VALIDATION REPORT

MARUBENI CORPORATION

Shaba 24MW Hydropower Project in Yunnan Province, China

12 June 2008

Japan Consulting Institute

REPORT NO. JCI-CDM-VAL-07/016
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Approved by: Akio Yoshida, Executive Director	Organisational unit: JCI CDM Center Japan Consulting Institute (JCI)
Client: MARUBENI CORPORATION	Client ref.:

Project Name: Shaba 24MW Hydropower Project in Yunnan Province, China
Country: People's Republic of China
Methodology: ACM0002
Version: 06
GHG reducing Measure/Technology: Grid-connected renewable power generation / Installation of three (3) water turbines and generators (8MW each) on the Yangbijiang River, a branch of Lancangjiang River in Yangbi County, Dali Bai Autonomous Prefecture in Yunnan Province.
ER estimate: 97,403 t-CO2e/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 Shaba 24MW Hydropower Project in Yunnan Province, China, as described in the PDD version 03 of 31th March, 2008 /2/, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodologyACM0002 (version 06) /5/. JCI thus requests the registration of the project as a CDM project activity.

Report No.:	Date of this revision:	Rev. No.
JCI-CDM-VAL-07/016	12 June 2008	03
Report title: Shaba 24MW Hydropower Project in Yunnan Province, China		
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Abbreviations

Beijing Haohua	Beijing Haohua Rivers International Water Engineering Consulting Co. Ltd.
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
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
MARUBENI	Marubeni Corporation
MP	Monitoring Plan
OM	Operating Margin
PDD	Project Design Document
PRC	People's Republic of China
SCPG	South China Power Grid
UNFCCC	United Nations Framework Convention for Climate Change
VVM	Validation and Verification Manual
YDXED	Yunnan Dali Xianglong Energy Development Co. Ltd.

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1 EXECUTIVE SUMMARY – VALIDATION OPINION

Japan Consulting Institute (JCI) has performed a validation of the Shaba 24MW Hydropower Project in Yunnan Province, China. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided JCI with sufficient evidence to determine the fulfilment of stated criteria.

The host country is People's Republic of China and the Annex I country is Japan. Both countries fulfil the participation criteria and have approved the project and authorized the project participants. The DNA from People's Republic of China confirmed that the project assists in achieving sustainable development.

The project correctly applies ACM0002 "Consolidated methodology for grid-connected electricity generation from renewable sources", version 06.

The total emission reductions from the project are estimated to be on the average 97,403 tCO_2e per year over the selected 7 year crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is JCI's opinion that the Shaba 24MW Hydropower Project in Yunnan Province, China, as described in the PDD version 03 of 31/03/2008 /2/, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002 version 06. JCI thus requests the registration of the project as a CDM project activity.

2 INTRODUCTION

MARUBENI has commissioned JCI to perform a validation of the (hereafter called "the project"). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board and COP/MOP.

2.1 Objective

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

2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, and the relevant

decisions by the CDM Executive Board and COP/MOP, including the approved consolidated baseline and monitoring methodology ACM0002 version 06 of 19 May 2006 /5/. 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 Shaba 24MW Hydropower Project in Yunnan Province, China, version 01, 15/08/2007 by Beijing Haohua

/2/ PDD of Shaba 24MW Hydropower Project in Yunnan Province, China, version 03, 31/03/2008 by Beijing Haohua

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

/4/ Tool for the demonstration and assessment of additionality (Version 03)

/5/ ACM0002 version 06 "Consolidated methodology for grid-connected electricity generation from renewable sources"

/6/ Thresholds and Criteria for the Eligibility of Hydroelectric Power Plants with Reservoirs as CDM project Activities

/7/ Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventory

/8/ China Energy Statistical Yearbook 2004~2006

/9/ China Electric Power Yearbook 2002~2006

/10/ "Request for guidance" by DNV

/11/ "Request for clarification on use of approved AM0005 for several projects in China" by CDM EB

/12/ The report of "Efficiency improvement and energy conservation in China's Power Industry"

/13/ National CDM Management Regulation of People's Republic of China

/14/ Economic Evaluation Code for Small Hydropower Projects (SL16-95)

/15/ Company Profile

/16/ Feasibility Study Report (including river water flow data)

/17/ Approval of Hydropower Project

/18/ Explanation for Reason of Investment Increase by Yunnan Lingyu Water Resource Design Institute

/19/ Meeting minutes for CDM investigation of Shaba Hydropower Project

/20/ Water and Soil Protection Measure Report

/21/ Opinion for Water Source

/22/ Approval of Water Soil Protection Measure Report

/23/ Power Transmission Line Design Report
/24/ Approval of Power Transmission Line Design Report
/25/ EIA report (including stakeholder comments)
/26/ Opinion for EIA Report
/27/ Preliminary Approval of EIA report
/28/ Approval of EIA report
/29/ Approval of Land Use
/30/ Agreement of Residents for Hydropower Project
/31/ Purchase Agreement for Hydropower plant
/32/ Purchase Agreement for Electric Power Trans
/33/ Memorandum on Power price issued by Yunnan Province Development and Reform Commission
/34/ Compensation Agreement with Residents
/35/ Drawings for Hydropower Station
/36/ Electrical Single Line Diagram
/37/ 2006 China Water Resource Yearbook
/38/ F-CDM-AM-Clar_Resp_ver 01.1-AM_CLA_0049 approved by CDM MP
/39/ Letter of Approval by DNA of the People's Republic of China
/40/ Letter of Approval by DNA of Japan

/44/ Specification on data source of average tariff 0.16yuan/kWh
/45/ Evidences for Cost incurred up to March 2006
/46/ Evidences for Tax Rate issued by official government organizations
/47/ Comments on "Explanation for Reason of Investment Increase" by Yunnan Lingyu Water Resource Design Institute
/48/ Loan Consent Letter from Agricultural Bank of China issue by the Yangbi Country Sub Branch of Agricultural Bank of China

Main changes between the version published for the 30 days stakeholder commenting period and the final version submitted for registration:

1) With reference to the starting date of the proposed project activity, JCI issued the finding of CAR-3 to clarify its starting date, based on the relevant guideline. As a consequence, the starting date of the proposed project activity is changed from the date of original project construction start to the date of decision of the project owner to look for financial support through CDM in the revised PDD /2/.
2) As response to CAR-3 the time schedule of the project is provided in the revised PDD.
3) With reference to the benchmark, JCI issued the finding of CAR-2 that the PDD should include IRR calculation sheets or submitted in the separate sheet. The PDD added the IRR calculation sheets of the base case without CDM and CDM case in PDD and provided in the separate sheets including sensitivity analysis.
4) JCI issued the finding of CLAR-4 to provide the graph showing results of IRR sensitivity analysis. The graph was added in the revised PDD.

5) With reference to the efficiency level of the best technology commercially available in P. R. China when calculating BM, JCI issued the finding of CLAR-6 that the PDD should clarify the efficiency of coal fired thermal plant in China. As a consequence, the revised PDD /2/ changes the efficiency from 35.82% (Coal consumption 336.66gce/kWh) to 38.44% (320gce/kWh). And then BM is changed from 0.6748tCO2e/MWh to 0.6319tCO2e/MWh.
6) JCI issued the finding of selecting criteria for the similar projects as common project. The original PDD described only three project in sub-step 4 but the revised PDD analysed 18 projects in Yunnan Province according to *Classification & design safety standard of hydropower projects (DL5180-2003)* issued by State Economic and Trade Commission of People's Republic of China in 2003 and *2006 China Water Resource Yearbook.*
7) With reference to the monitoring plan JCI issued the finding of CLAR-12 that the PDD should be required monitoring for the surface area of reservoir. The revised PDD added the surface area of reservoir measured at start of the proposed project in the monitoring plan.

3.2 Follow-up Interviews with Project Stakeholders

The follow-up interviews with project stakeholder were held from 22 October to 24 October 2007 at on-site in P. R. China.

	Date	Name	Organization	Topic
/41/	22/10/2007	Mr. Liu Ji Quan	YDXED	Opening meeting
		Ms. Corrie Liu Mr. Li Chun Min Dr. Liu Shu Kun	Beijing Haohua	Schedule of follow-up interviews Outline of YDXED Confirmation of construction schedule Organization Operation Starting date of project Feasibility study EIA report Approval of relevant local governments Power Purchase Agreement PDD description
/42/	23/10/2007	Mr. Dai Kui Mr. Wang Shu Fang	Resident	Stakeholder comments Taken due account
		Mr. Kong Yong Ning Mr. Liu Ji Quan	YDXED	Environmental affect
		Ms. Corrie Liu Mr. Li Chun Min Dr. Liu Shu Kun	Beijing Haohua	Drawing of project

/43/	23/10/2007	Mr. Liu Ji Quan Ms. Corrie Liu Mr. Li Chun Min Dr. Liu Shu Kun	YDXED Beijing Haohua	Closing meeting Confirmation or the site assessment results Outstanding matters Validation schedule

3.3 Resolution of Outstanding Issues

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

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the Shaba 24MW Hydropower Project in Yunnan Province, China, 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:

i) mistakes have been made with a direct influence on project results;
ii) CDM and/or methodology specific requirements have not been met; or
iii) 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 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.	*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 Table1& 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 reviewer qualified in accordance with JCI's qualification scheme for CDM validation and verification.

3.5 Validation Team

Role/Qualification	Last Name	First Name	Country
All relevant issues / Team Leader	ABE	Takayuki	JAPAN
CDM auditor / Team Member	SAKAI	Yoshihisa	JAPAN
CDM expert / Team Member	URAGAMI	Masayuki	JAPAN

The certificate of appointment of validation team member is attached in 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.
The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

4.1 Participation Requirements

Parties involved in the project are People's Republic of China as host Party and Japan as Annex 1 Party. The project participants are Ynnan Dali Xianglong Energy Development Co., Ltd. of P. R. China and Marubeni Corporation of Japan. Both P. R. China and Japan 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 30 September 2007, authorizing Ynnan Dali Xianglong Energy Development Co., Ltd. as project participant and confirming that the project assists in achieving sustainable development.

The DNA of Japan issued LoA on 14 September 2007, authorizing MARUBENI 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 issuance of the LoAs.

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

The project consists of a water diversion type run-of-river hydropower facility with new reservoir without regulation. The main structures are a water intake system, a water diversion system, a head pond, pressure conduits and a power house. The water-turbine generators adapted to the project are products of Chinese manufacturer and these are environmentally safe and sound. A total of 24MW generating units will be installed and expected to provide 118,510MWh electricity to South China Power Grid (SCPG) per year.
The project uses China domestic technologies and equipments. Before project operation the project operator will undergo training on operation and maintenance by the veteran engineer.

The project will start the operation at 1st April 2008 and the expected operation period is 20 years. The crediting period is from 1st April 2008 to 31st March 2015.

4.3 Baseline Determination

The project applies ACM0002 version 06 "Consolidated methodology for grid-connected electricity generation from renewable sources" /5/. The project meets the other requirements such as type of

hydropower generation, power density and system boundaries prescribed in the approved methodology ACM0002 version 06/5/.

JCI judged from the faclities constructed and its drawings during on-site assessment this project was a run-of-river type hydropower generation with small reservoir.

The PDD describes that the power density of the proposed project is 108W/m2, so this project is greater than 10W/m2. JCI issued the finding of CLAR-2 to clarify the power density calculation. The PDD explained that the power density was calculated based on the document "F-CDM-AM-Clar_Resp_ver 01.1-AM_CLA_0049" approved by CDM MP on 17th July 2007.

The project participants discussed the four (4) alternatives to identify the baseline scenario in the light of financial and legal requirements, moreover from view-point of renewable energy sources in the region.

JCI judges that the alternative providing the same amount of electricity by SCPG 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 as mentioned in "4.5.1 Parameters determined ex-ante" of this validation report.

The system boundaries of this project are as follows. JCI judges that the system boundaries are appropriately defined.

	GHGs involved	Description
Baseline emissions	CO_2	Emission from Electricity generation of SCPG[1)] and CCPG[2)]
Project emissions	None	The power density is greater than 10W/m^2
Leakage	None	

1) SCPG is a power grid that the project will supply electricity.

2) CCPG, Central China Power Grid, is a power grid from which SCPG imports electricity.

4.4 Additionality

The additionality of the Shaba 24MW Hydropower Project is demonstrated by a discussion for investment barrier in conformance with Tool for the demonstration and assessment of additionality (Version 03) /4/.

In accordance with Economic Evaluation Code for Small Hydropower Projects (SL16-95) /14/, issued by the Ministry of Water Resources of P. R. China, an IRR of 10% for total investment of a project is regarded as a benchmark of small hydropower projects.

The proposed project started its planning in 2003. The Feasibility Study Report /16/ completed March 2005. At that time a financial plan was without CDM. The feasibility study showed 104.1 million Yuan of the total static investment, 0.20 Yuan/kWh of the prospective feed-in electric Tariff which was anti-counting aimed to meet the basic requirement to afford the loan and then the project IRR was 14.65%. The feasibility study report was approved by the Provincial Development and Reform Commission at 2nd June 2005 /17/ and then the construction started.

After the construction start it was discovered that there was a geological dislocation on the tunnel root of water way and also that the rock was fragile and easy to crumble. Actually there were 13 times accidents happened during early several construction months. Therefore the expected construction period should be extended from one year to two years. The extension of construction schedule resulted to increase the interest for bank roan of which the owner should bear. And there were other reasons for increasing the investment.

The project owner knew the new feed-in electric Tariff by the document issued by the Yunnan Province Development and Reform Commission 30th August 2005 /33/. By the document the feed-in electric Tariff to be applied to this project was 0.16Yuan/kWh much lower than 0.20Yuan/kWh expected Tariff in the FS.

From those financial deteriorations of the project the project owner discussed with the relevant local governments and CDM specialists and then decided to seek a help from CDM. On 8th December 2005 all the stakeholders joined and held a meeting to discuss the project.

The Yunnan Lingyu Water Resource Design Institute, that carried out the original Feasibility Study, explained the reason for investment increase that 6.4 million Yuan of raw material cost increase such as steel, cement and so on, more than 6.0 million Yuan of construction cost due to geological problem, 3.4 million Yuan of the loan interest due to construction schedule extension, 8.2 million Yuan of additional compensation for the two existing small hydropower plant and then totally 24.0 million Yuan increased as the investment of this project. The compensation for the existing plants was requested in the opinion from the Prefecture Water Supply Office because of decreasing electric generation of these existing plants during low water flow season. The existing plants were located in downstream of the river and affected by the project operation.

The project owner proposed CDM application and the all stakeholders supported the implementation of the project with CDM. JCI confirmed those by “Explanation for Reason of Investment Increase” by Yunnan Lingyu Water Resource Design Institute /18/ and “Meeting minutes for CDM investigation of Shaba Hydropower Project” /19/ dated 8th December 2005.

The financial study re-carried out as CDM project. The results showed 128.21 million Yuan of the total static investment, 0.16 Yuen/kWh of the feed-in electric Tariff, 7.77% and 14.53% of the project IRR without CDM and with CDM respectively. Without CERs, the IRR value calculated in the financial study for the investment of the project is 7.77% below the financial benchmark of 10%. Thus without CERs, it is evident that the project will face substantial financial hurdles and cannot be implemented. After taking CERs revenue into consideration, the project IRR reaches 14.53% over than the benchmark rate. The IRR of the project with and without CER are calculated under the appropriate data and assumption.

A sensitivity analysis was conducted by altering the parameters: investment, O&M cost and electricity output. The electricity output meant the electricity supplied to the grid company and it is proportional to income of the project in the IRR calculation sheet. The sensitivity analysis shows firmly that if without CERs revenue, the project is not financially attractive and cannot be implemented. JCI judged that 10% variation used for the sensitivity analysis was appropriate by the reason described in the revised PDD.

JCI issued the finding of CLAR-4 that the sensitivity analysis graph should be provided in the PDD and the uncertainty should be clarified. The PDD revised then CLAR-4 was resolved and closed.

With reference to the common practice analysis, the project participants describes other activities similar to the project that were below 50 MW small scale 18 hydropower plants built in Yunnan Province. 5 plants started an operation before 2000 and then analysis was carried out about

remaining 13 plants. 8 plants were state-owned companies and 5 plants were private companies. In case of state-owned company's hydropower plant there are many advantages regarding connection procedures to the grid and electricity tariff setting. And also they are easy to get financial support from bank. On the other hand the private company does not have such advantages so the implementation possibilities for hydropower project are different from the state-owed company.

The PDD explained the analysis for detail of the 5 private company's projects. 4 projects of the 5 private companies have the background and connection to big companies and/or state owned company easy to get financial support and electricity connection to the Grid. One project is similar situation as the proposed project and it is CDM project.

JCI judged the proposed project will not implement without CDM because of bad financial situations such as higher investment cost and low feed-in electric Tariff. The project owner was consisted of three private and personal investors and does not have background such as big company.

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 are appropriate and credible, JCI judges that the project activity is additional.

Furthermore, JCI issued the finding of CAR-3 that the PDD should clarify the starting date of the proposed project activity, based on the relevant guideline.

The revised PDD /2/ changed the starting date of the project activity from 17th June 2005 of the commencement of the construction start issued by the local government in original PDD /1/ to the 8th December of decision of the project owner to look for financial support through CDM. The evidence is "meeting minutes for CDM investigation of Shaba Hydropower Project" at 08/12/2005 in which the seriously consideration of the project participant and the stakeholders to seek a help from CDM is shown /19/.

The responses for the finding of CAR-3 were appropriate. Thus the finding of CAR-3 was resolved and closed.

4.5 Monitoring

4.5.1 Parameters determined ex-ante

According to the approved consolidated baseline methodology ACM0002 (version 6) /5/, the baseline emission factor (EFy) is calculated in ex-ante as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) factor.

Moreover, with regard to the application of AM0005 and AMS-I.D. in P. R. China, "Request for guidance" /10/ 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" /11/ which suggested that the projects participants use 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" /12/ reports the coal consumption rate of 320gce/kWh and it's equivalent efficiency of 38.44% for supercritical units employed in P. R. China as major performance indicator in 2005.

JCI issued the finding of CLAR-6 that the 343.33gce/kWh and 35.82% used in the previous PDD /1/ does not indicate the efficiency level of the best technology commercially available in the provincial/regional or national grid of China.

The project participants revised its value to 320gce/kWh presenting to be conservative in the revised PDD /2/. The coal consumption rate of 320gce/kWh is equivalent to 38.44% of coal fired power plant efficiency in the Table 3-14 of PDD Annex 3.

JCI judges that the BM in the revised PDD /2/ ensures conservative determination by adopting the coal consumption rate of 320gce/kWh.

The BM emission factor of the SCPG is calculated using the data from 2003~2005,

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

Thus, the finding of CLAR-6 was resolved and closed.

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 SCPG 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. The total amounts of imported electricity for 2003, 2004 and 2005 account for by 0.005%, 4.2% and 26.3% of total supply electricity from SCPG respectively. Those of 2003 and 2004 did not exceed 20% of total supply in the project electricity system but that of 2005 did exceed 20%. The imported electricity from a connected electricity system within the same host country is adequately discussed in emission factor calculations of SCPG by conservative manner for three years. ACM0002 requires to use CM of the exporting grid if nets imports exceed 20% of the total generation in the project electricity system. The PDD used 0.772171t-CO2e/MWh as the 2005 emission factor of CCPG that was lower than the CM of CCPG shown in the document published by China DNA.

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

EF_{OMy} = 1.0119 t-CO2e/MWh

The baseline emission factor (EF_y) is expressed as:

$EF_y = 0.5 \times EF_{OM,y} + 0.5 \times EF_{BM,y}$

$= 1.0119 \times 0.5 + 0.6319 \times 0.5 = 0.8219$t-CO2e/MWh

Furthermore, as the project has the power density of 108 W/m2, the PDD adopts the project reservoir emission of zero in accordance with the guideline of "Thresholds and Criteria for the Eligibility of Hydroelectric Power Plants with Reservoirs as CDM project Activities" /6/ and the document "F-CDM-AM-Clar_Resp_ver 01.1-AM_CLA_0049" approved by CDM MP on 17th July 2007 /38/.

The parameters determined ex-ante are calculated in an appropriate and conservative manner.

4.5.2 Parameters monitored ex-post

Based on ACM0002 (version 06), the following data and parameters is monitored during the project crediting period.

1) Annual Grid-connected power generation of the proposed project ($EG_{PJ\ to\ SCPG,\ y}$)
2) The annual amount of power supplied by the South Power Grid Corporation to the proposed project ($EG_{SCPG\ to\ PJ,\ y}$)
3) Surface area of the reservoir at full reservoir level at the start of the project

JCI issued the finding of CLAR-12 that surface area of the reservoir at full water level should be monitored after project operation start. The revised PDD added the surface area of reservoir measured at start of the proposed project in section B.7.1.and section B.7.2.

4.5.3 Management system and quality assurance

The project owner, Ynnan Dali Xianglong Energy Development Co., Ltd., will monitor the electricity delivered to and imported from the SCPG. To ensure all data are reliable and transparent, the project owner establishes the managing structure for Quality Assurance and Quality Control (QA & QC) in the revised PDD /2/.

The quality procedures for recording, maintaining and archiving data were described in the PDD/2/ and shall be improved as part of this CDM project activity. The meters that should be installed and measured in the project require QA & QC measures to guarantee the accuracy of metering and safety of the project operation. The project owner and the grid company will sign an agreement to develop a set of quality control procedures regarding measurement and calibration to keep the accuracy of data.

JCI has discussed with the project owner regarding training of personnel and the preparation of manual for operation and maintenance. The project owner has hired the veteran engineer on operation and maintenance for hydropower station from the state owed power generation company. The operation and maintenance manuals and training procedures have been prepared.

4.6 Estimate of GHG Emissions

The baseline emissions (BE_y in t-CO2e) are the product of the baseline emissions factor (EFy in t-CO2e/MWh), times the electricity supplied by the project activity to the grid (EGy in MWh).

$$BEy = EGy \times EFy = (EG_{PJ\ to\ SCPG,\ y} - EG_{SCPG\ to\ PJ,\ y}) \times EFy$$
$$= (118{,}510 - 0) \times 0.8219 = 97{,}403\ t\text{-}CO2e$$

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 108W/m2 greater than 10W/m2. Based on ACM0002 version 06 /5/, the PEy of the project is zero.

$$PEy = 0\ t\text{-}CO2$$

The leakage (Ly) of this project is also zero. Therefore, the emission reductions of the project are:

$$ERy = BEy - PEy - Ly = (EG_{PJ\ to\ SCPG,\ y} - EG_{SCPG\ to\ PJ,\ y})\ EFy - PEy - Ly$$
$$= 97{,}403 - 0 - 0 = 97{,}403\ t\text{-}CO2e/year$$

(The $EG_{SCPG\ to\ PJ,\ y}$ is zero for ex-ante calculation of emission reductions)

The assumptions made for estimating GHG emission reductions are consistence with the approved consolidated baseline and monitoring methodology ACM0002 version 06.
JCI judges that the estimate of GHG emissions is accurate, transparent and conservative in establishing formulas, parameters and values used.

4.7 Environmental Impacts

An Environmental Impact Assessment (EIA) was conducted to ensure that the project complies with national, regional and local environmental regulations during its construction and operation period.
The categories of EIA were included water pollution, air pollution, noise, solid waste, ecology and resettlement.

The EIA report /25/, prepared by the Science and Technology Development Center of Yunnan University which was an organization approved the State Environmental Protection Administration and was independent from the project owner in terms of financial and personnel management. The EIA report has already been approved by the Environmental Protection Bureau of Dali Bali Autonomous Prefecture of Yunnan Province /28/.
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 issued the finding of CLAR-9 regarding the resettlement. JCI has confirmed no resettlement due to this project by EIA report and other documents during on-site-assessment. By the interview with residents JCI has confirmed their opinion that they supported this project and there was no environmental problem except noise and dust during construction. The project owner did take an adequate countermeasure for those problems.

JCI has confirmed the agreements between the project owner and villagers who transferred their land to the project owner. The villagers have got the compensation fee and the new land.

The finding of CLAR-9 was resolved and closed.

4.8 Comments by Local Stakeholders

The project owner carried out twice inviting comments from the local stakeholders. The first inviting comment was carried out by Science and Technology Development Centre of Yunnan University during the Environmental Impact Assessment. The purpose was the public consultation for the social, economic and environmental effects of the project before its implementation.
The result of this survey was reported in the EIA report /25/. The questionnaires were released to 50 residents in villages near the project and 42 of them were recollected. 76% of the residents consulted were supportive to the project in point of local economy development and local employment. Many residents thought that the project had little influence on the air quality, surface water and eco-environment. No one was against the implementation of the project.
The project owner took the comments and feedback seriously and took the prompt and adequate action to the stakeholders' comments and suggestions.

The second inviting comment was carried regarding applying CDM by the project owner and the local Town Committee. The letters to invite the opinion about applying CDM construction/

operation of this project have were released and re-collected. Almost local peoples supported this project and also applying CDM, and they thought that the project was benefit for supplying electricity to the local area, supplying local jobs and reducing GHG with no emitting the waste water and gas.

JCI interviewed the villagers affected by the project during on-site assessment, and confirmed that the consulted villagers fully satisfied with the owner's countermeasures to protect local environments and the compensation taken as due account by the owner. Nobody was against the project activity. JCI judged the project caused no influence of adverse impacts.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD version 01of, "15/08/2007" was made publicly available onJCI's climate change 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 "22/08/2007" to "20/09/2007".

No comment was received.

5 Response to Request for Review

JCI and the project participants have received the three Requests for Review from UNFCCC. The followings are the Initial Response of JCI and the project participants to Review Requests.

Issue 1*: Further clarification is required regarding whether costs incurred before March 2006 have been included in the investment analysis, and if so justification should be provided for this.*

Response of JCI:

The proposed project started its planning in 2003 and the FS Report completed March 2005 as shown in the PDD. At that time the project was as a business without CDM support. The project started a construction in June 2005 and afterword the project encountered with financial problems due to investment cost increase and stopped construction works.

The project owner discussed with the stakeholders and consultant to overcome the financial problem and started studying CDM. The Yunnan Lingyu Water Resource Design Institute estimated the investment cost increase and prepared the report /18/ in which it was nearly 24million Yuan. The meeting in which was participated by the local governments, the design institute, the project owner and the CDM consultant was held at 8th Dec., 2005 and the above report was submitted to the meeting. The minutes of the meeting /19/ showed the serious consideration among the stakeholders participated in the meeting and decided to apply CDM registration.

The project owner signed the CDM consult agreement with Beijing Hauhua Rivers International Water Engineering Consulting Co. Ltd., 12th Dec., 2005. And the Branch Bank of China Agricultural Bank agreed to provide the extra loan to the project with condition of CDM application on 16th January, 2006. Then the proposed project restarted a construction on March 2006.

According to the below Project Participant's response the cost incurred before March 2006 was 4.7928 million Yuan that was about 3.7% of total investment. The financial analysis including

sensitivity analysis in the PDD used the Total Static Investment of 128.42 Million Yuan which included the cost incurred before March 2006.

Generally, the financial performance of a specific part of the project may be individually evaluated if investment and return from the respective part of the product can be clearly separated. Otherwise the financial performance of a project is to be evaluated at any point of time during construction phase on the basis of the total investment cost that is necessary to complete overall project construction. In this specific case, the revenue from the sales of electricity cannot be separated for each part, i.e. initial construction phase and the remaining phase. Therefore the financial performance of this specific Project shall be evaluated on the basis of the total static investment that is necessary for both initial phase and the remaining phase.

JCI considers that the scheme of evaluation of the financial performance of the Project employed in the PDD is reasonable.

Response of Project Participant:

Costs incurred before March 2006 have been included in the investment analysis. According to six proofs for the Monthly Expense Payment, the actual expense payment each month from June 2005 to December 2005 is as follows:

During 17/06/2005-25/07/2005: the expense payment was 2.18198million Yuan;
During 26/07/2005-25/08/2005: the expense payment was 0.647034million Yuan;
During 26/08/2005-25/09/2005: the expense payment was 0.500784million Yuan;
During 26/09/2005-25/10/2005: the expense payment was 0.583496million Yuan;
During 26/10/2005-25/11/2005: the expense payment was 0.670202million Yuan;
During 26/11/2005-29/12/2005: the expense payment was 0.209342million Yuan;

The sum during 17/06/2005- 29/12/2005 is 4.7928 million Yuan. The construction work stopped at December 2005 and after that there was no cost incurred until the construction restart in March 2006.

Moreover the IRR was also checked in case that 4.7928million Yuan was reduced from the investment analysis. The results were such that the IRR was changed to be 8.30% from 7.77% without CER which was still lower than the benchmark of 10% so the proposed project was still additional. The IRR with CER was changed to 15.23% from 14.53%. The six proofs for the Monthly Expense Payment have been submitted to DOE /45/. The related IRR calculation Excel sheets using the reduced investment were also submitted to DOE.

Issue 2*: The DOE shall confirm how it has validated that the input values used in the investment analysis taking note of the guidance provided in EB 38 paragraph 54.*

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 /16/.

Item	Parameters	Unit	FS Report	PDD
1	Installed Capacity	MW	24	24
2	Total Static Investment	Million Yuan	104.17	128.21
3	Annual O&M cost	Million Yuan	2.7108	2.7108
4	Annual grid-connected electricity generation	GWh	118.51	118.51
5	Feed-in Tariff (including VAT)	Yuan/kWh	0.20	0.16
6	Rate of Value Added Tax (VAT)	%	6	6
7	City building and main- tenance tax rate	%	3	3
8	Surcharge for education	%	1	1
9	Income tax rate	%	33	33
10	Project life time	Year	20	20

From above table all input values are same between FS Report and PDD except Total Static Investment and Feed-in Tariff (including VAT).

The reason of increase of Total Static Investment was reported by the document /18/ issued by Yunnan Lingyu Water Resource Design Institute t. The increased costs and reasons are shown item by item. This report was approved by all participants of the meeting on 8st Dec., 2005 to decide an application of CDM registration. The participants were the local governments, the design institute and the CDM consultant who had specific local and sectoral expertise ability. At the same time, this report was confirmed and approved by Supervision Office of Shaba Hydropower Station of Mingxing Project Supervision and Consulting Co., Ltd in Sanming City on 6th December 2005. JCI evaluated the report and judged that the investment increase was appropriately confirmed.

The reason of decrease of Feed-in Tariff (including VAT) was based on the document issued by Yunnan Province Development and Reform Commission/33/. The DRC showed seasonal Tariffs depend on river water rate and then the average Tariff was calculated using such Tariffs and seasonal electric generation rates. The details were explained the document issued by the Project owner /44/. The revision of Feed-in Tariff was a policy of the local government and the project owner should conform to it.

The paragraph 54 of EB 38 shows as followings.

54. The Board clarified that in cases where project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities, DOEs are required to ensure that:

(a) The FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed.

(b) The values used in the PDD and associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE should validate the appropriateness of the values.

(c) On the basis of its specific local and sectoral expertise, confirmation is provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision.

JCI judged as follows regarding the above requirements.

(a)The FS Report has been completed in March 2005 and approved by the local Development and Reform Commission on 2nd June, 2005. The commencement of the project construction was 17th June, 2005 and the serious CDM consideration was undertaken in December 2005. Then JCI judges that the period of time between the FS Report completion and the investment decision was sufficiently short.

(b) The all values used in the PDD are fully consistent with the FS Report as shown above table except Total Static Investment and Feed-in Tariff (including VAT). As the above explanation JCI judges that these changes were reasonable and appropriate.

(c)The all input values are confirmed by JCI. The FS Report was approved by the Yunnan Province Development and Reform Commission and the document for the reason of increase of Total Static Investment was approved by the all attendants of meeting including the local government, the design institute and the CDM consultant who had specific local and sectoral expertise ability. At the same time, this report was confirmed and approved by Supervision Office of Shaba Hydropower Station of Mingxing Project Supervision and Consulting Co., Ltd in Sanming City on 6th December 2005. The Bank agreed with the investment increase and promised the extra loan because the project applied CDM. Annex 3 is the Loan Consent Letter from the Yangbi Country Sub Branch of Agricultural Bank of China on 16th January, 2006. The various tax rates used in the FS Report were confirmed by the documents issued by the relevant official organizations /46/ which were submitted to JCI.

JCI considers that the all input values used in the PDD were reasonable and appropriate.

Issue 3*: Further clarification is required on how the DOE has validated that the CDM was considered necessary to overcome the barriers to the development of this project activity, particularly in context to the delay by one year and eight months to initiate validation.*

Response of JCI:

The barrier of this project was financial problem that JCI validated in the Validation Report and the Response to above Issue 2.

Regarding the development of this project activity after the serious CDM consideration and the decision for CDM application is shown in the Response of Project Participant below.

About one year was needed to search the CER buyer but after that the project owner and the CDM consultant have worked the necessary procedures step by step. The Project participants have submitted the relevant evidence to show the above activities to JCI.

JCI judged that one and eight months to initiate validation were tolerable length for searching partner and preparation of CDM documents.

Response of Project Participant:

After CDM consideration and re-beginning of construction of the proposed project, the project owner did the related CDM work in the following procedures:

2006	From March to June	The consult company Beijing Haohua Rivers International Water Engineering Consulting Co. Ltd organized some CERs buyers and validators went to the on site visit of the proposed project and did the on site survey of the proposed project	The trip record
	From July to December	The consult company prepared the PDD and PIN and seek for the CERs buyers with the project owner	The work record
2007	From January to April	Contacted with the CERs buyer Marubeni Corporation and did the commercial negotiation such as CERs price and CERs transfer of the proposed project	The work record
	25th May	The CDM Development Agreement for the proposed project signed between the Beijing Haohua Rivers International Water Engineering Consulting Co. Ltd and Marubeni Corporation	The CDM Development Agreement between the CERs buyer and the CDM consult company
	1st June	Applied for China DNA to acquire the LOA from China	The application letter to China DNA
	10th July	The ERPA signed between the project owner and the Marubeni Corporation	The ERPA agreement
	30th July	The review meeting by China DNA to review the proposed project and other CDM project in China	The meeting notice of the 34th review meeting by China DNA
	13th August	The CDM Validation and Registration Service Agreement signed between Marubeni Corporation and Japan Consulting Institute.	The CDM Validation and Registration Service Agreement.
	22nd August	The public comment of the proposed project was started	http://cdm.unfccc.int/Projects/Validation/
	30th September	The LOA from China was acquired	The LOA from China DNA

APPENDIX A

CDM VALIDATION PROTOCOL –VERSION 01

INTRODUCTION

This document is the Validation Protocol on **Shaba 24MW Hydropower Project in Yunnan Province, China**

The validation protocol is prepared for the following purposes:

- To organise, detail and clarify the requirements that the CDM project is expected to meet
- To ensure a transparent validation process with the documenting how a particular requirement has been satisfied and which conclusions have been reached

The validation protocol is consisted of the following three types of tables, which are effective for the purposes of validation above.

Table 1 show the mandatory requirements, which the proposed project activity has to meet as a CDM project activity and the conclusion by the validator of how the requirements are met.

Table 2 contains the checklist with questions which ask how the requirements in Table 1 are fulfilled methodologically, qualitatively and quantitatively, and conclusion by the validator with such marks as **OK**, **CAR** and **CLAR** *.

Table 3 shows the corrective actions or clarifications which are requested to be taken in Table 1 & 2.

*Note:

- 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,
  i) mistakes have been made with a direct influence on project results;
  ii) CDM and/or methodology specific requirements have not been met; or
  iii) 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. Depending on the result of clarification, the item may lead to additional corrective request or further request for clarification.

Index:

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

Requirement	Reference	Cross-reference	Conclu-sion	Comments by validator
About Parties				
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	Table2, Section E.4.1	**OK**	
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	Table2, Section E.4.1	**OK**	
3. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a		~~**CAR 1**~~ **OK**	The project shall have the written approval of voluntary participation from the designated national authority of each Party involved. Both parties, P. R. China and Japan, have not provided the written approval and not authorized the project participants yet.
4. 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, Marrakesh Accords, CDM Modalities §40a	Table2, Section A.3	**OK**	LOA by DNA of China has been received.
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not	Marrakesh Accords		**OK**	There is no public founding from Parties included Annex 1.

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

Requirement	Reference	Cross-reference	Conclu-sion	Comments by validator
counted towards the financial obligations of these Parties.				
6. Parties participating in the CDM shall designate a national authority for the CDM	Marrakesh Accords, CDM Modalities §29		**OK**	DNA of China is the "National Development and Reform Commission, People's Republic of China". DNA of Japan is "Cabinet secretariat Assistant Chief Cabinet Secretary".
7. The host Party and the participating Annex 1 Party shall be a Party to the Kyoto Protocol	Marrakesh Accords, CDM Modalities §30/31a		**OK**	China ratified the Kyoto Protocol on 30 August, 2002. Japan ratified the Kyoto Protocol on 31 May, 2002.
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b		**OK**	
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b		**OK**	
About Additionality				
10. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional as anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM	Kyoto Protocol Art.12.5c, Marrakesh Accords, CDM Modalities §43	Table 2, Section B.2	~~**CAR 2**~~ **OK**	IRR calculation sheets including Sensitivity Analysis shall be included in the PDD or in the separate sheet.

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Requirement	Reference	Cross-reference	Conclu-sion	Comments by validator
project activity				
About Environmental Impacts				
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b		**OK**	
For Large- scale only				
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	Marrakesh Accords, CDM Modalities §37c	Table 2, Section F	**OK**	EIA report has been issued and approved by Environmental Protection Bureau of Dali Bai Autonomous Prefecture of Yunnan Province on 20,May,2005. This report has been reviewed at On Site Assessment of the validation.
About Stakeholder Involvement				
13. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	Marrakesh Accords, CDM Modalities §37b	Table 2, Section G	~~**CLAR-10**~~ **OK**	Are 50 questionnaires adequate to cover the local stakeholders? How many resettled persons are included in 50 people selected? The questionnaire/answers and the Feedback Opinion will be reviewed by DOE during the on-site assessment. How due account was taken of the comments received shall be described.
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for 30 days, and the project	Marrakesh Accords, CDM Modalities, §40		**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 22 August to 20 September 2007. No comment was received.

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Requirement	Reference	Cross-reference	Conclu-sion	Comments by validator
design document have been made publicly available.				
Other				
15. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	Marrakesh Accords, CDM Modalities §37e	Table 2, Section B.1.1 and D.1.1	**OK**	The PDD adopts the approved consolidated Methodology ACM0002 version06, justifying the applicability.
16. 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	Marrakesh Accords, CDM Modalities, §45c,d	Table 2, Section B.2	**OK**	
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakesh Accords, CDM Modalities, §47	Table 2, Section B.2	**OK**	
18. The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakesh Accords, CDM Modalities, Appendix B, EB Decisions		**OK**	The PDD is in line with PDD format version 03.
19. 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	Marrakesh Accords, CDM Modalities §37f	Table 2, Section D	**OK**	

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Table 2 Requirements Checklist

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
A.1. Title of the project activity:					
A.1.-1 Is the number and the date of the issue of the version updated?	PDD A.1	DR		**OK**	**OK**
A.2. Description of the project activity: *How the project activity reduces GHG emissions.* *The project's contribution to sustainable development is assessed.*					
A.2.-1 Is the project in line with relevant regulation and plans in the host country?	PDD A.2.	DR	Yes. The project has been approved by Dali Bai Autonomous Prefecture Development and Reform Commission.	**OK**	**OK**
A.2.-2 Is the project in line with host-country specific CDM requirements?	PDD A.2.	DR	Yes. The letter of approval from the DNA of China had been received.	**OK**	**OK**
A.2.-3 Is the project in line with sustainable development policies of the host country?	PDD A.2.	DR	Yes. The letter of approval from the DNA of China had been received.	**OK**	**OK**
A.2.-4 Will the project create other environmental or social benefits other than GHG emission reductions?	PDD A.2.	DR	Yes. The project will also mitigate local environmental pollution caused by coal-fired power plants and will create job opportunities locally and so on.	**OK**	**OK**
A.2.-5 Is the length of the description within one page?	PDD A.2.	DR	Yes.	**OK**	**OK**
A.3. Project participants:					
A.3.-1 Do both parties wish to be considered as project partipant?	PDD A.3.	DR	Yes.	**OK**	**OK**
A.3.-2 Is the name of the project participant correctly stated and consistent?	PDD A.3.	DR	Yes.	**OK**	**OK**
A.4.Technical description of the project activity					
A.4.1.4. Detail of physical location,					

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
including information allowing the unique identification of this project activity (maximum one page)					
A.4.1.4.-1 Is English used in map? Is the physical location of project activity indicated with longitude and latitude? Is map clear?	PDD A.4.1.	DR	It is requested to use clearer maps for easy understanding.	~~**CLAR-1**~~ **OK**	**OK**
A.4.3. Technology to be employed by the project activity: *Project technology focused on the project engineering, choice of technology and competence /maintenance needs are assessed. Validator shall ensure that environmentally safe and sound technology and know-how are used.*					
A.4.3.-1 Are the current good practices reflected in the project engineering /design?	PDD A.4.3	DR	Yes. The project engineering reflects the current good practice in China.	**OK**	**OK**
A.4.3.-2 Does the project use state of the art technology or will the technology result in a significantly better performance than any commonly used technologies in the host country?	PDD A.4.3	DR	The proposed project uses state of the art technologies and equipment domestically and not referring to international technical transfer.	**OK**	**OK**
A.4.3.-3 Is the project technology likely to be substituted by other or more efficient technologies within the project period?	PDD A.4.3	DR	No. The project technology is unlikely to be substituted by other or more efficient technologies within the first crediting period.	**OK**	**OK**
A.4.3.-4 Does the project require extensive initial training and maintenance efforts in order to work as presumed	PDD A.4.3	DR	Yes. Training is required for the project and the project owner has arranged training procedures. The project technology is not such a special one as requiring	**OK**	**OK**

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
during the project period?			extensive initial training and maintenance efforts.		
A.4.3.-5 Does the project make provisions for meeting training and maintenance needs?	PDD A.4.3.	DR	Yes. The training plan and operation manual have been prepared already by the project owner.	**OK**	**OK**
A.4.3.-6 Will the project create other environmental or social benefits than GHG emission reductions?	PDD A.4.3.	DR	Yes. Creation of local job opportunities, poverty reduction by developing local resources such as rare metal using electric power newly generated, and so on.	**OK**	**OK**
A.4.4. Estimated amount of emission reductions over the chosen crediting period:					
A.4.4.-1 Is the crediting period consistent with that shown in item B.6.4.and C.2.1.1.?	PDD A.4.4 C.2.1.	DR	The first crediting period is seven years. (from April 2008 to March 2015) It is consistent with item B.6.4 and C.2.1.1	**OK**	**OK**
A.4.4.-2 Is estimated amount of emission reduction consistent with that shown in item B.6.4. ?	PDD A.4.4 B.6.	DR	Yes. The annual GHG reduction is 99,945tCO_2 in PDD ver.1. It is 97,403 tCO_2 in PDD ver.3.	**OK** **OK**	**OK** **OK**
A.4.5. Public funding of the project activity:					
A.4.5.-1 Is the funding not diversification of Official Development Assistance?	PDD A.4.5 ANX 2	DR	No official development Assistance (ODA) from Annex I Parties is involved in the proposed project.	**OK**	**OK**
B. Application of a baseline and monitoring methodology *The assessment of the project baseline whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity: *It is assessed whether the project is applied*					

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
with appropriate baseline methodology.					
B.1.-1 Does the project apply an approved methodology and the correct version thereof?	PDD B.1.	DR	Yes. ACM0002 version06 is applied.	**OK**	**OK**
B.1.-2 Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	PDD B.1.	DR	Yes. The project is a capacity addition from a renewable energy source and does not involve on-site fuel switch from fossil fuels to a renewable source.	**OK**	**OK**
B.1.-3 Are the title and version of the approved Methodology applied to the project activity indicated?	PDD B.1.	DR	Yes.	**OK**	**OK**
B.1.-4 Are any methodologies or tools to which the approved Methodologies refer and their version indicated?	PDD B.1.	DR	Tool for Demonstration and Assessment of Additionality (version 03) is cited.	**OK**	**OK**
B.2. Justification of the choice of the methodology and why it is applicable to the project activity: *The choice of baseline shall be assessed with the focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.-1 Is the choice of methodology justified transparently by showing that the proposed project activity meets each of the applicability conditions of the methodology?	PDD B.2.	DR	Though the B.2 of PDD shows ”the project emission needs not be considered”, please explain whether the Project Activity has an inundated area raised by the diversion dam or not. If any inundated area, the PDD shall discuss the power density.	~~**CLAR 2**~~ **OK**	**OK**
B.2.-2 Is the document has been used explained? Are the references to the document provided?	PDD B.2.	DR	Yes.	**OK**	**OK**
B.3. Description of the sources and gases included in the project boundary:					

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
B.3.-1 Are the project's spatial boundaries (geographical) clearly defined?	PDD B.3.	DR	Yes. The project is located at the Yangbijiang River, Yangbi County, Dali Bai Autonomous Prefecture, Yunnan Province, the People's Republic of China. The geographic and system boundaries for the relevant electricity grid, South China Power Grid, are clearly identified.	**OK**	**OK**
B.3.-2 Is the description of the sources and gases for calculating project emissions and baseline emissions appropriate?	PDD B.3.	DR	Yes. Only CO_2 is a source for baseline emissions.	**OK**	**OK**
B.3.-3 Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	PDD B.3.	DR	The same comment as item B.2.-1	~~**CLAR 2**~~ **OK**	**OK**
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:					
B.4.-1 Has the baseline scenario been determined according to the methodology?	PDD B.4.	DR	Yes.	**OK**	**OK**
B.4.-2 Has the baseline scenario been determined using conservative assumptions where possible?	PDD B.4.	DR	Yes.	**OK**	**OK**
B.4.-3 What is the baseline scenario? Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	PDD B.4.	DR	The PDD describes four plausible and credible alternatives available to the project. The PDD consequently determines "The South China Power Grid providing the same annual power generation" as baseline scenario of the project with taking into account relevant national and/or sectoral policies, macro-economic trends and political aspirations.	**OK**	**OK**
B.4.-4 Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	PDD B.4.	DR	Yes.	**OK**	**OK**
B.4.-5 Does the selected baseline represent the most likely scenario among other	PDD B.4.	DR	Yes. The continuation of the operation of the existing power plants is the most likely baseline scenario.	**OK**	**OK**

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possible and/or discussed scenarios?					
B.4.-6 Is it demonstrated / justified that the project activity itself is not a likely baseline scenario (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, (c) a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or (d) an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations)?	PDD B.4. B.5.	DR	The project additionality is demonstrated by applying the "Tool for the demonstration and assessment of additionality" version 03 issued by CDM EB.	**OK**	**OK**
B.4.-7 Have the major risks to the baseline been identified?		DR	There are no significant risks to the baseline.	**OK**	**OK**
B.5. Description of how the anthropogenic emission of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality)					
B.5.1 Step 1. Idenfication of alternatives to the project activity consistent with current laws and regulations					
B.5.1-1 Are alternatives to the project activity consistent with current laws and regulations of host country identified?	PDD B.4. B.5.	DR	Four alternatives are identified and each alternative are consistent with current laws and regulations of China (scenario b) Building a new thermal power plant generating the same annual power	**OK**	**OK**

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			generation is not consistent with current laws and regulations of China). It has been demonstrated that the only realistic and credible alternative for the proposed project activity is provision of an equivalent amount of annual power output by the South China Power Grid.		
B.5.2 Step 2. Investment analysis					
B.5.2-1 Is investment analysis conducted?	PDD B.5.	DR	Yes Benchmark analysis (Option Ⅲ of Step2 of tool for demonstration ad assessment of additionality) is selected for conducting the investment analysis.	**OK**	**OK**
B.5.2-2 If benchmark analysis applied, is benchmark fully described with clear evidences?	PDD B.5.	DR	Yes. "Economic Evaluation Code for Small Hydropower Projects (SL16-95) issued by Ministry of Water Resources of People's Republic of China" is cited. According to this one, the IRR of 10% for total investment of project is regarded as benchmark for investing in the smaller hydropower project.	**OK**	**OK**
B.5.2-3 Are calculation sheets for investment analysis (IRR) attached in PDD?	PDD B.5. ANX 5	DR	IRR calculation sheets including Sensitivity Analysis shall be included in PDD or in the separate sheet.	~~**CAR 2**~~ **OK**	**OK**
B.5.2-4 Are the conditions and data for financial analysis clear?	PDD B.5. ANX 5	I DR	Feed-in Tariff (0.16Yuan/kWh(excl. VAT)) seems to be low, and it should be checked by the Power Purchase Agreement.	~~**CLAR 3**~~ **OK**	**OK**
B.5.2-5 Are sensitivity analysis fully described with clear evidences?	PDD B.5. ANX 5	DR	Sensitivity Analysis Graph shall be provided in B.5 Step 2d. How much uncertainty would be expected on the parameters chosen for the sensitivity analysis? It is requested to justify that the variation range of the "critical parameters" shall reasonably cover their fluctuations expected in the sensitivity analysis.	~~**CLAR 4**~~ **OK**	**OK**
B.5.3 Step 3. Barrier analysis.					
B.5.3-1 If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from			Regarding CDM application of the proposed project, major events (milestones) before starting the project may be described chronologically in the table form, which will be more convincing to PDD readers. Please clarify what kind of the project activity started	~~**CAR 3**~~ **OK**	**OK**

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the CDM was seriously considered in the decision to proceed with the project activity?			on ”17/06/2005” described in ”C.1.1 Starting date of the project activity” of the PDD. Also, evidences (Minutes of meeting, Revised FS Report, Approval documents etc.) for the serious consideration of CDM should be provided.		
B.5.3-2 Is the national policy for domestic production of advanced technology clear?			“Step 3. Barrier analysis” has not been selected for additionality demonstration in this PDD.	**OK**	**OK**
B.5.3-3 Are investment barriers fully described with clear evidences?			“Step 3. Barrier analysis” has not been selected for additionality demonstration in this PDD.	**OK**	**OK**
B.5.3-4 Are technical barriers fully described with clear evidences?			“Step 3. Barrier analysis” has not been selected for additionality demonstration in this PDD.	**OK**	**OK**
B.5.4 Step 4. Common practice analysis					
B.5.4-1 Is common practice analysis fully described with clear evidences?	PDD B.5.	DR	Please describe in detail the selection criteria for the similar projects as common practice analysis in B.5. Step 4 and the information source shall be provided during the on-site assessment. This is important to demonstrate the projects listed in Table 5 are not subjectively chosen to be fitted to the context of PDD in this section.	~~**CLAR 5**~~ **OK**	**OK**
B.6. Emission reductions:					
B.6.1. Baseline Emissions *It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
B.6.1.-1 Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?		DR	Yes. The relevant characteristics and baseline indicators have been chosen as reference for baseline emissions. (“China Electric Power Yearbook (2004-2006)” and “China Energy Statistical Yearbook (2004-2006)” are referred in Annex 3)	**OK**	**OK**
B.6.1.-2 Are data and parameters that are available at validation provided and explained?	PDD B.6.1 B.6.2	DR	Yes. Data and parameters are available at validation. Further, data and calculation manner/results are enough to evaluate the baseline emissions.	**OK**	**OK**

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Further, are clear and transparent references or additional documentation provided in Annex 3?	B.6.3 Anx 3				
B.6.1.-3 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	PDD B.6.1 B.6.2 B.6.3 Anx 3	DR	Material issue for BM calculation is how to justify the "efficiency level of the best technology commercially available in the provincial/regional or national grid of China" since 336.66gce/kWh in the DNA's publication on15 Dec 2006 is adversely modified to 343.33gce/kWh in the latest DNA publication. The source of the efficiency level is for sub-critical coal fired power plant recently constructed in China. However, there is already super-critical coal fired power plants constructed in a commercial basis in China including Guangdong Province that is a part of South China Power Grid. If efficiency level for super-critical coal fired power plant is not available, the most conservative figure for the efficiency level shall be applied as per "General Guidance" provided in the paragraph 74 of CDM-EB report of its 29th meeting.	~~CLAR 6~~ **OK**	**OK**
B.6.1.-4 Have conservative assumptions been used when calculating the baseline emissions?	PDD B.6.1 B.6.2 B.6.3 Anx 3	DR	Table 3-5 and 3-11 of PDD shows the basic data of South China Power Grid in 2005. Input from Central China Power Grid exceeds 20 % of the total SCPG electricity that is a generation in SCPG plus input from other grids. With regard to the determination of OM the approved methodology ACM0002 version 06 requires "the emission factor of the exporting grid, determined as described in step 1, 2 and 3, if net import exceed 20% of the total generation in the project electricity system". The PDD should clarify the OM determination of SCPG in 2005.	~~CLAR 8~~ **OK**	**OK**
B.6.1.-5 Are uncertainties in the baseline emission estimates properly addressed?	PDD B.6.1 B.6.2 B.6.3 Anx 3	DR	Yes.	**OK**	**OK**
B.6.2. Project emissions *It is assessed whether the project emissions are*					

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stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.					
B.6.2-1 Are all aspects related to direct and indirect project emissions considered in the project design?		DR	Though the B.2 of PDD shows "the project emission needs not be considered", please explain whether the Project Activity has an inundated area raised by the diversion dam or not. If any inundated area, the PDD shall discuss the power density.	~~CLAR-2~~ **OK**	**OK**
B.6.2.-2 Are the calculations documented according to the approved methodology and in a complete and transparent manner?			No consideration is required.	**OK**	**OK**
B.6.2.-3 Have conservative assumptions been used when calculating the project emissions?			No consideration is required.	**OK**	**OK**
B.6.2.-4 Are uncertainties in the project emissions estimates properly addressed?			No consideration is required.	**OK**	**OK**
B.6.3 Leakage *It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
B.6.3.-1 Are potential leakage effects beyond the chosen project boundaries properly identified?	PDD B.6.1	DR	There are no leakages that need to be considered in applying this methodology.	**OK**	**OK**
B.6.3.-2 Have these leakage effects been properly accounted for in calculations?	PDD B.6.1	DR	No leakages are accounted in the proposed project.	**OK**	**OK**
B.6.3.-3 Does the methodology for	PDD	DR	No leakages are accounted in the proposed project.	**OK**	**OK**

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
calculating leakage comply with existing good practice?	B.6.1				
B.6.4 Data and parameters that are available at validation: *The availability of data required for the estimation of emission reduction is assessed.*					
B.6.4.-1 Are the operation data of power plants available for calculating Operating Margin (OM) and Build Margin (BM)?	PDD B.6.1 B.6.2 B.6.3 Anx 3	DR	PDD refers the base data of which China DNA published for OM & BM calculations.	**OK**	**OK**
B.6.5 The ex-ante estimation of emission reductions and the summary					
B.6.5.-1 Emission reductions Is all relevant methodology choices explained and justified? - including explanation and justification of scenario or case applied to the project activity - including explanation and justification of option chosen for the project activity - including explanation and justification of default value chosen for the project activity Is the equation calculating emission reductions clearly stated?	PDD B.6.1 B.6.2 B.6.3 Anx 3	DR	Material issue for BM calculation is how to justify the "efficiency level of the best technology commercially available in the provincial/regional or national grid of China" since 336.66gce/kWh in the DNA's publication on15 Dec 2006 is adversely modified to 343.33gce/kWh in the latest DNA publication. The source of the efficiency level is for sub-critical coal fired power plant recently constructed in China. However, there is already super-critical coal fired power plants constructed in a commercial basis in China including Guangdong Province that is a part of South China Power Grid. If efficiency level for super-critical coal fired power plant is not available, the most conservative figure for the efficiency level shall be applied as per "General Guidance" provided in the paragraph 74 of CDM-EB report of its 29th meeting.	~~**CLAR 6**~~ **OK**	**OK**
B.6.5-2 Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	PDD B.6.3	DR	Yes.	**OK**	**OK**
B.6.5.-3 Will the project result in fewer GHG	PDD	DR	Yes. 97,415 tCO_2e/year can be reduced than the baseline.	**OK**	**OK**

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emissions than the baseline?	B.6.3				
B.6.5.-4 Are the credditing period and the emission reductions consistent with that shown in item A.4.4.?	PDD A4.4 B.6.3	DR	Yes. The total estimated reductions for the first crediting period of seven years are 681,905 tCO_2.	**OK**	**OK**
B.7. Application of the monitoring methodology and description of the monitoring plan: *It is assessed whether the project applies an appropriate monitoring methodology.*					
B.7.-1 Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	PDD B.7.1 B.7.2	DR	If the Project Activity have a reservoir and inundated area raised by diversion dam, the PDD should be required monitoring the surface area of reservoir at full water level after project operation start.	~~**CLAR 12**~~ **OK**	**OK**
B.7.-2 Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	PDD B.7.1	DR	All monitored data shall be kept until two years after the end of the total credit period of the proposed project.	**OK**	**OK**
B.7.1. Data and parameters monitored: *It is checked whether the parameters to be monitored are sufficietn and measurement is reliable for calculating emission reductiont.*					
B.7.1.-1 Are the parameters sufficient for calculating emission reductions?	PDD B.7.2. ANX 4	DR	The same comment as item B.7.-1	~~**CLAR 12**~~ **OK**	**OK**
B.7.1.-2 Will it be possible to monitor the specified baseline indicators?	PDD B.7.2. ANX 4	DR	The proposed project uses the ex-ante determination of emission factor for grid electricity. Electricity generated will be monitored and double checked with the invoice of electricity sold to the grid. Indicators provided shall satisfy the requirements of "Technical Administrative Code of Electric Energy Metering (DL/T448-	**OK**	**OK**

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
			2000)".		
B.7.1.-3 Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	PDD B.7.2. ANX 4	DR	The same comment as item B.7.-1	~~CLAR-12~~ **OK**	**OK**
B.7.1.-4 Is the choice of indicators for sustainable development (social, environmental, economic) reasonable? Will it be possible to monitor them?	PDD B.7.2. ANX 4	DR	No consideration is required.	**OK**	**OK**
B.7.1.-5 Are the sustainable development indicators in line with the national priorities in the Host Country?	PDD B.7.2. ANX 4	DR	No consideration is required.	**OK**	**OK**
B.7.1.-6 How often are the meters calibrated and maintained? How much is the accuracy or errors permitted? Who will monitor, maintain and calibrate?	PDD B.7.2.	DR	In the monitoring Data/Parameter Table, the accuracy level of ammeters shall also be described.	~~CLAR-11~~ **OK**	**OK**
B.7.2. Description of the monitoring plan: *It is checked whether monitoring plan is appropriate, whether role and responsibility for management, operation, maintenance /calibration, monitoring /operation, QC/QA and training of personnel are clear, whether operation and maintenance manuals are available.*					
B.7.2.-1 Is the authority and responsibility of project management clearly described?	PDD B.7.2	DR	Yes. The project owner will designate a CDM manager.	**OK**	**OK**
B.7.2.-2 Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?		I	The project owner shall perform all required works for the project execution such as operation, monitoring, recording and maintaining by himself. The organization chart has been provided in the PDD.	**OK**	**OK**

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
B.7.2.-3 Are procedures identified for training of monitoring personnel?		I	The operation & maintenance manual has already been completed. The project owner has explained those items during on-site assessment.	**OK**	**OK**
B.7.2.-4 Are procedures identified for the cases where emergencies can cause unintended emissions?	PDD B.7.2	DR	The emergency case to cause unintended emissions is not supposed in case of a hydropower project.	**OK**	**OK**
B.7.2.-5 Are procedures identified for calibration of monitoring equipment?	PDD B.7.2	DR	Yes. When there are errors of the key point meter, the check meter will be used to correct the data for the further calculation, It shall be done according to "Technical Administrative Code of Electric Energy Metering (DL/T448-2000).	**OK**	**OK**
B.7.2.-6 Are procedures identified for maintenance of monitoring equipment and installations?	PDD B.7.2	DR	The project owner is responsible for the installation of ammeters and the local grid company is responsible for check them. It shall be done according to "Technical Administrative Code of Electric Energy Metering (DL/T448-2000).	**OK**	**OK**
B.7.2.-7 Are procedures identified for monitoring, measurements and reporting?	PDD B.7.2	DR	Statistician to be managed under the CDM manager is in charge of monitoring, measurements and reporting. A simple drawing for CDM monitoring system showing main equipment, sub-station, all ammeters, South China Power Grid may be provided in this section (3. Monitoring equipment and its installation) for PDD readers to understand the context easily.	~~**CLAR-7**~~ **OK**	**OK**
B.7.2.-8 Are procedures identified for day-to-day records and how to process performance documentation?	PDD B.7.2	DR	At the end of each month, the monitoring data shall be archived electronically	**OK**	**OK**
B.7.2.-9 Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	PDD B.7.2	DR	Yes. Those are identified in section B.7.2.	**OK**	**OK**
B.7.2.-10 Are procedures identified for review of reported results /data?	PDD B.7.2	DR	The monitoring report, which shall be submitted at the end of every year for the CDM verification, should cover the monitoring of grid-connected power generation, check report, calculation of emission reductions and maintenance records of meters.	**OK**	**OK**
B.7.2.-11 Are procedures identified for	PDD	DR	Yes. In order to facilitate auditors' reference of relevant literature	**OK**	**OK**

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
internal audits of GHG project compliance with operational requirements where applicable?	B.7.2		relating to verification of the emission reductions, the index of the project materials and monitoring results shall be provided.		
B.7.2.-12 Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	PDD B.7.2	DR	Yes. Internal auditor reviews project performance data before verification.	**OK**	**OK**
B.7.2.-13 Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	PDD B.7.2	DR	CDM manager supervises corrective actions in order to provide more accurate future monitoring and reporting.	**OK**	**OK**
C.1. Duration of the project activity* *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Starting date of the project activity:					
C.1.1.-1 Is the starting date of project clearly defined and evidenced?	PDD B.5. C.1.1	DR	Regarding CDM application of the proposed project, major events (milestones) before starting the project may be described chronologically in the table form, which will be more convincing to PDD readers. Please clarify what kind of the project activity started on ”17/06/2005” described in ”C.1.1 Starting date of the project activity” of the PDD. Also, evidences (Minutes of meeting, Revised FS Report, Approval documents etc.) for the serious consideration of CDM should be provided.	~~**CAR 3**~~ **OK**	**OK**
C.1.2. Expected operational lifetime of the project activity:					
C.1.2.-1 Is expected operational lifetime of the project clearly defined?	PDD C.1.2	DR	Yes, the estimated operational lifetime of the proposed project is twenty years.	**OK**	**OK**
C.2. Choice of the crediting period and related information:					
C.2.-1 Is the starting date and ending date clearly defined and reasonable, and is	PDD C.2.1	DR	Yes. A renewable crediting period (seven years) is selected, with a crediting period starting date of 1 April 2008, and the ending is 31	**OK**	**OK**

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it consistent with that shown in A.4.4.and B.6.4.?			March 2015. When the registration date of the proposed project is later than the starting date, the starting date of the first crediting period should be revised to the registration date.		
C.2.2.2. Length:					
C.2.2.2.-1 Is the crediting period clearly defined?	PDD C.2.2	DR	Fixed crediting period is not applied.	**OK**	**OK**
D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:					
D.1.-1 Has an analysis of the environmental impacts of the project activity been sufficiently described?	PDD D.1.	DR	The EIA report for the proposed project was prepared by the Science and Technology Development Centre of Yunnan University. According to this EIA report, the environmental impacts of the proposed project have been sufficiently analyzed ecept resettlement. With regard to ”Resettlement”, more detail description shall be requested, or national/local guidelines/rules shall be quoted.	**OK** ~~**CLAR 9**~~ **OK**	**OK** **OK**
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party.					
D.2.-1 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	PDD D.1.	DR	Yes. In China EIA is required for hydropower project. The report has been approved already by the Environmental Protection Bureau of Dali Bai Autonomous Prefecture of Yunnan Province.	**OK**	**OK**
D.2.-2 Will the project creates any adverse environmental effects?	PDD D.1.	DR	According to the EIA report, no adverse environmental impacts are occurred on the proposed project.	**OK**	**OK**
D.2.-3 Are transboundary environmental	PDD	DR	According to the EIA report, there is no transboundary	**OK**	**OK**

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impacts considered in the analysis?	D.1.		environmental impact in the proposed project.		
D.2.-4 Have identified environmental impacts been addressed in the project design?	PDD D.1.	DR	Yes. The PDD identifies relevant environmental impacts.	**OK**	**OK**
D.2.-5 Does the project comply with environmental legislation in the host country?	PDD D.1.	DR	Yes. The project complies with relevant legislation and has receipt the LOA from the related local offices.	**OK**	**OK**
E.1. Brief description how comments by local stakeholders have been invited and complied: *The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*					
E.1.-1 Have relevant stakeholders been consulted?	PDD E.1.	DR	Yes, they have.	**OK**	**OK**
E.1.-2 Have appropriate media been used to invite comments by local stakeholders?	PDD E.1.	DR	Questionnaire distribution was performed to different stakeholders from local officials, technicians, rural residents, nearby workers were consulted. An opinion invitation letter was also published in which comment should be submitted to the Town Committee within 15 workdays.	**OK**	**OK**
E.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.1.	DR	Yes. The stakeholder consultation process is in accordance with Chinese EIA regulations.	**OK**	**OK**
E.2. Summary of the comments received:					
E.2.-1 Is a summary of the stakeholder comments received provided?	PDD E.2.	DR	Yes. The comments from stakeholders are summarized in section E.2. of the PDD. The detail is involved in the EIA report.	**OK**	**OK**
E.3. Report on how due account was taken of any comments received:					

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E.3.-1 Has due account been taken of any stakeholder comments received?		DR	The stakeholders hold positive views on the proposed project and there is no negative opinion	**OK**	**OK**

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Table 3 Resolution of Corrective Actions and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 & table 2	Summary of project owner response	Validation team Conclusion
CAR-1 The project shall have the written approval of voluntary participation from the designated national authority of each Party involved. Both parties, P. R. China and Japan, have not provided the written approval and not authorized the project participants yet.	Table 1 Item 3		The project 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 Japan was issued on 30 September 2007 /39/ and 14 September 2007 /40/ respectively. The finding of CAR 1 was resolved and closed.
CAR-2 IRR calculation sheets including Sensitivity Analysis shall be included in the PDD or in the separate sheet.	Table 1 Item 10 Table 2 B.5.2-3	These sheets have been added in the PDD. The IRR calculation sheets including detailed and complete sensitivity analysis have already shown in a concrete Excel sheet as attachment which will be submitted to you. Because the calculation process for sensitivity analysis is so complex that we didn't put the detailed calculation process in the PDD and we only put the result in the PDD, we give you an Excel sheet for sensitivity analysis as attachment, please see the attachment.	For the baseline condition, these sheets have been checked and reviewed by JCI and the calculated IRR has been confirmed correctly. Regarding to the sensitivity analysis PDD Author has provided only the calculation results. The PDD Author should provide calculation sheets for CDM case and also sensitivity analysis. JCI shall submit the main IRR calculation sheets to UNFCCC when the project will be applied to registration. The tables of calculation results of five cases in the same form as the PDD shall be sent; base case, CDM case, -10% total static investment case, -10% annual O&M cost case and +10% annual electricity output to the grid case.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 & table 2	Summary of project owner response	Validation team Conclusion
			JCI have received the sheets and judged those were appropriate. The finding of CAR 2 was resolved and closed.
CAR-3 Regarding CDM application of the proposed project, major events (milestones) before starting the project may be described chronologically in the table form, which will be more convincing to PDD readers. Please clarify what kind of the project activity started on ”17/06/2005” described in ”C.1.1 Starting date of the project activity” of the PDD. Also, evidences (Minutes of meeting, Revised FS Report, Approval documents etc.) for the serious consideration of CDM should be provided.	Table 2 B.5.3-1 C.1.1-1	The time schedule of the proposed project including the milestone for CDM application is provided. The proof of serious consideration of CDM is provided for you as attachment We make an understanding mistake for the concept of the starting date of the project activity. As for the actual time schedule for Shaba, 08/12/2005 should be the starting date of the project activity when it was determined as CDM project. And the proof for this date has been submitted to JCI. This date of 08/12/2005 was revised in section C.1.1.	The newly added “The time schedule of the proposed project” as the table form in section B.5. is useful to follow the process of applying CDM. One candidate of the date is 8, December, 2005 when the proposed project is determined as CDM project through the whole meeting among relevant local governments, the project owner and other concerned parties. The minutes of this meeting has been confirmed by JCI during the On-Site Survey. Afterward the PDD Author has explained 01/03/2006 as the starting date. But the starting date of a CDM project activity in Glossary of CDM terms is the earliest date at which either the implementation or construction or real action of a project activity begins. PDD Author shall further clarify the starting date. The PDD version 03 has been revised to the 08/12/2005 that was appropriate date for the starting date of the project activity.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 & table 2	Summary of project owner response	Validation team Conclusion
			The finding of CAR-3 was resolved and closed.
CLAR-1 It is requested to use clearer maps for easy understanding.	Table 2 A.4.1.4.-1	Clearer maps have been used in section A.4.1.4	The revision has been confirmed. The finding of CLAR 1 was resolved and closed.
CLAR-2 Though the B.2 of PDD shows "the project emission needs not be considered", please explain whether the Project Activity has an inundated area raised by the diversion dam or not. If any inundated area, the PDD shall discuss the power density.	Table 2 B.2-1 B.3-3 B.6.2-1	The Project Activity has an inundated area raised by the diversion dam as 50,000 m^2. And the installed capacity is 24MW, so the power density of the proposed project is 480W/ m^2. The above analysis has been added in section B.2.	When the power density of the project is greater than 10W/m^2, according to ACM0002, an emission from reservoir (PE_y) shall not be taken accounted. It has been confirmed that the power density was much greater than 10W/m^2. The finding of CLAR 2 was resolved and closed.
CLAR-3 Feed-in Tariff (0.16Yuan/kWh(incl. VAT)) seems to be low, and it should be checked by the Power Purchase Agreement.	Table 2 B.5.2.-4	The Power Purchase Agreement of the proposed project hasn't been signed, and the tariff of 0.16yuan/kWh is reasonably expected by the project owner according to the document issued by Yunnan Province Development and Reform Commission on 30th August 2005(the document number: Yunfagaijiage [2005]792) ; This document has been submitted to DOE as attachment.	According to the relevant document /33/, it has been confirmed that the used tariff of 0.16Yuan/KWh was reasonable for PDD preparation in Yunnan Province. The finding of CLAR 3 was resolved and closed.
CLAR-4 Sensitivity Analysis Graph shall be provided in B.5 Step 2d. How much uncertainty would be expected on the parameters chosen for the sensitivity analysis? It is requested to justify that the variation range of the "critical parameters" shall reasonably cover their	Table 2 B.5.2.-5	The graph has been added. When the three factors: Total static investment, Annual O&M cost, Annual electricity output to the grid fluctuate from -10% to +10%, the FIRR of the proposed project cannot reach 10%. We also add the more detailed reason and the	Figure 2 was added so as to show the results of sensitivity analysis.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 & table 2	Summary of project owner response	Validation team Conclusion
fluctuations expected in the sensitivity analysis.		proof for why the fluctuations of three parameters will not exceed -10% and +10% which was revised in step 2 of section 5. Please see the detailed explanation in the step 2 of section 5 of PDD ver.02.	The explanation has been added in the PDD that fluctuations of three parameters will not exceed -10% and +10%. JCI has reviewed it and judged that it was appropriate explanation. The finding of CLAR 4 was resolved and closed.
CLAR-5 Please describe in detail the selection criteria for the similar projects as common practice analysis in B.5. Step 4 and the information source shall be provided during the on-site assessment. This is important to demonstrate the projects listed in Table 5 are not subjectively chosen to be fitted to the context of PDD in this section.	Table 2 B.5.4.-1	The related revision is shown in step 4 in section B.5 of PDD ver.02. Firstly, the three projects in the original PDD are cited from *2003 Water Resources Review of the People's Republic of China* which was renewed several years ago, so some information for the hydro power projects in this Review Report is not so accurate and updated. In China, the most credible data source for hydro power projects is *China Water Resource Yearbook* which is published every year by China Water Resource Press (at present, *2006 China Water Resource Yearbook is available to us*). For most of the registrated hydro power CDM projects in China such as Hei'er, Maguan Daliangzi and Baishui River, their PDDs cited the information of the hydro power projects from *China Water Resource Yearbook.* Therefore when we do the common practice analysis of Shaba, we also cite the information from *2006 China Water Resource Yearbook* instead of from *2003 Water Resources Review of the People's Republic of*	Table 5 of the PDD ver.03 was drastically changed to add many similar projects in

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 & table 2	Summary of project owner response	Validation team Conclusion
		China. Secondly, because of the excellent development condition and convenient financing conditions, all projects except Mengga River 4th level H. P. listed in Table 5 are without CDM. Mengga is constructed based on consideration of CDM. Thirdly, the difference of project implementation possibilities between private investment case and big companies or state owed companies case mainly embodies in the following aspects: whether easy to connect to the power grid, whether easy to acquire the high tariff, whether easy to negotiate with the power grid; and the capacity whether can get the loan from the Bank and whether can afford the interests and the loan. The above differences have been added in the step 4a of the PDD ver. 02 and also give the proof for these difference.	Yunnan Province. And the selection criteria have been described in PDD ver.03. The PDD Author clarified in this Protocol the reasons why the three projects in the original PDD have been deleted in the PDD ver. 03. The PDD Author confirmed in the protocol that all projects except Mengga River 4th level H. P. listed in Table 5 were without CDM. PDD ver.03 added the explanations regarding the difference of project implementation possibilities between private investment case and big companies or state owed companie's case. JCI Judged that the revisions of PDD ver. 03 and PDD Author's clarification in the Protocol were appropriate. The finding of CLAR5 was resolved and closed.
CLAR-6 Material issue for BM calculation is how to justify the "efficiency level of the best technology commercially available in the provincial/regional or national grid of China" since 336.66gce/kWh in the DNA's publication on15 Dec 2006 is adversely modified to 343.33gce/kWh in the latest DNA publication. The source of the efficiency level is for sub-critical coal fired power plant recently constructed in China.	Table 2 B.6.1.-3 B.6.5.-1	Firstly, as you see in the Table 3-14 of Annex 3 of the PDD ver.02, we adopt the efficiency of coal-fired power plant of 38.44%. It was equivalent to the emission factor 320gce/kWh because this data is more conservative than 343.33gce/kWh (equivalent to the efficiency 35.82%). This is also shown in the Ex-cel table for CM calculation of SCPG.	In the Table 3-14 of PDD ver.03 the efficiency of coal-fired power plant has been changed from 35.82% to 38.44%. It was equivalent to the emission factor

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 & table 2	Summary of project owner response	Validation team Conclusion
However, there is already super-critical coal fired power plants constructed in a commercial basis in China including Guangdong Province that is a part of South China Power Grid. If efficiency level for super-critical coal fired power plant is not available, the most conservative figure for the efficiency level shall be applied as per "General Guidance" provided in the paragraph 74 of CDM-EB report of its 29th meeting.		Secondly, as you see, we have changed the emission factor of coke and Refinery gas according to the concrete IPCC 2006 default values. In section B.6.2, the data source of emission factor per unit energy of fuel i $EF_{CO_2,i}$ is from Defaults on page 1.23～page 1.24 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. But China DNA has a little mistake for emission factor of coke and Refinery gas. You can find the page 1.23～page 1.24 to check the emission factor of coke and Refinery gas in the chapter 1 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Also we have submitted the excel document for emission factor of South China Power Grid.	320gce/kWh. Some of emission factors in the Table 3-7, 3-9, 3-11, 3-13 were changed in PDD ver.03. For example emission factor of coke was changed from 25.8 to 29.2. The reason was clarified in this protocol by the PDD Author. The PDD Author has clarified appropriately on CLAR-6 in the revised PDD ver.03. The finding of CLAR 6 was resolved and closed.
CLAR-7 A simple drawing for CDM monitoring system showing main equipment, sub-station, all ammeters, South China Power Grid may be provided in this section (3. Monitoring equipment and its installation) for PDD readers to understand the context easily.	Table 2 B.7.2-7	This picture has been added in Annex 4.	The drawing has been added in Annex 4. The finding of CLAR 7 was resolved and closed.
CLAR-8 Table 3-5 and 3-11 of PDD shows the basic data of South China Power Grid in 2005. Input from Central China Power Grid exceeds 20 % of the total SCPG electricity that is a generation in SCPG plus input from other grids. With regard to the determination of OM the approved	Table 2 B.6.1-4	Table 3-5, table 3-10 and table 3-11 of PDD shows the basic data of South China Power Grid in 2005. Especially in table 3-10, "*When calculating simple OM emission factor of South China Power Grid in 2005, the electricity imports from*	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 & table 2	Summary of project owner response	Validation team Conclusion
methodology ACM0002 version 06 requires "the emission factor of the exporting grid, determined as described in step 1, 2 and 3, if net import exceed 20% of the total generation in the project electricity system". The PDD should clarify the OM determination of SCPG in 2005.		*Central China Power Grid is 96,363,000 MWh, so the total thermal power generation of South China Power Grid in 2005 is 96,363,000+269,169,531=365,532,531MWh*" was described. In table 3-11, it was noted that "*The electricity imports from Central China Power Grid in 2005 is 96,363,000 MWh, and the simple OM emission factor of Central China Power Grid in 2005 is 0.772171 tCO_2e/MWh, so the total CO_2 emission of South China Power Grid in 2005 is 295,229,176+0.772171*96363000=369,637,871 tCO_2e"* So, when calculation of CM of South China Power Grid in this PDD, the imported electricity has been considered and calculated.	The PDD Author clarified that the emission of SCPG was calculated using 0.772171 for CCPG emission factor. 0.772171 was lower than 0.97 of CCPG's CM, and then it was conservative to calculate the emissions of SCPG. The PDD ver. 03 has added explanations for OM determination procedures appropriately. The finding of CLAR 8 was resolved and closed.
CLAR-9 With regard to "Resettlement", more detail description shall be requested, or national/local guidelines/rules shall be quoted.	Table 2 D.1-1	The document on the proof of none of resettlement was submitted to you.	At on-site assessment it was explained there was no people to be resettled. But PDD ver. 01 showed a small number of resettlement. It was confirmed there was no resettlement in the revised PDD ver. 03. The finding of CLAR 9 was resolved and closed.
CLAR-10 Are 50 questionnaires adequate to cover the local stakeholders? How many resettled persons are included in 50 people	Table 1 Item 13	Has been reviewed during the on-site assessment, and also 3 residents (Mr. Dai Kui, Mr. Wang Shu Fang, Mr. Kong Yong Ning) were visited.	The report /25/ has been provided to JCI. And Some evidence /30/ was provided. JCI reviewed these and confirmed that

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 & table 2	Summary of project owner response	Validation team Conclusion
selected? The questionnaire/answers and the Feedback Opinion will be reviewed by DOE during the on-site assessment. How due account was taken of the comments received shall be described.		Has been reviewed during the on-site assessment. And the related document can be provided to you. Has been reviewed during the on-site assessment.	Prject Participant has done appropriately due account for stakeholder comments. The finding of CLAR 10 was resolved and closed.
CLAR-11 In the monitoring Data/Parameter Table, the accuracy level of ammeters shall also be described.	Table 2 B.7.1-6	The accuracy level of ammeters has been added in the Table in B.7.1 of PDD ver.02.	Description has been corrected in PDD ver. 03. The finding of CLAR 11 was resolved and closed.
CLAR-12 If the Project Activity have a reservoir and inundated area raised by diversion dam, the PDD should be required monitoring the surface area of reservoir at full water level after project operation start.	Table 2 B.7.-1 B.7.1-1 B.7.1-3	The surface area of reservoir at full water level was added in the monitoring plan of the PDD.	The PDD ver.03 added the surface area of reservoir appropriately in the monitoring plan. The finding of CLAR 12 was resolved and closed.
CLAR-13 Editorial issues are as follows. 1. Line headings of the table in A.4.4 are altered from PDD template. 2. ”The latest (version) ACM0002” shall be ”ACM0002 (Version 06)” in B.6.2. 3. No need to describe anything in C.2.1.		1. Has revised the table according to the template of PDD. 2. Has revised to ”ACM0002 (Version 06).” 3. Has deleted ”7*3”	1. Table has been corrected. 2. Description has been corrected. 3. Description has been corrected. The finding of CLAR 13 was resolved and closed.

APPENDIX B

CERTIFICATE OF APPOINTMENT OF VALIDATION TEAM

Certificate of Appointment of Validation Team

Project Title	Shaba 24MW Hydropower Project in Yunnan Province, China
Applied Methodology	ACM0002-Ver.06
	Sectoral Scope 1

Date: 11 Sep. 2007

Designated Operational Entity: Japan Consulting Institute (JCI)

Reflecting the competence criteria of JCI in accordance with "Criteria for operational entities of LIST of SECTORAL SCOPES", 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: 18/09/2007

Client: MARUBENI Corporation

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. Yoshihisa SAKAI of JCI participates in the validation activities of the said project for the quality issues under its quality management scheme.

Signature

Kaname Toh
Assistant General Manager of
Energy & Natural Resources Projects Dept.-1

Validation Team

Validation Team	Name	Assigned Role
Leader	Takayuki ABE	All relevant issues
Member	Yoshihisa SAKAI	CDM auditor
External Expert	Masayuki URAGAMI	Particular Task