.</p>			<p>demonstrated that</p> <ul style="list-style-type: none"> • Three projects - Tongkou Hydropower Station, Zhongzui Hydropower Station, Waner Hydropower Station and Huilongqiao Hydropower Station are applying CDM • Of the remaining 22 projects projects, 10 projects^[1], such as Wenfeng Power Plant, Huaneng Mingzhi Power Plant, Luosichi Power Station, Damo Power Station, Huangdan Hydropower Station, Sijiutan Hydropower Station, Caopo Hydropower Station, Shapai Hydropower Station, Lixian Hydropower Station, Ganbao Hydropower Station, have been installed prior to 2000, were developed by the state under a market environment that is substantially different from the current market

[¹] *Yearbook of China Water Resources 2000, published by Almanac of China Water Resources, P534*



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
			<p>environment, which is, for independent power producers at least, considerably less attractive.^[2]</p> <ul style="list-style-type: none"> • Of the remaining 12, nine projects have been developed by the state owned company • The other three projects (i.e. Huatan, Yongle and Baishuihe Hydropower Station) sell electricity at a grid price of 0.28 Yuan RMB/kWh or 0.288Yuan RMB/kWh, which is higher than the grid price of 0.167Yuan RMB/kW paid to the Yongning River project. <p>CL is closed.</p>
<p>CL 2: The documents for demonstrating that CDM was considered at the stage of conceiving the project shall be provided. This shall be provided in English language</p>	B.3.4	<p>The proof (including English version and Chinese version) has been showed to auditor and provided to the auditor. Please see the directorate decision of cooperation exploitation, directorate decision of applying CDM, Application for CDM</p>	<p>Consideration of CDM, prior to the date of restart of construction has been evidence by Directorate decision, dated 6 July 2005 and approval from the local government to proceed with the application of the project under CDM,</p>

^[2] Economist Intelligence Unit (2003), “China Hand”, page 37-40



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		project support by government, approval of the application from government documents. These all documents include English version and Chinese version	dated 12 July 2005. OK. CL 2 is closed.
CL 3: <ul style="list-style-type: none"> The authority and responsibility of overall project management has not been formalised The procedures for training of the operating personnel; internal review; corrective and preventive actions needs to be formalised 	D.6.1, 6.2, 6.4, 6.5	<ul style="list-style-type: none"> The authority and responsibility of overall project management has been formalised in special MP, P5. The procedures for training of the operating personnel; internal review; corrective and preventive actions have been formalised in special MP, P5 and PDD, P6, P29. 	General Manager has been identified as the overall authority for the project plant. Procedure for training, corrective and preventive actions is adequately defined in the monitoring plan formalized by the proponent. The monitoring plan has been submitted and verified by DNV. OK. CL 3 is closed.
CL 4: The starting date of the project as per the PDD is 31 December 2006, while its operational lifetime is expected to be 25 years. It remains to be clarified whether this is the start of the construction or commissioning date with evidences	E.1.1	The starting date of the project construction: 26/02/2004, and in August 2004, project construction had been interrupted due to lack of capital. Only after getting approval by local government to apply for CDM in July 2005, the construction work could be resumed. The restarting date of the project construction: 18/07/2005. About the proof has been provided to auditor(English and	The starting date of the project as per the PDD is 18 July 2005 which is the date of re-commencement of the project construction following the approval by the local Government for the project activity to be taken up as a CDM project. Consideration of CDM, prior to the date of restart of construction has been evidence by Directorate decision, dated 6 July 2005 and approval from the



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		Chinese version)	local government to proceed with the application of the project under CDM, dated 12 July 2005. CL 4 is closed.
<p>CL 5:</p> <p>A renewable crediting period has been chosen with the start date of the crediting period expected to be 1 July 2007. This is not feasible since the crediting period of the project cannot start before the registration of the project. The project proponent is requested to delay the start date of the crediting period.</p>	E.1.2	Yes, now the start date of the crediting period has been revised to January 1, 2009	<p>Revised PDD has been verified.</p> <p>CL is closed.</p>
<p>CL 6:</p> <p>It remains to be clarified on the exact date of the stakeholder meeting as it is claimed that while the announcement was made in the local newspaper on 19 Septemebr 2006, the meeting actually took place on 18 May 2006</p>	G.1.2	Yes, the announcement date has been changed to 17 May 2006, this is a clerical error.	<p>The date of announcement in the local news paper has been corrected to 17 May 2006. The same has been verified by DNV.</p> <p>OK. CL 6 is closed.</p>

APPENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Elfride V. Covarrubias

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 4 January 2008

Michael Lehmann

Michael Lehmann

Technical Director, International Climate Change Services

Govindarajulu Kaliaperumal Murali

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 1 June 2008

Michael Lehmann

Michael Lehmann

Technical Director, International Climate Change Services



CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	Yes
CDM Verifier:	Yes	JI Verifier:	Yes
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS-III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Kumaraswamy Chandrashekara

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 4 & 5		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS-III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Yi Yang

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-
CDMJ1-i1)

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	--	<i>JI Validator:</i>	--
<i>CDM Verifier:</i>	--	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	--		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director