



**Voluntary Carbon Standard 2007
Validation Report Template
19 November 2007**

Validation Report:

No.JCI-VCS-08/003

Name of Verification company:	Date of the issue:
Japan Consulting Institute (JCI)	15 October 2009
Report Title:	Approved by:
Validation Report; 48 MW Houqiao Hydropower Project, Yunnan, China	Akio Yoshida, Executive Director
Client:	Project Title:
Tepia Corporation Japan, Co., Ltd.	48 MW Houqiao Hydropower Project, Yunnan, China
Summary:	
Japan Consulting Institute (JCI) has performed a validation work of the “48 MW Houqiao Hydropower Project, Yunnan, China” on the basis of the relevant requirements of VCS 2007.1 and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. The validation is based on the VCS PD, the evidences, and other supporting documents made available to JCI by the project owner. The project activity is a hydropower project generating electricity to displace electricity generated by thermal power plants in China Southern Power Grid, thus achieves GHG emission reduction. The total emission reductions from the project are estimated to be on the average 178,615 tCO₂e per year over 10 years 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. In summary, it is JCI’s opinion that the “48 MW Houqiao Hydropower Project, Yunnan, China” as described in the PD version 1.3 of 14/10/2009 meets all relevant VCS 2007.1 requirements and all relevant criteria. JCI thus provides a positive opinion and requests the registration of the proposed project as a VCS project activity.	
Work carried out by:	Number of pages:
Team Leader; Takayuki ABE Team Member; Shigeo AOKI	Validation Report; 17 Page Protocol; 19 Page

[Table of Contents]

1. Introduction.....	3
1.1. Objective	3
1.2. Scope and Criteria.....	3
1.3. VCS project Description	3
1.4. Level of assurance.....	3
2. Methodology	4
2.1. Review of Document	4
2.2. Follow-up Interviews	4
2.3. Resolution of Any Material Discrepancy	5
3. Validation Findings.....	7
3.1. Project Design.....	7
3.2. Baseline.....	8
3.2.1. Baseline Methodology	8
3.2.2. Additionality	9
3.3. Monitoring Plan	12
3.4. Calculation of GHG Emissions.....	12
3.5. Environmental Impact.....	13
3.6. Comments by Stakeholders.....	14
4. Validation Conclusion	15
5. References.....	16

1. Introduction

1.1. Objective

The purpose of this validation is to have an independent third party assessment on the Project Description of the proposed project. In particular the project's baseline, the monitoring plan and the project's compliance with the requirements of VCS 2007.1 Standard and other relevant rules, including the host country (China) legislation and sustainability criteria, are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide an assurance to the stakeholders on the quality of the project and its intended generation of Voluntary Carbon Units (VCUs).

1.2. Scope and Criteria

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan, based on CDM approved methodology ACM0002 version 10 "Consolidated methodology for grid-connected electricity generation from renewable sources", which are included in the VCS PD and other relevant supporting documents.

The items covered in the validation are described below:

- Project Description
- Project Baseline
- Monitoring Plan
- Stakeholder Consultation

1.3. VCS project Description

The project is the hydropower project located on the Binglang River with total installed capacity of 48 MW, which consists of three 16 MW hydro turbines and generators, and which are expected the net annual supply of 211,080 MWh to the China South Power Grid (CSPG). The project will reduce the average 178,615 tons CO₂e/year of GHGs by avoiding operation of existing thermal power plants and future capacity expansion of fossil fuel-based power generation during the 10-years crediting period. This project will sell electricity to the grid as well as supplying reliable power to the Yunnan Power Grid which is one of the components of the CSPG.

1.4. Level of assurance

The validation report is based on the VCS PD, the evidences and documents provided by the project owner, as well as information got from on-site assessment. The validation opinion assures the credibility of all above.

2. Methodology

The validation of the project was carried out from June 2009 to October 2009 which consisted of the following three phases:

- I. Desk review of the project description (from June, 2009 to August, 2009).
- II. Follow-up interviews with project stakeholders (from August 24 to 26, 2009).
- III. Resolution of outstanding issues and the issuance of the final validation report and opinion (from August 2009 to October, 2009).

In order to ensure transparency, a validation protocol was customized for the VCS project, according to the Validation and Verification Manual. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes the details and clarifications for the requirements which a VCS project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of two tables, Table-1 is the requirements checklist and Table-2 Resolution of Corrective Action and Clarification requirements.

The validation protocol is enclosed in Appendix 1 to this report. Findings established during the validation can either be seen as a non-fulfillment of validation protocol criteria or where a risk to the fulfillment of project objectives is identified. Corrective Action Requests (CAR) is issued, where:

- i) Mistakes have been made with a direct influence on project results;
- ii) Validation protocol requirements have not been met; or
- iii) There is a risk that the project would not be accepted as a VCS project or that emission reductions will not be certified.

The validation team may also use the term Clarification (CL), which would be where:

- iv) 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.

2.1. Review of Document

The VCS PD submitted by the Project Participants and the additional background documents related to the project design and baseline were reviewed. The documents reviewed are listed in Chapter 5 “References”.

2.2. Follow-up Interviews

Table 1 Interviewed Organization and Topics

Interviewed organizations/ Persons	Interview topics/ Inspected items
Yunnan Baoshan Binglang River Hydropower Development Co., Ltd.	- Company outline - Project design - Project implementation

Interviewed organizations/ Persons	Interview topics/ Inspected items
Mr. Chen Shibo Mr. Xu Juhong Mr. Meng Xuepin Mr. Liu Xiaodong Mr. Bai Jinqiao	- Internal and external data - Environmental and social indicators - Management & operational systems - Monitoring plan - Desk review findings
(Site tour) Houqiao 48 MW Hydropower Station	- Physical components - Control room (Auxiliary meter, metering system, data, operation manual) - Monitoring and measurement equipment - Monitored data management
Tepia Corporation Japan, Co., Ltd. (PD Author) Ms. Wang Nan Ms. Fu Huan Mr. Zhang Pengcheng	- Desk review findings - Methodology selection aspects - Baseline study and additionality - Internal and external data
Yunnan Sun Valley Energy Conservation Industry Development Co., Ltd. Mr. Wang Shaohai Ms. He Yaju Ms. Xu Jixia	- Contract of VCS consultation - Milestone of VCS project
Residents Mr. Cai Shunfu Ms. Cai Junmei Mr. Zhao Xianguo	- Stakeholder comments - Living condition - Environmental affect - Contributions by the project activity to local society/economy
Baoshan Grid Company Ms. Zhan Yanping Mr. Li Chaogun	- Electricity supply situation of Baoshan City - Power generation facilities including renewable energy - Electricity Tariff including future forecast
Yunnan Province Environmental Protection Bureau Ms. Cai Juanjuan	- Implications of China laws and Yunnan Province laws - Ways of assessment of the project - EPBs general views on hydropower project - Potential environmental issues associated with hydropower project
Kunming Hydropower Investigation and Design Institute Mr. Lu Kun Mr. Wei Youwen	- General aspects of the project - River water data and capacity selection - Feasibility study report - Specification of equipments - Financial analysis of the project

2.3. Resolution of Any Material Discrepancy

The objective of this phase of the validation is to resolve the requests for corrective actions and clarification and any other outstanding issues which needed to be clarified for JCI's opinion on the Project Description. The Corrective Action requests and Clarification requests raised by JCI were resolved during

communications between the Project Participants and JCI.

To guarantee the transparency of the validation process, the concerns raised and responses given are summarized in chapter 3 below and documented in more detail in the validation protocol in Appendix A

Since modifications to the Project Description were necessary to resolve JCI's concerns, the Project Participants decided to revise the documentation. After revised PD was submitted and reviewed, JCI issued the final validation report and opinion.

3. Validation Findings

3.1. Project Design

The Houqiao Hydropower Project owned by Yunnan Baoshan Binglang River Hydropower Development Co., Ltd. is an accumulated reservoir and water diversion type hydropower project of which capacity is 48 MW. The main constructions are; a dam, flood discharge structures, intake, water-tunnels (4.5 m diameter x 4.0 km), power plant (2x15MW) and switching yard. JCI confirmed all of the facilities during the on-site assessment.

Key parameters of the project are as below:

Table 3-1-1; Key parameters of Houqiao Hydropower Station

Turbine		Generator	
Quantity:	3	Quantity:	3
Model:	HLA696-LJ-130	Model:	SF16 -10 / 2860
Rated Output:	16.6 MW	Rated Capacity:	16 MW
Rated Revolution:	600 r/min	Rated Revolution:	600 r/min
Rated Head:	115 m	Rated Voltage:	10.5 kV
Rated Flow:	15.82 m ³ /s	Rated Power Factor:	0.8

The water-turbine/generator adapted to the project are products by a manufacture in China and environmentally safe and sound. The facility started its operation in Sep. 2005. The expected power generation is 235,000 MWh annually and 211,080 MWh will be provided annually to the china Southern Power Grid (CSPG).

The project owner has possessed and operated similar hydropower plants. The plant has been operated from Sep. 2005 smoothly. The operators are well trained on operation and maintenance of hydropower plant.

The project start date is 23 Sep. 2005 when the proposed plant started its operation. The operation start means to begin reducing GHG emissions. The project is scheduled that the start of first crediting period as VSC project is at 1st April 2006 and its closing date is at 31st March 2016.

The project owner is Yunnan Baoshan Binglang River Hydropower Development Co., Ltd. of which the proof of title is attached to the PD. JCI implemented the on-site assessment in which JCI interviewed with the owner to confirm the outline of the company and its organization for VCS project implementation.

The project does not participate in and is not rejected from another emission programme such as CDM. And China, as host country, doesn't have any supporting credit programme for GHG emission reductions.

The PD states clearly followings. The project is a compliance with the requirements of VCS 2007.1 Standard and other relevant rules, including the host country (China) legislation and sustainability criteria.

- 1) The project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction.
- 2) The project has not created another form of environmental credit (for example renewable energy certificates).

Thus JCI judges the project is eligible as the VCS.

JCI issued the finding of CL-3 and CL-15 regarding the schedule of project. The information regarding the project activities were shown in the revised PD including the project starting date and the starting date of the first crediting period. JCI judges that the necessary information was provided in the revised PD. The finding of CL-3 and CL-15 was resolved and closed.

JCI issued the finding of CL-4 regarding the expected level of activity that was not explained in the original PD. These explanations were added in the revised PD according to VCS 2007.1. The finding of CL-4 was resolved and closed.

JCI issued the finding of CL-5 regarding other environment credit specially CDM. During on-site assessment JCI confirmed that the Project Owner studied an application to CDM but, as a result, did not apply before VCS application. It was added in the revised PD. The finding of CL-5 was resolved and closed.

3.2. Baseline

3.2.1. Baseline Methodology

The project is a 48 MW hydropower plant and the power density is 282.4 W/m^2 which is greater than 4 W/m^2 . The electricity generated is connected to the Yunnan province power grid, which is one of the components of the China South Power Grid (CSPG). The baseline methodology ACM0002 version 10 for CDM is applicable to the project. All of CDM methodologies were approved as baseline scenario and monitoring methodologies under the VCS program.

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 IV providing the same amount of electricity by CSPG was selected appropriately as reasonable and credible baseline scenario.

The baseline emission factor (EF_y) is properly calculated in accordance with the approved “Tool to calculate the emission factor for an electricity system” and the approved methodology ACM0002 version 10.

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

	GHGs involved	Description
Baseline emissions	CO ₂	Emission from electricity generation of CSPC
Project emissions	None	The power density is greater than 10W/m ²
Leakage	None	

3.2.2. *Additionality*

According to VCS 2007.1, the project proponent shall demonstrate that the project is additional using one of the following tests:

Test 1 - The project test:

Test 2 - Performance test;

Test 3 - Technology test

The test 1 of the project test is chosen for this project. And the test 1 is carried out according to the following three steps.

Step 1 - Regulatory Surplus

Step 2 - Implementation Barriers

Step 3 - Common Practice

As Step 2 Implementation Barriers the Project Document carried out investment barriers analysis.

Benchmark analysis

According to the CDM Methodological Tool “Tool for the demonstration for the demonstration and assessment of additionality” (version 05.2), it is stated that the alternatives shall be in compliance with all mandatory applicable legal and regulatory requirements. The additionality of the project is demonstrated by a discussion for investment barrier in conformance with the Tool.

The PD selected Benchmark analysis method (Option III) for investment analysis among the three options suggested by the Tool. In accordance with Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects, issued by the China National Electric Power Company, Project IRR of 8% for total investment of a project (after taxes) is regarded as a benchmark of this hydropower project. JCI judges that the selection of analysis method and benchmark value 8% were appropriate in compliance with the Additionality Tool.

Input value for analysis

The input values used in the investment analysis of the PD were as below table that compared with those values used in the FS Report.

Item	Parameters	Unit	FS Report	PD
1	Installed capacity	MW	48	48
2	Annual grid-electricity after 2009	MWh	211,080	*1 211,080
3	Project lifetime	Year	30	30

4	Static investment	RMB million Yuan	259.4	297.9
5	Liquid capital	RMB million Yuan	0.48	0.48
6	Annual O&M cost after 2009	RMB million Yuan	5.95	*2 9.64
7	Value Added Tax (VAT)	%	17	17
8	Additional tax	%	8	8
9	Income tax	%	33	33
10	Electricity Tariff (excluding VAT)	RMB Yuan/kWh	0.1477	0.1709
11	Crediting period	Years x times	-	10 x 3
12	Expected VCU price	EUR/tCO ₂ e	-	3.3

*1 For 2006, 2007, and 2008 the annual Electricity Exports were 149514, 219,545 and 187980 MWh. From 2009 is estimated to be 211,080 MWh, based on the FS Report.

*2 For 2006, 2007, and 2008 the annual O&M costs were RMB 4.09, 4.59 and 6.02 million Yuan. From 2009 is estimated to be RMB 9.64 million Yuan, based on the FS Report and the notices issued by the local government.

1) Static investment

The FS Report of the project was completed in Apr. 2004 by HydroChina Kunming Engineering Corporation and it was approved in Nov. 2004 by Yunnan Development and Reform Commission. RMB 259.4 million Yuan of the static investment in the FS Report was an estimated value before project start. The project has completed its construction on Dec. 2005. The project owner started to consider a application of the project to VCS program on May 2008. At Oct. 2008 the project owner has acknowledged the actual investment cost which was RMB 297.9 million Yuan. The value was confirmed by the evidence.

JCI judges that the actual investment should be used for benchmark analysis for the project at decision of the project owner to apply to VCS project.

2) Annual O&M cost

The annual O&M costs of 2006 to 2008 are the actual value and the costs after 2009 are estimations based on FS Report and the special payments. The local government decided that the hydropower generation company had to bear the special payments for water resources fee and reservior fund in proportion to electricity tariff income. These payments were decided after issue of the FS Report so then the FS Report did not consider these in the financial analysis of the project. The special payments were confirmed with the notice issued by the local government.

The annual O&M costs after 2009 were higher than those between 2006 and 2008. Those were actual values and showed a tendency of O&M cost increasing significantly.

JCI issued the finding of CL-17 regarding difference of O&M costs between before and after 2009. The Project Participant explained its reasons. JCI judges it is reasonable. Furthermore JCI checked the IRR if the O&M costs after 2009 were constantly same as the actual 2008 O&M cost. The IRR was 7.69 % that was lower than 8 % of the benchmark. The finding of CL-17 was resolved and closed.

3) Electricity tariff

RMB 0.1477 Yuan/kWh without VAT in the FS Report was the expected tariff at 2004 by HydroChina Kunming Engineering Corporation. Recent and actual tariff is RMB 0.1709 Yuan/kWh excluding VAT based on the power purchase agreement with the Grid company and special payments required by the local government. JCI confirmed the evidence and judges the tariff used in benchmark analysis is reasonable and appropriate.

JCI issued the finding of CL-6 regarding the input values for investment analysis which were FS Report base or recent and actual base. The Project Participant revised the static investment and electricity tariff in the PD from FS Report base to recent and actual base as explanations above. JCI judges the changes of input value are reasonable and appropriate. The finding of CL-6 was resolved and closed.

Results of benchmark analysis

The PD shows the project IRRs which are 6.97 % without VCUs and 8.35 % with VCUs respectively. Without VCUs the IRR value calculated in the benchmark analysis below the benchmark of 8%, thus it is evident that the project will face substantial financial hurdles and cannot be implemented. After taking VCUs revenue into consideration, the project IRR reaches 8.35 % that is higher than the benchmark. JCI judges that the IRR of the project with and without VCUs are calculated appropriately under the proper input data and assumptions.

Sensitivity analysis

A sensitivity analysis was conducted by varying the parameters: electricity exports, electricity tariff and annual O&M cost. The sensitivity analysis shows firmly that if without VCUs, the project is not financially attractive and cannot be implemented. JCI judges that 10% variation used for the sensitivity analysis is appropriate by the reason described in the revised PD. It is shown that even if the parameter changed extremely the project IRR calculated is not beyond the benchmark of 8%. Then it was confirmed that an implementation of the project was impossible except VCUs revenue.

Common practice barrier

It have been compared with the similar projects in Yunnan Region with the same capacity range (comparable capacity between 32 and 168 MW), which were operated after 2003, because the China State Power Corporation was split into five regional grid in 2002 with substantial effects on the investment environment for the power project.

The PD shows an investment comparison of similar projects. The investment cost per kW of the project is RBM 1,267 Yuan/kW that is higher than those of the similar projects. JCI judges the proposed project will not implement without VCUs because of bad financial situations such as higher investment cost.

JCI issued the finding of CL-7 regarding the common practice that further clarification was required. The PD was revised appropriately. The finding of CL-7

was resolved and closed.

Additionality of the project

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

3.3. Monitoring Plan

As described above “3.2.1. Baseline methodology”, the methodology ACM0002 version 10 is applicable to this project.

Since the emission factor is fixed by the ex ante analysis, the most important data is the electricity supplied to the Yunnan Power Grid by the project activity. The electricity supplied to the Yunnan power grid by Houqiao Hydropower Station are measured continuously by the electric meters and all data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period. VCS monitoring office manages all data collected.

The monitoring plan provides detailed information related to the collection and archiving of necessary information including the monitoring point, measurement method, double checking procedures and frequency in accordance with the methodology ACM0002 version 10.

The responsibility and authority for registration, monitoring, measurement and reporting activities are appropriate.

JCI issued the finding of CL-11 regarding the monitoring of reservoir area of which measurement interval is not defined. The monitoring plan in PD revised to measure it yearly according to ACM0002 version 10. The finding of CL-11 was resolved and closed.

JCI issued the finding of CL-12 regarding the electricity metering system that further clarification was required. The PD was revised to clarify plainly its metering system and a determination method for transmission loss. The finding of CL-12 was resolved and closed.

3.4. Calculation of GHG Emissions

The methodologies for quantifying GHG emissions are selected in accordance with the approved CDM methodology ACM0002 version 10.

The project is a hydropower project, a grid-connected zero emission renewable generation activity and meets all the conditions stated in the methodology ACM0002. The emission factor is properly calculated in the ex ante analysis in accordance with the “Tool to calculate the emission factor for an electricity system (Version 01.1)”.

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

$$\begin{aligned} BE_y &= EG_y \times EF_y = (EG_{ex,y} - EG_{im,y}) \times EF_y \\ &= (211,080 - 0) \times 0.8712 = 183,893 \text{ t-CO}_2\text{e /year (after 2009)} \end{aligned}$$

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

$$ER_y = BE_y - PE_y - L_y$$

Where: PE_y is project emission, and L_y is leakage of the project.

The power density of the project is 282.4W/m² greater than 10W/m². According to ACM0002 version 10, the PE_y of the project is zero.

$$PE_y = 0 \text{ t-CO}_2$$

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

$$\begin{aligned} ER_y &= BE_y - PE_y - L_y = (EG_{ex,y} - EG_{im,y}) \times EF_y - PE_y - L_y \\ &= 183,893 - 0 - 0 = 183,893 \text{ t-CO}_2\text{e/year (after 2009)} \end{aligned}$$

The assumptions made for estimating GHG emission reductions are consistent with the approved consolidated baseline and monitoring methodology ACM0002 version 10. JCI judges that the estimation of GHG emissions is accurate, transparent and conservative in establishing formulas, parameters and values used.

JCI issued the finding of CAR-1 regarding estimated amount of emission reductions. The Table 1 in the PD was revised its emission reductions of each year based on recalculation using the baseline emissions factor published by the China DNA in 2008. JCI judges that the recalculation results were appropriate according to the "Tool to calculate the emission factor for an electricity system" version 01.1. The finding of CAR-1 was resolved and closed.

3.5. *Environmental Impact*

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 ecology, surface water quality, air pollution, noise, solid waste and resettlement.

The EIA report was prepared by HydroChina Kunming Engineering Corporation which was an organization approved by the National 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 Yunnan Environmental Protection Bureau.

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.

3.6. *Comments by Stakeholders*

The project participant and Yunnan Sun Valley Energy Conservation Industry Development Co., Ltd. carried out the public opinion survey inviting comments from the local stakeholders in May 2008. The purpose was the public consultation for the social, economic and environmental effects of the project.

The result of this survey was reported in the PD. The questionnaires were released to residents in villages near the project and 68 answers were recollected. 98 % of the residents consulted were accepted with construction of the project. Advantages of the project are promotion of local economy and working opportunity , and furthermore no opinion of significant minus impact on environment. Some residents concerned about air pollution, water pollution and noise but all of them thought the project was feasible.

Also by the interview with residents JCI has confirmed their opinion that they supported this project and there was no environmental problem to the present. Nobody was against the project activity. The project owner did take proper countermeasures for keeping environment safely near the project site.

JCI judges the project caused no influence of adverse impacts on the relevant local area.

4. Validation Conclusion

JCI has performed a validation of the VCS PD of “48 MW Houqiao Hydropower Project, Yunnan, China” based on the Voluntary Carbon Standard 2007.1. The project is a hydropower project located on the Binglang River with an installed capacity of 48 MW; expected a net supply of 211,080 megawatt-hour / year. The project will provide additional capacity to the interconnected Yunnan Power Grid (a component of the China South Power Grid (CSPG)). The project will reduce the annual average 178,615 tons CO₂e of GHGs by avoiding operation of existing thermal power plants and future capacity expansion of fossil fuel-based generation during the 10-year crediting period. This project will sell electricity to the grid as well as supplying reliable power to nearby villages.

- The methodology and criteria used for validation

The calculation methodology and criteria used for the validation is a consolidated baseline methodology ACM0002 version 10 approved by CDM Executive Board and relevant criteria. And it is approved as methodology under VCS Program.

- Any quantifications or limitations related to the validation

The project started its operation on 23 Sep., 2005 and has been operated favorably. However, the Project Crediting Period Start Date under the VCS 2007.1 is defined as should not be earlier than 28 March 2006. Hence, the project owner determined the Project Crediting Period Start Date of the proposed project as 1 April, 2006 according to the conservative principle.

There are no quantifications or limitations related to the validation.

- Main conclusions and corrective action requests when relevant

The responses to JCI’s CARs and CLs to the PD were satisfactorily provided by the Project participants and the PD was revised.

- Summary of the validation conclusion

In summary, it is JCI’s opinion that the PD version 1.3 for “48 MW Houqiao Hydropower Project, Yunnan, China” meets the VCS standard 2007.1, and correctly applies the baseline and monitoring methodology ACM 0002 (version 10) “consolidated methodology for grid-connected electricity generation from renewable sources”.

Hence, JCI requests the registration of the “48 MW Houqiao Hydropower Project, Yunnan, China” as a VCS project.

5. References

Table 5-1; Documents provided by project proponent

Reference	Document
/D-01/	Project Description of 48 MW Houqiao Hydropower Project, Yunnan, China, Version 1.0 dated 09/06/2009, by Tepia Corporation
/ D-02/	Project Description of 48 MW Houqiao Hydropower Project, Yunnan, China, Version 1.3 dated 14/10/2009, by Tepia Corporation
/ D-03/	Feasibility Study Report for Houqiao Hydropower, dated 4/2004, by Kunming Hydropower Investigation and Design Institute of HydroChina Kunming Engineering Corporation
/ D-04/	Drawings for Houqiao Project attached to the FSR, by Kunming Hydropower Investigation and Design Institute & others
/ D-05/	EIA Report for Houqiao Project, dated July 2003, by Kunming Hydropower Investigation and Design Institute of HydroChina Kunming Engineering Corporation
/ D-08/	2005 Power Purchase Agreement between Yunnan Baoshan Binglang River HDC & Yunnan Baoshan Grid Company
/ D-09/	2009 Power Purchase Agreement between Yunnan Baoshan Binglang River HDC & Yunnan Baoshan Grid Company
/ D-10/	Meeting minutes on VCS project cooperation between Yunnan Baoshan Binglang River HDC and Sun Valley Energy Conservation Industry Development, dated 06/05/2008
/ D-11/	Notice on Electricity Tariff, dated 27/02/2008, by Baoshan City Development and Reform Committee
/ D-12/	Notice on special payment additional to electricity tariff for industrial enterprise support, dated 29/12/2008, by Baoshan City Economy Committee
/ D-13/	Notice on additional payment to electricity tariff for dam fund, dated 13/04/2009, by Yunnan Province Finance Agency
/ D-14/	Notice on additional payment to electricity tariff for dam fund, dated 13/07/2009, by Tengchong County Tax Agency
/ D-15/	Notice on collection method of Houqiao, dated 28/10/2008, by Baoshan Zhongxin Certified Accountant Co., Ltd.
/ D-16/	Comparison between estimated and actual investment of Houqiao Project, dated 10/10/2008, by Baoshan Binglang River HDC
/ D-17/	Explanation on investment increase of Houqiao Project, dated 10/02/2009, by Baoshan Binglang River HDC
/ D-18/	O&M cost, dated 10/09/2009, by Baoshan Binglang River HDC
/ D-19/	Spreadsheet for financial analysis, by Tepia Corporation

Table 5-2; Background investigation and assessment documents

Reference	Document
/A-01/	Voluntary Carbon Standard 2007.1, dated 18/11/ 2008
/A-02/	Voluntary Carbon Standard, Program Guidelines, dated 18/11/2008
/A-03/	Voluntary Carbon Standard 2007, Validation Report Template, dated 19/11/ 2007
/A-04/	Voluntary Carbon Standard 2007, Project Description Template, dated 19/11/ 2007
/A-05/	ACM0002, Consolidated methodology for grid-connected electricity generation from renewable sources (Version 10)
/A-06/	Tool for the demonstration and assessment of additionality (Version 05.2)
/A-07/	Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion (Version 02)
/A-08/	Tool to calculate the emission factor for an electricity system (Version 01.1)
/A-09/	China's Regional Grid Baseline Emission Factors 2008 Renewed, 30/12/2008, by China DNA
/A-10/	Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects, dated 2003, by China National Electric Power Company

Table 5-3; Websites used

Reference	Link	Organization
/vcs/	http://www.v-c-s.org/	VCS website

Appendix A

VCS Validation Protocol –Version 01

Introduction

This document is the Validation Protocol on 48 MW Houqiao Hydropower Project, Yunnan, China

The validation protocol is prepared for the following purposes:

- To organise, detail and clarify the requirements that the VCS 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 contains the checklist with questions which ask how the VCS requirements are fulfilled methodologically, qualitatively and quantitatively, and conclusion by the validator with such marks as **OK**, **CAR** and **CL** *.

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

***Note:**

- Findings established during the validation can either be seen as a non-fulfillment of VCS criteria or where a risk to the fulfillment 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 VCS project or that emission reductions will not be certified
- A request for clarification (**CL**) may be used where additional information is needed to fully clarify an issue. Depending on the result of clarification, the item may lead to additional corrective request or further request for clarification.

Index:

Table 1 Requirements ChecklistA-2

Table 2 Resolution of Corrective Actions and Clarification Requests.....A-13

TABLE 1. REQUIREMENTS CHECKLIST

Page A-2

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
A.1.-4 Is a brief description of the project mentioned?	PD 1.4	DR	Yes	OK	OK
A.1.-5 Is the project location including geographic and physical information allowing the unique identification and delineation of the specific extent of the project mentioned?	PD 1.5	DR	Yes	OK	OK
A.1.-6 Is the duration of the project activity/crediting period mentioned? ▪ <i>Project start date: Date on which the project began reducing or removing GHG emissions.</i> ▪ <i>Crediting period start date: the date the first monitoring period commenced</i> <i>VCS project crediting period: A maximum of ten years which may be renewed at most two times</i>	PD 1.6	DR	No It is not described in Clause 7 Schedule that the project began reducing or removing GHG emissions on 23 September 2005. It is not described in Clause 7 Schedule that the first monitoring period commenced on 1 April 2006.	CL-3	OK
A.1.-7 Is Conditions prior to project initiation mentioned?	PD 1.7	DR	Yes	OK	OK
A.1.-8 Is a description of how the project will achieve GHG emission reductions and/or removal enhancements mentioned?	PD 1.8	DR	Yes	OK	OK
A.1.-9 Is project technologies, products, services and the expected level of activity mentioned?	PD 1.9	DR	No. The project technologies are mentioned in the PD but the expected level of activity is not.	CL-4	OK
A.1.-10 Is the compliance with relevant local laws and regulations related to the project mentioned? <i>The VCS PD shall include identification of</i>	PD 1.10	DR	Yes	OK	OK

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
<i>relevant local laws and regulations related to the project and demonstration of compliance with them.</i>					
A.1.-11 Is the identification of risks that may substantially affect the project's GHG emission reductions or removal enhancements mentioned?	PD 1.11	DR	Yes	OK	OK
A.1.-12 Is it demonstrated to confirm that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction?	PD 1.12	DR	Yes	OK	OK
A.1.-13 Is it demonstrated that the project has not created another form of environmental credit (for example renewable energy certificates)? <i>If the project has created another form of environmental credit, the proponent must provide a letter from the program operator that the credit has not been used and has been cancelled from the relevant program.</i>	PD 1.13	DR	Yes. It would be better to add some description such that the proposed project is not CDM.	CL-5	OK
A.1.-14 Project rejected under other GHG programs (if applicable): Projects rejected by other GHG programs, due to procedural or eligibility requirements where the GHG program applied have been approved by the VCS Board; can be considered for VCU but project proponents for such a project shall: ▪ clearly state in its VCS PD all GHG programs for which the project has applied for credits and why the	PD 1.14	DR	Not applicable.	OK	OK

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
project was rejected, such information shall not be deemed commercially sensitive information; and ▪ provide the VCS verifier and Registry with the actual rejection document(s) including explanation; and ▪ have the project validated against VCS program requirements.					
A.1.-15 Is project proponents roles and responsibilities, including contact information of the project proponent, other project participants mentioned?	PD 1.15	DR	Yes	OK	OK
A.1.-16 Is any information relevant for the eligibility of the project and quantification of emission reductions or removal enhancements (including legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and temporal information) mentioned?	PD 1.16	DR	Yes	OK	OK
A.1.-17 Is the list of commercially sensitive information (if applicable) mentioned?	PD 1.17	DR	Yes	OK	OK
A.2. VCS Methodology:					
A.2.-1 Is the title and reference of the VCS methodology applied to the project activity and explanation of methodology choices mentioned? <i>Projects shall use one of the VCS program approved project methodologies and provide information relevant to methodology deviations or methodology revisions.</i>	PD 2.1	DR	Yes The Methodology applied is ACM0002 (Ver.10) of CDM.	OK	OK

[illegible]

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
<i>investment return constraint that can be overcome by the additional revenues with the generation of VCUs.</i> ▪ <i>Technological barriers – Project faces technology-related barriers to its implementation.</i> ▪ <i>Institutional barriers – Project faces financial, organizational, cultural or social barriers that the VCU revenue stream can help overcome.</i> Step 3: Common Practice ▪ <i>Project type shall not be common practice in sector/ region, compared with projects that have received no carbon finance.</i> ▪ <i>If it is common practice, the project proponents shall identify barriers faced compared with existing projects.</i> ▪ <i>Demonstration that the project is not common practice shall be based on guidance in the GHG Protocol for Project Accounting, Chapter 7.</i> <i>(Common practice refers to the predominant technologies or those technologies or practices have penetrated the market (defined by a specific geographic area).)</i> 2) Performance Test: Step 1: Regulatory Surplus: <i>The project shall not be mandated by any enforced law, statute or other regulatory framework.</i> Step 2: Performance Standard: <i>The emission generated per unit output by the project shall be below the level that</i>			submitted to JCI. The PD version 1.3 states that annual O&M cost of 2008 as actual data is RBM 6.0222 M Yuan and that after 2009 as calculated data is RBM 9.6372 M Yuan. The reason of cost difference is required to clarify. The PD should clarify followings. Page 17, 9th low; Table 4 should be Table 6. Page 19, 16th low; 1.1627 is correct? Pls clarify. Page 19, 20th low; 5692.3 is correct? Pls clarify.	CL-17 CL-7	OK OK

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
has been approved by the VCS Program for the product, service, sector or industry, as the level defined to ensure the the project is not business-as-usual. Performance standard based additionality tests shall be approved through the double approval process and by the VCS Board. <i>The list of approved performance standards is on www.v-c-s.org.</i> 3) Technology Test: Step 1: Regulatory Surplus: The project shall not be mandated by any enforced law, statute or other regulatory framework. Step 2: Technology Additionality: The project and its location are contained in the list of project types and applicable areas approved as being additional by the VCS Program. These project types are defined as those in which all projects would also be deemed additional using Additionality test 1 and will be determined on a case by case basis. <i>The approved list is available on www.v-c-s.org.</i>					
A.3.Monitoring:					
A.3.-1 Is the title and reference of the VCS methodology (which includes the monitoring requirements) applied to the project activity and explanation of methodology choices Mentioned?	PD 3.1	DR	Yes	OK	OK
A3.-2 Is Monitoring included estimation, modelling, measurement or calculation	PD 3.2	DR	No. Page 21, 5 th and 7 th low; PD used EG _{ex} and EG _{im} for	CL-8	OK

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl																
approaches? ▪ Purpose of monitoring ▪ Types of data and information to be reported, including units of measurement ▪ Origin of the data) ▪ Monitoring, including estimation, modelling, measurement or calculation approaches ▪ Monitoring times and periods, considering the needs of intended users ▪ Monitoring roles and responsibilities ▪ Managing data quality			monitoring data but these names are different from description in “4.1 Explanation of methodological choice”. PD should clarify clearly about monitoring of the diesel generator. Will it operate after construction? Why is it necessary to measure operational hours but diesel oil consumption?	CL-9	OK																
A.3.-3 Data and parameters monitored / Selecting relevant GHG sources, sinks and reservoirs for monitoring or estimating GHG emissions and removals: <i>Describe each data and parameter using this table;</i> <table><tr><td>Data / Parameter:</td><td></td></tr><tr><td>Data unit:</td><td></td></tr><tr><td>Description:</td><td></td></tr><tr><td>Source of data to be used:</td><td></td></tr><tr><td>Value of data applied for the purpose of calculating expected emission reductions</td><td></td></tr><tr><td>Description of measurement methods and procedures to be applied:</td><td></td></tr><tr><td>QA/QC procedures to be applied:</td><td></td></tr><tr><td>Any comment:</td><td></td></tr></table>	Data / Parameter:		Data unit:		Description:		Source of data to be used:		Value of data applied for the purpose of calculating expected emission reductions		Description of measurement methods and procedures to be applied:		QA/QC procedures to be applied:		Any comment:		PD 3.3	DR	No The names of Data/Parameter in 3.3 are different from 4.1; EG _{ex} & EG _{im} in 3.3, EG _{output,y} & EG _{input,y} in 4.1. ACM0002 (ver.10) requires to measure A _{pj} yearly after the project implementation. The PD does not mention about measurement interval.	CL-10 CL-11	OK OK
Data / Parameter:																					
Data unit:																					
Description:																					
Source of data to be used:																					
Value of data applied for the purpose of calculating expected emission reductions																					
Description of measurement methods and procedures to be applied:																					
QA/QC procedures to be applied:																					
Any comment:																					
A.3.-4 Is the monitoring plan mentiond?	PD	DR	No																		

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
	3.4		PD is described that the Monitoring Plan will be updated and revised basing on-site situation and the comments from the DOE. This description is seemed to suggest that the Monitoring Plan can be updated and revised every year. The VCS 2007.1 stipulates in 5.11 that the project proponent shall apply GHG monitoring criteria and procedures on a regular basis during project implementation. PD should be revised. Regarding the metering system the PD does not explain clearly the electricity flow directions and the electricity kinds measured by M6 & M4. What electricity is measured by M6; electricity from the proposed project to Sanchahe PS or electricity from Sanchahe PS to Shitoushan Substation? If the electricity measured by M6 is that Sanchahe PS to Shitoushan Substation, the PD should clarify the procedure how to decide electricity from the proposed project by M4 data. Since M6 measures both electricity from the proposed project and Sanchahe PS.	CL-12	OK
				CL-13	OK
A.4. GHG Emission Reductions:					
A.4.-1 Is methodological choice explained?	PD 4.1	DR	Yes	OK	OK
A.4.-2 Is GHG emissions and/or removals for the baseline scenario quantified?	PD 4.2	DR	No. Please clarify about 203,460MWh of Electricity Export. It is 211, 080MWh or not.	CL-14	OK
A.4.-3 Is GHG emissions and/or removals for the project quantified?	PD 4.3	DR	Yes	OK	OK
A.4.-4 Is GHG emission reductions and removal enhancements for the GHG project quantified?	PD 4.4	DR	Yes	OK	OK
A.5. Environmental Impact:					

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
A.5.-1 Environmental impact assessment is to be summarized when such an assessment is required by applicable legislation or regulation.	PD 5.1	DR	Yes	OK	OK
A.6. Stakeholder Comments:					
A.6.-1 Relevant outcomes from stakeholder consultations and mechanisms for on-going communication are to be mentioned.	PD 6.1	DR	Yes	OK	OK
A.7. Schedule:					
A.7.-1 Chronological plan for the date of initiating project activities, date of terminating the project, frequency of monitoring and reporting and the project period, including relevant project activities in each step of the GHG project cycle are to be mentioned.	PD 7.1	DR	No. The PD should clarify the dates of which are the date of initiating project activities, date of terminating the project, frequency of monitoring and reporting and the project period, including relevant project activities in each step of the GHG project cycle.	CL-15	OK
A.8. Ownership:					
A.8.-1 Proof of Title: Provide evidence of proof of title through one of the following: ▪ a legislative right; ▪ a right under local common law; ▪ Ownership of the plant, equipment and/or process generating the reductions/removals; ▪ A contractual arrangement with the owner of the plant, equipment or process that grants all reductions/removals to the proponent	PD 8.1	DR	No. Main descriptions of the evidence should be translated to English for readers to understand these as a proof of title.	CL-16	OK

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
A.8.-2 Projects that reduce GHG emissions from activities that participate in an emissions trading program (if applicable): Project proponents of projects that reduce GHG emissions from activities that: are included in an emissions trading Program; or ▪ take place in a jurisdiction or sector in which binding limits are established on GHG emissions; shall provide evidence that the reductions or removals generated by the project have or will not be used in the Program or jurisdiction for the purpose of demonstrating compliance. The evidence could include: ▪ a letter from the Program operator or designated national authority that emissions allowances (or other GHG credits used in the Program) equivalent to the reductions/removals generated by the project have been cancelled from the Program; or national cap as applicable or; ▪ purchase and cancellation of GHG allowances equivalent to the reductions/removals generated by the project related to the Program or national cap.	PD 8.2	DR	Not applicable	OK	OK

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

TABLE 2. RESOLUTION OF CORRECTIVE ACTIONS AND CLARIFICATION REQUESTS

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Table 1	Summary of project owner response	Validation team Conclusion
CAR-1 The estimated amount of emission reductions are mentioned in the Table 1. But some data are seemed wrong as follows. The estimated emission reductions of 2016 Total estimated reductions Annual average over the crediting period of estimated reductions	A.1.-3	Total estimated emission reductions and annual average estimated emission reductions have been revised in the latest PD. Pls. refer to Page 2.	Table 1 was revised appropriately. The finding of CAR-1 was resolved and closed.
CL-1 The number of PD version is not shown. The date of issue is shown in the cover page, but it is hard to understand.	A.0.-1	The number of PD has been inserted, and the document completed date has been made clear. Pls. refer to the cover page of PD.	The list of PD issued was added in the cover page. The finding of CL-1 was resolved and closed.
CL-2 The followings should be clarified. The estimated emission reductions from 2006 to 2008 are actual data or not.	A.1.-3	The estimated emission reductions from 2006 to 2008 are actual data, and have been noted in PD. Pls. refer to Page 3.	The PD was revised appropriately. The finding of CL-2 was resolved and closed.
CL-3 It is not described in Clause 7 Schedule that the project began reducing or removing GHG emissions on 23 September 2005. It is not described in Clause 7 Schedule that the first monitoring period commenced on 1 April 2006.	A.1.-6	The data have been inserted in Clause 7 Schedule of the latest PD. Pls. refer to Page 40.	The dates related to the project were added in 7 Schedule. The finding of CL-3 was resolved and closed.
CL-4	A.1.-9	To describe the expected level of	The expected level of activity was

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Table 1	Summary of project owner response	Validation team Conclusion
The project technologies are mentioned in the PD but the expected level of activity is not.		activity, the sentence which the project has met the requirements of ISO 14064: 2006 and VCS 2007.1 has been inserted in the latest PD. Pls. refer to Page 9.	added in the PD appropriately. The finding of CL-4 was resolved and closed.
CL-5 It would be better to add some description such that the proposed project is not CDM.	A.1.-13	The description to indicate that the activity is not CDM has been inserted in the latest PD. Pls. refer to Page 11.	The PD was revised. The finding of CL-5 was resolved and closed.
CL-6 Investment analysis is selected and performed. The following input values for investment analysis are requested to clarify about their decision base. 1) Pool purchase price 2) Static investment The spread sheet for investment analysis should be submitted to JCI.	A.2.-5	1) Description as "Pool purchase price" has been revised to "On-grid power tariff". RMB 0.1477 Yuan/kWh (exclude VAT) of the PD ver.1.0 is the data in the feasibility study report of the project. The tariff has revised to RMB 0.1709 Yuan/kWh (exclude VAT) based on the recent PPA and the notification of renewable tariff. It is calculated as follows: According to PPA in 2009, on-grid power tariff with VAT are 0.19 RMB yuan/kWh in the wet season from June to November and 0.24 RMB yuan/kWh in the dry season from	1) The project has already started its operation in 2006. How much is the actual on-grid power tariff recently? If the actual tariff is higher than the expected tariff in the PD, the actual tariff should be used for investment analysis in the PD.

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Table 1	Summary of project owner response	Validation team Conclusion
		December to May in the next year respectively, and in accordance with notice on supportance of special industry tariff and down-regulation of tariff, tariff in the wet and dry season respectively reduce 0.01 RMB and 0.02 RMB yuan/kWh with VAT. VAT is 17%, so the average on-grid power tariff without VAT for 2009 is calculated as follows: $[(0.19-0.01) \times 6 + (0.24-0.02) \times 6] / 12 / (1+0.17) = 0.1709 \text{ RMB yuan/kWh.}$ Then RMB 0.1709 yuan/kWh is recent average tariff which can mostly reflect the electricity price in the future, we choose this value as the expected tariff in FIRR calculation and actual sale income from 2006 to 2008 has been used for FIRR calculation. Pls. refer to Page 17 of PD. And relevant evidences have been submitted; pls. refer to Annex Houqiao evidences. 2) Also RMB 259.4 million Yuan of the PD ver.1.0 is the data in the FSR.	2) The project has already completed its construction, then the project owner might have the actual investment cost. If the actual tariff is applied to investment analysis the static investment should

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Table 1	Summary of project owner response	Validation team Conclusion
		The static investment has revised to RMB 297.9 million Yuan based on actual investment cost. Actual static investment have used in investment analysis in latest PD. Actual static investment is higher than that of FSR. Based on the data of FSR, the total additional static investment has been quartered to add to the estimated static investment in four years respectively from 2003 to 2006 in FIRR calculation. So the project IRR has been revised in latest PD. Pls. refer to Page 17-20. And evidences which are relevant with investment analysis have submitted, pls. refer to Annex Houqiao evidences and refer to the spread sheet for investment analysis. FIRR has been recalculated based on the actual investment cost and electricity tariff of this project. The spread sheet has been submitted to JCI.	use also actual investment consistently. The PD was revised and the relevant evidences were submitted to JCI.. The spread sheet was submitted. The finding of CL-6 was resolved and closed.
CL-7 The PD should clarify followings.	A.2.-5	The latest PD has clarified these questions. The data has been	

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Table 1	Summary of project owner response	Validation team Conclusion
Page 17, 9 th low; Table 4 should be Table 6. Page 19, 16 th low; 1.1627 is correct? Pls clarify. Page 19, 20 th low; 5692.3 is correct? Pls clarify.		changed. And the expression of annual electricity output has been revised and the actual data of main parameters have been inserted in the Table 5. Pls. refer to Page 17. Actual Static investment has been revised, so the investment cost per kWh and the costs per installed capacity have been also revised. Pls. Refer to Page 20.	Further clarifications are required. Page 20, 8 th low; 259.4 should be 297.9. Page 20, 10 th low; 5404 is correct? Pls clarify. The PD was revised appropriately. The finding of CL-7 was resolved and closed.
CL-8 Page 21, 5 th and 7 th low; PD used EG _{ex} and EG _{im} for monitoring data but these names are different from description in "4.1 Explanation of methodological choice".	A.3.-2	The latest PD has clarified this question. Pls. refer to Page 32.	The PD was revised. The finding of CL-8 was resolved and closed.
CL-9 PD should clarify clearly about monitoring of the diesel generator. Will it operate after construction? Why is it necessary to measure operational hours but diesel oil consumption?	A.3.-2	The description about the diesel generator has been deleted in the latest PD because the diesel wasn't been operated and it will seldom used in future. Pls. refer to Page 21, 24.	The diesel generator will not operate except very short time when a stoppage of grid electricity occurred at a flood. JCI judges it is negligible small CO2 emission. The PD was revised appropriately. The finding of CL-9 was resolved and closed.
CL-10 The names of Data/Parameter in 3.3 are different from 4.1; EG _{ex} & EG _{im} in 3.3, EG _{output,y} & EG _{input,y} in	A.3.-3	These parameter have been unified in the latest PD.	The PD was revised appropriately. The finding of CL-10 was resolved and

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Table 1	Summary of project owner response	Validation team Conclusion
4.1.			closed.
CL-11 ACM0002 (ver.10) requires to measure A_{pj} yearly after the project implementation. The PD does not mention about measurement interval.	A.3.-3	The measurement interval of A_{pj} has been inverted in section A.3.-3. Pls. refer to Page 25.	The monitoring plan was revised appropriately. The finding of CL-11 was resolved and closed.
CL-12 PD is described that the Monitoring Plan will be updated and revised basing on-site situation and the comments from the DOE. This description is seemed to suggest that the Monitoring Plan can be updated and revised every year. The VCS 2007.1 stipulates in 5.11 that the project proponent shall apply GHG monitoring criteria and procedures on a regular basis during project implementation. PD should be revised.	A.3.-4	The monitoring Plan has been revised in the latest PD, Pls. refer to section A.3.-4 Page 26-31.	The PD was revised appropriately. The finding of CL-12 was resolved and closed.
CL-13 Regarding the metering system the PD does not explain clearly the electricity flow directions and the electricity kinds measured by M6 & M4. What electricity is measured by M6; electricity from the proposed project to Sanchahe PS or electricity from Sanchahe PS to Shitoushan Substation? If the electricity measured by M6 is that Sanchahe PS to Shitoushan Substation, the PD should clarify the procedure how to decide electricity from the proposed project by M4 data. Since M6 measures both electricity from the proposed project and Sanchahe PS.	A.3.-4	The metering system has been revised in the latest PD, Pls. refer to section A.3.-4 Page 26-27. Simplified electric grid connection diagram and the following description have been revised in the Figure 4. Detailed illustrations of meters have been revised in the Table 9.	The meter system was explained clearly in the revised PD. The finding of CL-13 was resolved and closed.

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Table 1	Summary of project owner response	Validation team Conclusion
CL-14 Please clarify about 203,460MWh of Electricity Export. It is 211, 080MWh or not.	A.4.-2	The data has been revised in the PD. Pls. refer to Page 36.	The emission reduction calculations were revised appropriately. The finding of CL-14 was resolved and closed.
CL-15 The PD should clarify the dates of which are the date of initiating project activities, date of terminating the project, frequency of monitoring and reporting and the project period, including relevant project activities in each step of the GHG project cycle.	A.7.-1	These have been inserted in section A.7.-1 Page 40.	The main milestones were added in 7 Schedule appropriately. The finding of CL-15 was resolved and closed.
CL-16 Main descriptions of the evidence should be translated to English for readers to understand these as a proof of title.	A.8.-1	Main descriptions of the evidence have be translated to English, pls. refer to another document named "Translation of the evidence of proof of title".	The translation added in the evidence. The finding of CL-16 was resolved and closed.
CL-17 The PD version 1.3 states that annual O&M cost of 2008 as actual data is RBM 6.0222 M Yuan and that after 2009 as calculated data is RBM 9.6372 M Yuan. The reason of cost difference is required to clarify.	A.2.-5	The water resources fee, reservoir fund, purchase cost and superfluous electricity apportionment fee were decided by the local government after issue of the FSR, and then were not considered in the FSR. These four fees actually existed in the past three years, 2006 to 2008, and will continue in future. The O&M costs after 2009 were estimated using the O&M cost of the FSR and these additional costs.	The PD and financial analysis calculation were revised appropriately. The finding of CL-17 was resolved and closed.

VCS Validation Protocol for 48 MW Houqiao Hydropower Project, Yunnan, China

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Table 1	Summary of project owner response	Validation team Conclusion
		Moreover, according to the Evidence 3 regarding the actual O&M costs of 2006-2008, the actual repair and labour costs were lower than those of the FSR. The project owner tried their best to save O&M cost through reducing repair and labour costs in the past three years. But the power owner has to employ actually temporary workers for repair jobs in 2009. As the time goes by, the repair and labour costs are expected to increase continually, and then the O&M cost will increase consequently in future.	