VALIDATION REPORT

Shuangbai Ejia Magahe River Hydropower Project in Yunnan Province, People's Republic of China

29 September 2008

JCI CDM Center
Japan Consulting Institute

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Approved by: Akio Yoshida, Executive Director	Organisational unit: JCI CDM Center Japan Consulting Institute (JCI)
Client: Coway International TechTrans Co., Ltd.	Client ref.:

JCI has been commissioned by Coway International TechTrans Co., Ltd. to perform a validation of the CDM project listed below.
This validation report summarizes the results of validation of the project.

Project Name: Shuangbai Ejia Magahe River Hydropower Project
Country: The People's Republic of China
Methodology: AMS-1.D.version 12 /10/, ACM0002 version 06/11/
Version: 12 & 06, respectively
GHG reducing Measure/Technology: Grid connected renewable electricity generation / Installation of two (2) turbines and generators (7.5MW each) on Magahe river, in Ejia Town, Shuangbai County, Chuxiong City, Yunnan Province in P.R. China
ER estimate: 49,694 tCO2e/year

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 JCI's opinion that the Shuangbai Ejia Magahe River Hydropower Project in People's Republic of China, as described in the PDD version 03 of "18/02/2008" /2/, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the approved small scale baseline and monitoring methodology AMS-1.D version 12 /10/ and ACM0002 version 06 /11/. JCI thus requests the registration of the project as a CDM project activity.

Report No.: JCI-CDM-VAL-07/027	Date of this revision: 29 September 2008	Rev. No. 01
Report title: Shuangbai Ejia Magahe River Hydropower Project in People's Republic of China		
Work carried out by: Takayuki ABE, Yoshihisa SAKAI		
Work verified by: Hideyuki Sato, Manager, Assessment Group, CDM Center		

Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CLAR	Clarification Request
DOE	Designated Operational Entity
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CM	Combined Margin
CO_2	Carbon dioxide
Coway	Coway International TechTrans Co., Ltd.
CSPG	China Southern Power Grid
DNA	Designated National Authority
EIA	Environmental Impact Assessment
ERs	Emissions Reductions
GHG	Greenhouse Gas
IETA	International Emission Trading Association
JCI	Japan Consulting Institute
KP	Kyoto Protocol
LoA	Letter of Approval
Standard Bank	Standard Bank Plc.
MP	Monitoring Plan
OM	Operating Margin
PDD	Project Design Document
PRC	People's Republic of China
YDCHD	Yunnan Dianneng Chuxiong Hydropower Development Co., Ltd.
UNFCCC	United Nations Framework Convention for Climate Change
VVM	Validation and Verification Manual

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY – VALIDATION OPINION

This validation report concerns the "Shuangbai Ejia Magahe River Hydropower Project" (hereafter called the "project") proposed by Yunnan Dianneng Chuxiong Hydropower Development Co., Ltd. in People's Republic of China and Standard Bank Plc. in United Kingdom. The objective of the project activity is to achieve emission reductions of greenhouse gases by electricity generation with clean and renewable water sources and displacement with part of the electricity from fossil fuel-fired plants connected to the China Southern Power Grid (CSPG).

Coway International TechTrans Co., Ltd. has commissioned Japan Consulting Institute (JCI) to perform a validation of the project. JCI has performed the validation of the project on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as all relevant guidance and decisions by CDM EB.

JCI conducted all validation activities including the desk review of the project design documents, follow-up interviews to local stakeholders in P.R.China, project site survey and the resolution of outstanding issues as well as the invitation of public comment.

The scope of validation covers the baseline methodology, the monitoring methodology and plan, calculation of GHG emission reduction, environmental impacts and taken due accounts on the comments from stakeholders on the basis of risk approach.

This validation report summarizes the result of validation for the project after obtained the responses for corrective action request (CAR) and clarification request (CLAR).

- Both host country and Annex1 country fulfill the participation criteria and have approved the project and authorized the project participants
- The DNA of host country, P.R.China, confirmed that the project meets all relevant host country criteria and assists in achieving sustainable development
- The project correctly applies AMS-1.D.version 12 "Grid connected renewable electricity generation" /10/, ACM0002 version 06 "Consolidated methodology for grid-connected electricity generation from renewable sources" /11/ and meets all other relevant UNFCCC requirements for the CDM.
- The project results in reductions of GHG emission that are real, measurable and give long-term benefits to the mitigation of climate change
- Emission reductions attributable to the project are additional to any that would occur in the absence of the project activity

The project expects annual GHG emission reductions of 49,694tCO2e over the renewable crediting period of seven (7) years

In summary, it is JCI's opinion that the Shuangbai Ejia Magahe River Hydropower Project in P.R.China as described in the PDD version 03 of 18/02/2008 /2/ meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the approved small scale baseline and monitoring methodology AMS-1.D version 12 /10/ and the approved consolidated baseline and monitoring methodology ACM0002 version 06 /11/.

JCI thus requests the registration of the project as a CDM project activity.

2 INTRODUCTION

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, the simplified modalities and procedures for small-scale CDM project activities /4/ and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology AMS-1.D version 12 of 10 August 2007 /10/ and ACM0002 version 06 of 19 May 2006 /11/. 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.

3 METHODOLOGY

The validation consists 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.

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

/1/ PDD of Shuangbai Ejia Magahe River Hydropower Project, version 01, 23/03/2007 by Coway International TechTrans Co., Ltd.

/2/ PDD of Shuangbai Ejia Magahe River Hydropower Project, version 03, 18/02/2008 by Coway International TechTrans Co., Ltd.

/3/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): Validation Verification Manual (v 4.0 & 5.0). http://www.vvmanual.info

/4/ Simplified modalities and procedures for small-scale CDM project activities

/5/ Appendix B of the simplified modalities and procedures for small-scale CDM project activities

/6/ Appendix C of the simplified modalities and procedures for small-scale CDM project activities "Determining the occurrence of debundling"

/7/ Clarification on Determining the Occurrence of Debundling

/8/ Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities

/9/ Decision 1/CMP 2: Further guidance relating to the Clean Development Mechanism

/10/ AMS-1.D version 12 "Grid connected renewable electricity generation"

/11/ ACM0002 version 06 "Consolidated methodology for grid-connected electricity generation from renewable sources"

/12/ Thresholds and Criteria for the Eligibility of Hydroelectric Power Plants with Reservoirs as CDM project Activities

/13/ Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventory

/14/ China Energy Statistical Yearbook 2004~2006

/15/ China Electric Power Yearbook 2002~2006

/16/ "Request for guidance" by DNV

/17/ "Request for clarification on use of approved AM0005 for several projects in China" by CDM EB

/18/ The report of "Efficiency improvement and energy conservation in China's Power Industry"

/19/ National CDM Management Regulation of People's Republic of China

/20/ Feasibility Study Report and LoA of its FS for Magahe River Hydropower Project (including river water flow data and economy analysis)

/21/ Design Document and LoA of Magahe River Hydropower Project

/22/ Environmental Impact Assessment of Magahe River Hydropower Project

/23/ LoA of Environmental Impact Assessment of Magahe River Hydropower Project

/24/ Compensation Agreement with the residents whose lands will be occupied by Magahe River Hydropower Project

/25/ Economic Evaluation Code for Small Hydropower Projects (Document No. SL16-95)

/26/ Drawings of Hydropower Station for Magahe River Hydropower Project

/27/ Power Transmission Line Design Report and LoA of its Report for Magahe River Hydropower Project

/28/ Electrical Single Line Diagram of Magahe River Hydropower Project

/29/ Drawing of Inundated Area raised by Magahe River Hydropower Project

/30/ Directorate Meeting Record of Project Owner decided to seek support from CDM

/31/ Bank Notification on Re-open of Loan for Magahe River Hydropower Project

/32/ Notice on Construction Start for Magahe River Hydropower Project

/33/ China Statistical Yearbook 2007

/34/ Notice from General Office of the PRC State Council on Strictly Prohibiting Construction Fossil Fuel Power Units with the Capacity of 135MW or below

/35/ Temporary Rules on Small-scale Fossil Fuel Units Construction Management

/36/ Wind Power Resources in China

/37/ Prospect for Renewable Energy Development

/38/ Development for Renewable Energy Utilization in future

Main changes between the PDD version 01 /1/ published for the 30 days stakeholder commenting period and the PDD version 03 /2/ submitted for registration:

1) With reference to the parameters adopted in benchmark analysis, JCI issued the finding of CLAR 4 that the PDD should clarify the basis of those figures using the data sources and evidences, especially investment cost, prospective electricity tariff and O/M cost. The PDD version 03 /2/ changed the investment cost, based on the revised feasibility report which the project participants carried out to gain the re-open of loan for the proposed project from the bank.

   As a consequence, the investment cost was revised 100.7692 million Yuan /2/ from the original of 85.6746 million Yuan /1/.

2) With reference to the efficiency level of the best technology commercially available in P.R.China when calculating build margin (BM), JCI issued the finding of CAR 2 that the PDD should adopt the coal consumption rate of 320.58gce/kWh based on

super-critical thermal plant, not sub-critical plant.
The project participants calculated the BM of CSPG in most conservative manner, reflecting the modern efficiency level of the best technology available in China, of which the value was 320.58gce/kWh.
The PDD version 03 /2/ changed the coal consumption rate of 336.66gce/kWh to 320.58gce/kWh. Therefore, the value of BM was correct into 0.6319 tCO2e/MWh.

3) With reference to the determination of OM for identified power grid, CSPG that required by the approved methodology ACM0002 version 06 /11/. JCI issued the finding of CLAR 7 that the PDD should adopt the full generation average for the most recent three (3) years which data are available at the time of PDD submission.
The PDD version 02 /2/ changed the value of OM ex-ante from 0.9853 tCO2e/MWh to 1.0329 tCO2e/MWh, reflecting the latest available data of 2003, 2004 and 2005 which were published by the DNA of China on August 09, 2007.
Therefore, the baseline emission factor of CSPG was obtained as $EF_{CM.y}$ = 0.5 (1.0329 + 0.6319) = 0.8324 tCO2e/MWh

4) With reference to the annual electricity generation, the project participants changed the value of electricity generation supplied to the Grid from 69.7GWh to 59.7GWh. All data relating to the electricity generation were adopted in the feasibility study (FS) approved by the relevant authority. The project participants found out some mistakes caused by the clerical error when the PDD author incorporated the value of annual electricity generation into the PDD version 01 /1/ form the approved FS.

   As a consequence, the estimated annual amount of emission reductions was changed from 54,251 tCO2e to 49,694 tCO2e.

5) With reference to the starting date of the proposed project activity, JCI issued the finding of CLAR 9 to clarify its starting date, based on the relevant guideline.
The PDD version 03 /2/ demonstrated the starting date of the project activity describing the history on the proposed project in the section B.5. The project participants determined the starting date of the project activity on 28/07/2006 as the beginning of construction.

   As a consequence, the starting date of the proposed project activity is clarified in the PDD version 03 /2/.

6) With reference to the data and parameter to be monitored, the surface area of reservoir at full reservoir level is incorporated into the PDD version 03 /2/.

7) With reference to the baseline identification, especially for power generation from renewable sources, JCI issued the finding of CLAR 14 to describe the possibility of the utilization of renewable energy in more convincible manner and clarify the reasons for elimination of alternatives showing evidences and data sources

   As a consequence, the possibility of power generation by the utilization of wind power, biomass power and solar energy was discussed in the section B.4 of the PDD version 03 /2/. Moreover, the reasons of judgement to set up the baseline scenario were clarified by the demonstration of the data sources.

3.2 Follow-up Interviews with Project Stakeholders

The follow-up interview with project stakeholder was held from 05 November to 09 November 2007 at on-site in P.R.China.

Table: Follow-up interviews

	Date	Name	Organization	Topic
/39/	2007-11-05	Mr. Gao Di Mr. Cao Xu Mr. Zhang Gong Yu Mr. Zhang Shu Hong Ms. Xiao Xiao Mr. Li Rong Chang Mr. Zhao Cheng Mr. Yang Ming Zhen	YDCHD Coway Yunnan Provincial Water Conservancy & Hydroelectric Survey Design Institute and Reserch Institute	✧ The timing and results of Feasibility Study ✧ Criteria/Regulations for hydropower electricity development ✧ Bench mark for investment analysis ✧ Confirmation of design basis ✧ Confirmation of electric single line diagram ✧ Criteria/Regulations for environmental impact
/40/	2007-11-05	Mr. Gao Di Mr. Cao Xu Mr. Yang Yong Fu Mr. Kong Wei Mr. Xu Wen Wu Mr. Shao Yan Qing	YDCHD Coway Scientific Research and Design Institute of FCB Office	✧ Confirmation of design basis ✧ Confirmation for starting date of the project activity ✧ Confirmation of financial analysis ✧ Confirmation of data for water flow rate ✧ Confirmation of inundated area
/41/	2007-11-05	Mr. Gao Di Mr. Cao Xu Mr. Liu Cheng Chun Mr. Wu Dong Ping	YDCHD Coway China Southern Power Grid Company, Kunming Office	✧ Confirmation of Power Purchase Agreement ✧ Confirmation of electricity price ✧ Confirmation for variation of electricity price for these five (5) years
/42/	2007-11-06	Mr. Gao Di Mr. Cao Xu Ms. Huang He Mr. Lai Yu Min Ms. Lu Jian Ping	YDCHD Coway Development and Reform Committee Chuxiong State, Yunnan	✧ Criteria/Regulations of approval for hydropower project ✧ Evaluation point for hydropower project ✧ Publishment of approved hydropower project ✧ Confirmation for

			Province	environmental impact
/43/	2007-11-06	Mr. Gao Di Mr. Cao Xu Ms. Ren Jin Rui Mr. Wang Cai Biao Mr. Li Jian	YDCHD Coway Yunnan Chuxiong Environment Protection Bureau	✧ Criteria/Regulations of approval for EIA ✧ Publishment of EIA approval ✧ Confirmation of special comments for EIA ✧ Monitoring for environmental effect for dam construction ✧ Ecological effect for inundated area
/44/	2007-11-06	Mr. Gao Di Mr. Li Wen Xiang Mr. Dong Guo Hua Mr. Shen Yan Hua Ms. Yang Li Zhi Mr. Cao Xu	YDCHD Coway	✧ Opening meeting ✧ Schedule of follow-up interviews ✧ Presentation of JCI activity ✧ Confirmation of date of obtaining LoA from DNA of PRC ✧ Criteria for CDM project of PRC ✧ Operation & maintenance manual ✧ Confirmation of stakeholder comments ✧ Drawing for Hydropower Station ✧ BM calculation ✧ Imported electric power ✧ Confirmation of the CAR/CLAR ✧ Investment barrier analysis & IRR calculation ✧ Confirmation of emission reduction
/45/	2007-11-07	Mr. Gao Di Mr. Cheng Yung Mr. Guo Qing Gao Mr. Cao Xu	YDCHD Coway	✧ Site survey at Magahe river power plant ✧ Confirmation of environment effect ✧ Confirmation of construction schedule ✧ Confirmation for

				employment of local residents for construction work
/46/	2007-11-07	Mr. Wang Wei Zhang Mr. Lu Tian De	Local residents	✧ Confirmation of stakeholder comments ✧ Confirmation of taken due account such as compensation ✧ Confirmation of environmental affect during construction stage
/47/	2007-11-09	Mr. Gao Di Mr. Cao Xu	YDCHD Coway	✧ Closing meeting ✧ Confirmation or the site assessment results ✧ Confirmation of the outstanding matters ✧ Confirmation of the subsequent schedule

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues to be clarified prior to JCI's positive conclusion on the project design. In order to ensure transparency, the 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 three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the Shuangbai Ejia Magahe River Hydropower Project 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:

1) mistakes have been made with a direct influence on project results;
2) CDM and/or methodology specific requirements have not been met; or
3) 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 (CLAR) may be used where additional information is needed to fully clarify an issue.

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

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

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table1 & 2***	***Summary of project owner response***	***Validation conclusion***
If the conclusions from the draft Validation are either a CAR or a CLAR, these should be listed in this section.	*Reference to the checklist question number in Table 1 & 2 where the CAR or CLAR is explained.*	*The responses given by the project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

3.4 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 experts qualified in accordance with JCI's qualification scheme for CDM validation and verification.

3.5 Validation Team

The validation team of JCI assigned below for this project were composed of reflecting the competence criteria of JCI in accordance with Criteria for Operational Entities of list of sectoral scopes.

Role/Qualification	Last Name	First Name	Country
All relevant issues / Team Leader	ABE	Takayuki	Japan
CDM auditor / Team Member	SAKAI	Yoshihisa	Japan

The certificate of appointment of the validation team by JCI, and its approval by the client are attached as Appendix B to this report.

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 to this report.
The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation, version 03 /2/, dated on 18/02/2008.

4.1 Participation Requirements

Parties involved in the project are The People's Republic of China as host Party and the United Kingdom as Annex 1 Party. The project participants are Yunnan Dianneng Chuxiong Hydropower Development Co., Ltd. of P.R.China and Standard Bank Plc.of United Kingdom. Both P.R.China and United Kingdom meet the requirements to participate in the CDM project activity.

The project obtained the Letter of Approval from the DNA of P.R.China dated on August 26, 2007, authorizing Yunnan Dianneng Chuxiong Hydropower Development Co., Ltd. as project participant and confirming that the project assists in achieving sustainable development.

The DNA of United Kingdom issued the Letter of Approval on 18 March 2008, authorizing Standard Bank Plc. as project participant.

JCI issued the finding of CAR 1 that the written approval by DNA of each Party involved shall be provided.
As a consequence, the finding of CAR 1 was resolved and closed due to the LoA issued by both parties, P.R.China and United Kingdom.

It is none of indication during validation process that the project uses the official development assistance funding towards P.R.China.

4.2 Project Design

Shuangbai Ejia Magahe River Hydropower Project utilizes hydropower to generate electricity. Electricity generated by the project displaces part of the electricity from China Southern Power Grid (CSPG) which is dominated by fossil fuel power plants, and thus greenhousa gas (GHG) emission reductions could be achieved.
JCI confirmed that the ratio of the electricity by fossil fuel power plants to by other energy power plants was around 70% to 30% during 2002 to 2005, according to the announcement published by DNA of P.R.China on August 9, 2007, in the Annex 3 of the PDD version 02./2/

The project consists of a run-of-river type hydropower project with the installed capacity of 15MW, which is eligible to a small-scale CDM project activity.
The technology to be employed by the project is the state of the art technology for the turbine and generator in P.R.China. The critical head is 681.9m, fiducial flow rate is 2.8m3/s and the number of installed turbine and generator are two (2) units (2×7.5MW). The expecting annual operating hours is 4667h.
JCI issued the finding of CLAR 5 that the project participants should clarify the flooded surface area in the PDD. The finding of CLAR 5 was resolved and closed due to the response from the project participants that the flooded area caused by dam was 1,742.1m2 and the power density of the project was 8,610.3W/m2.

JCI issued the finding of CLAR 1 that the project participants is required to clarify and justify the estimated annual electricity generation of 59.7GWh and the annual emission reductions of 49,694tCO2e.

All data relating to the electricity generation were adopted in the feasibility study (FS) approved by the relevant authority. The project participants found out some mistakes caused by the clerical error when the PDD author incorporated the value of annual electricity generation into the PDD version 01 /1/.

JCI confirmed that the PDD author had no clerical error for IRR of financial analysis through the review for the approved FS /20/ and the investigation for IRR spreadsheet.

Therefore, the modification of the electricity generation caused by clerical error did not influence the calculation and comparison of financial indicators.

The finding of CLAR 1 was resolved and closed by the appropriate response from the project participants

JCI judged that it was appropriate to change the estimated annual amount of emission reductions from 54,251 tCO2e to 49,694 tCO2e in the PDD version 03 /2/.

The construction of the project will contribute to the sustainable development of the host party and the local area through the following aspects:

- Alleviating the contradiction between demand and supply of local electric power
- Creating employment opportunity with 20 local jobs offered
- Reducing GHG emission and other pollutant emission compared with the conventional power generation methods.

JCI performed the interview with Design and Research Institute /39/, /40/, China Southern Power Grid Company /41/, Development and Reform Commission of local government /42/ and local residential people /46/ at the visit to Chuxiong City and Yunnan Province for on-site assessment.

JCI confirmed that the design criteria such as installed capacity, critical head, fiducial flow, No of units and power density are appropriate by the review and check of drawings, equipment specification and calculation of inundated projected area /26/, /27/, /28/, /29/.

Moreover, JCI confirmed through the interview that the residential people obtained the local jobs from the construction of hydropower plant /46/.

Shuangbai Ejia Magahe River Hydropower Project is renewable energy project activity with a maximum output capacity equivalent of up to 15MW and supplies electricity to a grid. This project falls into type (i) project activities of small-scale CDM and applies the approved small scale CDM baseline and monitoring methodology AMS-1.D version 12 /10/.

JCI issued the finding of CAR 3 to apply the AMS-1D version 12 which was most recent version at the submission of the PDD version 01 /1/

JCI confirmed that it is appropriate to apply the approved small-scale CDM baseline and monitoring methodology AMS-1.D version 12 /10/ in the PDD version 03 /2/.

JCI issued the finding of CLAR 3 for the project participants to clarify that the project was not a debundling component of a large scale project activities, in accordance with Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM /6/, /7/.

JCI confirmed that the same project participants was not operating, developing or planning another project in the direct vicinity of the project boundary, registered within the previous two (2) years and within 1 km of the project boundary through the interview with the project

participants /44/, /45/, and the review and check of map/drawing /21/, /26/, when JCI visited on-site plant on November 2007.
Thus, JCI judged that the project was not debundling component of a large scale project activity.

JCI issued the findings of CLAR 2 for alteration of heading in PDD template.
JCI confirmed that the project participants appropriately amended the alteration of heading in PDD template.
The finding of CLAR 2 was resolved and closed due to the appropriate amendment of the alteration of heading.

Furthermore, JCI issued the finding on the project boundary in CLAR 7 that in case of utilizing the imported electricity to CSPG from other grid, the exporting grid should be included in the project boundary.
As CSPG utilizes the imported electricity from CCPG, the project participants included the CCPG exporting electricity to CSPG in the project boundary of the PDD version 03 /2/.

4.3 Baseline Determination

The project applies the approved small scale baseline and monitoring methodology AMS-1.D version 12 /10/ and ACM0002 version 06 "Consolidated methodology for grid-connected electricity generation from renewable sources" /11/.

The project meets the other requirements such as power density and system boundaries prescribed in the approved methodology ACM0002 version 06 /11/.

The project participants discussed the four (4) plausible alternatives as below to identify the baseline scenario in the light of financial, rules and regulations requirements, moreover from the viewpoint of renewable energy sources in the region.

a) the proposed hydropower plant development not undertaken as CDM project
b) construction of a fossil fuel power plant with the same capacity as the project
c) construction of a power plant using other renewable energy sources
d) China Southern Power Grid as the provider for the same electricity generation as the project

The project participants selected the baseline scenario of the project that China Southern Power Grid provides the same capacity and electricity as that of the project, as a result of discussion.

JCI reviewed and checked the process of baseline determination through the relevant documents. With reference to the baseline identification, especially for power generation from renewable sources, JCI issued the finding of CLAR 14 to describe the possibility of the utilization of renewable energy in more convincible manner and clarify the reasons for elimination of alternatives showing evidences and data sources /36/, /37/, /38/.
As a consequence, the possibility of power generation by the utilization of wind power, biomass power and solar energy was discussed in the section B.4 of the PDD version 03 /2/. Moreover, the reasons of judgement to set up the baseline scenario were clarified by the demonstration of the data sources and quoted study report.

The finding of CLAR 14 was resolved and closed due to the detailed description for the utilization of renewable energy.

Subsequently, JCI investigated the IRR spreadsheet of the project and confirmed that the alternative a. is not feasible due to the IRR of 6.92% for the project below the benchmark IRR (10%). Further, JCI confirmed the related documents, rules and regulations such as "Notice from General Office of the PRC State Council on Strictly Prohibiting Constructing Fossil Fuel Power Units with the Capacity of 135MW or below" /34/ (state council public notice 2002 No 6) and "Temporary Rules on Small-scale Fossil Fuel Units Construction Management" /35/.
As a consequence, JCI judged that the alternative d) above listed providing the same amount of electricity by CSPG was selected appropriately as reasonable and credible baseline scenario.

Moreover, the baseline emission factor (EFy) for calculating baseline emissions (BEy) was determined in conservative and transparent manner, based on the most recent data available for 3 years from 2003 to 2005 as mentioned in "4.5.1 Parameters determined ex-ante" of this validation report.

JCI issued the finding on the imported electricity in CLAR 7 that the project participants shall clarify the imported electricity to the identified power grid, China Southern Power Grid, and also clarify whether the electricity imports are less than 20% of the total electricity generation of CSPG or not. The imported electricity for year 2005 from Central China Power Grid to CSPG exceeded 20% of electricity generated by the power plant of CSPG.
JCI confirmed that the project participants calculated the OM of CSPG in 2005 using the CM (Combined Margin) of CCPG in year 2005, in accordance with the approved consolidated methodology ACM0002 version 06 /11/.

JCI judged that the baseline emission factor was determined appropriately.

4.4 Additionality

The additionality of Shuangbai Ejia Magahe River Hydropower Project was demonstrated by a discussion for investment barrier in conformance with Attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities /8/.

1) In accordance with Economic Evaluation Code for Small Hydropower Projects issued by the Ministry of Water Resources in 1995 (Document No 16-95) /25/, an IRR of 10% for total investment of a project was regarded as benchmark for investment of hydropower plants in P.R China. JCI confirmed that the benchmark IRR of small hydropower project was 10% in the Economic Evaluation Code for Small Hydropower Projects /25/.

   Without CERs, the IRR value calculated in the feasibility study for the investment of the project was 6.92% below the financial benchmark of 10% /2/. Thus without CERs, it was evident that the project would face substantial financial hurdles and could not be implemented.

   After taking CERs revenue into consideration, the project IRR reached 10.80% over than the benchmark rate. The IRR of the project with and without CER were calculated under the appropriate data and assumption /2/.

2) The project participants started the feasibility study in 2003 and prepared the feasibility study report in 2004. However, the proposed project faced difficulties for the

implementation of proposed project in which the price of construction materials increased very high more than 15% including steel and cement. The project participants found the deficiency of budget to follow up the modification/addition to the original planning such as the electricity transmission line, channel and penstock civil work, furthermore, the increase of material, labor cost and compensation cost.

The bank expressed their serious worry and concern to the budget deficiency for the investment cost and delayed the loan until the appropriate revised proposal was provided by the project participants.

The project participant decided to search the support from CDM and contact with the consulting company at the directorate meeting of Yunnan Dianneng Chuxiong Hydropower Development Co., Ltd. (YDCHD) on 28/02/2005 /30/.

The discussion of directorate meeting summarized as follows.

- The construction cost of the hydropower station dramatically rised due to the rising prices of building materials and consumable, the improvement of workers' salary, increasing of design-changed investment, increasing the compensation charge for residents and so on
- The directorate meeting decided to add RMB 15.0946 millions into the original budget of the proposed project, which made the total capital be RMB 100.7692 millions Yuan
- The directorate meeting decided to search the support from CDM.
  At the same time, the directorate meeting decided to prepare the revised proposal (revised feasibility report) to the bank to gain the re-open of loan

Then, the revised feasibility report with adjusted budget which the project participants carried out to gain the re-open of loan was approved by Development and Reform Commission of Chuxiong State, Yunnan Province, Energy Bureau on 25/07/2005 /20/

JCI validated three points relating to the increase of investment cost in discussion of directorate meeting.

- The first point was the rising prices of building materials and consumable.
  According to the China Statistical Yearbooks 2007, the price indices of investment for construction and installation in fixed assets were 105.6 in 2004 and 101.6 in 2005 as whole national average (Index is that the preceding year equals 100). Such price indices in Yunnan Province was 108.0 in 2004 and 104.6 in 2005 much higher that national average indices.
  In particular, the raw metal material prices were drastically increased in 2004 and 2005 that ferrous/nonferrous metals prices were 120.4/120.1 in 2004 and 107.5/114.0 in 2005 as whole national average /33/
- The second point was the workers' salary.
  According to the same sources the average wage of staff and workers in China rose about 14 % in 2004 and also 2005 which were higher value than another countries /33/.
- The third point was an increase for investment cost modified by design change.
  The project participants provided the documents showing the detatiled information about increase of investment cost. The reason of investment cost increase were as follows.
  a) Expanding of the electricity transmission line to the power grid

b) Increase of compensation charge for the inundated field an occupaied area

c) Design change of civil and building works to make a quality of road and a safty of building higher

These modifications were caused depending on the change of route in mountainous and rocky area. These additional unexpected charges were needed to implement the proposed project completely.

JCI judged through the review and check mentioned above that the increase of investment as RMB 15.0946 millions was appropriate for the proposed project.
That was the reason why financial situation of the project got worse and the project participants decided to seek a support from CDM.

After the investigation of the revised proposal with CDM support, the bank decided to provide the loan to the proposed project on 30/05/2005 /31/.

JCI judged that these explanations and evidence backed up the description of the PDD version 03 /2/.

3) JCI reviewed whether the project participants appropriately took account of the parameters in the financial analysis as follows:

a) Estimated annual electricity delivered to the grid

As JCI confirmed the finding of CLAR 1, all data relating to the electricity generation were adopted in the feasibility study (FS) approved by the relevant authority. JCI confirmed through the review to the approved FS /20/ that the annual electricity generation of 59.7GWh was calculated appropriately.

Moreover, JCI confirmed that the effective factor of 0.9 used for the electricity generation calculation was stipulated as the official value in the Economic Evaluation Code for Small Hydropower Projects (Document No SL 16-95) /25/.

b) Investment cost

JCI reviewed the investment cost of similar five (5) small-scale projects in Yunnan Province registered as CDM project or made publicly available on UNFCCC web for validation since September 2007.

The investment costs per kW unit for those small-scale projects were ranged from 5,342Yuan/kW to 8,231Yuan/kW of installed capacity.

The investment cost per kW unit of the proposed project was calculated in 6,718Yuan/kW of installed capacity.

JCI judged that the investment cost level of the proposed project was appropriate.

c) Prospective tariff

The project participants adopted the tariff of 0.21 Yuan/kWh excluding VAT in the financial analysis.

JCI interviewed with key persons of China Southern Power Grid Company (CSPG), at their Kunming Office during On-site Assessment and requested them to provide what the electricity price was to be agreed with the project participants /41/.

Though the CSPG did not have the agreement on tariff with the project participants yet, the personnel of CSPG anticipated being the actual tariff less than 0.21 Yuan/kWh. JCI confirmed that the prospective tariff adopted in the financial analysis was somewhat high level in comparison with the actual tariff anticipated.

Therefore, JCI judged that the prospective tariff adopted in the financial analysis was conservative value.

d) O/M cost

The O/M cost adopted in the financial analysis was determined through the estimation of labour cost and maintenance cost in accordance with Economic Evaluation Code for Small Hydropower Projects issued by Ministry of Water Resources, P. R. China /25/.

Therefore, JCI judged that the O/M cost was formally permitted in the sector of hydropower electricity generation of China.

A sensitivity analysis was conducted by altering the parameters: investment in fixed assets, annual O&M cost and prospective tariff. The sensitivity analysis showed firmly that if without CERs revenue, the project was not financially attractive and could not be implemented.

JCI issued the finding of CLAR 4 that the spreadsheet of both FIRR for base case and for sensitivity analysis should be submitted to the validator in electronic data or PDF file.

JCI judged that 10% variation used for the sensitivity analysis was appropriate by the reason described in the PDD version 03 /2/. It is showed that even if the parameters changed within the range from −10% to +10%, the IRR for the project calculated will not exceed 10% of benchmark.

The responses for the finding of CLAR 4 were appropriate. Thus, the finding of CLAR 4 was resolved and closed.

4) JCI issued the finding of CLAR 9 that the project participants should provide the relevant evidences for the starting date of the project activities which was described 28 July 2006 in the section C.1.1.of the PDD version 03 /2/.

JCI confirmed the evidences as below provided by the project participants.

a) the directorate meeting record on 28/02/2005 decided to seek support from CDM /30/
b) the bank notification from Agricutural Bank of China-Branch of Chuxiong on 30/05/2005 to re-open the loan to the project /31/
c) the approval of feasibility study report on 25/07/2005 by Development and Reform Commission of Chuxiong State, Yunnan Province, Energy Bureau /20/
d) the notice of construction start from 28/07/2006 by Yunnan Construction Supervisary Company /32/

JCI confirmed that the project participants took into account to seek support from CDM prior to the re-start of bank loan and the approval of FS by local DRC.

JCI judged that the starting date of the projet acitivity of 28/07/2006 was appropriate.

Thus, the finding of CLAR 9 was resolved and closed.

5) JCI assessed the reliability and credibility of all discussion to demonstrate the additionality, verifying all data, assumption, justifications and documentation provided by the project participants.
As a consequence, as those discussions were appropriate and credible, JCI judged that the project activity was additional.

4.5 Monitoring

4.5.1 Parameters determined ex-ante

According to the approved consolidated baseline methodology ACM0002 version 06 /11/, the baseline emission factor (EFy) is calculated ex-ante as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) factor.

1) The simple OM emission factor ($EF_{OM\ simple}$) is calculated using the weighted average for the most recent 3 years (2003, 2004, and 2005).
   The China Southern Power Grid (CSPG) imports the electricity from Central China Power Grid (CCPG). The amount of imported electricity and emission factor for individual grid are explicitly shown in Annex 3 of the PDD.

   JCI confirmed that the ratio of imported electricity from CCPG to CSPG for 2003, 2004, 2005 were 0.005%, 4.4%, 35.8% of total generation electricity in CSPG respectively, and in 2005 the electricity imported exceeded 20% of total generation in the project electricity system of CSPG.

   JCI issued the finding of CLAR 7 that the project participants should clarify the imported electricity to the identified power grid, CSPG and take the provision on CM of exporting grid in the ACM0002 version 06 into account in calculation of OM of the CSPG.

   JCI confirmed that the project participants used the CM (combined margin) of CCPG in 2005 to calculate the OM of CSPG in relevant year according to ACM0002 version 06 /11/ through checking the Annex 3 of the PDD version 03 /2/, and the project participants used the average emission rate of CCPG in 2003 and 2004 to calculate the OM of CSPG in relevant year, due to the imported electricity ratio from CCPG to CSPG below 20%.

   The Simple OM emission factor of the CSPG was calculated using total generation electricity included imported electricity as below.

   $$EF_{OMy} = 1.0329\ tCO2e/MWh$$

2) With regard to the application of AM0005 and AMS-1.D.in P.R.China, “Request for guidance” /16/ was submitted to CDM EB dated on 07 October 2005 by DNV. In response to the request for guidance, CDM EB issued the “Request for clarification on use of approved AM0005 for several projects in China” /17/ which suggested that the projects participants used the following alternative solutions in absence of data.
   - 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). For the estimation of the operating margin (OM) the average emission factor for the grid for each fuel type can be used.
   - The “Efficiency improvement and energy conservation in China’s Power Industry” /18/ reports the coal consumption rate of 320.58gce/kWh for supercritical units employed in P.R.China as major performance indicator in 2005.

   JCI issued the finding of CAR 2 that the 336.66gce/kWh used in the PDD version 01 /1/ did not indicate the efficiency level of the best technology commercially available in the provincial/regional or national grid of P.R.China.

   The project participants revised its value to 320.58gce/kWh presenting to be conservative in the PDD version 03 /2/.

JCI judged that the BM in the PDD version 03 /2/ ensures conservative determination by adopting the coal consumption rate of 320.58gce/kWh.

The BM emission factor of the CSPG was calculated using the data from 2003~2005,

The BM emission factor was $EF_{BM,y}$＝0.6319 tCO2e/MWh

Thus, the finding of CAR 2 was resolved and closed.

The baseline emission factor (EF_y) is expressed as:

$$EF_y = 0.5 \times EF_{OM,y} + 0.5 \times EF_{BM,y}$$
$$=0.5 \times 1.0329+0.5 \times 0.6319 = 0.8324 \text{ tCO2e/MWh}$$

JCI judged that the parameters determined ex-ante were calculated in an appropriate and conservative manner.

4.5.2 Parameters monitored ex-post

Based on AMS-1.D.version 12 /10/ and ACM0002 version 06 /11/, the following data and parameters are monitored during the project crediting period.

a) Electricity supplied to the CSPG by the project (EGy)
b) Electricity imported to the project site from CSPG (EGimport)
c) Surface area of reservoir at the full reservoir level at the start of the project

JCI confirmed that in case of using the electricity imported from CSPG for the project operation, maintenance work and shut down period, the electricity supplied to the CSPG, EGy, is adjusted by the electricity supplied to grid minus the electricity imported to the project from CSPG.
JCI issued the finding of CLAR 11 that the project participants should monitor the flooded surface area prior to the start of the project operation.
JCI confirmed that the surface area of reservoir at the full reservoir level will be monitored at the start of the project operation in the PDD version 03 /2/.

4.5.3 Management system and quality assurance

JCI issued the finding of CLAR 8 that the project participants should clarify the training of personnel and the preparation of manual for operation and maintenance in the section B.7.2 of the PDD.

The project owner clarfied the training of personnel in the PDD version 03 /2/ that the all personnel in the department of the monitoring accept the training and can not undertake such work until they pass the exams and master the knowledge and skill.

JCI confirmed that the manual for operation and maintenance was prepared as a rule for daily work prior to the plant start-up to hence the Quality Assurance and Quality Control (QA & QC).

The project owner, Yunnan Dianneng Chuxiong Hydropower Development Co., Ltd. monitors the electricity delivered to and imported from the CSPG. In order to ensure that all data are reliable and transparent, the project owner established the managing structure for Quality Assurance and Quality Control (QA & QC) in the PDD version 03 /2/.

JCI judged that the QA & QC procedures for recording, maintaining and archiving data were appropriate in the B.7.2 Description of the monitoring plan of the PDD version 03 /2/

4.6 Estimate of GHG Emissions

The baseline emissions (BE_y in tCO2e) ex-ante are the product of the baseline emissions factor (EFy in tCO2e/MWh) times the electricity supplied by the project activity to the grid (EGy in MWh).

$$BEy = (EGy - EGimport) \times EFy = 59{,}700 \times 0.8324 = 49.694 \text{ tCO2e}$$

The ex-ante emission reductions (ERy) of the project are calculated by the equation as below.

$$ERy = BEy - PEy - Ly$$

Where: PEy is project emission, and Ly is leakage of the project.

The power density of the project is 8,610.3W/m2. Therefore, the project emission PEy is zero /12/. The leakage (Ly) of this project is zero too. Therefore, the emission reductions of the project are:

$$ERy = BEy - PEy - Ly = (EGy - EGimport) \times EFy - PEy - Ly$$
$$= 49.694 - 0 - 0 = 49.694 \text{ tCO2e/year}$$

(The EGimport is zero for ex-ante calculation of emission reductions)

JCI issued the finding of CLAR 1 that the project participants are required to clarify and justify the estimated annual electricity generation of 59.7GWh and the annual emission reductions of 49,694 tCO2e. The project participants appropriately explained the annual electricity generation and the annual emission reductions.
JCI confirmed that the assumptions made for estimating GHG emission reductions are consistence with the approved consolidated baseline and monitoring methodology ACM0002 version 06 /11/ through the investigation of the feasibility study and relevant documents.
JCI judged that the estimate of emission reductions was accurate, transparent and conservative in establishing formulas, parameters and values used.

4.7 Environmental Impacts

The Environmental Impact Assessment (EIA) /22/ was performed to ensure that the project complies with national, regional and local environmental regulations during its construction and operation period.

The categories of EIA performed included ecological effect, soil erosion, impact on the quality of surface water, water pollution, air pollution, noise pollution, solid waste, ecology and social impact.

JCI visited the plant construction site at the On-Site Assessment of validation and confirmed that the environment impacts made by the project participants were not considered significant.

JCI issued the finding of CLAR 12 requesting the review and confirmation of EIA report.

JCI reviewed the EIA report during On-Site Assessment and confirmed that the project activity has no great adverse impact on the local people and environment.

JCI confirmed that Yunnan Chuxiong Environment Protection Bureau in P.R.China finally approved the EIA report on 26 November 2006 /23/.

The finding of CLAR 12 was resolved and closed

4.8 Comments by Local Stakeholders

The project participants carried out the public opinion survey together with the main counties, village governments, society communities and residents in the area where the land would be occupied in August 2006.

The result of this survey showed that 94% of the 50 local villagers and inhabitants consulted are supportive to the project. The remaining people had no comment or think there was no impact by the prosed project. No one was against the construction of the proposed project.

The project participants took the comments and feedback seriously and took the prompt and proper action to the stakeholders' comments and suggestions.

JCI interviewed the inhabitants affected in their farm fields by the proposed project during the On-Site Assessment, and confirmed that the consulted inhabitants were fully satisfied with the compensation by the project participants, and that nobody was against the project activity /24/, /46/.

That was the reason why the proposed project caused no resettlement and the inhabitants suffered no influence of adverse impacts.

JCI issued the finding of CLAR 13 that the project participants should demonstrate protective facilities taken for water and soil loss and ecology deterioration by drawing and site survey in more detail.
JCI confirmed the measures to protect water and soil loss and ecology deterioration through the explanation of the project participants showing the detailed drawings.
Moreover, JCI confirmed that the compensation was appropriately agreed with the residents whose lands would be occupied by Magahe River Hydropower project /24/
The finding of CLAR 13 was resolved and closed

4.9 Comments by Parties, Stakeholders and NGOs

The PDD version 01 /1/ dated 23 March 2007 was made publicly available on JCI's website (http://jci-plant.or.jp/english/030cdm/05project.htm) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from "08 September 2007" to "07 October 2007".

No comment was received.

Comment by:
☐ Accredited NGO ☐ Party ☐ Stakeholder
Inserted on:
Subject:
Comment:

5. Response to Request for Review

The Project Participants and JCI have received the three Requests for Review from UNFCCC. The followings are the initial Response of the Project Participants and JCI to Review Requests.

***Issue 1**: The DOE is requested to explain how it has validated that the input values used for the IRR calculations are appropriate in the context of the project activity in line with EB 38, paragraph 54c, including the use of fixed input values (tariff of 0.21 Yuan kWh; O&M is also constant).*

Response of Project Participant:

All input values in the financial analysis, including the tariff and O&M cost, are taken from the Feasibility Study Report (FSR) and the Revised Budget Report. The FSR was developed by "No.14 Institute of Chinese Water Conservancy & Hydroelectric Survey Design Institute and Research Institute". Due to dramatic price rise of construction materials, the Revised Budget Report was also developed by the same institute in May 2005. This project got the approval by local Development and Reform Committee on 25 July 2005. No.14 Institute of Chinese Water Conservancy & Hydroelectric Survey Design Institute and Research Institute was an independent and recognized design institute, and it was undergone the approval process by the governmental authorities.

Using fixed input values to calculate IRR in the FSR is based on "Economic Evaluation Code for Small Hydropower Projects" issued by the China Ministry of Water Resources in 1995 (Document No. SL16-95), and all the FSR in China adopted fixed input values, this is common practice in China. Furthermore, in order to ensure the stability of the domestic price level, the tariff is fully determined and strictly controlled by China government, so it's relatively stable.

Based on the notice issued on 6th January 2006 by Yunnan Province Development and Reform Commission[1)], the benchmark on-grid tariff of hydropower plants in Yunnan Province is 0.215 Yuan/kWh (including VAT). For hydro projects with installed capacity less than 50MW, the tariff should be varied in different month, 0.215 Yuan/kWh (including VAT) for May and November, 0.19 Yuan/kWh (including VAT) from June to October, and 0.24 Yuan/kWh (including VAT) for December and January to April. Based on the benchmark price of Yunnan government, the average tariff for Magahe project is 0.205 Yuan/kWh (including VAT) or 0.193 Yuan/kWh (excluding VAT). So the tariff of 0.21 Yuan/kWh (excluding VAT) adopted in the investment analysis by Magahe project is higher than the benchmark of Yunnan province, so it's a conservative method.

Further explanation to this question will be provided by DOE.

1) Refer to Evidence 3 of Enclosure 3

Response of JCI:

The input values used in the investment analysis of the PDD were as below table that compared with those values used in the FS Report. The table showed that all input values were same between FS Report and PDD except Total Static Investment.

Item	Parameters	Unit	FS Report	PDD
1	Installed Capacity	MW	15	15
2	Estimated Annual Electricity Deliver to the Grid	GWh	59.7	59.7
3	Project Lifetime	Year	28	28
4	Total Static Investment	Million Yuan	85.6746	100.7692
5	Annual O&M Cost	Million Yuan	1.6216	1.6216
6	Annual Tax; Income Tax Value-Added Tax Tax Premium	 % % %	 33 6 7.5	 33 6 7.5
7	Prospective Tariff (excluding VAT)	Yuan/kWh	0.21	0.21
8	Crediting Period (renewable)	Years	-	7*3
9	Expected CERs Price (Change rate: 1:8)	US$/tCO$_2$e	-	10

JCI judged as follows regarding the requirements of EB 38, paragraph 54c.

(a) Total Static Investment

The reason of increase of Total Static Investment was reported by the revised budged report that was prepared by No. 14 Institute of Chinese Water Conservancy & Hydroelectric Survey Design and Research Institute [1)]. The increased costs and reasons are shown item by item. This report was submitted to the Yunnan Dianneng Chuxiong Hydropower Development Co., Ltd. This report was approved by the Development and Reform Commission of Chuxiong State, Yunnan Province. And this report was submitted to the Agricultural Bank of China-Branch of Chuxiong Yi Nationality Autonomous City which studied it and decided to agree a reopen of the loan by applying for CDM registration.

JCI have validated the reason of increase of Total Static Investment of which details were reported in page 19 - 20 of the Validation Report. Main reasons were price increase of building materials and consumable, worker's salary increase and design changes. JCI judged that the investment increase as 15.0946 million Yuan was appropriate for the project.

(b) Prospective Tariff

Regarding the prospective tariff of 0.21 Yuan/kWh (excluding VAT) was adopted to the IRR calculation as shown in the PDD. JCI issued CLAR 4 to clarify the tariff and the Project Participants responded that 0.21 Yuan/kWh (excluding VAT) was adopted with a conservative value based on the average price of 0.205 Yuan/kWh (including VAT) or 0.193 Yuan/kWh (excluding VAT) in Yunnan province. JCI interviewed with key persons of China Southern Power Grid Company (CSPG), during On-site Assessment. Though the CSPG did not have the agreement on tariff with the project participants yet, the personnel of CSPG anticipated the actual tariff less than 0.21 Yuan/kWh. JCI confirmed that the prospective tariff adopted was somewhat higher level but conservative value for the financial analysis.

(c) O & M cost

The O/M cost adopted in the financial analysis was determined through the estimation of labour cost and maintenance cost in accordance with Economic Evaluation Code for Small Hydropower Projects issued by Ministry of Water Resources, P. R. China. In China an investment analysis for small hydropower project was carried out in accordance with the Code and fixed/constant values were used commonly for input data along with life times such as prospective tariff and O & M cost unless special reason for change.

Therefore, JCI judged that the O/M costs were formally permitted in the sector of hydropower project of China.

(d) JCI judged that all of the input values were valid and applicable at the time of investment decision from above information. And JCI confirmed that each input value was approved and assessed respectively by the relevant organizations such as local Development and Reform Committee, Bank and Grid Company who have specific local and sectoral expertise abilities.

***Issue 2**: The PP/DOE are requested to provide the details (of the investment analysis in a spreadsheet format that allows replication of the calculation following EB 41, Annex 35, paragraph 7.*

Note; JCI supposed that this issue was following EB39, Annex 35, paragraph 7, not EB41.

Response of Project Participant:
We provide the spreadsheet format table as required. Please refer to the attached Excel table.

Response of JCI:
The Project Participants submit the Excel sheet that allows replication of the IRR calculation. JCI send it to UNFCCC with the response.

***Issue 3**: The PP/DOE are requested to provide relevant evidence of actions taken to secure CDM status for the project activity in parallel with its implementation, under EB 41 guidance, Annex 42, paragraphs 5 and 6.*

Note; JCI supposed that this issue was under EB41 guidance, Annex 46, paragraph 5 and 6, not Annex 42.

Response of Project Participant:
As outlined in the PDD, for the proposed project, 70% investment is from bank. In the beginning of 2005, the owner discussed the loan for Magahe river project with bank. After made the investigation on the project, bank thought the budget was not enough and worried about payback ability of the project, so they delayed the loan. On 28th February 2005, the board of directorate decided to ask help from CDM, then the bank open the loan after study on the new proposal of Magahe hydropower projects with income from CDM on 30th May 2005. The detailed history of the proposed project is as following table in PDD.

Time	Description
2004	The price of the construction materials such as steel and cement increased more than 15%. Meanwhile, after discussed with the power grid, Project Owner realized they still had to pay about 3 million Yuan for the transmitting lines on top of the cost outlined in FSR.
01~02/2005	Agricultural Bank of China-Branch of Chuxiong Yi Nationality Autonomous City refused the loan request after assessed the project.
28/02/2005	Board of directorate decided to seek support from CDM and started to contact the consulting company.
30/05/2005	Agricultural Bank of China-Branch of Chuxiong Yi Nationality Autonomous City agreed to lend after the new proposal put in CDM income.
25/07/2005	Magahe project got the approval from local Development and Reform Committee
21/03/2006	Project Owner signed the CDM consulting agreement with “Coway International TechTrans Co., Ltd. (Coway)”. Coway began to prepare the PDD as well as look for buyer.
06/07/2006	Construction agreement signed
28/07/2006	Project construction started
31/08/2006	Equipment Purchase Contract signed
12/01/2007	After rounds of negotiation, Project Owner signed the term sheet with the Buyer “Standard Bank Plc”.
03/2007	Coway finished the PDD and submitted to apply for China LoA.
13/07/2007	The project was approved by China DNA. This news was published on China DNA website.
30/08/2007	Coway engaged JCI to validate the project. PDD was published online for public comments.

In conclusion, CDM was seriously considered prior to the start of the Project. CDM activities were thus conducted in parallel with project implementation. The relevant evidences were submitted to JCI.

Response of JCI:
The Project Participants submit the response above and the related evidences. The followings are a list of evidences.

1) The revised budget report of Shuangbai Ejia Magahe River Hydropower Station, Evidence 1 in Enclosure 2 (Enclosure 2 has been submitted to UNFCCC on 02/05/2008)
2) General Manager Office Conference Minutes dated on 28/02/2005, Evidence 2 in Enclosure 2 (Enclosure 2 has been submitted to UNFCCC on 02/05/2008)

3) Bank Notification on Re-Open of Loan for Magahe River Hydropower Project, Evidence 3 in Enclosure 2 (Enclosure 2 has been submitted to UNFCCC on 02/05/2008)
4) Notice on Construction Start for Magahe River Hydropower Project, Evidence 4 in Enclosure 2 (Enclosure 2 has been submitted to UNFCCC on 02/05/2008)
5) Consulting Contract between the Project Owner and Coway International TechTrans Co., Ltd., Evidence 1 in Enclosure 3.
6) Term Sheet Contract between the Project Owner and Standard Bank Plc., Evidence 2 in Enclosure 3

JCI judged that above evidences support serious CDM consideration prior to the project activity by the project participant and also secure CDM status for the project in parallel with its implementation.

APPENDIX A

SMALL-SCALE CDM VALIDATION PROTOCOL

Shuangbai Ejia Magahe River Hydropower Project

* MoV = Means of Verification, DR= Document Review, I= Interview CAR= Corrective Action Request, CLAR= Clarification, OBS= Observation

SMALL-SCALE CDM VALIDATION PROTOCOL

Rev No. 00: 4 April 2008

Introduction

This document contains the Validation Protocol for Shuangbai Ejia Magahe River Hydropower Project in People's Republic of China which must be seen in conjunction with the Validation and Verification Guidelines.

This validation protocol serves the following purposes:

- It organises, details and clarifies the requirements the Project is expected to meet; and
- It ensures a transparent validation process by inducing the validator to document how a particular requirement has been validated and which conclusions have been reached;

This protocol contains three tables with generic requirements for validation projects.
Table 1 shows the requirements that the GHG emission reduction project will be validated against.
Table 2 consists of a checklist with validation questions related to one or more of the requirements in Table 1. Where a finding is issued, a corrective action request (CAR) and/or clarification request (CLAR), Observation (OBS) is stated.
Table 3 of this protocol presents the resolution and final conclusion of the above requests.

Corrective action requests (CAR) are issued, where:

a) mistakes are made with a direct influence on project results
b) the project does not meet the requirements of CDM or host party
c) there is an unacceptable risk as CDM project or a risk that emission reductions cannot be verified and certified

Clarification requests (CLAR) are issued where the additional information is required to clarify an issue sufficiently
Observations (OBS) are issued where both project participants and validator are obliged to observe the aspects due to governmental policy, regulation and so forth.

Index:

* MoV = Means of Verification, DR= Document Review, I= Interview CAR= Corrective Action Request, CLAR= Clarification, OBS= Observation

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

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
1. 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	Table 2, Section E.4.1 The project will assist Annex 1 in achieving emission reductions committment.
2. 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, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	OK	Table 2, Section A.3 The project will contribute to sustainable development of non-Annex 1 party with registration as CDM project by CDM EB
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	OK	Table 2, Section E.4.1 The project achieves emission reductions and contributes to sustainable development of non Annex 1 party with registration as CDM project, by CDM EB.
4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	~~CAR 1~~ OK	The project participants obtained the written approval of voluntary participation from the designated national authorities (DNA) of each party involved. The finding of CAR 1 was resolved and closed. Please refer to CAR 1 in Table 3 of this protocol.

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	~~CLAR 1~~ OK	Table 2, Section B.1.2, D.2.1. The PDD reads in the section A.2 and B.6.4 of PDD that the annual CO2 emission reduction will reach 49,694 tCO2e. JCI judged that the amount of emission reductions of 49,694 tCO2e was appropriate. The finding of CLAR 1 was resolved and closed. Please refer to CLAR 1 in Table 3 of this protocol.
6. Reduction in GHG emissions must be additional to any that would occur in 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. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	~~CLAR 4~~ OK	Table 2, Section B.2.5 The spreadsheet of both FIRR for base case and for sensitivity analysis should be submitted to the validator in electronic data or PDF file prior to request for registration. Moreover, the basis of benchmark of 10% should be provided with the precisely written paper. The finding of CLAR 4 was resolved and closed. Please refer to CLAR 4 in

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
			Table 3 of this protocol.
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords (Decision 17/CP.7)	OK	No public fundng from Annex 1 countries is provided.
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakesh Accords (CDM modalities§ 29)	OK	DNA of P.R.China is The National Development and Reform Commission. DNA of United Kingdom is The Department for Environment, Food and Rural Afffairs.
9. The host Party and the participating Annex 1 Party shall be a Party to the Kyoto Protocol	Marrakesh Accords (CDM modalities§ 30)	OK	The People's Republic of China ratified the Kyoto Protocol on 30 August 2002. The United Kingdom ratified the Kyoto Protocol on 31 May 2002.
10. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	~~CLAR 3~~ OK	Table 2, Section A.1 The project owner shall clarify that the proposed project is not debundling component of a large scale project activiy in more detailed and precise manner, in accordance with Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities by CDM EB, and furthermore clarifications on determining the occurence of debundling

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
			by EB /6/, /7/. JCI judged that the proposed project was not debundling component of a large scale project activity. The finding of CLAR 3 was resolved and closed. Please refer to CLAR 3 in Table 3 of this protocol.
11. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	~~CLAR 2~~ OK	The PDD should not alter the title of guidline in the lower part two lines at Table 2 of A.4.3. Also, A.4.1.4 Details of physical location is requested to fill in within one page. JCI confirmed that the title of gideline at Table 2 of A.4.3 was revised, and the detail of physical location was described in the section A.4.1.4 of the PDD, not exceeding one page. The finding of CLAR 2 was resolved and closed. Please refer to CLAR 2 in Table 3 of this protocol.

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK	Table 2, Section A.1.3 and B.1
13. 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	Marrakech Accords, CDM Modalities, §45c,d	~~CAR 2~~ OK	Table 2, Section E.3. The proposed Project determines the emission factor ex-ante in accordance with ACM0002 version 06. With regard to Build Margin (BM), CDM EB issued guidance that the efficiency level of the best technology commercially available in the provincial/regional or national grid of P.R. China is used as a conservative proxy for each fuel type in estimating the fuel consumption when calculating BM. "Efficiency Improvement and Energy Conservation in China Power Industry" issued in 2006 reports that the coal consumption rate of supercritical thermal plants is 320.58gce/kWh, which is available on the web site of http://www.hm-treasury.gov.uk/media/9A0/D9/final_draft_china_mitigation_power_generation_sector.pd

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
			f. This coal consumption of 320.58gce/kWh is converted the power plant efficiency of 38.44% /16/, /17/, /18/. This PDD calculates Build Margin using the efficiency of 36.53% on basis of sub-critical thermal plant. As conservative proxy, the calculation of BM should apply the method of a relevant deviation of methodology approved by CDM EB, based on the efficiency of 38.44% representing best technology commercially available in P.R.China JCI judged that the project owner could ensure accuracy, conservativeness and transparency in calculation of baseline emissions (BEy) by adopting the coal consumption rate of 320.58gce/kWh /16/, /17/, /18/. The finding of CAR 2 was resolved and closed. Please refer to CAR 2 in

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
			Table 3 of this protocol.
14. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	~~CAR 2~~ OK	Table 2, Section E.3. With regard to Build Margin (BM), the PDD should calculate BM using the efficiency level of best technology commercially available in P.R.China, as mentioned in the above No 13 /16/, /17/, /18/. JCI judged that the project owner could ensure accuracy, conservativeness and transparency in calculation of baseline emissions (BEy) by adopting the coal consumption rate of 320.58gce/kWh. The finding of CAR 2 was resolved and closed. Please refer to CAR 2 in Table 3 of this protocol.
15. 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	Marrakech Accords, CDM Modalities §37f	OK	Table 2, Section D.2 In case of using the electricity imported for the project operation, maintenance work and shut down period, EGy shall be adjusted by the electricity supplied to grid minus the electricity imported

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
			from CSPG. The PDD is adjusted EGy by setting the equation of BEy =(EGoutput – EGimport)×EFy
16. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b	~~CLAR 13~~ OK	Table 2, Section G The project owner has already invited stakeholder' comments and taken due account of them. However, the project participants shall show protective facilities taken for water and soil loss and ecology deterioration by drawing during site survey in more detail. The finding of CLAR 13 was resolved and closed. Please refer to CLAR 13 in Table 3 of this protocol.
17. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	~~CLAR 12~~ OK	Table 2, Section F The PDD shall incorporate the approved date into the section of D.1. regarding to the EIA approval. The EIA has already approved by Yunnan Chuxiong Environment Protection Bureau according to China laws. However, the EIA report shall

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference/ Comment
			be reviewed during the On-Site Assessment of validation. The finding of CLAR 12 was resolved and closed. Please refer to CLAR 12 in Table 3 of this protocol.
18. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	OK	The PDD has been made publicly available on JCI CDM Center web linked to the UNFCCC web site. The public comment was invited from 08 September to 07 October 2007. No comment was received.

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Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. Project Description The project design is assessed.					
A.1. Small scale project activity It is assess whether the project qualifies as small scale CDM project activity.					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?			The project is electricity generation by 15 MW hydropower plant which consists of two (2) hydro turbines and generators with installation capacity of 7.5MW for each unit for electricity supply to a grid. Therefore, its capacity is within the threshold of 15MW to small-scale CDM project.	OK	OK
A.1.2. The small scale project activity is not a debundled component of a larger project activity?			The project owner shall clarify that the proposed project is not debundling component of a large scale project activiy in more detailed and precise manner, in accordance with Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities by CDM EB, and furthermore clarifications on determining the occurence of debundling by EB JCI confirmed that the adjacent hydropower station was built in 1994 and the project participants was not developing or planning another project within 1km and 2 years of the proposed project activity, when JCI visited on-site plant on November 7 2007. JCI judged that the proposed project was not debundling component of a large scale project activity.	CLAR 3	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The finding of CLAR 3 was resolved and closed. Please refer to CLAR 3 in Table 3 of this protocol.		
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?			As mentioned the above in A.1.1 of this protocol, the project meets the criteria of SSC CDM project: type 1. renewable energy projects, project, category D. electricity generation for a system. The project is applicable to Type 1.D "Grid connected renewable electricity generation" for small-scale CDM project activity, moreover, ACM0002 version 06 "Consolidated baseline and monitoring methodology for grid-connected electricity generation from renewable sources"	OK	OK
A.2. Project Design Validation of project design focuses on the choice of technology and the design documentation of the project.					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	PDD A.4.	DR	In case of utilizing the imported electricity to CSPG from other exporting grid, the exporting grid should be included in the project boundary. As CSPG imported electricity from CCPG, the PDD version 03 /2/ included the CCPG exporting electricity to CSPG in the project boundary. The finding of CLAR 7 was resolved and closed. Please refer to CLAR 7 in Table 3 of this protocol.	CLAR 7	OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	PDD B.3.	DR	Yes. The system clearly defined.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.3. Does the project design engineering reflect current good practices?	PDD A.4.2.	DR /I	Yes. It reflected the current practices in P.R.China.	OK	OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?	PDD B.7.2 Annex 4	DR	No. The project did not need special training.	OK	OK
A.3. Contribution to Sustainable Development The project's contribution to sustainable development is assessed					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	PDD A.2	DR	The project contributes to social and economic and environmental benefits as summarized in A.2 of PDD.	OK	OK
A.3.2. Will the project create any adverse environmental or social effects?	PDD A.2	DR	No. Same as the above A.3.1 of this protocol	OK	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	PDD A.2	DR	The project contribute to sustainable development of non-Annex 1 party with registration as CDM project by CDM EB	OK	OK
A.3.4. Is the project in line with relevant legislation and plans in the host country?	PDD A.2	DR	Same as the above A.3. 1 and A.3.3 of this protocol	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B. Project Baseline The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
B.1. Baseline Methodology It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category?			In accordance with the ACM0002 version 06, the PDD shall adopt the full generation-weighted average for the most recent three (3) years which data are available at the time of PDD submission. The PDD shall clarify that the data adopted in calculation of operating margin are the most recent ones. Moreover, the project owner shall clarify the imported electricity to the identified power grid, that is, China Southern Power Grid and also clarify whether the electricity imports are less than 20% of the total electricity generation. In case of utilizing th eimported electricity to CSPG from other exporting grid, the exporting grid should be included inthe project boundary. With reference to the imported electricity in 2005 exceeding 20% of total generation in the identified power grid, CSPG, JCI confirmed that the OM in 2005 was calculated appropriately, using the CM of exporting power grid, CCPG, in 2005.	CLAR 7	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The finding of CLAR 7 was resolved and closed. Please refer to CLAR 7 in Table 3 of this protocol.		
B.1.2. Is the baseline methodology applicable to the project being considered?			The approved small-scale CDM Methodology "AMS-1D" was revised to AMS-1D version 12 prior to submission of PDD. The PDD shall apply AMS-1D version 12 to the proposed project activities. The finding of CAR 3 was resolved and closed. Please refer to CAR 3 in Table 3 of this protocol.	CAR 3	OK
B.2. Baseline Determination It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	PDD B.5	DR	The spreadsheet of both FIRR for base case and for sensitivity analysis should be submitted to the validator in electronic data or PDF file prior to request for registration. Moreover, the basis of benchmark of 10% should be provided with the precisely written paper. The finding of CLAR 4 was resolved and closed. Please refer to CLAR 4 in Table 3 of this protocol.	CLAR 4	OK
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	PDD B.1	DR	The PDD should clarify that the individual ratio of low operating cost / must-run power plant is less than 50% for five (5) years, in accordance with the reqiurement for simple OM method by ACM0002 version 06.	CLAR 6	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The finding of CLAR 6 was resolved and closed. Please refer to CLAR 6 in Table 3 of this protocol.		
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	PDD B.4	DR	Baseline identification shall be described more convincing manner, especially for power generation from renewable source. As many published study reports or statistical data on the power generation potential from renewable source as possible may be quoted. It shall be noted that the reason(s) of elimination of alternative(s) shall be justified with evidences. The finding of CLAR 14 was resolved and closed. Please refer to CLAR 14 in Table 3 of this protocol.	CLAR 14	OK
B.2.4. Is the baseline selection compatible with the available data?	PDD B.4 B.5	DR	Same as mentioned in B.2.1 of htis protocol.	CLAR 4	OK
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	PDD B.4 B.5	DR	Same as mentioned in B.2.1 of htis protocol.	CLAR 4	OK
C. Duration of the Project / Crediting Period It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1.1. Are the project's starting date and operational lifetime clearly defined?	PDD C.2.	DR	The starting date of the project activities is described 28 July 2006 in the section C.1.1 of the PDD. The guideline by CDM EB defines that the staring date of the project activities is the earliest date of which the implementation or construction or real action of proposed project begins as CDM project. The PDD shall clarify the starting date of proposed	CLAR 9	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			project showing the relevant evidence. Moreover, the starting date shall be described in DD/MM/YYYY, and delete the sentence of begining of construction of the project. The finding of CLAR 9 was resolved and closed. Please refer to CLAR 9 in Table 3 of this protocol.		
C.1.2. Is the crediting period clearly defined (seven years with two possible renewals or 10 years with no renewal)?	PDD C.2.	DR	The PDD shall clarify the first cediting period, because of the inconsistency with between in Table 3 of A.4.3 and in the section C.2. Moreover, the starting date shall be described in DD/MM/YYYY. The finding of CLAR 10 was resolved and closed. Please refer to CLAR 10 in Table 3 of this protocol.	CLAR 10	OK
D. Monitoring Plan The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category?	PDD B.7	DR	The approved small-scale CDM Methodology ”AMS-1D” was revised to AMS-1D version 12 prior to submission of PDD. The PDD shall apply AMS-1D version 12 to the proposed project activities. The finding of CAR 3 was resolved and closed. Please refer to CAR 3 in Table 3 of this protocol.	CAR 3	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.1.2. Is the monitoring methodology applicable to the project being considered?	PDD B.7	DR	Same as the above D.1.1 of this protocol.	CAR 3	OK
D.1.3. Is the application of the monitoring methodology transparent?	PDD B.7	DR	In case of discuss to power density raising by the dam, the PDD shall monitor the area of the reservoir measured in the surface of the water, after the implementation of the project activities, when the reservoir is full, in accordance with the approved methodology ACM0002 version 06. The finding of CLAR 11 was resolved and closed. Please refer to CLAR 11 in Table 3 of this protocol.	CLAR 11	OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	PDD B.7	DR	Same as the above D.1.3 of this protocol.	CLAR 11	OK
D.2. Monitoring of Project Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. Are the choices of project emission indicators reasonable?	PDD B.6 B.7	DR	Yes. The choice of project emission was reasonable	OK	OK
D.2.2. Will it be possible to monitor / measure the specified project emission indicators?	PDD B.6 B.7	DR	In Step 1 of section B.6.1., the PDD describes ”the proposed project is a run-of-river, therefore, the CO2 = 0”. However, in case that an inundated area is raised by construction of dam, the PDD shall discuss the power density and consider the project emission. The PDD shall clarify whether the inundated area is raised by the dam or intake weir. Moreover, the PDD reads that the proposed project	CLAR 5	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			has ”no storage capacity” in the section of A.2. This description is not appropriate. The finding of CLAR 5 was resolved and closed. Please refer to CLAR 5 inTable of this protocol.		
D.2.3. Do the measuring technique and frequency comply with good monitoring practices?	PDD B.6 B.7	DR	Yes. There are no issues for the measuring technique and frequency.	OK	OK
D.2.4. Are the provisions made for archiving project emission data sufficient to enable later verification?	PDD B.6 B.7	DR	Yes. There are special issues for archiving of emission data.	OK	OK
D.3. Monitoring of Leakage It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. If applicable, are the choices of leakage indicators reasonable?	PDD B.6	DR	There is no leakage.	OK	OK
D.3.2. If applicable, will it be possible to monitor / measure the specified leakage indicators?	PDD B.6	DR	Same as the above D.3.1 of this protocol.	OK	OK
D.3.3. If applicable, do the measuring technique and frequency comply with good monitoring practices?	PDD B.6	DR	Same as the above D.3.1 of this protocol.	OK	OK
D.3.4. If applicable, are the provisions made for archiving leakage data sufficient to enable later verification?	PDD B.6	DR	Same as the above D.3.1 of this protocol.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.4. Monitoring of Baseline Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	PDD B.7	DR	In accordance with the approved methodology, AMS.1 .D version 12 and ACM0002 version 06, the monitoring plan provides properly for collection and archiving of all relevant data.	OK	OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	PDD B.7	DR	Its choice is reasonable.	OK	OK
D.4.3. Will it be possible to monitor / measure the specified baseline emission indicators?	PDD B.7	DR	It is possible to monitor.	OK	OK
D.5. Project Management Planning It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.1. Is the authority and responsibility of project management clearly described?	PDD B.7.2 Annex 4	DR	Yes. The authority and responsibility are clearly described.	OK	OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	PDD B.7.2 Annex 4	DR	Yes. The authority and responsibility are clearly described.	OK	OK
D.5.3. Are procedures identified for training of	PDD	DR	The PDD shall clarify the training of personnel and	CLAR 8	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
monitoring personnel?	B.7.2 Annex 4		the preparation of manual for operation and maintenance in the section B.7.2. JCI confirmed that the project owner clarified the outline of training of personnel and manual for operation and maintenance. The finding of CLAR 8 was resolved and closed. Please refer to CLAR 8 in Table 3 of this protocol.		
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	PDD B.7.2 Annex 4	DR	Same as the above D.5.3 of this protocol	CLAR 8	OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	PDD B.7.2 Annex 4	DR	Same as the above D.5.3 of this protocol	CLAR 8	OK
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	PDD B.7.2 Annex 4	DR	Same as the above D.5.3 of this protocol	CLAR 8	OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	PDD B.7.2 Annex 4	DR	Same as the above D.5.3 of this protocol	CLAR 8	OK
D.5.8. Are procedures identified for day-to-day	PDD	DR	Same as the above D.5.3 of this protocol	CLAR 8	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
records handling (including what records to keep, storage area of records and how to process performance documentation)	B.7.2 Annex 4				
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	PDD B.7.2 Annex 4	DR	Same as the above D.5.3 of this protocol	CLAR 8	OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	PDD B.7.2 Annex 4	DR	Same as the above D.5.3 of this protocol	CLAR 8	OK
D.5.11. Are procedures identified for project performance reviews?	PDD B.7.2 Annex 4	DR	Same as the above D.5.3 of this protocol	CLAR 8	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E. Calculation of GHG emission 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.					
E.1. Project GHG Emissions The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	PDD B.6	DR	Tes. All aspects are related to direct and indirect GHG emissions.	OK	OK
E.1.2. Have all relevant greenhouse gases and sources been evaluated?	PDD B.3	DR	The PDD confirms all relevant greenhouse gases and source categories in section B.3.	OK	OK
E.1.3. Are the calculations documented in a complete and transparent manner with existing good practice?	PDD B.6. 3	DR	Ex-ante calculation of emission reductions is appropriate in conservative manner	OK	OK
E.1.4. Have conservative assumptions been used?	PDD B.6. 3	DR	Ex-ante calculation of emission reductions is appropriate in conservative manner	OK	OK
E.1.5. Are uncertainties in the project emissions estimates properly addressed?	PDD B.7	DR	The electricity supplied to the grid is measured by calibrated ammeter.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.2. Leakage It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	PDD B.6	DR	There is no leakage. Thus, leakage calculation are not required.	OK	OK
E.2.2. Are potential leakage effects properly accounted for in the calculations (if applicable)?	PDD B.6	DR	Same as the above E.2.1 of this protocol	OK	OK
E.2.3. Do the methodologies for calculating leakage comply with existing good practice (if applicable)?	PDD B.6	DR	Same as the above E.2.1 of this protocol	OK	OK
E.2.4. Are the calculations documented in a complete and transparent manner and (if applicable)?	PDD B.6	DR	Same as the above E.2.1 of this protocol	OK	OK
E.2.5. Have conservative assumptions been used (if applicable)?	PDD B.6	DR	Same as the above E.2.1 of this protocol	OK	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed (if applicable)?	PDD B.6	DR	Same as the above E.2.1 of this protocol	OK	OK
E.3. Baseline GHG Emissions The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Have the most relevant and likely operational characteristics and baseline	PDD B.6	DR	This project participants determine the emission factor ex-ante in accordance with ACM0002	CAR 2	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
indicators been chosen as reference for baseline emissions?			version 06. With regard to Build Margin (BM), CDM EB issued guidance that the efficiency level of the best technology commercially available in the provincial/regional or national grid of P.R. China is used as a conservative proxy for each fuel type in estimating the fuel consumption when calculating BM. "Efficiency Improvement and Energy Conservation in China Power Industry" issued in 2006 reports that the coal consumption rate of supercritical thermal plants is 320.58gce/kWh, which is available on the web site of http://www.hm-treasury.gov.uk/media/9A0/D9/final_draft_china_mitigation_power_generation_sector.pdf. This coal consumption of 320.58gce/kWh is converted the power plant efficiency of 38.44%. This PDD calculates Build Margin using the efficiency of 36.53% on basis of sub-critical thermal plant. As conservative proxy, the calculation of BM should apply the method of a relevant deviation of methodology approved by CDM EB, based on the efficiency of 38.44% representing best technology commercially available in P.R.China The project participants reflected the efficiency level of best technology commercially available in P.R.China and adopted the coal consumption rate of 320.58gce/kWh in the PDD version 03 /2/ for		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			calculating build margin (BM) /17/, /18/. JCI judged that the project participants could ensure accuracy, conservativeness and transparency in calculation of baseline emissions (BEy) by adopting the coal consumption rate of 320.58gce/kWh. The finding of CAR 2 was resolved and closed. Please refer to CAR 2 in Table 3 of this protocol.		
E.3.2. Blank					
E.3.3. Are the calculations documented in a complete and transparent manner?	PDD B.3 B.6	DR	Same as the above E3.1 of this protocol	CAR 2	OK
E.3.4. Have conservative assumptions been used?	PDD B.6	DR	Same as the above E3.1 of this protocol	CAR 2	OK
E.3.5. Are uncertainties in the baseline emissions estimates properly addressed?	PDD B.7	DR	The electricity supplied to the grid is measured by calibrated ammeter.	OK	OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	PDD B.6 B.7	DR	There are no issues	OK	OK
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline case?	PDD B.6	DR	The project achieves emission reductions and contributes to sustainable development of non Annex 1 party with registration as CDM project by CDM EB	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
F. Environmental Impacts It is assessed whether environmental impacts of the project are sufficiently addressed.					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	PDD D.1	DR	The PDD shall incorporate the approved date into the section of D.1. regarding to the EIA approval. The EIA has already approved by Yunnan Chuxiong Environment Protection Bureau according to China laws /22/, /23/. However, the EIA report shall be reviewed during the On-Site Assessment of validation. JCI confirmed at the on-site visit that the EIA was finally approved on 26 November 2006 /22/, /23/. The finding of CLAR 12 was resolved and closed. Please refer to CLAR 12 in Table 3 of this protocol.	CLAR 12	OK
F.1.2. Does the project comply with environmental legislation in the host country?	PDD D.1, D.2	DR	There are no significant environmental impacts identified for the project.	OK	OK
F.1.3. Will the project create any adverse environmental effects?	PDD D.2	DR	Stringent environmental monitoring and mitigation measures are carried out in construction and operation periods.	OK	OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	PDD D.2	DR	Yes.	OK	OK
F.1.5. Are transboundary environmental impacts considered in the analysis?	PDD D.2 E.3	DR	Yes. The EIA included ecological effect, soil erosion air pollution during construction and impact on the quality of surface water.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
G. Comments by Local Stakeholder Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	PDD E.1, E.2, E.3	DR	The project owner has already invited stakeholder' comments and taken due account of them. However, the project participants shall show protective facilities taken for water and soil loss and ecology deterioration by drawing during site survey in more detail. JCI judged that the project participants took due account for stakeholder comments such as the soil protection, ecology deterioration and compensation for inundated farm field. The finding of CLAR 13 was resolved and closed. Please refer to CLAR 13 in Table 3 of this protocol.	CLAR 13	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	PDD E.1, E.2	DR	Same as the above G.1.1 of this protocol	CLAR 13	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?	PDD E.3	DR	Same as the above G.1.1 of this protocol	CLAR 13	OK
G.1.4. Is a summary of the comments received provided?	PDD E.1, E.3	DR	Same as the above G.1.1 of this protocol.	CLAR 13	OK
G.1.5. Has due account been taken of any comments received?	PDD E.1, E.3	DR	Same as the aboveG.1.1 of this protocol	CLAR 13	OK

Table 3 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 written approval by DNA of each Party involved shall be provided. LoA from DNA of P.R.China was issued on August 26 2007. However, the UK government has not provided the written approval and not authorized the project participants yet.	N0 4 in Table 1 of this protocol	We provided copy of LoA from DNA of China to DOE. On the other habd, the LoA from DNA of UK sent on 19 March '08	The project participants obtained the written approval of voluntary participation from the designated national authorities (DNA) of each party involved. Eventually, the LoA from DNA of P.R.China and United Kingdom was issued on August 26, 2007 and 18 March 2008 respectively. The finding of CAR 1 was resolved and closed.
CAR 2. This project determines the emission factor ex-ante in accordance with ACM0002 version 06. With regard to Build Margin (BM), CDM EB issued guidance that the efficiency level of the best technology commercially available in the provincial/regional or national grid of P.R. China is used as a conservative proxy for each fuel type in estimating the fuel consumption when calculating BM. "Efficiency Improvement and Energy Conservation in China Power Industry" issued in 2006 reports that the coal consumption rate of supercritical thermal	E.3.1 E.3.3 E.3.4 No 13 & No 14 in Table 1 of this protocol,	The project owner has used the new coal consumption rate of 320.58gce/kWh in the revised PDD for BM calculation. As a result, the project owner adopted the Build Margin of 0.6319 tCO2e/MWh as per shown in the Annex 3 of the PDD version 03.	The project participants reflected the efficiency level of best technology commercially available in P.R.China and adopted the coal consumption rate of 320.58gce/kWh in the PDD version 03 /2/ for calculating build margin (BM). JCI confirmed that the project participants took the BM of 0.6319tCO2e/MWh through the review and check of Annex 3 in the PDD version 03 /2/. JCI judged that the project participants could ensure accuracy, conservativeness and transparency in calculation of baseline emissions (BEy)

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
plants is 320.58gce/kWh, which is available on the web site of http://www.hm-treasury.gov.uk/media/9A0/D9/final_draft_china_mitigation_power_generation_sector.pdf. This coal consumption of 320.58gce/kWh is converted the power plant efficiency of 38.44%. This PDD version 01 /1/ calculates Build Margin using the efficiency of 36.53% on basis of sub-critical thermal plant. As conservative proxy, the calculation of BM should apply the method of a relevant deviation of methodology approved by CDM EB, based on the efficiency of 38.44% representing best technology commercially available in P.R.China.			by adopting the coal consumption rate of 320.58gce/kWh for best technology commercially available in P.R.China /16/, /17/, /18/. The finding of CAR 2 was resolved and closed.
CAR 3. The approved small-scale CDM Methodology ”AMS-1D” was revised to AMS-1D version 12 prior to submission of PDD. The PDD shall apply AMS-1D version 12 to the proposed project activities.	B.1.2 D.1.1 D.1.2	The project owner made modification in the section B.2 of the PDD version 03 /2/ with AMS-1D version 12, reflecting the revision at the time of PDD submission.	The project participants modified and clarified the appropriate version No of AMS-1D applicable to the proposed project at the time of PDD submission /10/. JCI judged that the proposed project was appropriately applied to the approved methodology as a result of the modification. The finding of CAR 3 was resolved and closed

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
CLAR 1. The revised PDD received on February 18 2008 reads that the project has the installed capacity of 15MW and the annual operation hour is 4667h. It is estimated that the annual electricity generation will be 59.7GWh. The project owner are required to clarify and justify the estimated annual electricity generation of 59.7GWh and the annual emission reductions of 49,694 tCO2e	No 5 in Table 1 of this protocol	The annual electricity generation was calculated in the approved feasibility study (FS) as follows. Installed capacity: 15MW Annual operating hour: 4,667hours Annual average electricity generation: 70.00GWh Effective factor: 0.9 Internal consumption: 0.25% Line loss: 5% Therefore, the electricity generation sent to power grid was: 70.00X 0.9 X0.9975 X0.95=59.700GWh Thus, the electricity generation will reach 59.7GWh The baseline emission factor was calculated as 0.8324 tCO2e/MWh. The electricity supplied to the CSPG will be 59.7GWh. Therefore, the estimated annaul emssion reductions will be expressed as 49,694 tCO2e.	All data relating to the electricity generation were adopted in the feasibility study (FS) approved by the relevant authority. JCI confirmed that the oprerating hours were decided according to the hydrological record day by day measured for long period. Moreover, JCI confirmed that the effective factor of 0.9 for the electricity generation supplied to the grid was stipulated as the official value in the Economic Evaluation Code for Small Hydropower Projects (Document No SL 16-95) issued by Ministry of Water Resources, P.R.China /25/. JCI confirmed that the annual electricity generation of 59.7GWh was appropriate through the review for the approved FS /20/ and the investigation for IRR spreadsheet. JCI judged that the annual emission reduction of 49,694tCO2 was estimated appropriately using electricity replaced of 59.7GWh and emission factor of 0.8324tCO2/MWh. The finding of CLAR 1 was resolved and closed

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
CLAR 2. 1. The PDD should not alter the title of guidline in the lower part two lines at Table 2 of A.4.3. 2. Also, A.4.1.4 Details of physical location is requested to fill in within one page.	No 11 in Table 1 of this protocol	1. The project owner correctly amended the total number of crediting years according to the Guidelines for Completing PDD by CDM EB. 2. The project participants filled in the detail of physical location within one page.	JCI confirmed that the total number of crediting years was amended accordingly. Moreover, JCI confirmed that the detail of physical location was described in the section A.4.1.4 of the PDD version 03 /2/, not exceeding one page. The finding of CLAR 2 was resolved and closed.
CLAR 3. The project owner shall clarify that the proposed project is not debundling component of a large scale project activiy in more detailed and precise manner, in accordance with Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities by CDM EB, and furthermore clarifications on determining the occurence of debundling by EB	A.1.2 No 10 in Table 1 of this protocol	According to Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities, the project participants clarified that the proposed project was not debundling of large scale project activity in the section A.4.5 of the PDD. Moreover, the project participants clarified that there was only one hydropower station belonging to the same owner of the project nearby, but it was construted in 1994 and not applied to CDM in the same section of PDD.	JCI confirmed that the project participants was not developing or planning another project within 1km and 2 years of the proposed project activity, when JCI visited on-site plant on November 7 2007 /45/, through checking of the relevant documents and detailed map around the power plant site nearby. JCI judged that the proposed project was not debundling component of a large scale project activity in accordance with Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities by CDM EB /6/,/7/. The finding of CLAR 3 was resolved and closed.

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
CLAR 4. The spreadsheet of both FIRR for base case and for sensitivity analysis should be submitted to the validator in electronic data or PDF file prior to request for registration. Moreover, the basis of benchmark of 10% should be provided with the precisely written paper. Moreover, regarding to basic parameters, the project owner should clarify and provide the data sources and evidences to DOE, especially investment cost, prospective pool purchase price and O/M cost.	B.2.1 B.2.4 B.2.5 No 6 in Table 1 of this protocol	The project owner provided the IRR spreadsheet of both base case and sensitivity analysis to JCI. Moreover, the project owner clarified the basis of benchmark of 10% showing the Ecomonic Evaluation Code for Small Hydropower Projects issued by th Ministry of Water Resources, P.R.China. All basic parameters adopted in financial analysis were taken from the feasibility study (FS) report. However, the investment cost were adjusted by actual substantial constrution cost including compensation cost to residents. Therefore, the budget of investmnet cost were adjustied from the original of 85.6746 million Yuan to 100.7692 million Yuan. The prospected tariff was 0.21 Yuan /kWh. The O/M cost was estimated on the basis of the relevant labour provided in the Economic Evaluation Code for Small Hydropower Projects issued by th	JCI reviewed and checked the IRR spreadsheet without CER and with CER. JCI confirmed that the basis of bench mark of 10% was stipulated in the Ecomonic Evaluation Code for Small Hydropower Projects issued by th Ministry of Water Resources, P.R.China /25/. JCI confirmed that the project IRR was 6.92%, which was less than the benchmark IRR of 10% without CER, and the IRR of 10.80% with CER exceeded the benchmark of 10%. JCI reviewed the main parameters such as investment cost, prospective tariff of electricity and O/M cost. Please refer to the section 4.4 Additionality of this validation report. JCI confirmed that the increase of investment cost compared with the original of 85.6746 milloion yaun resulted in the rising prices of building materials and consumable, the improvement of workers' salary, the design-change of power line, the compensation charge for inundated fields and so on Please refer to the section 4.4

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
		Ministry of Water Resources, P.R.China.	Additionality of this validation report. JCI judged that the project participants responded to the CLAR 4 appropriately, providing the necessary documents and relevant description. The finding of CLAR 4 was resolved and closed.
CLAR 5. In Step 1 of section B.6.1., the PDD describes ”the proposed project is a run-of-river, therefore, the CO2 = 0”. However, in case that an inundated area is raised by construction of dam, the project owner shall discuss the power density and consider the project emission in the PDD. The project owner shall clarify whether the inundated area is raised by the dam or intake weir. Moreover, the PDD reads that the proposed project has ”no storage capacity” in the section of A.2. This description is not appropriate. Moreover, the project owner should demonstrate the measure of flooded surface area, showing the original surface area and the surface area at full water level by dam.	D.2.2	The project owner discussed the flooded surface area of 1,742.1m2 and the power density of 8,610.3W/m2 in the section A.4.2 of the PDD. The project owner provided the Drawing of Inundated Area to JCI.	JCI confirmed that it was the flooded surface area of 1,742.1m2 for the proposed project. Therefore, JCI confirmed through the review of the Drawing of Inundated Area /29/ that the power density of the proposed project was 8,610.3W/m2 /12/. The finding of CLAR 5 was resolved and closed.

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
CLAR 6. The project owner should clarify in the PDD that the individual ratio of low operating cost/must-run power plant is less than 50% for five (5) years, in accordance with the reqiurement for simple OM method by the ACM0002 version 06.	B.2.2	In order to demonstrate that the proposed project cleared the requirement of the ACM0002 version 06, the project owner showed the ratio of low operating cost/must-run resources to total grid generation in the section B.6.1 and Annex 3 of the PDD version 03.	JCI confirmed in Annex 3 of the PDD version 03 /2/ that the low operating cost/must-run resources constitute less than 50% of total generation of the China Southern Power Grid; 32.33% (2001), 31.62% (2002), 31.06% (2003), 28% (2004), 28.61% (2205). JCI judged that the project participants appropriately adopted the Simple OM method of the ACM0002 version 06 /11/. The finding of CLAR 6 was resolved and closed.
CLAR 7. In accordance with the ACM0002 version 06, the PDD shall adopt the full generation-weighted average for the most recent three (3) years which data are available at the time of PDD submission. The project owner shall clarify in the PDD that the data adopted in calculation of operating margin are the most recent ones. Moreover, the project owner shall clarify the imported electricity to the identified power grid, that is, China Southern Power Grid and also clarify whether the electricity imports are less than 20% of the total electricity generation in the PDD.	B.1.1	The project owner adopted the most recent available data which was issued on August 09 2007 by the DNA of China. Moreover, the project owner showed that the China Southern Power Grid (CSPG) imported electricity from Central China Power Grid (CCPG) which exceeded 20% of total generation in the identified power grid, CSPG only in 2005. The project owner calculated the OM of the identified power grid, CSPG in 2005, using the CM of CCPG exported electricity to CSPG based on the	The project participants adopted the full generation average of the identified power grid, CSPG and CCPG exporting electricity for the most recent three (3) years, 2003, 2004 and 2005. As a result, the project participants changed the value of OM ex-ante from 0.9853 tCO2e/MWh to 1.0329 tCO2e/MWh in Annex 3 of the PDD version 03 /2/, reflecting the latest available data of 2003, 2004 and 2005 JCI confirmed that the data issued on August 09 2007 by the DNA of China was appropriately adopted in Annex 3 of the PDD version 03 /2/, through the review and check of data sources.

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
In case of utilizing the imported electricity to CSPG from other exporting grid, the exporting grid should be included in the project boundary.	A.2.1	ACM0002 version 06. The PDD version 03 included the CCPG exporting electricity to CSPG in the project boundary.	In reference with the imported electricity from CCPG in 2005 exceeding 20% of total generation in the identified power grid, CSPG, JCI confirmed that the OM of CSPG in 2005 was appropriately calculated, using the CM of exporting power grid, CCPG, in 2005 in accordance with the ACM0002 version 06 /11/. As CSPG imported electricity from CCPG, the PDD version 03 /2/ included the CCPG exporting electricity to CSPG in the project boundary. The finding of CLAR 7 was resolved and closed.
CLAR 8. The project owner shall clarify the training of personnel and the preparation of manual for operation and maintenance in the section B.7.2 of the PDD.	D.5.3 D.5.4 D.5.5 D.5.6 D.5.7 D.5.8 D.5.9 D.5.10 D.5.11	The project owner clarified the training of personnel, and also stated the outline of manual for operation and maitenance to be prepared prior to the start-up of the plant.	JCI confirmed that the project participants clarified the outline of training of personnel and manual for operation and maintenance. JCI judged that the project participants was assured to obtain the proper management for CDM. The finding of CLAR 8 was resolved and closed.

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
CLAR 9. The starting date of the project activities is described 28 July 2006 in the section C.1.1 of the PDD. The guideline by CDM EB defines that the staring date of the project activities is the earliest date of which the implementation or construction or real action of proposed project begins as CDM project. The project owner shall clarify the starting date of proposed project showing the relevant evidence in the PDD. Moreover, the starting date shall be described in DD/MM/YYYY.	C.1.1	The history of the proposed projects and the determination of the starting date of the project activity are as follows: 28/02/2005 The project owner decided to seek support from CDM by the directorate meeting. The project owner demonstrated the above decision using the record of directorate meeting. 30/05/2005 The project owner received the bank notification from Agricutural Bank of China-Branch of Chuxiong to re-open the loan to the proposed project. 25/07/2005 The approval of feasibility study report by Development and Reform Commission (DRC) of Chuxiong State, Yunnan Province, Energy Bureau 28/07/2006 The project owner started the construction of the proposed project. Therefore, the starting date of the proposed project was decided on 28/07/2006.	JCI confirmed that the project participants decided to seek support from CDM on 28/02/2005, through the review and check of the Directorate Meeting Record /30/ provided by the project participants. Subsequently, JCI confirmed that Agricutural Bank of China-Branch of Chuxiong informed the project participants of the re-open of loan to the project through the review and check of the Bank Notification /31/ Moreover, JCI confirmed that the DRC of Chuxiong State approved the feasibility study report in writing /20/ and Notice on Construction Start /32/ was issued on 28/07/2006. The starting date of the project activity was decided on 28/07/2006 of construction start /32/. JCI judged that the starting date of the proposed project was approriately demonstrated with the evidences. The finding of CLAR 9 was resolved and closed.

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
CLAR 10. The project owner shall clarify the first crediting period, because of the inconsistency with between in Table 3 of A.4.3 and in the section C.2 of the PDD. Moreover, the starting date of the first crediting perid shall be described in DD/MM/YYYY.	C.1.2	The project owner amended to ensure the consistency of the starting date of the first crediting period in the PDD version 03.	JCI confirmed the consistency of description between in A.4.3 and C.2 of the PDD version 03 /2/. JCI confirmed that the starting date of the first crediting period was 01/09/2008 in C.2 of the PDD version 03 /2/. The finding of CLAR 10 was resolved and closed.
CLAR 11. In case of discuss to power density raising by the dam, the project owner shall monitor the area of the reservoir measured in the surface of the water, after the implementation of the project activities, when the reservoir is full, in accordance with the ACM0002 version 06.	D.1.3 D.1.4	The project owner added the measurement for flooded surface area as the monitoring item in the PDD version 03.	JCI confirmed that the measurement for flooded surface area was added in the section B.7.1 of the PDD version 03 /2/. JCI judged that the application of monitoring methology was appropriate, in accordance with the approved methodology ACM0002 version 06. The finding of CLAR 11 was resolved and closed.
CLAR 12. The project owner shall incorporate the approved date into the section of D.1 of the PDD, regarding to the EIA approval. The EIA has already approved by Yunnan Chuxiong Environment Protection Bureau according to China laws. However, the EIA report shall be reviewed during the On-Site Assessment of validation.	F.1.1 No 17 in Table 1 of this protocol	The project owner incorporated the approved date into the PDD. The project owner showed the EIA report to JCI and submitted the photocopy of it at the on-site assessment.	JCI confirmed at the on-site visit that the EIA was finally approved on 26 November 2006 /22/, /23/. The finding of CLAR 12 was resolved and closed.

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
CLAR 13. The project owner has already invited stakeholder' comments and taken due account of them. However, the project owner shall show protective facilities taken for water and soil loss and ecology deterioration, and also compensation measures using the relevant drawing or documents during the site survey in more detail.	G.1.1 G.1.2 G.1.3 G.1.4 G.1.5 No 16 in Table 1 of this protocol	The project owner demonstrated the taken due account using the Design Document and Drawing of Hydropower Station and Compensation Agreement with the residents during the on-site assessment.	During the on-site assessment, JCI reviewed the Design Document of Magahe River Hydropower Station, the Drawings of Hydropower Station for Magahe River Hydropower Project and Compensation Agreement with the residents /21/, /24/, /26/. JCI judged that the project participants took due account for stakeholder comments such as the soil protection, ecology deterioration and compensation for inundated farm field. The finding of CLAR 13 was resolved and closed.
CLAR 14. Baseline identification shall be described in more convincing manner, especially for power generation from renewable source. As many published study reports or statistical data on the power generation potential from renewable source as possible may be quoted. It shall be noted that the reason(s) of elimination of alternative(s) shall be justified with evidences. Regarding to the solar technology as renewable source in China, the project owner	B.2.3 No 13 in Table 1 of this protocol	The project owner added the explanation and description on the power generation potential from renewable sources such as wind power, biomass power, solar energy and son on, in more detailed manner. Moreover, the project owner incorporated the reasons eleiminated plausible scenario showing the data sources and evidences in the PDD version 03.	The project participants incorporated the description for power generation from renewable sources into the B/4 of the PDD version 03 /2/, showing data sources and quoted study report. JCI confirmed through the review of data and evidences that the description and explanation added to the PDD reflected the substantial technology level and the potential sources in Yunnan province, P.R.China, for the utilization of wind power and biomass power /36/, /37/, /38/. As for the solar, there is no enterprise

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
should add the description and reason eliminated from alternatives. The evidences for judgement to set up the baseline should be provided to JCI and also demonstrated in the B.4 of the PDD as footnote.			to develop the utilization of solar power in P.R.China, because the generation cost of 3.5Yuan/kWh is too high. Moreover, JCI confirmed that the construction fossil fuel power units with the capacity of 135MW or below are strictly prohibited, and furthermore there are rules and regulations in P.R.China to prohibit constructing fossil fuel power plant with single-unit capacity of 100MW or below /34/, /35/. JCI confirmed that the project participants eliminated the baseline scenario for construction of fossil fuel power plant based on these rules and regulations. The finding of CLAR 14 was resolved and closed.

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APPENDIX B

Certificate of Appointment of Validation Team

Project Title	Shuangbai Ejia Magahe River Hydropower Project
Applied Methodology	AMS-1D version 12
	Sectoral Scope 1

Date: 12/09/2007

Designated Operational Entity: Japan Consulting Institute (JCI)

Reflecting the competence criteria of JCI, this is to certify the appointment of validation team of JCI specified below for the CDM project activity above, as per CDM Project Activity Registration Form, "**F-CDM-REG**" adopted at the 24th Meeting of CDM Executive Board, and Validation Procedure established by JCI CDM Center.

Signature

Akio Yoshida,
Executive Director, JCI CDM Center

Date: 20/09/2007

Client: Coway International TechTrans Co. Ltd.

Reflecting the curricula vitae provided, this is to agree the validation team of JCI specified below for the CDM project activity above, as per Validation Procedure established by JCI CDM Center.

It is also agreed that Mr. Takayuki ABE of JCI participates in the validation activities of the said project for the quality issues under its quality management scheme.

Signature

(Name) Zhu Ling
(Title) Director, CDM Division, Coway International TechTrans Co., Ltd.

Validation Team

Validation Team	Name	Assigned Role
Leader	Takayuki ABE	All relevant issues
Member	Yoshihisa SAKAI	CDM auditor