Voluntary Carbon Standard 2007

Validation Report Template

19 November 2007

Validation Report:

No.JCI-VCS-08/001

Name of Verification company:	Date of the issue:
Japan Consulting Institute (JCI)	2009-10-15
Report Title:	Approved by:
4×50 MW Dayingjiang-3 Hydropower Project Phases 1&2	Mr. Akio YOSHIDA Executive Director
Client:	Project Title:
Tepia Corporation Japan, Co., Ltd.	4×50 MW Dayingjiang-3 Hydropower Project Phases 1&2
Summary:	
Tepia Corporation Japan, Co., Ltd. has commissioned Japan Consulting Institute (JCI) JI/CDM Certification Program to carry out the validation of the project - "4×50 MW Dayingjiang-3 Hydropower Project Phases 1&2", with regard to the relevant requirements of VCS 2007.1 Standard. 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 project descriptions had been initially splitted into two projects in according to two feasibility study reports, which correspond to phase 1 and 2 respectively. The intakes, the water-tunnels, the surge tanks, penstocks and the turbines/generators are separated between both projects. However, these two projects were commonly use the dam, the power building, the control room, IGS, the transmission line (or towers) and the same monitoring equipments for the VCS project. Therefore, these two project descriptions should be treated as one grouped project finally. A risk based approach has been followed to perform this validation. In the course of the validation 3 Corrective Action Requests (CAR) and 8 Clarification Requests (CL) were raised and successfully closed. The validation is based on the VCS PD, the evidences, and other supporting documents made available to the valuator by project owner. As a result of the validation, the validator confirmed that the project fulfilled the criteria of VCS 2007.1. No restrictions or uncertainties were identified related to the validation.	
Work carried out by:	Number of pages:
Team leader; Masatoshi SHIBATA Team member; Tsuneo OCHIAI	Total 32 Pages

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1 Introduction

1.1. Objective

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

1.3. VCS project Description

The project is the hydropower project located on the Daying River with an installed capacity of 200MW (4 sets of 50MW machine) which is expected the net supply of 725 giga-watt-hour/year to the Power Grid. The project will reduce about 569,379 tons CO2e/Annual Average 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 the Yunnan Power Grid which is one of the components of the China South Power Grid (CSPG).

1.4. Level of assurance

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

2 Methodology

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

I. a desk review of the project design documentation (from May 11, 2009 to August 29, 2009).
II. follow-up interviews with project stakeholders (from August 31, 2009 to September 3, 2009).
III. the resolution of outstanding issues and the issuance of the final validation report and opinion (from September 5, 2009 to October 15, 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 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 is enclosed in Appendix A to this report.
It consists of two tables, Table-1 is the requirements checklist and Table-2 Resolution of Corrective Action and Clarification requirements.
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 CDM 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

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

2.2. Follow-up Interviews

Table 1 Interviewed Organization and Topics

Interviewed organizations/ visited sites	Interview topics/ Inspected items
Dehong Kairui Dayingjiang Hydropower Development Co., Ltd. (Head Office)	- Desk review findings - Project design and implementation - Monitoring plan - Internal and external data - Environmental and social indicators - Management & operational systems - Implementation of the monitoring plan
Dayingjiang-3 Hydropower Station	- Physical components - Control room (Auxiliary meter, metering system, data, training materials, certificates for equipments) - Monitoring and measurement equipment - Monitored data management - Procedural aspects of the verification
HydroChina Kunming Engineering Corporation (FSR Consultant and EPC contractor)	- General aspects of the project - Project design, Commissioning and implementation - Technical equipment and operation of the project - Performance of the project
Tepia Corporation Japan, Co., Ltd. (PD Author)	- Desk review findings - Methodology selection aspects - Baseline study and additionality - Internal and external data
Yunnan Provincial Environmental Protection Bureau	- Criteria and Regulation of EIA for approval of Hydropower project - Positive and/or negative concerns from the environmental point of view - Records/documents regarding the project approval - Compensation scheme for the local residents and the national compensation standards - Monitoring items in the construction phase and normal operation phase
Yunnan Power Grid Corporation	- Description and organization of Power Grid Company - Annual distributed or supplied electric power - Major industries and user for electricity of the supply area - Major supply source to the grid - Effect of this Hydropower project to the grid - Criteria for the buying electricity tariff

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 positive conclusion on the PD. The CARs and CLs raised by JCI were resolved during communications between the Client 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 PD were necessary to resolve JCI's concerns, the Client 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

3.1.1 Discussion

The Dayingjiang-3 Hydropower Project (the "Project") owned by Dehong Kairui Dayingjiang Hydropower Development Co., Ltd. is a reserved water type hydropower project consisting the installed capacity 200MW. The main construction are; a dam, two intakes, two water-tunnels (7m diameter x 3.5km), Surge tanks, penstocks, the powerhouse and the switching yard.
Key parameters of the project are as below:

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

Turbine		Generator	
Quantity:	4	Quantity:	4
Model:	HL722c-LJ-290	Model:	SF50-24 / 6000
Rated Output:	51500 kW	Rated Capacity:	58823.5kVA
Rated Revolution:	250 r/min	Rated Revolution:	250 r/min
Rated Head:	84 m	Rated Voltage:	10,500 V
Rated Flow:	66.8 m^3/s	Rated Current	3,234.4 A
-	-	Rated Power Factor:	0.85

The project start date is 18/03/2006 (Operation start date)
1stCrediting period is: 01/04/2006 – 31/03/2016.

3.1.2 Findings

The descriptions of the PD were found the some mistyping and the some engineering errors. JCI requested to correct them by CL-1 and CL-2 of the Protocol.

3.1.3 Conclusion

The description of the PD was corrected. JCI confirmed their corrections of the revised PD.
The project does not participate in and is not rejected from another emission programme such as CDM. And the host country, China, doesn't have any supporting credits programme for GHG emission reductions.
The PD stated clearly followings. And 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.

3.2. Baseline

3.2.1. Baseline methodology

3.2.1.1. Discussion

The project is a 200 MW hydropower plant and the power density is greater than 4 W/m2 and 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 is applicable to the project.

The baseline scenario is the continued operation of existing grid connected power plants and future expansion of thermal power plants that would be used to generate increased demand in the absence of the Project.

Baseline emissions factor is calculated as a combined margin (CM) consisting of the simple operating margin (Simple OM) and the build margin (BM).

The emission factor 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 project uses renewable sources and there are no project emissions.

3.2.1.2. Findings

According to the UNFCCC CDM Methodological Tool "Tool for the demonstration for the demonstration and assessment of additionality" (version 05.2, EB 39 Annex 10), it is stated that the alternatives shall be in compliance with all mandatory applicable legal and regulatory requirements.

On the other hand, the coal-fired power plants of less than 300MW are prohibited for construction in the areas covered by large grids, in accordance with Chinese power regulation (Adjustment Catalogue of Industrial Structure in China). The description of PD was corrected. However, the total capacity of the turbines/generators were written wrong, which was used the capacity of FSR, not actual name plate rating. JCI issued CAR-1 to correct it.

3.2.1.3. Conclusion

The description of the PD was corrected. JCI confirmed the correction of the revised PD

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 following three steps

According to the CDM Methodological Tool "Tool for the demonstration for the demonstration and assessment of additionality" (version 05.2, EB 39 Annex 10), 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.

3.2.2.1. Discussion

Investment barrier
The calculated FIRR value is 6.96% without VCU revenues, which is below the benchmark 8% for Chinese Power Industries. And the results of the sensitivity analysis are still within the benchmark 8%, which the key parameters fluctuate within the reasonable range. This result indicates that the project faces the investment barrier.

Common practice barrier
It have been compared with the similar projects in Yunnan Region with the same capacity range (comparable capacity between 50 MW and 300MW), which were operated after 2002, because the China State Power Corporation was split into five regional grid with substantial effects on the investment environment for the power project.
There were three projects, including this project activity, in Yunnan Province, in accordance with the above criteria. The each project was compared with the "specific investment cost (Total investment cost (Yuan) / Annual (expected) generation output (kWh))" instead of the "investment cost per kW" to equalize the annual operating hours of the turbine/generators.
The specific investment cost of this project was 30% and 20% higher than that of the other project. This higher cost was caused by the tough constructions and transportation conditions, because the project site is located near the country boundary between China and Myanmar, which location is one of the most remote regions in China and is around the mountains.

3.2.2.2. Findings
Since the financial figures in FSR has substantially changed during the serious consideration period and the long construction period, the actual investment cost and O&M cost including the additional investments etc. should be considered for this project cost. JCI has found and pointed out the some minor wording problems and some unsuitable calculations. JCI issued CAR-2 to correct them.

Section 7 Schedule was not fully reflected the other descriptions of PD and was found the some un-normal approval sequences for the construction. JCI issued CAR-3, CL-7 and CL-8 to confirm the reasons of them.

3.2.2.3. Conclusion
PD author corrected the wording, calculations and schedules. JCI confirmed the corrections of the revised PD.
However, for these un-normal approval sequences, the project owner and PD author explained the reasons of them with the background of the Chinese modernization, which was referred the attached protocol. JCI confirmed and agreed them during the on-site assessment.

3.3. Monitoring Plan

3.3.1. Discussion
The monitoring methodology is applied ACM0002 version 10.

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. Electricity, which supplies to the Yunnan power grid and receives from Dayingjiang-2 Hydropower station, are measured continuously by the electric meters and are recorded automatically by the process computer in Dayingjiang-3 Hydropower Station, respectively. And these electricity are recorded manually by the operators about two hours interval (ten times per day) for the back-up.

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.

3.3.2. Findings

The monitoring method and items are followed by the methodology ACM0002 version 10. However, there were found the some minor point-outs. JCI issued CL-3, CL-4 and CL-5 to correct them.

3.3.3. Conclusion

PD author corrected and added the descriptions. JCI confirmed the descriptions in the revised PD.

3.4. Calculation of GHG Emissions

3.4.1. Discussion

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)" (/A-07/).
There is no highly uncertain data and information in the monitoring process as indicated in the monitoring plan such as double checking by the project owner.

3.4.2. Findings

The Emission calculations are followed by the methodology ACM0002 version 10. However, there was found the minor point-out clearly to treat the data of "Electricity exports EG_{ex}". JCI issued CL-6 to add the explanation in the revised PD.

3.4.3. Conclusion

PD author added the descriptions in the revised PD. JCI confirmed them in the

revised PD.

3.5. Environmental Impact

3.5.1. Discussion

It had been confirmed by the approval letter (/D-11/, /D-12/) from Yunnan Provincial Environmental Protection Bureau before the on-site assessment, and was confirmed by the on-site interviews with project owner and Yunnan Provincial Environmental Protection Bureau that the project complies with all relevant local, regional / national laws and regulations.

Also, the project has obtained approval letter (/D-09/, /D-10/) of Development and Reform Committee (DRC = DNA) of Yunnan Province.

3.5.2. Findings

None

3.5.3. Conclusion

The project complies with the requirements.

3.6. Comments by stakeholders

3.6.1. Discussion

The local stakeholders living near the site had known this project at the land surveying carried out for the feasibility study report (FSR) by the project owner, and they had heard the purpose of the land surveying.
Project owner had organized the appropriate consultation to the stakeholders, including the initial information of this project.

The results of survey during the stakeholder's consultation were positive, and in support of the initiative due to recognized social benefits such as the improvement of water services, roads, electricity supply and local economy.
As regards the several concerns such as noise, possible dust and waste pollution and disruption during the construction work and submergence after the completion of construction, the stakeholder have not seen the problems, because this area is one of the lowest population and lowest income area in China. Actually, the stakeholders have not made to suffer the above several concerns. In addition to that, the stakeholders have been receiving the social benefits such as improvement of water services, roads, electricity supply and local economy, now.

3.6.2. Findings

None

3.6.3. Conclusion

The project complies with the requirements.

4 Validation conclusion

JCI has performed a validation of the VCS PD of "4×50 MW Dayingjiang-3 Hydropower Project Phases 1&2" (herein after "Dayingjiang-3 Project") based on the Voluntary Carbon Standard 2007.1.
The project is a hydropower project located on the Daying River with an installed capacity of 200MW; expected a net supply of 725,460 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 569,649 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 purpose and scope of validation

The validation is the independent third party assessment of the PD, and is the requirement for the VCS projects. The project's compliance with the relevant VCS criteria is validated in order to confirm that the project description is sound and reasonable and meets the stated and identified criteria. The validation was conducted through the assessment of the VCS PD dated on 9 October, 2009. The validation consisted of the following three steps:

i) desk review of the PD,
ii) follow-up interviews with project stakeholders and
iii) the resolution of outstanding issues and issuance of the final validation report and the opinion.

- The methodology and criteria used for validation

The calculation methodology and criteria used for the validation is a CDM consolidated baseline methodology ACM0002 version 10 approved by CDM Executive Board and relevant criteria.

- Any restrictions or uncertainties related to the validation

The project started its operation on 18 March, 2006 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 restrictions and uncertainties 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 for "4×50 MW Dayingjiang-3 Hydropower Project Phases 1&2" dated on 9 October, 2009 meets the VCS standard 2007.1, and correctly applies the CDM 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 "4×50 MW Dayingjiang-3 Hydropower Project Phases 1&2" as a VCS project.

5 References

Table 5-1; Documents provided by project proponent

Reference	Document
/D-01/	PD for "98 MW Dayingjiang-3 Hydropower Project Phase1 and Phase2 (version 1.0)
/D-02/	Final PD for "4x50 MW Dayingjiang-3 Hydropower Project Phases 1 and 2 (version 1.3)
/D-03/	Summary for Dayingjiang HD and Dayingjiang-3 Project
/D-04/	Feasibility Study Report for Dayingjiang-3 Project Phase 1, Volume 1
/D-05/	Feasibility Study Report for Dayingjiang-3 Project Phase 1, Volume 5
/D-06/	Feasibility Study Report for Dayingjiang-3 Project Phase 2, Section 1
/D-07/	Feasibility Study Report for Dayingjiang-3 Project Phase 2, Section 13&14
/D-08/	Minutes of Board Meeting on March 2, 2005
/D-09/	Approval Letter for Dayingjiang-3 Hydropower Station Phase 1 dated on 13 July, 2004
/D-10/	Approval Letter for Dayingjiang-3 Hydropower Station Phase 2 dated on 27 December, 2005
/D-11/	Approval Letter for EIA Report of Dayingjiang-3 Hydropower Station Phase 1 dated on 28 June, 2004
/D-12/	Approval Letter for EIA Report of Dayingjiang-3 Hydropower Station Phase 2 dated on 16 March, 2009
/D-13/	Specification of the Dayingjiang-3 Hydropower Project Phase1
/D-14/	List of Total Repairs Cost for the accident on 13 August, 2007
/D-14-a/	Contract agreement of the unit prices for the cleaning, replacement, assembling and adjusting for the generator equipment.
/D-14-b/	Payment agreement of the unit prices for the cleaning, replacement, assembling and adjusting for the generator equipment.
/D-14-c/	Contract agreement of the manufacturing and transportation for the relay protection system
/D-14-d/	Contract agreement of the repairing for the air compression system
/D-14-e/	Contract agreement of the assembling of the water turbine generator and the manufacturing and transportation for the auxiliary equipments
/D-14-f/	Contract agreement of the manufacturing and transportation for the Valves and attachment
/D-15/	Electricity generation start date as indicated in Project Process Report
/D-16/	Actual electricity exports of 2006-2008
/D-17/	Minute of Meeting for VCS proposal
/D-18/	Water supply reform project
/D-19/	Report for accident of 5 July, 2004
/D-20/	Regulation for Reservoir found
/D-21/	Power purchase agreement
/D-22/	Yunnan Province Government notice on Tariff decrease dated on 24 November, 2008
/D-23/	Yunnan Province Government notice on Tariff decrease dated on 06 November, 2008
/D-24/	Spread-sheet for FIRR Calculation
/D-25/	Contract Agreement for construction of Dayingjiang-3 Hydropower Project Phases 2 dated on 26 March, 2006.

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-05/	Tool for the demonstration and assessment of additionality (Version 05.2)
/A-06/	Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (Version 02)
/A-07/	Tool to calculate the emission factor for an electricity system (Version 01.1)
/A-08/	Bulletin on the Baseline Emission Factors of the China's Regional Grids (Official data sources for Grid Emission Factor published by the Chinese DNA.)

Table 5-3; Websites used

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

Table 5-4; List of interviewed persons

Reference		Name	Organization / Function
/P-01/	☑ Mr. ☐ MS	Yi Yinggui	Dehong Kairui Dayingjiang Hydropower Development Co., Ltd.
/P-02/	☐ Mr. ☑ MS	Wang Qiuxian	
/P-03/	☑ Mr. ☐ MS	Yue Jinlin	
/P-04/	☑ Mr. ☐ MS	Wang Haowei	
/P-05/	☐ Mr. ☑ MS	Li Ruiyan	
/P-06/	☑ Mr. ☐ MS	Zhao Jin	HydroChina Kunming Engineering Corporation
/P-07/	☐ Mr. ☑ MS	Wang Nan	Tepia Corporation Japan, Co., Ltd.
/P-08/	☑ Mr. ☐ MS	Zhang Pengcheng	
/P-09/	☐ Mr. ☑ MS	He Yaju	Yunnan Sun Valley Energy Conservation Industry Development Co., Ltd.
/P-10/	☑ Mr. ☐ MS	Wang shaohai	
/P-11/	☐ Mr. ☑ MS	Xu Jixia	

Reference		Name	Organization / Function
/P-12/	☑ Mr. ☐ MS	Shen Dehong	Yunnan Power Grid Corporation
/P-13/	☑ Mr. ☐ MS	Yang Chun Ming	Yunnan Provincial Environmental Protection Bureau
/P-14/	☑ Mr. ☐ MS	Yang Yonggang	General manager of Economic Department / Dehong Province (Stakeholder)
/P-15/	☑ Mr. ☐ MS	Zhang Lagan,	Farmer (Stakeholder)
/P-16/	☑ Mr. ☐ MS	Yang Deyun	Former village leader (Stakeholder)
/P-17/	☑ Mr. ☐ MS	Liu Fuwen	Farmer (Stakeholder)

Appendix A

VCS Validation Protocol

Introduction

This document is the Validation Protocol on *4x50 MW Dayingjinag-3 Hydropower Project Phases 1&2*

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 CHECKLIST

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
A.0. Title of the project activity:					
A.0.-1 Is the number and the date of the issue of the version updated?	PD Cover page	DR	Yes	OK	OK
A.1. Description of the project activity: *How the project activity reduces GHG emissions.* *The project's contribution to sustainable development is assessed.*					
A.1.-1 Is the project title mentioned?	PD 1.1	DR	Yes	OK	OK
A.1.-2 Is a Type/Category of the project mentioned? 1) Whether the project is Project category part of a GHG program that has been approved by the VCS Board or not? 2) Whether the project is a grouped project or not?	PD 1.2	DR	1) Yes 2) No. (non-grouped project) This is a grouped project, because of its integral constructions (such as dam and reservoir) and individual approval letters, based on the tradition of one approval letter for one project.	OK	OK
A.1.-3 Is the estimated amount of emission reductions over the crediting period including project size mentioned? *Micro project: Less than 5,000 tonnes CO2 equivalent emissions reductions per year.* *Mega Project: More than 1,000,000 tonnes CO2 equivalent emissions reductions per year*	PD 1.3	DR	Yes	OK	OK
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	PD	DR	Yes	OK	OK

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

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
geographic and physical information allowing the unique identification and delineation of the specific extent of the project mentioned?	1.5				
A.1.-6 Is the duration of the project activity/crediting period mentioned? ▪ *Project start date: Date on which the project began reducing or removing GHG emissions.* ▪ *Crediting period start date: the date the first monitoring period commenced* *VCS project crediting period: A maximum of ten years which may be renewed at most two times*	PD 1.6	DR	▪ Project start date: 18 March 2006 ▪ Crediting period start date: 1 April 2006 ▪ VCS project crediting period: 10 years	OK	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	It is requested to clarify the reduction figure (5,146,488 tCO2e) in section 1.8.	CL-1	OK
A.1.-9 Is project technologies, products, services and the expected level of activity mentioned?	PD 1.9	DR	1) It is requested to clarify the difference between Turbine Rated flow of 69m3/s in Table 2 and Penstock design flow of 6.0-7.0 m3/s of Section 1.9. It is requested to clarify whether the Penstock design flow means the volumetric flow rate or flow velocity. 2) Technical specifications of the turbines and generators of Table 2 shall be revised in accordance with the name plate of them.	CL-2	OK
A.1.-10 Is the compliance with relevant local	PD	DR	Yes	OK	OK

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

Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
laws and regulations related to the project mentioned? *The VCS PD shall include identification of relevant local laws and regulations related to the project and demonstration of compliance with them.*	1.10				
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)? *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.*	PD 1.13	DR	Yes	OK	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	PD 1.14	DR	Yes	OK	OK

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
such a project shall: ▪ clearly state in its VCS PD all GHG programs for which the project has applied for credits and why the 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?	PD 2.1	DR	Yes	OK	

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
Projects shall use one of the VCS program approved project methodologies and provide information relevant to methodology deviations or methodology revisions.					
A.2.-2 Is the choice of the methodology and why it is applicable to the project activity justified?	PD 2.2	DR	Yes	OK	OK
A.2.-3 Is GHG sources, sinks and reservoirs for the baseline scenario and for the project identified?	PD 2.3	DR	Yes	OK	OK
A.2.-4 Is it mentioned how the baseline scenario is identified and description of the identified baseline scenario? *The project proponent shall select the most reasonable baseline scenario for the project. This shall reflect what most likely would have occurred in the absence of the project.*	PD 2.4	DR	The figure 98MW of section 2.4 should be corrected to 200MW, and the connecting description should be reviewed.	CAR-1	OK
A.2.-5 Description of how the emissions of GHG by source in baseline scenario are reduced below those that would have occurred in the absence of the project activity (assessment and demonstration of additionality) *The project proponent shall in the VCS PD, in addition to describing how the project meets the VCS methodology, demonstrate that the project is additional based on one of the tests,* ***the project test, the performance test****, and* ***technology test.*** ***1) Project Test:*** ***Step 1: Regulatory Surplus****: The project shall not be mandated by any enforced law, statute or other regulatory framework.* ***Step 2: Implementation barriers***	PD 2.5	DR	1) It is requested to clarify whether the term “IRR” and “FIRR” are identical each other or not. If they are identical each other, it is requested to unify them to one same term. *2)* The explanation for the sensitivity analysis in Fig.2 should be revised according to the revised FIRR analysis results. 3) It is requested to provide the evidence of DRC approval for total capacity increase from 196MW to 200MW, both original and revised FIRR spread sheets for detail clarification. *4)* The description regarding proposal and decision process in accordance with VCS 2007.1 shall be added.	CAR-2	OK

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
The project shall face one (or more) distinct barrier(s)compared with barriers faced by alternative projects. ▪ *Investment barrier - Project faces capital or investment return constraint that can be overcome by the additional revenues with the generation of VCUs.* ▪ *Technological barriers – Project faces technology-related barriers to its implementation.* ▪ *Institutional barriers – Project faces financial, organizational, cultural or social barriers that the VCU revenue stream can help overcome.*			Investment analysis is selected and performed.		
Step 3: Common Practice ▪ *Project type shall not be common practice in sector/ region, compared with projects that have received no carbon finance.* ▪ *If it is common practice, the project proponents shall identify barriers faced compared with existing projects.* ▪ *Demonstration that the project is not common practice shall be based on guidance in the GHG Protocol for Project Accounting, Chapter 7.* *(Common practice refers to the predominant technologies or those technologies or practices have penetrated the market* (defined by a specific geographic area).)			Common Practice analysis is performed.		
2) Performance Test: ***Step 1: Regulatory Surplus:*** *The project shall not be mandated by any enforced law, statute or other regulatory framework.* ***Step 2: Performance Standard:*** *The emission generated per unit output by the project shall be below the level that*					

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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. *The list of approved performance standards is on www.v-c-s.org.* ***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.* *The approved list is available on www.v-c-s.org.*					
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 approaches?	PD 3.2	DR	The note e.g. “Electricity exports EG_{ex} before 2007 or 2008 is the actual data, and the data after the year based on FSR” is the actual data” should be added to “Monitoring including	CL-3	OK

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
▪ 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			estimation, modelling measurement or calculation approaches".		
A.3.-3 Data and parameters monitored / Selecting relevant GHG sources, sinks and reservoirs for monitoring or estimating GHG emissions and removals: *Describe each data and parameter using this 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	1) It is requested to clarify how the Data/Parameters of "$FC_{diesel,y}$" and "Operational hours of diesel generator" are necessary to be used in calculation of GHG Emission Reductions. 2) ACM0002 (ver.10) requests to measure A_{pj} yearly after the project implementation. The PD does not mention about measurement interval.	CL-4	OK
A.3.-4 Is the monitoring plan mentiond?	PD 3.4	DR	It is requested to describe the additional explanation for the measurement method/instrument of M3ex, M3im, M5ex and	CL-5	OK

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
			M5im which are described in section 3.4.		
A.4. GHG Emission Reductions:					
A.4.-1 Is methodological choice eplained?	PD 4.1	DR			
A.4.-2 Is GHG emissions and/or removals for the baseline scenario quantified?	PD 4.2	DR	The note e.g. "Electricity exports EG_{ex} before 2007 or 2008 is the actual data, and the data after the year based on FSR" is the actual data" should be added to the calculation.	CL-6	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:					
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	1) The section 7 "Schedule" should include the items described in the left column including the following corrections according to section 1.6. 2) "Electricity generation start" should be corrected to "Project Start". And it is requested to provide the evidence of the electricity generation start. 3) "Project start" should be corrected to "Project Crediting Period start".	CAR-3	OK

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Checklist Question	Ref.	MoV	Comments	Draft Concl	Final Concl
			It is requested to clarify the reason that Construction started before EIA approval (phase1&2) and FSR approval (phase1). It is requested to clarify the project consideration when starting the project, especially the contents of phases 1&2 and general schedule.	CL-7 CL-8	
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	Yes	OK	OK
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	PD 8.2	DR	Yes	OK	OK

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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.					

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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 figure 98MW of section 2.4 should be corrected to 200MW, and the connecting description should be reviewed.	A2.-4	98 MW was revised to 200 MW, and the following description also has been revised to "However, according to the <Adjustment Catalogue of Industrial Structure in China>, coal-fired thermal power unit which is lower than 300MW is constrained to construct, except for small grid such as Xinjiang and Hainan Province[1]. Therefore, coal-fired thermal power plant is not consistent with China's laws and regulations. In addition, the project site is lack of oil and natural gas, and the cost is expensive[2], it is impossible to build an oil-fired or natural gas fired power plant. Therefore, Alternative II is omitted for further consideration."	JCI confirmed it in the revised PD. CAR-1 Closed
CAR-2	A.2.-5		
1) It is requested to clarify whether the term "IRR" and "FIRR" are identical each other or not. If they are identical each other, it is requested to unify them to one same term.		"IRR" and "FIRR" are identical, and "IRR"s have all been unified to "FIRR" in the latest PD (version 1.1).	JCI confirmed it in the revised PD. CAR-2-1) closed
2) The explanation for the sensitivity analysis in Fig.2 should be revised according to the revised FIRR analysis results.		Explanations for sensitivity analysis in Fig.2 are revised according to the revised FIRR analysis.	JCI confirmed it in the revised PD. CAR-2-2) closed

[1] National Development and Reform Committee of China, document No. 40 in 2005.

[2] http://www.m188.com/newsinfo/2006413/2006413-8561948.html

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
3) It is requested to provide the evidence of DRC approval for total capacity increase from 196MW to 200MW, both original and revised FIRR spread sheets for detail clarification.		The specification of the water turbine and generator in FSR was 4 set of 49MW machines. However, the standard design machines of the manufacture are 50MW machines. Therefore, Project owner accepted this 50MW standard design machines. In accordance with Chinese law, it is not required the re-approval for the capacity change of water turbine/generator within 10%. Then, there are not DRC approval for total capacity increase from 196MW to 200MW	JCI confirmed it during the on-site assessment. CAR-2-3) closed
4) The description regarding proposal and decision process in accordance with VCS 2007.1 shall be added.		We add this description in section 2.5 in page 15.	JCI confirmed it in the revised PD. CAR-2-4) closed
CAR-3	A.7.-1		
1) The section 7 "Schedule" should include the items described in the left column including the following corrections according to section 1.6.		Schedule in PD were added the items in accordance with PD 1.6.	JCI confirmed them in the revised PD. CAR-3-1) closed
2)"Electricity generation start" should be corrected to "Project Start". And it is requested to provide the evidence of the electricity generation start.		Schedule in PD was added the word of "Project Start".	JCI confirmed the additional word of "Project Start" in the revised PD. CAR-3-2) closed
3)"Project start" should be corrected to "Project Crediting Period start".		Schedule in PD was corrected from the word of "Project start" to "Project Crediting Period start".	JCI confirmed it in the revised PD. CAR-3-3) closed

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-1 It is requested to clarify the reduction figure (5,146,488 tCO2e) in section 1.8.	A.1.-8	PD was corrected from 5,146,488 tCO2e to 5,693,788 tCO2e.	JCI confirmed it in the revised PD. CL-1 Closed
CL-2	A.1.-9		
1) It is requested to clarify the difference between Turbine Rated flow of 69m3/s in Table 2 and Penstock design flow of 6.0-7.0 m3/s of Section 1.9. It is requested to clarify whether the Penstock design flow means the volumetric flow rate or flow velocity.		Turbine rated flow of 69m3/s should be turbine design discharge of 66.8 m3/s, which has been revised in table 2 in the latest PD. Penstock design flow of 6.0-7.0 m3/s should be penstock design flow of 6.0-7.0 m/s, which means the flow velocity, and has been revised in PD.	JCI confirmed it in the revised PD CL-2-1) Closed
2) Technical specifications of the turbines and generators of Table 2 shall be revised in accordance with the name plate of them.		Technical specifications of the turbines and generators of Table 2 were revised in accordance with the name plate, pls check Table 2 in page 7 of the PD	JCI confirmed them in the revised PD CL-2-2) Closed
CL-3 The note e.g. "Electricity exports EG_{ex} before 2007 or 2008 is the actual data, and the data after the year based on FSR" is the actual data" should be added to "Monitoring including estimation, modelling measurement or calculation approaches".	A3.-2	The actual annual electricity exports of 2006 to 2008 were added to "Monitoring including estimation, modelling measurement or calculation approaches".	JCI confirmed them in the revised PD. CL-3 Closed
CL-4	A.3.-3		
1) It is requested to clarify how the Data/Parameters of "$FC_{diesel,y}$" and "Operational hours of diesel generator" are necessary to be used in calculation of GHG Emission Reductions.		The Data/Parameters of "$FC_{diesel,y}$" and "Operational hours of diesel generator" were deleted in the revised PD, because there is no back-up diesel generator in this project.	JCI confirmed the deletion of them from the revised PD. CL-4-1) Closed
2) ACM0002 (ver.10) requests to measure A_{pj} yearly after the project implementation. The PD does not mention about measurement interval.		PD was revised.	JCI confirmed it in the revised PD. CL-4-2) Closed

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-5 It is requested to describe the additional explanation for the measurement method/instrument of M3ex, M3im, M5ex and M5im which are described in section 3.4.	A.3.-4	The gateway electricity meters M3, M5 and back-up electricity meters M2, M4, in addition with M3ex, M3im, M5ex, M5im and M2ex, M2im, M4ex, M4im were all explained in monitor plan of the latest PD in page 25-27.	JCI confirmed them in the revised PD. CL-5 Closed
CL-6 The note e.g. "Electricity exports EG_{ex} before 2007 or 2008 is the actual data, and the data after the year based on FSR" is the actual data" should be added to the calculation.	A.4.-2	"According to the monitored data, the annual Electricity Export of 2006, 2007, and 2008 was 354,914, 308,896, and 700,183 MWh, respectively. The electricity export to the CSPG was estimated to be 725,460 MWh (refer to FSR)" has been added in section 4.2 of the PD.	JCI confirmed them in the revised PD. CL-6 Closed
CL-7 It is requested to clarify the reason that Construction started before EIA approval (phase1&2) and FSR approval (phase1).	A.7.-1	In accordance with the policy speech by General Secretary of the Chinese party Mr**.** Jiāng Zémín on May 13, 2002, the government of Yunnan province has made the development plan based on the water sources. This company, Dehong Kairui Dayingjiang Hydropower Development Co., Ltd., has been one of the companies which were established based on the development policy of Yunnan province government. The development contract was signed between the autonomous province government and the investment company, which would become the stock-holder of this company, on March 11, 2003. And it has started the construction work for the hydropower project. Under the social circumstances in those days, there were no	JCI confirmed it during the on-site assessment. CL-7 Closed

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
		legal problems. On the other side, Chinese government have been supporting the autonomous province government for the minority people, and have not claimed to this project.	
CL-8 It is requested to clarify the project consideration when starting the project, especially the contents of phases 1&2 and general schedule.	A.7.-1	The Dehong Kairui Dayingjiang Hydropower Development Co., Ltd., as an investment corporation, had focused on the development boom of water resource around Dayingjiang river area since the beginning of 2003. They then discussed the possibility of hydropower development with Dehong Prefecture Government, and received the government's permit (on March 11, 2003) on establishing the Dayingjiang-3 Hydropower Station. Due to the good water resource condition and their financial capability at that time, the company decided to firstly construct a power capacity of 98MW hydropower project as phase1 in the coming three years, and then construct one more 98MW project as phase 2 after the phase1 project put into operation, by using the same dam, reservoir of phase1 project.	JCI confirmed it during the on-site assessment. CL-8 Closed