



VALIDATION REPORT

Shimian Haiyang Hydropower Project

09 November 2009

Japan Consulting Institute

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CDM Validation Report for Shimian Haiyang Hydropower Project

Date of first issue	Report Number
20 April 2009	JCI-CDM-VAL-08/038
Approved by Akio Yoshida, Executive Director	Organizational Unit JCI CDM Center, Japan Consulting Institute (JCI)
Client	Client ref.,
J-TEC Co., Ltd. (Japan)	Ms.Mizuho Tanaka
Project name	Shimian Haiyang Hydropower Project
Host Country	Methodology version
People's Republic of China	AMS-I.D. version 13
Size	ER estimate
Small Scale	15,510 t-CO ₂ e / year (average)
GHG Reducing Measure/	Grid-connected hydro power generation
A summary of the validation process and its conclusions, validation opinion	
<p>Japan Consulting Institute (JCI) has performed a validation work of the “Shimian Haiyang Hydropower Project”. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.</p> <ul style="list-style-type: none"> • The review of the PDD and the subsequent follow-up interviews have provided JCI with sufficient evidence, to determine the fulfilment of stated criteria. • The host country is People's Republic of China and the Annex I country is Japan. Both countries fulfil the participation criteria and have approved the project and authorized the project participants. The DNA from People's Republic of China confirmed that the project assists in achieving sustainable development. • The project correctly applies “AMS-I.D. Grid connected renewable electricity generation”, version 13 and referenced Tool. • The total emission reductions from the project are estimated to be on the average 15,510 t-CO₂e per year over the selected 7 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. • Adequate training and monitoring procedures have been implemented. • In summary, it is JCI's opinion that the Shimian Haiyang Hydropower Project as described in the PDD version 06 of “14/07/2009” meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the methodology AMS-I.D. version 13. • JCI thus provides a positive opinion and requests the registration of the proposed project as a CDM project activity. 	

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09 November 2009, revision 05	
Checked by Hideyuki Sato, Manager, Evaluation Group, JCI CDM Center	
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CDM Validation Report for Shimian Haiyang Hydropower Project

Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CL	Clarification Request
CCPG	Central China Power Grid
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CERs	Certified Emission Reductions
CM	Combined Margin
CNY	China Yuan (Unit of Chinese currency)
CO ₂	Carbon dioxide
DOE	Designated Operation Entity
DNA	Designated National Authority
DRC	Development and Reform Commission
EIA	Environmental Impact Assessment
ERPA	Emission Reduction Purchase Agreement
ERs	Emissions Reductions
EB	Executive Board
EPB	Environmental Protection Bureau
GHG	Greenhouse Gas
JCI	Japan Consulting Institute
J-TEC	J-TEC Co., Ltd.
KP	Kyoto Protocol
LoA	Letter of Approval
NDRC	National Development and Reform Commission
NWCPG	Northwest China Power Grid
OM	Operating Margin
PDD	Project Design Document
PDR	Preliminary Design Report
PP	Project Participants
PRC	People's Republic of China
SHJEC	Shanghai JEC Environmental Consultant Co., Ltd.
SHEPCo	Shimian Haiyang Electric Power Co., Ltd.
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Clean Development Mechanism Validation and Verification Manual

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I. VALIDATION SUMMARY AND OPINION

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

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

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

The project correctly applies "AMS-I.D. Grid connected renewable electricity generation", version 13 and referenced "Tool to calculate the emission factor for an electricity system" (Version 01.1).

The total emission reductions from the project are estimated to be on the average 15,510 tCO₂e per year over the selected 7 year crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is JCI's validation conclusion that the "Shimian Haiyang Hydropower Project" as described in the PDD version 06 of 14/07/2009 meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the AMS-I.D. version 13. JCI thus provides a positive validation opinion and requests for the registration of the proposed project as a CDM project activity.

II. INTRODUCTION OF CDM VALIDATION

J-TEC Co., Ltd. has commissioned JCI to perform a validation of the "Shimian Haiyang Hydropower Project" (hereafter called "the project"). This report summarises the findings of the validation of the project, performed on the basis of CDM VVM version 01, and related UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

1. Objective of CDM Validation

The purpose of validation is to ensure a thorough, independent assessment of proposed project activities submitted for registration as a proposed CDM project activity against the applicable CDM requirements.

JCI reports the results of its assessment in a validation report. JCI submits this validation report, along with the supporting documents to the CDM Executive Board as part of the request for registration of a project activity as a proposed CDM project activity.

The validation report includes a positive validation opinion only if the proposed project activity complies with the applicable CDM requirements.

2. Validation approach

The CDM is a rules-based mechanism. Therefore, it will be JCI's responsibility to ensure that, in accordance with the CDM VVM version01 and CDM requirements, these rules are complied with for any project activities requesting registration as a proposed CDM project activity.

During validation, JCI assesses whether the project design of the proposed CDM project activity meets the CDM requirements. For this, JCI, using objective evidence, assesses the completeness and accuracy of the claims and conservativeness of the assumptions made in the project design document (PDD). The evidence used in this assessment is not limited to that provided by the project participants.

In assessing evidence, JCI does not omit evidence that is likely to alter the validation opinion. In the assessment of evidence, JCI uses the acceptable approaches as specified in Chapter V. CDM Validation of section E. in CDM VVM version01, and JCI ensures that the project activity complies with the relevant requirements set out in the CDM modalities and procedures, the applicability conditions of the selected methodology and guidance issued by the CDM Executive Board before submitting a request for registration.

In case the validation report includes a negative validation opinion the validation report will be sent to the CDM Executive Board.

3. VALIDATION METHODS

3.1 Means of validation

JCI applies standard auditing techniques to assess the correctness of the information provided by the project participants, including, where appropriate, but not limited to:

- 1) Document review, involving:
 - (i) Review of data and information to verify the correctness, credibility and interpretation of presented information
 - (ii) Cross checks between information provided in the PDD and information from sources other than that used, if available, and if necessary independent background investigations
- 2) Follow-up actions (e.g., on-site visit and telephone or email interviews), including:
 - (i) Interviews with relevant stakeholders in the host country, personnel with knowledge of the project design and implementation
 - (ii) Cross-check of information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted from the validation

- 3) Reference to available information relating to projects or technologies similar to the proposed CDM project activity under validation;
- 4) Review, based on the approved methodology being applied, of the appropriateness of formulae and correctness of calculations.

3.2 Clarification requests, corrective action requests and forward action requests

If, during the validation of a project activity, JCI identifies issues that need to be further elaborated upon, researched or added to in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, JCI ensures that these issues are correctly identified, discussed and concluded in the validation report.

JCI raises a corrective action request (CAR) if one of the following occurs:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

JCI raises a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

JCI raises a forward action request (FAR) during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

JCI resolves or “close out” CARs and CLs only if the project participants modify the project design, rectify the PDD or provide adequate additional explanations or evidence that satisfy the DOE’s concerns. If this is not done, JCI will not recommend the project activity for registration to the CDM Executive Board.

JCI reports on all CARs, CLs and FARs in its validation report. This reporting shall be undertaken in a transparent and unambiguous manner that allows the reader to understand the nature of the issue raised, the nature of the responses provided by the project participants, the means of validation of such responses and clear reference to any resulting changes in the PDD or supporting annexes. The validation protocol consists of two tables. The different columns in these tables are described as followings.

Validation protocol tables

Table 1: Requirement checklist
✧ Checklist Question :

The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.

✧ Reference :

Gives reference to documents where the answer to the checklist question or item is found.

✧ Means of verification (MoV) :

Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.

✧ Comment :

The column is used to elaborate and discuss the checklist question and/or the conformance to the question.

✧ Draft and/or Final Conclusion :

- *OK is used either acceptable based on evidence provided*
- *Corrective Action Request (CAR) is used due to non-compliance with the checklist question.*
- *Clarification Request (CL) is used when the validation team has identified a need for further clarification.*
- *Forward Action request (FAR) is used to highlight issues related to project implementation that require review during the first verification of the project activity.*

Table 2: Resolution of Corrective Action and Clarification Requests
✧ Draft report clarifications and corrective action requests :

If the conclusions from the draft Validation are either a CAR, a CL or a FAR, these should be listed in this section.

✧ Ref. to checklist question in table1& 2 :

Reference to the checklist question number in Table1& 2 where the CAR, CL or FAR is explained.

✧ Summary of project owner response :

The responses given by the project participants during the communications with the validation team should be summarised in this section.

✧ Validation conclusion :

This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

The completed validation protocol for the Shimian Haiyang Hydropower Project is enclosed in Appendix A to this report.

4. STAKEHOLDER CONSULTATION PROCESS

JCI makes the PDD of the project activity under consideration publicly available in accordance with the latest version of the “Procedures For Processing And Reporting On Validation Of CDM Project Activities”*1.

*1 <http://cdm.unfccc.int/EB/043/eb43_repan12.pdf>.

During the validation of the project activity, JCI takes into account the comments received and the validation report includes details of actions taken to take due account of the comments during the validation process.

If comments are not sufficiently substantiated or indicate that the project activity does not comply with the CDM requirements, then JCI requests further clarification from the entity providing the comment. However, JCI is not required to enter into a dialogue with Parties, stakeholders or NGOs that comment on the CDM requirements. If no additional information or substantiation is provided in response to a request for clarification, JCI proceeds to assess the comments as originally provided.

III. VALIDATION WORK

JCI carried out the validation work to ensure that the project activity complies with the requirements of paragraph 37 of the CDM modalities and procedures.

1. Validation Team

Details of the validation team are shown in below Table.

Table 3. Details of Validation Team members

Name	Role/Qualification	Expertise/ Experience of Audit
Junji Yoshizawa	All relevant issues / Team Leader	Chemical Eng., / LFG recovery power generation, Waste gas recovery power generation, Biomass boiler, Hydropower generations
Takayuki Abe	CDM auditor / Team Member	Mechanical Eng., / Power & Steam Generation, Energy Industry, Hydropower and LFG Recovery
Shigeo Aoki	CDM auditor / Team Member	Mechanical Eng., / Hydropower generations
Haruo Sawada	CDM auditor / Team Member	Chemical Eng., / Hydropower generations

2. Appointment certificate of JCI validation team member

The certificate of appointment of the validation team members is attached in Appendix B to this report.

It shall be noted that Mr. Mutsuo KATO of JCI participated in the validation activities of the Project for the quality issues under its quality management scheme, and that Mr. Masaki OKADA of JCI participated in the validation activities of the Project as a technical reviewer.

3. Quality Control of the Validation Process

The validation report worked out by the team underwent an internal review process to ensure the compliance with the applicable requirement of VVM.

JCI applies internally established Quality Management Program for the required review process, which is defined as follows;

1. Internal Review for the interim check by the internal audit team and the interim technical review by the technical reviewer
2. The evaluation of the validation work in the CDM evaluation committee consists of outside experts
3. Internal review for the final check by internal audit team and the final technical review by the technical reviewer

The review and evaluation including the technical review are implemented for every validation work by the competent personnel assigned in accordance with JCI's qualification scheme for CDM validation and verification.

4. Desk Review

4.1 Document list

The following table outlines the documentation reviewed during the validation.

Table 4. Document list

No.	Title
	PDD, Methodology, Tools, Guidance, Guidelines, Code
/1/	PDD of Shimian Haiyang Hydropower Project version 01, completed on 14/08/2008
/2/	PDD of Shimian Haiyang Hydropower Project, version 06, completed on 14/07/2009
/3/	Tool to calculate the emission factor for an electricity system (Version 01.1)
/4/	Tool for the demonstration and assessment of additionality (Version 05.2)
/5/	AMS-I.D. "Grid connected renewable electricity generation" (version 13)
/6/	GUIDELINES FOR COMPLETING THE SIMPLIFIED PROJECT DESIGN DOCUMENT (CDM-SSC-PDD) AND THE FORM FOR PROPOSED NEW SMALL SCALE METHODOLOGIES (CDM-SSC-NM) (Version 5)
/7/	Guidance on the Assessment of Investment Analysis (Version 02)
/8/	GUIDANCE ON THE DEMONSTRATION AND ASSESSMENT OF PRIOR CONSIDERATION OF THE CDM (Version 01)
/9/	Glossary of CDM terms (Version 04)
/10/	Clean Development Mechanism Validation and Verification Manual (version 01)
/11/	The paragraph 54 of the 38th meeting report of CDM EB

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No.	Title
General Reference	
/21/	Economic Evaluation Code for Small Hydropower Projects (SL16-95)
/22/	Announcement of Ministry of Water Resources of the People's Republic of China issued on 09/09/2006
/23/	Technical administrative code of electric energy metering (DL/T448-2000), approved by State Economic and trade commission of PRC on 03/11/2000
/24/	National Bureau of Statistics of China : http://www.stats.gov.cn
/25/	CDM hydropower projects in Sichuan Province : Data source UNFCCC website
/26/	Projects approved by DNA of China published by Department of Climate Change : http://cdm.ccchina.gov.cn
/27/	China's Regional Grid Emission Factors : http://cdm.ccchina.gov.cn
/28/	"Process Economics" in Perry's Chemical Engineer's Handbook 7 th Ed. 1997 McGraw-Hill
Evidence and Documents provided by the Project Participant and others	
/37/	The memo on the history of Shimian Haiyang Hydropower Station by Mr.Lee
/38/	The agreement of the title transfer of Shimian Haiyang Hydropower Station between Haiyang Village Committee and Mr.Lee on 01/04/2003
/39/	The agreement of investment for Shimian Haiyang Hydropower Station between Shimian Asbestos Mine Company and Mr.Lee on 23/12/2003
/40/	Preliminary Design Report (PDR) completion in 20/05/1997
/41/	Revised Preliminary Design Report (PDR) completion in 08/2005
/42/	Approval Letter of PDR 08/09/1997
/43/	Approval Letter of Revised PDR issued by Local DRC on 01/07/2008
/44/	Certificate of the Design Institute issued on 01/10/1995
/45/	Approval Letter of the project by local DRC on 01/07/2008
/46/	EIA Report completion on 16/12/2003
/47/	Approval Letter of EIA Report issued on 29/01/2004
/48/	Approval of Water and Soil Preservation Report on 15/11/2005
/49/	The certificate of the company, Shimian Haiyang Hydropower Station, issued by Ya'an City on 15/02/2005
/50/	Minutes of Board Meeting on Serious Consideration of CDM Application on 25/10/2005
/51/	Meeting Minutes of Project Decision with CDM Application on 15/01/2006
/52/	Agreement of CDM Consultation on 15/08/2006
/53-1/	The preliminary Emission Reduction Purchase Agreement among Project Participants on 03/04/2008
/53/	The final Emission Reduction Purchase Agreement among Project Participants on 22/07/2008
/54/	CDM Application Document to NDRC on 13/08/2008
/55/	Meeting Notice by NDRC for CDM Approval
/56/	LoA of PRC DNA issued on 10/2008(English) and 11/11/2008(Chinese version)
/57/	LoA of Japan DNA issued on 25/12/2008
/58/	Power Purchase Agreement for the project issued on 09/02/2009
/60/	The tariff information by Shimian County Price Bureau on 10/11/2008
/61/	Turbine / Generator Purchase Agreement on 08/05/2007
/62/	Construction Permit by Local DRC on 09/10/2001
/63/	Contract of construction on 25/02/2007
/66/	Notification Letter of the project for Local Stakeholders on 30/09/2006
/67/	Questionnaire and Answers from Local Stakeholders on 12/10/2006
/68/	Compensation Agreement with Local Stakeholders on 30/05/2006
/69/	CDM Monitoring/Data Management Plan and Manual issued on 10/2008

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No.	Title
/70/	Plant Operation / Maintenance Manual summarized on 20/02/2008
/71/	Operator Training Plan issued on 25/06/2008
/73/	Summary of On-Site Assessment by DOE(JCI) 16/12/2008
/74/	Contract of Validation/Registration service to J-TEC by DOE(JCI) on 09/09/2008
/75/	Audit Report on the year of 2008 for Shimian Haiyang Electric Power Co.,Ltd. issued on 05/04/2009 by Sichuan Yacheng Certified Public Accountants Co.,Ltd.
/76/	Notice of the Local income tax incentive for electric generation business in Shimian County issued by Ya'an City Tax Office on 09/08/2004

Major changes of the content from the PDD/1/ to the PDD/2/ are summarized in the below table.

Table 5. Major Changes in the Content of the PDDs

Subject and section in the PDD	Original content in the PDD/1/	Revised content in the PDD/2/	Relevant tool, guidance, or guidelines applied
Baseline Emission B.3. B.6.3 Annex 3	Description of Project Boundary was insufficient, and BM calculation base was unclear	Appropriate description was added, and EFBM was corrected, thus emission reduction value was corrected to comply with the latest NDRC data of the year.	CAR-2 and CAR-3 by CDM-VVM, Section 5.7, 5.12, 5.13 Tool to calculate the emission factor for an electricity system (ver.01.1)
Prior consideration of the CDM B.5.	Project milestones table with key date was requested to show the steps of the project were consistent as CDM project	Appropriate table was added in the PDD/2/. The timelines and relevant evidences were confirmed at the on-site assessment, and by followup cross check.	CAR-4 by CDM-VVM, Sec.6.14 Guidance on Demonstration and Assessment of Prior Consideration of the CDM (ver.01)
Investment Analysis B.5.	Explanations of the input values and the supporting evidences were insufficient, and calculation process was unclear.	Spreadsheets of benchmark analysis and sensitivity analysis calculations in excel version were attached to the PDD/2/ The provided evidences were crosschecked and the parameters were confirmed to being appropriately applied to Revised IRR, thus IRR results were corrected.	CAR-5 and CL-5 by CDM-VVM, Sec. 6.1, 6.9, 6.12, 6.14 Guidance on the Assessment of Investment Analysis (Ver. 02), and PRC Code SL16-95/21/ Tool for the demonstration of assessment of additionality (Vers. 05.2)

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Monitoring plan B.7.2	A simplified diagram of the entire monitoring system, and quantitative descriptions were required to specify the monitoring procedure. And the functions of CDM organization were not clear.	The descriptions and the figure were appropriately provided. And appropriate description of CDM organization was added. Monitoring of EGpjy was appropriately defined.	CL-10 and CL-11 by CDM-VVM , Section 7.1.b.(ii) CDM Validation and Verification Manual (ver. 01)
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5. Follow-up actions (e.g., Onsite visit, Interviews with Project Stakeholders)

The on-site assessment and interviews with project stakeholders were held from 11 to 16 December 2008 at the project site in Shimian County, Sichuan Province, China.

The names of interviewees are listed as following table.

Table 6. List of interviewees

No.	Date	Name	Organization	Topic
/73/	12/12/2008	Mr. Liu Fuquan	SHEPCo	<u>Interview with PP</u> <ul style="list-style-type: none"> Company profile and Scheme of Project Auditing system/Investment scheme Project history/milestones Serous Consideration of CDM LoA application status/PPA Specification of generators Record of Stakeholders' comment/Compensation issue Social contribution of Project
/73/	14/12/2008	Ms.Luo Jin Mr.Xie Guo Lian	Farmer Farmer	<u>Interview with Local Residents</u> <ul style="list-style-type: none"> Stakeholders comment Living condition Environmental Affect Contribution by Project to Local society/economy

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No.	Date	Name	Organization	Topic
/73/	13/12/2008	Mr. Yang Jing Tao	Design Institute	<u>Interview with Design Institute</u> <ul style="list-style-type: none"> · Outline of Institute & and the role in the project · History and content of PDR · Design base of PDR · Electricity to the grid
		Mr. Li Jian	Design Institute	
		Mr. Cheng Yi	Design Institute	
/73/	15/12/ 2008	Ms. Wan Xuan Cai	Local Grid Co.	<u>Interview with Local Grid</u> <ul style="list-style-type: none"> · Outline of Grid Company · Overview of Grid operation · Policy/Regulation for purchasing power · Information on tariff applied to the region · Contractual issue with PP

IV. VALIDATION FINDINGS

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

Findings issued through the validation

JCI issued the five (5) CARs, and twenty (20) CLs as shown in the Validation Protocol, Appendix A Table-1 and Table-2 of this report.

All the five CARs, and twenty CLs, which were raised during validation process, were finally resolved and then closed as shown in the Table 2 of the Appendix A, their major changes from PDD version 01(PDD for GSC) to PDD version 05 are summarized in Table 5. in the previous Chapter of this report.

Major issues and its resolution process through the validation are described in following items, according to Clean Development Mechanism Validation and Verification Manual (version 01), /10/.

1. Approval

JCI received copies of the two LoAs from PP through SHJEC, the CDM consultant for the project, on 17 February 2009: one is from DNA of PRC issued on 11 November 2008/56/, and for the other from DNA of Japan issued on 25 December 2008/57/.

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JCI has confirmed the approval of the project activity with a piece of news released on the website of PRC government related organization /26/.

JCI also has confirmed the following:

1. With the LoA, DNA of PRC approved Shimian Haiyang Hydropower Project and authorized Shimian Haiyang Electric Power Co., Ltd. as a voluntary participant to the project, and addressed its assistance to sustainable development in the host country.
2. Japanese government, as the DNA for Japan, approved Shimian Haiyang Hydropower Project and authorized J-TEC Co., Ltd. as a voluntary participant to the project.

There found no indication during the validation process that the project used the official development assistance funding for PRC.

JCI concluded that the two LoAs are credible and fully comply with the requirements by the CDM.

2. Participation

JCI confirmed that Shimian Haiyang Electric Power Co., Ltd. is the sole project participant of PRC, and that J-TEC Co., Ltd. is the sole project participant of Japan as being listed in tabular form in section A.3 of the PDD/2/, and also confirmed that this information is consistent with the contact details provided in Annex 1 of the PDD/2/. It is also confirmed that no entities other than those approved as project participants are included in these sections of the PDD/2/.

As described above, the project participants are authorized with the LoAs issued by the relevant DNA as a voluntary participant to the project activity.

3. Project Design Document

Through desk reviews and Q&A sessions with the PDD author, JCI confirmed that the PDD is described based on and referring to the following relevant tools, guidance, guidelines, and manual:

- (1) Tool to calculate the emission factor for an electricity system (Version 01.1)
- (2) GUIDELINES FOR COMPLETING THE SIMPLIFIED PROJECT DESIGN DOCUMENT (CDM-SSC-PDD) AND THE FORM FOR PROPOSED NEW SMALL SCALE METHODOLOGIES (CDM-SSC-NM) (Version 05)
- (3) Guidance on the Assessment of Investment Analysis (Version 01)
- (4) GUIDANCE ON THE DEMONSTRATION AND ASSESSMENT OF PRIOR CONSIDERATION OF THE CDM (Version 01)
- (5) Glossary of CDM terms (Version 04)
- (6) CDM VVM (Version 01)

The project design was described using the PDD template of the latest version 03. as shown in the PDD/2/, that was confirmed through comparison with the template listed on the UNFCCC website.

As described above, JCI judged that the PDD is compiled with the appropriate format and is described based on appropriate tools, guidelines, manual and guidance which are specified and requested by the CDM procedures.

4. Project Description

JCI conducted on-site assessment from 11 through 16 December 2008 to confirm the context of the PDD/1/ with the following measures:

- 1) Observation of the project site
- 2) Cross-check of the plant design work with relevant drawings provided by the project participant
- 3) Interviews with the project participant, relevant organizations/entities, and local stakeholders shown in Table 6 of section 5 of the previous Chapter.

There is no registered small-scale project activity under the CDM nor an application to register another CDM small-scale project activity under the CDM by the project participant within the previous two years with the same project category and technology within 1 km of the project boundary of the proposed project. This was confirmed during the on-site assessment by the interview with the project participant and relevant governmental officials, who indicated that the proposed project is the first hydropower project being developed by the project owner.^{73/} In addition, JCI confirmed with the UNFCCC website that there is no other CDM project by the same project participant.

Therefore the proposed project is not deemed to be a de-bundled component of any larger scale project activity.

As the result of the above observations and findings and through the clarifications of descriptions of the PDD after the on-site assessment, JCI judged that the descriptions of the PDD/2/ were correct and its context was sufficient, and well outlined the nature and technical aspects of the project activity.

The major features of the project activity described in the PDD/2/ are summarized below:

- Project type : the construction of a new hydropower plant of Run-of-River without Reservoir Type
- Installed capacity : 3.2MW (1.6MW x 2 units)
- Connecting grid : Central China Power Grid (CCPG)
- Estimated delivered electricity: 15,932 MWh/year
- Estimated emission reductions: 15,510 t-CO₂e/year
- Operational lifetime : 30 years
- 1st crediting period : 7years (a total of 21 years: 7years x 3)

5. Baseline and monitoring methodology

5.1. Applicability of selected methodology to the project activity

JCI judged that application of methodology AMS-I.D. Grid connected renewable electricity generation (Version 13) ^{5/}to the project activity is appropriate, and justified that they are correctly quoted and interpreted in the PDD/2/ .

The project activity complies with the following two application conditions of the methodology AMS-I.D./5/ as below:

- 1) The project activity involves the hydropower technology, one of renewable energy technologies, for power generation and supply the electricity to a grid, CCPG, and that meets the requirement of category ID.
- 2) The installed capacity of the project is 3.2MW, below the limit of 15MW for a small-scale CDM project activity using renewable energy.

5.2. Project boundary

The PDD/2/ defined the system boundary to include the project site and the relevant electricity grid which encompass the physical, geographical site of the renewable generation source. The electricity generated by the project activity replaces part of electricity from the relevant electricity grids which have many fossil fuel-fired power plants within the network.

The PDD/2/ defined this relevant electricity grid as Central China Power Grid (CCPG) plus Northwest China Power Grid (NWCPG) which exported electricity to CCPG as adequately quoted in the PDD/2/ B.3. and B.6.1.

JCI judged that the definition is appropriate and fully complies with the methodology AMS-I.D.

5.3. Baseline identification

JCI judged that the PDD/2/ appropriately identified “Provision of equivalent amount of annual power supply by CCPG” as the credible and feasible baseline to the project activity, according to the selected methodology/5/.

The baseline is the KWh produced by the renewable generating unit multiplied by an emission coefficient calculated according to the procedures prescribed in the selected tool/3/.

This is appropriately quoted in the PDD/2/ and the detailed calculations are shown in section B.6. and Annex3.

5.4. Algorithms and/or formulae used to determine emission reductions

The algorithms and/or formulae are validated with the following steps:

5.4.1. Application of baseline and monitoring methodology

JCI confirmed that the PDD/2/ fully complies with the methodology AMS-I.D. version 13 /5/ and the relevant tool/3/ based on the baseline selected. The calculations were conducted first to work out the project emissions based on the methodology/5/ and then work out the emission reductions with the 6-step method specified by the tool/3/.

JCI also confirmed that the data and parameters used in the calculations were correctly interpreted and applied through cross-checks with comparison of the data of the website of CDM China,/27/.

5.4.2. Project emission (Pa_y)

Project emissions were ignored as the methodology AMS-I.D./5/ does not refer to any quantitative estimation by applying a parameter such as the power density.

5.4.3. Baseline emission factor (By_e)

- 1) CCPG has been appropriately identified in B.3. of the PDD/2/ as the Grid included in the project boundary as stated at 5.2 of this report.
- 2) JCI confirmed that OM emission factor was calculated correctly as described below:
 - A) The simple OM method was appropriately applied satisfying the applicable conditions specified by the relevant tool/3/: the dispatch data from the Grid in China is not publically available, and low-cost/must-run resources of CCPG in the average of the last five years from year 2002 through 2006 constitutes ranging from 34.4% to 38.6% of total grid generation based on data derived from China Electric Year Books and thus satisfies the specified ratio less than 50%.
 - B) Ex-ante option was selected and then a 3-year generation-weighted average, based on the most recent available data at the year of submission of the PDD/1/ for validation was appropriately worked out using grid data from year 2004 through 2006 derived from China Electric Year Books, which are considered appropriate as data sources.
 - C) Option C was properly selected for calculation of the simple OM considering the condition of the connecting grid CCPG as:
 - Necessary data, such as power generation data on each plant required for selecting either Option A or Option B is not available in PRC
 - Only nuclear and renewable power generation are considered as low-cost/must –run power sources in CCPG
 - The quantity of electricity supplied to CCPG by these sources is known, which can be obtained from the above data sources
 - D) Calculations were correctly conducted using Equation (2) of the PDD/2/, that is exactly the same as Equation (5) specified in the relevant tool/3/. The data and parameters used are appropriately derived from the data sources listed, and the electricity import from NWCPG was correctly reflected to the calculations.

As a result, the OM emission factor was calculated to be 1.2783 tCO₂/MWh, as shown in Annex 3, the procedure of which is confirmed to be fully complying with the tool/3/.

- 3) JCI confirmed that BM emission factor was calculated correctly as described below:
 - A) Due to the limitation of data availability on each power plant in PRC, the PDD/2/ appropriately applied the approved deviation in use of the methodology of AM0005 and AMS-I.D by several project activities in China, when estimating the BM emission coefficient.
 - B) For calculations of the emission factor of new thermal power plants in CCPG, the efficiencies provided by the host country were applied according to the relevant tool/3/: 37.28% for coal-fueled, and 48.81% for gas and oil-fueled power plants are considered appropriate.
 - C) The cohort of power unit necessary for BM calculation has been appropriately selected as shown in Annex 3 of the PDD/2/, according to the deviation. The installed capacity addition from year 2004 through 2006 was selected as it stands for 25.9% of the total installed capacity of year 2006 that satisfies the specification of over 20%.

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D) The weighted average of new thermal plant emission factor in CCPG has been correctly calculated using Equations from (3) through (8) expressed in the PDD/2/. And then the BM emission factor has been appropriately calculated using the ratio of new capacity addition of thermal power plants as calculated above.

As a result, BM has been correctly worked out to be 0.6687 tCO₂/MWh complying with the relevant tool/3/ which is shown in Annex 3 of the PDD/2/.

The background of the change of the Combined margin emission factor EF_{CM} 0.9969 tCO₂/MWh in the PDD/1/ to 0.9735 tCO₂/MWh in the revised PDD/2/ is explained further in detail in the following 29 lines as a comment by DOE, as requested by UNFCCC secretariat as a Request for registration INCOMPLETE.

As pointed out by CAR-3, which was reported both at Table 5. (page 11) and at Appendix A Table 1 (Appendix A page 1-8) as well as Appendix A Table 2 (Appendix A page 2-2) of this validation report, BM emission factor of the PDD for Global Stakeholders' Consultation (G.S.C.) /1/ was corrected from 0.7156 tCO₂/MWh to 0.6687 tCO₂/MWh of the PDD/2/.

According to the PDD for G.S.C./1/ , its BM emission factor (0.7156 tCO₂/MWh) was estimated by the following procedure.

$$EF_{BM} = EF_{thermal} \times \text{Thermal share percentage in the Capacity Addition} \\ = 0.9064 \times 78.95\% = 0.7156 \text{ tCO}_2/\text{MWh}$$

,where Thermal share percentage in the Capacity Addition was calculated by taking the Capacity Addition from 2005 to 2006 as shown at Table 13 in Annex 3 of the PDD/1/.

In this procedure of the PDD/1/, the Capacity Addition from 2005 to 2006, was adopted, thus the addition comprises (119483 – 98596.4)/119483 MWh= 17.48% of system generation.

JCI pointed out by CAR-3 as described above that this calculation did not comply with the Tool/3/ (EB35 Annex 12), which requires “ The set of power capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently”, in its Step.4.(b).

The project participant revised its BM calculation procedure in the revised PDD/2/, by adopting the Capacity Addition from 2004 to 2006 as shown at Table 13 in Annex 3 of the revised PDD/2/, namely 25.92% of the system generation, which is over 20% thus complying with the Tool/3/. In this revised procedure, Thermal share percentage in the Capacity Addition was calculated as 73.77%, therefore the BM emission factor in the revised PDD/2/ was,

$$EF_{BM} = EF_{thermal} \times \text{Thermal share percentage in the Capacity Addition} \\ = 0.9064 \times 73.77\% = 0.6687 \text{ tCO}_2/\text{MWh}$$

By adopting this corrected BM emission factor, the Combined margin emission factor EF_{CM} was revised from 0.9969 tCO₂/MWh in the PDD /1/ to 0.9735 tCO₂/MWh in the revised PDD/2/, as described in the below (4).

JCI verified this correction point by confirming with the data in China's Regional Grid Baseline Emission Factors 2008 correctly revised on 30 December 2008 published by Department of Climate Change of PRC/27/.

- 4) JCI confirmed that CM emission factor is calculated to be 0.9735 tCO₂/MWh, using the Equation (9) in the PDD/2/ which correctly follows the equation (13) of the relevant tool/3/.

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The default weight of 50% is applied to both OM and BM emission factors for calculation of CM emission factor.

- 5) JCI also confirmed that the above calculations can be replicated based on equations in the PDD/2/ and data listed in Annex3 with appropriate data sources.

5.4.4. Leakage

JCI confirmed that the PDD/2/ estimated no leakage associated with the project activity, appropriately based on the methodology/5/, which requires to consider leakage only when equipment transfer is involved.

5.4.5. Emission reductions

The PDD/2/ estimated the project and leakage emissions to be zero appropriately complying with the methodology/5/. And then it calculated the emission reductions of the project activity to be 15,510 tCO₂ / year. JCI confirmed that the calculations were appropriate and correct.

In conclusion, JCI judged that the emission reductions were appropriately worked out complying with relevant methodology/5/ and tool/3/, and parameters and data for the calculations were sourced from proper data sources.

6. Additionality of project activity

JCI assessed the additionality of the project activity with the following steps as below, complying with VVM/10/.

6.1 Prior consideration of CDM

Since the project activity started on 25February 2007, before the date of publication of the PDD for global stakeholder consultation on 16 October 2008 and before 2 August 2008 of the date of project classification, the validation of “Prior consideration of CDM” is requested by the Guidance stated in EB41 annex 46.

6.1.1. Project start date definition

With the construction contract/63/ as the evidence, JCI confirmed the project start date of 25February 2007 is the earliest real action of the project, and fully complied with the new definition of Glossary of CDM terms (version 04)/9/.

6.1.2. Prior consideration of CDM

Timeline of major milestones relevant to the prior consideration of CDM is tabulated below, according to the relevant guidance/8/.

Table 7. Timeline of major key milestones relevant to prior consideration of CDM

Date	Key Milestone	Evidence
08 September 1997	Approval of PDR	Approval letter /42/
29 January 2004	Approval of EIA Report	Approval letter /47/
August 2005	Revised PDR was completed by Design Institute	Rev.PDR /41/
25 October 2005	PP considered CDM application (Serious consideration of CDM)	MOM /50/
15 January 2006	PP decided to seek CDM support.	MOM /51/

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	(Decision of CDM)	
15 August 2006	PP contracted to apply for CDM project with CDM Consultant (SHJEC)	Agreement /52/
12 October 2006	PP conducted the meeting with Local Stakeholders	Notification /66/ and Q&A /67/
25 February 2007	PP signed Construction Contract (Starting date of the project activity)	Contract /63/

JCI verified all the milestones listed in the above table with relevant evidence provided by the project participant.

Through the interview to the project participant at the on-site assessment conducted in December 2008/73/, JCI learned that the activity for setting up the hydropower station at the same site of the present project was started by other project owner. The project owner was Haiyang Village Committee when PDR was approved in 1997, then the title of the hydropower station was transferred to a private owner on 01 April 2003, and the participation of new investor, Shimian Asbestos Mine Company on 23 December 2003, while Shimian Asbestos Mine Company was transformed to Shimian Haiyang Electric Power Co., Ltd. in 2004, and finally the present project owner, Shimian Haiyang Electric Power Co., Ltd. was set up on 15 February 2005.

JCI confirmed by the documents/37/38/39/49/ provided by the project participant that,

- i) the title of the project activity was unchanged as “Shimian Haiyang Hydropower Station” for applications to the local authorities.
- ii) there was no tangible asset or debt transfer among the parties whenever each ownership changes.
- iii) there was no activity for CDM, before the present project owner, Shimian Haiyang Electric Power Co., Ltd. considered the project activity for CDM application on 25/10/2005.
- iv) the project participant realized the financial barrier of the project by the latest estimation of construction budget in the revised PDR prepared by the design institute in August 2005.
- v) there was no construction work before the Starting date of the project on 25 February 2007, during the period of ownership changes which were caused by lack of fund.

JCI concluded that there was practically no project activity nor CDM activity before 2004 except the approval by the Local DRC on the PDR which was a base of the hydropower generation plant at the site of the project.

Thus JCI concluded that the above timeline appropriately justifies the project participant to undertake a series of actions starting with the serious consideration of CDM application prior to the decision of the project activity to go ahead with CDM, and the contract with the CDM consultant.

Prior to the project decision, the project participant had convinced that the benefits of the CDM were decisive factor in the decision to proceed with the project which was then encountering the financial barrier./50/ Upon receipt of the recommendation by the consultant that the project activity is eligible for applying CDM, the project participant made the final decision on the project. Then the project participant proceeded with the contract of construction for actually starting the project activity.

6.1.3. Activities/events to achieve CDM registration

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JCI also concluded that continuing and real actions were taken by the related parties to secure CDM status for the project in parallel with the construction works for the project.

As shown in the timeline at Table 7 and Table 8, the key activities and events taken by the project participant were verified by JCI with relevant evidences provided by the project participant as well as verified through published information.

Table 8. Timeline of milestones of key activities/events to achieve CDM

Date	Milestone of Key Activity/Event	Evidence
15 August 2006	PP contracted with CDM Consultant.	Agreement /52/
12 October 2006	PP conducted the meeting with Local Stakeholders	Notification /66/ and Q&A /67/
25 February 2007	The Construction Contract was signed between the PO and the construction company.	Contract /63/
September 2007	The negotiation with the CER Buyer candidate started.	
03 April 2008	Pre. ERPA was signed between the two PP	Contract /53-1/
22 July 2008	Final ERPA was signed between the two PP	Contract /53/
13 August 2008	PP applied CDM project to NDRC	Application /54/
09 September 2008	PP(J-TEC) contracted with DOE (JCI)	Contract /74/
16 October 2008	PDD published on the UNFCCC website	UN Website
October 2008 / 11 November 2008	LoA of PRC DNA was issued	LoA /56/
11-16 December 2008	DOE(JCI) conducted On-Site Assessment	Visit Report /73/
25 December 2009	LoA of Japan DNA was issued	LoA /57/

6.2 Identification of alternative

JCI judged that PDD/2/ of the proposed project activity appropriately described the baseline according to the selected approved methodology/ 5/, as described in the above section “5.3 Baseline identification”

6.3 Investment analysis

The PDD/2/ selected Investment barrier out of the 4 options specified in Attachment A to Appendix B of the specified modalities and procedures for small-scale CDM project activities as this barrier was considered to be the most prohibitive factor in implementing the project activity.

6.3.1. Benchmark Analysis

For the investment analysis, benchmark analysis was applied and the project IRR after tax (hereafter IRR) was calculated to be 8.73% without CERs revenue, and 12.41% with CERs revenue. It was, therefore, concluded that the project activity was not financially attractive, and are validated with the steps described below:

Application of benchmark analysis was justified appropriately as below:

- A) Tool for demonstration and assessment of additionality/4 / provides three options for the methods of investment analysis. Option I and II, however were not applicable, since the project activity aimed to obtain revenue from electricity sale in addition to revenue from CERs, and the specified baseline scenario was not an investment project. Only option III, benchmark analysis, therefore can be applied to the project activity
- B) There is an official benchmark IRR applicable to the project activity, as per “The Economic Evaluation Code for Small Hydropower Projects (SL16-95)”/21/, which is widely applied in PRC for the financial evaluation of hydropower projects of installed capacity below 50MW. The document is part of the “Professional Standards of the People’s Republic of China” and was approved and published by the Ministry of Water Resources of the PRC. The validity of this code was officially reconfirmed in 2006 by “Announcement of Ministry of Water Resources of the People’s Republic of China /22”.

JCI reviewed the PDD/2/, and judged that the selection of benchmark analysis for investment analysis was appropriate and fully complied with the relevant tool, Tool for the demonstration and assessment of additionality (Version 05)/4/, and Clean Development Mechanism Validation and Verification Manual (version 01)/10/.

According to the above mentioned Code (SL16-95), /21/, the benchmark IRR is specified as the project IRR after tax at 10% that can be applied to the investment analysis for the scale of the project activity, and JCI confirmed the PDD/2/ appropriately applied this benchmark value.

6.3.2. Evaluation of IRR calculation

With the result of benchmark analysis, the PDD/2/ concluded that the project activity would not be implemented without CDM application, as the project IRR without CERs revenue worked out to be 8.73% lower than the benchmark 10%, while with CERs revenue 12.41%.

The parameter values applied to the IRR calculation of the PDD/2/, which are listed at Table B.5.-2 of the PDD/2/, were validated through confirmation by the public information /24/, /76/, and also by the relevant PRC Code/ (SL16-95)./21/

JCI also checked the consistency of the parameter values as required by the guideline of EB38 para.54 (a), (b) and (c).

As shown in the Table 9. in this section whose data was described in B.5. and Table B.5.-2 of the PDD, the IRR calculation in the PDD/2/was worked out basically on the basis of the data of Revised PDR issued in August 2005,/41/, and JCI verified this Revised PDR was approved by the local DRC./43/ The decision made for going ahead with CDM by the project participant,/51/, was January 2006, after realising the financial assessment by the CDM consultant/50/, whose report was also made on the basis of Revised PDR.

JCI therefore judged that the period of time between “the finalization of the PDR “(August 2005) and “the investment decision” (January 2006) was sufficiently short to confirm that it is unlikely the input values would have materially changed, as recommended by EB38 Para.54.(a).

As for the guideline requirement for the consistency of the parameters in the PDD to the PDR, and the applicability at the time of the investment decision by cross-checking with the local and sectoral expertise, JCI confirmed that the parameter values applied to the IRR calculation in the PDD/2/ were relying on those in Revised PDR, as listed in Table 9, except the income tax rate,

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which was corrected in the PDD/2/ and justified by the supporting document by Ya'an City Tax Office. /76/

The appropriateness of the values of Tariff and O&M cost in the PDD/2/ are validated in the following 6.3.2.- 2) and -3).

Table9. Consistency check of Input Values between Revised PDR/41/ and PDD/2/

Parameters	Unit	Revised PDR 2005/Aug.	PDD 2009/July	Evidence source for assessment
Capacity	MW	3.2	3.2	PDR and Revised PDR
Annual electricity output	MWh	15,932	15,932	PDR, Rev.PDR
Annual operation hours	h/Y	5941	5941	PDR, Rev.PDR
Coefficient of effective electricity / Internal Loss / Line Loss	-	$0.88 \times (1 - 0.008) \times (1 - 0.04)$	$0.88 \times (1 - 0.008) \times (1 - 0.04)$	PDR data and SL16-95 Guide
Tariff (exc. VAT)	CNY/kWh	0.246	0.246	Sichuan Price Bureau Data/24/
Total static investment	Million CNY	30.14	30.14	Rev.PDR
O & M parameters	Operators Headcount	30	18	SL16-95 Guide
O & M parameters	Maintenance	1% vs Invest.	1% vs Invest.	SL16-95 Guide
Income tax	%	33	4.0	Ya'an Tax Dept/76/
VAT	%	6	6	Ya'an Tax Dept.

Through cross checking with the public information and other CDM projects data, the parameter values applied to the IRR calculation were reasonably justified in a transparent manner as discussed below.

1) The total static investment value

The appropriateness of the investment value estimated for the project was validated by comparing with the investment values of thirty three (33) CDM projects (mostly registered and some under requesting) of hydropower generation plant constructed within recent years in the same Sichuan Province of the host country. /25/,/26/

An Investment Cost Index value (Investment cost by the power generation capacity = CNY/ KW), is applied as an useful index for justifying investment cost of the project, when comparing with other hydropower generation plants in the same Province.

As described below, 33 plants ranging from 2MW to over 50MW are classified into four groups by their plant capacity.

The averaged Investment Cost Index of each group becomes larger as their plant capacity becomes smaller.

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This is reasonable judging from the plant cost estimation theory for construction engineering Where plant construction cost increases by exponentially not by linearly against the plant capacity/28/.

This means that the Investment Cost Index value is valid only for a limited range of plant capacity (within similar scale plants) and not for a wide range of plant capacity.

The Investment Cost Index values of 5 plants with 2 to 6 MW in the Province are ranging from 6710 to 10260 CNY/ KW and their average value is 8650 CNY/ KW.

The Indices of 6 plants with 6 to 15 MW in the Province are ranging from 4060 to 9530 CNY/ KW and their average value is 6560 CNY/ KW.

The Indices of 14 plants with 15 to 50 MW in the Province are ranging from 4540 to 7710 CNY/ KW and their average value is 6370 CNY/ KW.

The Indices of 8 plants over 50MW in Sichuan Province are ranging from 4550 to 7510 CNY/ KW and their average value is 5890 CNY/ KW.

By taking Investment Cost Index value for the group of smallest capacity as a comparison, the Investment Cost Index value of the project is 9420 CNY/ KW, thus the investment cost of the project is justified as reasonable, because the Index is within the range (from 6710 to 10260 CNY/ KW) of the similar scale projects (2 to 6 MW).

The estimated total static investment value in the PDD/2/, was also judged as reasonable by cross checking the actual expense of the project/75/, which was already completed its construction in October of 2008.

The asset value of the project before depreciation was reported in the audit report of the project for the year of 2008 made in April of 2009./75/ It was about 100.5% (30.29 million CNY) of the total static investment value estimated in the revised PDR/41/, which was within a range of the contingency of the construction budget, thus no material impact to the IRR result.

Thus JCI validated that the total static investment value applied to IRR calculation was reasonably estimated, judging from the actual investment cost summary as well as—from the comparison data with similar hydropower generation plants in Sichuan Province.

2) Tariff

For IRR calculation in the PDD/2/ , the average tariff value of Sichuan Province published by the Price Bureau of Sichuan Province/24./ was applied. The published tariff data by the Price Bureau./24/, at the time of decision made for CDM (January 2006) was 0.246 CNY/KW without VAT, thus the applied tariff value was valid as guided in the paragraph 6 of EB41 Annex45.

For cross check of the appropriateness of the applied tariff, the following information was reviewed for validation.

The recent tariff data applied by other CDM projects in Sichuan Province/25/ are ranging from 0.145 to 0.245 CNY/KW, and its average is 0.182.

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As an additional evidence for cross check, JCI reviewed an example of the approved tariff of a local grid company provided by Shimian Price Bureau of Sichuan Province /60/ (the same County where the project site locates), which was ranging from 0.158 to 0.205 CNY/KW without VAT depending on seasonal and supply conditions to a grid company.

Accordingly JCI validated the tariff applied to the IRR calculation of the PDD/2/, was therefore to be reasonable and conservative.

3) O&M cost (operation and maintenance cost)

The PDD/2/ estimated O&M cost as 0.599 million CNY/Year or 1.99% to total static investment cost. This value is relatively low when compared with O&M cost percentage of other CDM projects in Sichuan Province/25/, which are ranging from 1.81 to 7.14% to their total investment cost.

JCI reviewed each component cost in the O&M cost such as Repair and Material cost, Labour and Welfare cost including operators headcount and Indirect expense, and justified that the application of these component costs in the PDD/2/ were appropriate and comply with the guideline values stipulated in Appendix B of the local code, Economic Evaluation Code for Small Hydropower Project (SL16-95)./21/

Thus JCI validated that the O&M cost applied in the PDD/2/ was reasonable and conservative.

4) Annual electricity delivered to the grid

The estimated annual electricity delivered to the grid (D) was calculated in the PDD/2/ as :

$$D = G \times E_f \times (1 - \text{Internal Consumption}) \times (1 - \text{Transmission Loss}) \\ = G \times (0.88) \times (1 - 0.008) \times (1 - 0.04) = G \times \underline{0.838} = 19011 \times \underline{0.838} = 15932 \text{ MWh/Y}$$

Where $G = 3.2\text{MW}$ (generation capacity) $\times 5941\text{h/Y}$ (annual operation hours) = 19,011MWh/Y (as the average annual designed electricity generation),
 $E_f = 0.88$ as the coefficient of effective electricity, Internal Consumption = 0.008(0.8%), and Transmission Loss = 0.04 (4%).

JCI confirmed all these parameters were consistent with those designed in the PDR/40/ and Revised PDR/41/which were completed by the authorized design institute (JCI verified by their certificate of the license), and approved by the local DRC as well as by the local department of Water Resources./42/ /43/

As for the coefficient of effective electricity (E_f) of 0.88, which is defined in the Code (SL16-95) as the most probable output ratio from the average annual designed electricity generation, JCI justified that the selection of 0.88 in the PDR as well as in the PDD/2/ was reasonable and relatively conservative because the plant was designed as the type of “non-regulating hydropower station”, whose E_f is defined in the range of 0.8 to 0.9 as stipulated in Table 3.4 of the Code(SL16-95).

As an additional cross check through public information, JCI reviewed the total effective factor of 0.838 of the project, which covers all E_f and Internal Consumption and Transmission Loss as described in the equation above.

When compared with other CDM projects in Shimian Province/25/, whose total effective factors are in the range of 0.792 to 0.977, thus JCI justified that the estimated annual

electricity delivered to the grid, which was calculated by applying the total effective factor of 0.838 in the PDD/2/, was acceptable.

In conclusion, JCI validated the annual electricity delivered to the grid and its determining parameter values were defined correctly in the PDD/2/, and JCI verified they were consistent with the PDR data which was determined by a third party (design institute) contracted by the project participant, and consequently approved by the government authority, thus complying with Guidelines for the reporting and validation of plant load factors (ver.01) of EB48 Annex11.

As summary, the parameters for the IRR calculation were validated as reasonable through the assessment described in the above 1) to 4).

Through all assessment to validate the IRR calculation procedure, JCI therefore concluded that the project activity was not considered financially attractive (8.73% which is below the bench mark without CDM).

6.3.3. Sensitivity Analysis

The sensitivity analysis has been validated with two steps: 1) assessment of (+) / (-) 10% variation results and 2) assessment of likelihood of variations to reach the benchmark IRR complying with relevant Guidance/7/, and Tool/4/.

- 1) The (+) / (-) 10% variation analysis was conducted in the PDD/2/ using the four parameters, A) total static investment, B) electricity sales, C) electricity tariff, and D) O&M cost.

The result of the PDD/2/ showed that within the (+) / (-) 10% variation range, the IRRs did not exceed the benchmark 10% : at (-) 10% of total static investment, the IRR reached at 9.96%, and at (+) 10% of electricity sales, the IRR reached at 9.93%, and at (+) 10% of electricity tariff, the IRR reached at 9.94%, and at (-) 10% of O&M cost, the IRR reached at 8.93%, respectively.

- 2) As for the assessment of likelihood of variations to reach the benchmark IRR, the PDD/2/ conducted the project IRR simulation with the same four parameters as listed in above 1), JCI reviewed the possibility of variations of the three parameters, because of their major impact on the IRR result, namely A) total static investment, and electricity sales which is composed of B) the annual electricity delivered to the grid, and C) the electricity tariff.

By varying the selected three parameters independently to the values when the IRR reaches the benchmark of the IRR 10%, A) the total static investment cost would be lowered by 10.3%, or B) the annual electricity delivered to the grid to increase by 10.6%, or C) the electricity tariff to increase by 10.5%.

- A) It is unlikely that the total static investment cost would be lowered by 10.3% (or the change from 30.14 to 27.04 million CNY), at the time the project decision (January 2006)

Judging from the data of National Bureau of Statistics of China on price of goods and labour cost in Sichuan Province./24 /, which summarized material inflation factors were 9.3%, 4.3%, 5.7% at 2005, 2006, 2007 respectively, and wage inflation factors were 9.4%, 14.3%, 22.0% at the same period, it was justifiable that the total static investment cost would not be lowered by 10.3% either at the time of the project decision or during the construction period (from February 2007 to October 2008).

B) JCI justified that it is also unlikely that the annual electricity delivered to grid would increase by 10.6% as discussed below.

The annual operation hours is one of the variables which determine the annual electricity delivered to the grid. The increase of the annual operation hours from the designed hours (5941 h) as much as +10.6% would not continuously happen, because the water flow design condition for the project in the PDR was determined according to the last 31 years hydrological data as designed in the PDR. /40/

Another key variable which determines the annual electricity delivered to the grid is Ef value (the coefficient of effective electricity). The increase of the annual electricity delivered to the grid by +10.6% is equivalent to Ef value (the coefficient of effective electricity) increases from the designed value of 88% to 97.3% under the same Internal Consumption value and the same Transmission Loss value.

The possibility of Ef value reaches continuously over 97.3% throughout the year is unlikely to happen, judging from that the designed Ef applied to the project (88%) is determined in the PDR /40/ by the design institute by considering the practical condition of the local grid intake in the specific region of the Province according to the economic evaluation Code (SL16-95) which stipulated Ef value as ranging from 80% to 90% for the condition of the project power station.

C) As for the electricity tariff to increase by +10.5%, it is equivalent to the increase of from 0.246 to 0.272 CNY/KW without VAT.

As discussed at Section 6.3.2 -2), the average tariff value in Sichuan Province from 2003 to 2007 was below 0.246, and the recent market price of the electricity tariff in Shimian County was about 0.158 – 0.205 without VAT./60/ Therefore JCI justified that it is also unlikely that the tariff would increase by 10.5%.

Therefore, JCI justified that the above arguments clearly demonstrated that it is unlikely that the project IRR may exceed the benchmark within reasonable variations of financial parameters. JCI, therefore concluded that the result of the above investment analysis with use of the benchmark analysis is robust and then the project activity is financially unattractive.

6.4 Barrier analysis

As a small-scale CDM project, the PDD/2/ already preferred Investment barrier out of 4 barriers specified in Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories. The investment barrier has been discussed in above 6.3 Investment analysis, thus Barrier analysis can be skipped.

6.5 Common practice analysis

As a small-scale CDM project, the common practice analysis is not applied and can be skipped.

6.6 Conclusion of assessment of additionality

JCI concluded that the PDD/2/ clearly demonstrated as shown in the above that the project activity is additional, not financially attractive and therefore, would not occur without CDM revenue provision. Serious consideration of CDM prior to the project decision by the project

participant was clearly and sufficiently explained. Appropriate actions and events were taken by the project participant to achieve CDM well after the project decision up to the publication of the PDD/1/. And investment and sensitivity analyses clearly showed the project activity is not financially viable without CDM revenue.

7. Monitoring plan

1) Parameters to be monitored

The PDD/2/, in section B.7.1.Data and parameters monitored, specified to monitor the following parameters ex-post:

EG_y: The electricity supplied by the project activity to the grid minus electricity imported to the project from the grid.

JCI cross-checked these parameters with the relevant methodology/5/ and tool/3/, and confirmed that these parameters are fully comply with them required to this kind of project activities.

2) Monitoring of EG_y

The implementation plan of monitoring of the parameter, (EG_y), described in the PDD/2/ was validated as follows:

A) Equipment for monitoring

As described in the PDD/2/, a bidirectional electricity meter with accuracy of 0.5s, which is specified in the Code/23/, is installed to measure both exported and imported electricity of the plant at the outlet of the project site. In addition to this ‘main metering device’, a ‘backup metering device’ is installed at the inlet of the substation of the grid. The main metering device would serve to monitor EG_y. The technical specification of the electricity meters installed for the project activity meets the Code /23/.

This arrangement was judged as sufficient to monitor the planned parameters, EG_y, with a backup capability against possible malfunctions of the main metering device at the project site.

Thus the program is fully comply with the relevant methodology/5/

B) Monitoring organization

The project participant planned to set up a CDM team covering entire processes of measuring, recording, managing, and maintenance, and the responsibility for reporting and surveillance function would be separately managed by Operators, CDM Assistant, and CDM Team Leader, as described in the PDD/2/, and thus JCI confirmed the stated management was justified by the document prepared by the project participant./69/

C) Monitoring manual

The project participant commissioned the CDM consultant to prepare monitoring manuals necessary to implement the monitoring task, including the details procedure for data reading, data management system, verification of monitoring results, and disposing process of abnormality,

which were described in the PDD/2/, and justified JCI also confirmed by the document prepared by the project participant./69/.

D) Training on monitoring

Under the responsibility of the CDM Team Leader, the training plan would be conducted such as training at similar hydropower generation plant, and hiring of the specialized graduates, as described in the PDD/2/.

JCI judged that the above monitoring plan was appropriately covered complying with the relevant tool and methodology.

8. Sustainable development

JCI confirmed that the LoA issued by DNA of the host Party PRC /56/ confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party, which has been already described in Section IV 1. Approval.

9. Local stakeholder consultation

The project participant conducted an invitation of local stakeholder comments.

The invitation was taken place on 12 October 2006, distributing 52 sheets of the questionnaire to local inhabitants with a variety of age, gender, education, occupations, the main questions and the comments by the local inhabitants were summarized in the PDD/2/, which JCI confirmed with the documents provided/67/ during the on-site assessment conducted on 11-16 December 2008.

In summary, 1) All of them acknowledged and 58% of them supported the project activity positively, and the rest were no adverse opinions; 2) 37% of them expected obvious economical and social benefits from the project activity, and 46% of them expected a little active influence; and 3) Most of them believed the project activity would give no significant adverse impacts on local environment but most of them concerned noise impact during construction.

The project participant took proper mitigation measures in response to the stakeholders' comment, for example, installing in-site sound barriers and carrying out explosion activities strictly in compliance with relevant regulations during construction period as described in the PDD/2/.

JCI confirmed the mitigation plan including green measures, through direct interview with the local environment office/73/ during the on-site assessment and found that there was no significant impact during construction. The approvals by the authorities such as EIA /47/ and Water and Soil Preservation Report/48/ were also confirmed with the provided documents.

There was no migration issue of the inhabitant, but the compensation agreement for the affected pasture was contracted with the village committee, which was confirmed by the copy of the document/68/ during the on-site assessment.

Based on the above, JCI judged that the project activity, supported by local stakeholders, gave no significant adverse impacts on local environment, and instead contributed to the development of local economy and the improvement of infrastructure.

10. Environmental impacts

An Environmental Impact Assessment (EIA) was conducted by a certified organization, Ya'an Environmental Science and Technology Service Company to ensure that the project complies with relevant national, regional and local regulations, and its report/ 46/ was approved by Simian County Environmental Protection Bureau of Sichuan Province on 29 January 2004 /47/.


The EIA report /46/ referred to anticipated environmental impacts by the project activity both during the construction period and after the operation start, and suggested mitigation measures against anticipated pollution of water and air, noise, solid waste, and soil/water erosion. No significant ecological impact on the local area was anticipated.

The appropriate mitigation measures and the related regulations were described in the PDD/2/. Through the interview to Simian County Environmental Protection Bureau of Sichuan Province during the on-site assessment conducted on 15 December 2008, JCI confirmed that appropriate mitigation measures had been taken during the construction period, and the anticipated environmental impacts had been controlled at a minimum level by regular and irregular monitoring by the Environmental Protection Bureau /73/.

11. Comments by Parties, Stakeholder through the consultation process

The PDD version 01 of 14 August 2008 was made publicly available on UNFCCC CDM website and Parties, stakeholders and NGOs were through the website invited to provide comments during a 30 days period from 16 October 2008 to 14 November 2008.

And no comments were received.

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APPENDIX A CDM VALIDATION PROTOCOL –Version 01

1. INTRODUCTION

This document is prepared as the Validation Protocol on Shimian Haiyang Hydropower Project. The validation protocol is prepared for the following purposes:

- To ensure that, in accordance with the Validation Verification Manual version 01 (Annex 3, CDM-EB44, "VVM"), and CDM requirements, these rules are complied with for any project activities requesting registration as a proposed CDM project activity.
- To ensure a thorough, independent assessment of proposed project activities submitted for registration as a proposed CDM project activity against the applicable CDM requirements.
- To assess whether the project design of the proposed CDM project activity meets the CDM requirements, using objective evidence, and to assess the completeness and accuracy of the claims and conservativeness of the assumptions made in the project design document.

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

Table 1 contains the checklist with questions along with the thematic chapter of VVM.

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

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Table 1 Requirements Checklist.....Page -1-1

Table 2 Resolution of Corrective Actions and Clarification Requests.....page -2-1

2. CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

If, during the validation of a project activity, issues are identified that need to be further elaborated upon, researched or added to in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, these issues shall be ensured that are correctly identified, discussed and concluded in the validation report.

➤ **CAR** : a corrective action request (**CAR**) is raised, if one of the following occurs:

- (a) The PPs have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

➤ **CL** : a clarification request (**CL**) is raised,

if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

➤ **FAR** : a forward action request (**FAR**) is raised,

during validation to highlight issues related to project implementation that require review during the first verification of the project activity.

FARs shall not relate to the CDM requirements for registration.

The CARs and CLs are resolved or "closed out" only if the project participants modify the project design, rectify the PDD or provide adequate additional explanations or evidences that satisfy the requirements. If this is not done, the project activity will not be recommended for registration to the CDM EB.

All CARs, CLs and FARs will be reported on in its validation report. This reporting shall be undertaken in a transparent and unambiguous manner that allows the reader to understand the nature of the issue raised, the nature of the responses provided by the project participants, the means of validation of such responses and clear reference to any resulting changes in the PDD or supporting annexes.


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
1.	Approval	Para. 44-50 VVM	--	--
	<Requirement to be validated> All Parties involved have approved the project activity.	Para. 44 VVM	--	--
1.1	Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval? Each letter confirms that:	Para. 45 VVM	LOA was not provided	CAR-1
(a)	The Party is a Party to the Kyoto Protocol	ditto		
(b)	Participation is voluntary	ditto		
(c)	The proposed CDM project activity contributes to the sustainable development of the country	ditto		
(d)	It refers to the precise proposed CDM project activity title in the PDD being submitted for registration	ditto		
1.2	Is the LoA unconditional with respect to (a) to (d) above?	Para. 46, VVM	LOA was not provided	CAR-1
1.3	Has the letter(s) of approval been issued by the respective Party's designated national authority (DNA) and if in doubt, shall verify with the DNA that the letter of approval is valid for the proposed CDM project activity under validation?	Para. 47 VVM	LOA was not provided	CAR-1
	A list of DNAs is available on the UNFCCC CDM website. < http://cdm.unfccc.int/index.html >	List of DNAs		
1.4	Is the authenticity of the letter of approval in doubt?	Para. 48 VVM	LOA was not provided	CAR-1
1.5	Has a letter of approval been received from each Party involved, with clearly referencing the letter itself and any supporting documentation?	Para. 49 VVM	LOA was not provided	CAR-1
(a)				
(b)	Whether this letter received from the project participants or directly from the DNA?	ditto	LOA was not provided	CAR-1
2.	Participation	Para. 51-54 VVM	--	--
	<Requirement to be validated> All project participants have been listed in a consistent manner in the project documentation, and their participation in the project activity has been approved by a Party to the Kyoto Protocol.	Para. 51 VVM	--	--
2.1	Are the project participants listed in tabular form in section A.3 of the PDD, and this information is consistent with the contact details provided in annex 1 of the PDD?	Para. 52 VVM	Yes	
	Has the participation of each project participant been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation?	ditto	No To be confirmed by LOA	CAR-1
	Are no entities other than those approved as project participants included in these sections of the PDD?	ditto	Yes	


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
2.2	Has the approval of participation been issued from the relevant DNA and if in doubt it shall be verified with the DNA that the approval of participation is valid for the proposed project participant?	Para. 53 VVM	No To be confirmed by LOA	CAR-1
3.	Project Design Document	Para. 55-57 VVM	--	--
	<Requirement to be validated> The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website. http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html	Para. 55 VVM PDDs Forms	--	--
3.1	Is the PDD in accordance with the applicable CDM requirements for completing PDDs? http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html (Refer to the PDD Completeness checklist prepared by JCI)	Para. 56 VVM	Yes	
4.	Project Description	Para. 58-64 VVM		
	<Requirement to be validated> The PDD shall contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.	Para. 58 VVM		
4.1	Does the description of the proposed CDM project activity as contained in the PDD sufficiently cover all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity?	Para. 59 VVM	No The adequate description shall be made	CL-1 CL-14
4.2	For proposed CDM project activities in existing facilities or utilizing existing equipments, a physical site inspection shall be conducted to confirm that the description in the PDD reflects the proposed CDM project activity for the following types of CDM project activities unless other means are specified in the methodology:	Para. 60 VVM	NA	
(a)	Large scale project (if yes, skip below (a) and (b))	ditto	NA	
(b)	Non-bundled small scale project with emission reductions exceeding 15,000 tonnes per year (if yes, skip 4.3 below)	ditto	Yes	
(c)	Bundled small scale project, each with emission reductions not exceeding 15,000 tonnes per year; in such case the number of physical site visits can however be based on sampling, if the sampling size is appropriately justified through statistical analysis.	ditto	NA	
4.3	For other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year a physical site visit may be conducted as appropriate.	Para. 61 VVM	NA	
4.4	For all other proposed CDM project activities not referred to in above paragraphs 4.2 – 4.3, the validation shall be undertaken by reviewing available designs and feasibility studies (FSR) and may be conducted comparison analysis to equivalent projects, as appropriate.	Para. 62 VVM	Yes	


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
	The physical site visit can be conducted to assess the plan.			
	If a physical site inspection is not undertaken for proposed CDM project activities, this shall be appropriately justified.	ditto	NA	
4.5	In case that the proposed CDM project activity involves the alteration of an existing installation or process; Does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	Para. 63 VVM	NA	
5.	Baseline and monitoring methodology	Para. 65-95 VVM	--	--
(a)	General requirement	Para.65-67 VVM	--	--
	The baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board.	Para. 65 VVM	--	--
	If the project participants intend to use a new baseline and monitoring methodology, it shall, before submitting a request for registration of the project activity, forward the proposed methodology, together with the draft PDD, to the CDM Executive Board for review, in accordance with the latest procedure for submitting and considering proposed new methodologies. http://cdm.unfccc.int/Reference/Procedures/meth_proc02_v13.pdf	Para. 65 VVM	-	--
	To ensure that the project activity meets this general requirement, the DOE shall determine whether: (a) The selected methodology is applicable to the project activity; (b) The selected methodology had been correctly applied.	Para. 66 VVM	-	--
	The DOE shall ensure that the selected methodology applies to the project activity and has been correctly applied with respect to following: (a) Project boundary; (b) Baseline identification; (c) Algorithms and/or formulae used to determine emission reductions; (d) Additionality; ¹⁴ 14 See Chapter V, sections E6 below. (e) Monitoring methodology. ¹⁵ 15 See Chapter V, sections E7 below.	Para. 67 VVM	-	--
5.	Baseline and monitoring methodology	Para.65-	--	--


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
		95 VVM		
(b)	Applicability of the selected methodology to the project activity	Para. 68-76 VVM	--	--
	<Requirement to be validated> The selected baseline and monitoring methodology previously approved by the CDM Executive Board, is applicable to the project activity.	Para. 68 VVM	--	--
5.1	Is the methodology correctly quoted and applied by comparing it with the actual text of the applicable version of the methodology available on the UNFCCC CDM website?	Para. 69 VVM	Yes	
5.2	Does the project activity apply a selected approved methodology in which the applicability conditions of the methodology are met and the project activity is not expected to result in emissions other than those allowed by the methodology?	Para. 70 VVM	Yes 3.2< 15MW Apply AMS.I.D.	
	Is the choice of methodology justified and the project participants have shown that the project activity meets each of the applicability conditions of the approved methodology or any tool or other methodology component referred to therein?	ditto	Yes	
	Is the documentation referred to in the PDD and its content correctly quoted and interpreted in the PDD?	ditto	Yes	
	If the comparable information is available from sources other than that used in the PDD, cross check the PDD against the other sources to confirm that the project activity meets the applicability conditions of the methodology.	ditto	NA (by DOE)	
5.3	The applicability of the selected methodology to the proposed CDM project activity cannot be made a determination by the DOE, then the clarification request of the methodology shall be submitted by the DOE in accordance with the guidance provided by the CDM Executive Board. “CLARIFICATION FOR PROJECT PARTICIPANTS ON WHEN TO REQUEST A REVISION, CLARIFICATION TO AN APPROVED METHODOLOGY OR DEVIATION” < http://cdm.unfccc.int/EB/031/eb31_repan12.pdf > and “Guidance on criteria for consolidations and revision of methodologies” < http://cdm.unfccc.int/EB/027/eb27_repan10.pdf >	Para. 71 VVM Annex 12 EB31 Annex 10 EB27	NA (by DOE)	
5.4	In case that the applicability conditions to proposed CDM project activity cannot be determined whether it is complied with the methodology or not; Is revision request to or deviation from the methodology necessary in accordance with the guidance provided by the CDM Executive Board? 1. < http://cdm.unfccc.int/EB/031/eb31_repan12.pdf > and < http://cdm.unfccc.int/EB/027/eb27_repan10.pdf >.	Para. 72 VVM Annex 12 EB31 Annex 10 EB27	No The applicability conditions are complied with the methodology	


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TABLE 1 REQUIREMENTS CHECKLIST

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5.5	If the clarification of, revision to or deviation from a methodology is requested, a request for registration cannot be submitted until the CDM Executive Board has approved the proposed deviation or revision.	Para. 73 VVM	NA	
5.6	Under no circumstance shall be considered the submission of a request for registration as a means of seeking clarification from the CDM Executive Board on the applicability of a methodology.	Para. 74 VVM	NA	
5.	Baseline and monitoring methodology	Para.65-95 VVM	--	--
(c)	Project boundary	Para.77-79 VVM	--	--
	<Requirement to be validated> The PDD shall correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.	Para. 77 VVM	--	--
5.7	Based on documented evidence and corroborated by a site visit where required by the section 4.1- 4.4 above; Is the delineation in the PDD of the project boundary correct and meets the requirements of the selected baseline methodology.?	Para. 78 VVM	No The clarification shall be made	CAR-2
	Are all sources and GHGs required by the methodology included within the project boundary.	ditto	No The clarification shall be made	CAR-2
	In case that the methodology allows project participants to choose whether a source or gas is to be included within the project boundary; Have the project participants justified that choice?	ditto	NA	
	Is the justification provided reasonable, based on assessment of supporting documented evidence provided by the project participants and corroborated by observations if required?	ditto	NA	
5.	Baseline and monitoring methodology	Para.65-95 VVM	--	--
(d)	Baseline identification	Para.80-87 VVM	--	--
	<Requirement to be validated> The PDD shall identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.	Para. 80 VVM	--	--
	Any procedure contained in the methodology to identify the most reasonable baseline scenario, has been correctly applied. If the selected methodology requires use of tools (such as the "Tool for the demonstration and assessment of additionality" and the "Combined tool to identify the baseline scenario and demonstrate additionality") to establish the baseline scenario,	Para. 81 VVM	--	--


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
	the methodology on the application of these tools shall be confirmed. In such cases, the guidance in the methodology shall supersede the tool. The each step in the procedure described in the PDD against the requirements of the methodology shall be checked.			
5.8	In case that the methodology requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario; Are all scenarios that are considered by the project participants and are supplementary to those required by the methodology, reasonable in the context of the proposed CDM project activity ? Are no reasonable alternative scenario excluded?	Para. 82 VVM	NA Baseline is determined according to AMS.ID.para9.	
5.9	Is the baseline scenario identified reasonable by validating the assumptions, calculations and rationales used, as described in the PDD?	Para. 83 VVM	Yes	
	Are the documents and sources referred to in the PDD correctly quoted and interpreted?	ditto	Yes	
	The information provided in the PDD with other verifiable and credible sources, such as local expert opinion, if available, shall be cross checked.	ditto	NA (by DOE)	
5.10	Are all applicable CDM requirements taken into account in the identification of the baseline scenario for the proposed CDM project activity, including "relevant national and/or sectoral policies and circumstances."? (See paragraph 45 CDM M&P; Annex 3 to the report of the meeting of the CDM EB22) < http://cdm.unfccc.int/EB/022/eb22rep.pdf >	Para. 84 VVM Para. 45 CDM M&P Annex 3, CDM EB22	Yes	
	Are all relevant policies and circumstances identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	ditto	Yes	
5.11	Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	Para. 85 VVM	Yes	
5.	Baseline and monitoring methodology	Para.65-95VVM	--	--
(e)	Algorithms and/or formulae used to determine emission reductions	Para.88-92VVM	--	--


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
	<Requirement to be validated> The steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions shall comply with the requirements of the selected baseline and monitoring methodology.	Para. 88 VVM	--	--
5.12	Have equations and parameters in the PDD been correctly applied by comparing them to those in the selected approved methodology? In case that the methodology provides for selection between different options for equations or parameters; Has adequate justification been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided)? Have the correct equations and parameters been used, in accordance with the methodology selected?	Para. 89 VVM ditto	No The related evidences shall be provide Yes	CAR-3 CL-2 CL-3
5.13	Is the justification given in the PDD for the choice of data and parameters used in the equations appropriate? In case that data and parameters will not be monitored throughout the crediting period of the proposed CDM project activity but have already been determined and will remain fixed throughout the crediting period; Are all data sources and assumptions appropriate? Are calculations correct, applicable to the proposed CDM project activity and will result in a conservative estimate of the emission reductions? If data and parameters will be monitored on implementation and hence become available only after validation of the project activity; Are the estimates provided in the PDD for these data and parameters reasonable?	Para. 90 VVM ditto ditto	No The clarification shall be needed Yes NA	CAR-2 CL-8 CL-9
6.	Additionality of a project activity	Para.93-119VVM	--	--
	<Requirement to be validated> The PDD shall describe how a proposed CDM project activity is additional. In accordance with paragraph 43 of the CDM M&P "A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity".	Para. 93 VVM Para. 43 CDM M&P	--	--


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
6.1	Are the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by project participants to support the demonstration of additionality assessed?	Para. 93 VVM	No The relevant documents shall be provided	CL-5
	Is the presented evidence assessed critically, using local knowledge and sectoral and financial expertise?	ditto	No The relevant information shall be searched at on-site assessment	CL-5
6.2	Is the tools and documents provided by the CDM Executive Board to demonstrate the additionality of proposed CDM project activities considered, as well as specific complementary or alternative requirements included in approved CDM methodology?	Para. 94 VVM	Yes	
6.	Additionality of a project activity	Para.93-119VVM	--	--
(a)	Prior consideration of the clean development mechanism While specific elements of the assessment of additionality are discussed in further detail in Section 6.3 –6.15 below, not all elements discussed below will be applicable to all proposed CDM project activities	Para.96-102VVM	--	--
	<Requirement to be validated> If the project activity start date is prior to the date of publication of the PDD for stakeholder comments it shall be demonstrated that the that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity.	Para. 96 VVM	--	--
6.3	Is the start date of the project activity, reported in the PDD, in accordance with the “Glossary of CDM terms”? http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM_v04.pdf Glossary of CDM terms Version 04	Para. 97 VVM	No The description shall be appropriately modified	CL-13
	If the reported date is not in accordance with the glossary; Is a CAR raised to ensure that the start date is correctly reported in a revised PDD?	ditto	NA (by DOE)	
	In case that the project activities require construction, retrofit or other modifications; In particular, for project activities that require construction, retrofit or other modifications, is the date of commissioning not considered the project activity start date?	ditto	NA	
6.4	Is it a new project activity (project activities with staring date on or after 02 August 2008) in accordance with the guidance from the Board?	Para. 98 VVM	NA Start Date 25/Feb./2007	


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TABLE 1 REQUIREMENTS CHECKLIST

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	or an existing project activity (project activities with a start date before 02 August 2008)? (See Annex 46 of EB 41 report) Guidance on the Demonstration and Assessment of Prior Consideration of the CDM	Annex 46, EB 41	Yes	
6.5	For a new project activity with a start date on or after 2 August 2008 and for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the Executive Board before the project activity start date; Had PPs informed the Host Party DNA and/or the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? Is it ensured by means of confirmation from the DNA or UNFCCC secretariat?	Para. 99 VVM	NA	
	If such a notification has not been provided by the project participants; Is It determined that the CDM was not seriously considered in the decision to implement the project activity?	ditto	NA (by DOE)	
6.6	For an existing project activity with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, the project participant's prior consideration of the CDM is assessed through document reviews and shall satisfy following requirements:	Para. 100 VVM		
(a)	Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project.	ditto	No The relevant evidence shall be submitted	CAR-4
	Evidence to support this would include, inter alia, minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity.	ditto	No The relevant evidence shall be submitted	CAR-4
(b)	Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation.	ditto	Yes	
	Evidence to support this should include, inter alia, • contracts with consultants for CDM/PDD/methodology services,	ditto	Yes	
	• Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds),	ditto	Yes	
	• Evidence of agreements or negotiations with a DOE for validation services,	ditto	Yes	
	• Submission of a new methodology to the CDM Executive Board,	ditto	NA	


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
	<ul style="list-style-type: none"> Publication in newspaper, Interviews with DNA, Earlier correspondence on the project with the DNA or the UNFCCC secretariat. 	ditto	NA	
		ditto	NA	
		ditto	NA	
6.7	If evidence to support the serious prior consideration of the CDM as indicated above is not available, was the CDM not considered in the decision to implement the project activity?	Para.101 VVM	NA (by DOE)	
	Is It determined that the CDM was not seriously considered in the decision to implement the project activity?	ditto	NA (by DOE)	
6.	Additionality of a project activity	Para. 93-119 VVM	--	--
(b)	Identification of alternatives	Para. 103-105 VVM	--	--
	<Requirement to be validated> The PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required (e.g., methodology ACM0002).	Para.103 VVM	--	--
6.8	Whether the list of alternatives given in the PDD is assessed and ensured or not that:	Para.104 VVM	-	
(a)	The list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity;	ditto	NA	
(b)	The list contains all plausible alternatives that are considered, on the basis of local and sectoral knowledge, to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity.	ditto ditto	NA	
(c)	The alternatives comply with all applicable and enforced legislation.	ditto	NA	
6.	Additionality of a project activity	Para. 93-119 VVM	--	--
(c)	Investment analysis	Para. 106-112 VVM	--	--
6.9	<Requirement to be validated> If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity; Whether the PDD shall provide evidence that the proposed CDM project activity would not be:	Para.106 VVM	--	--
(a)	The most economically or financially attractive alternative; or	ditto	NA	
(b)	Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).	ditto	The relevant evidences shall be provided	CL-5 CAR-5


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
6.10	Through which one of the following approaches Project participants show this?: It should be noted that “Guidance on the assessment of investment analysis” (EB41, Annex 45 ver.02) and the requirements of specific methodologies may preclude the use of one of these options in certain scenarios	Para.107 VVM Annex 45 EB41	-	
(a)	Demonstrate that the proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity;	ditto	NA	
(b)	The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative;	ditto	NA	
(c)	The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	ditto	NA	
6.11	Is the PDD comply with the latest version of the “Guidance on the Assessment of Investment Analysis” as provided by the CDM Executive Board? (See Annex 45 of EB 41 report)	Para.108 VVM Annex 45 EB 41	The relevant evidences shall be provided	CAR-4 CAR-5 CL-5
6.12	The accuracy of financial calculations are carried out for any investment analysis:	Para.109 VVM		
(a)	Is a thorough assessment conducted for all parameters and assumptions used in calculating the relevant financial indicator? Are the accuracy and suitability of these parameters determined using the available evidence and expertise in relevant accounting practices?	ditto	Application of SL16-95 shall be further clarified	CL-5 CL-6
(b)	The parameters should be cross-checked against third-party or publicly available sources, such as invoices or price indices;	ditto	NA (by DOE)	
(c)	Are feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?	ditto	The parameters of PDR shall be further clarified	CL-5
(d)	Are assesement for the correctness of computations carried out and documented by the project participants?	ditto	Active IRR sheet shall be provided	CAR-5 CL-4
(e)	Are assesement for the sensitivity analysis by the project participants conducted to determine under what conditions variations in the result would occur, and the likelihood of these conditions?	ditto	Yes Further assesement shall be provided	CL-7
6.13	Whether the suitability of any benchmark applied in the investment analysis is confirmed or not:	Para.110 VVM	--	


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
(a)	The type of benchmark applied is suitable for the type of financial indicator presented;	ditto	Yes	
(b)	Any risk premiums applied in determining the benchmark is reflected by the risks associated with the project type or activity;	ditto	Yes	
(c)	It is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants involved and the same benchmark has been applied	ditto	Yes	
	or if there are verifiable circumstances that have led to a change in the benchmark.	ditto	No	
6.14	The Board clarified that in cases where project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities, it is required to ensure that: (See paragraph 54 of the report of the meeting of the CDM EB38)	Para.111 VVM Para. 54 CDM EB38	--	--
(a)	Has the FSR been the basis of the decision to proceed with the investment in the project? Is the period of time between the finalization of the FSR and the investment decision sufficiently short to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed?	ditto	The timeline of the project shall be submitted	CAR-4
(b)	Are the values used in the PDD and associated annexes fully consistent with the FSR?	ditto	No	CL-5
	Where inconsistencies occur; Was the appropriateness of the values confirmed?	ditto	The appropriateness shall be confirmed	
(c)	On the basis of its specific local and sectoral expertise, confirmation should be provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision.	Ditto	Yes	
6.	Additionality of a project activity	Para. 93-119 VVM	--	--
(d)	Barrier analysis Barriers are issues in project implementation that could prevent a potential investor from pursuing the implementation of the proposed project activity. The identified barriers are only sufficient grounds for demonstration of additionality if they would prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a CDM project activity	Para.113 -116 VVM	--	--


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
6.15	<Requirement to be validated> If barrier analysis has been used to demonstrate the additionality of the proposed CDM project activity; The PDD shall demonstrate that the proposed CDM project activity faces barriers that:	Para.113 VVM	--	--
(a)	Is the barrier that prevents the implementation of this type of proposed CDM project activity?	ditto	NA	
(b)	Is the barrier that do not prevent the implementation of at least one of the alternatives?	ditto	NA	
6.16	Issues that have a clear direct impact on the financial returns of the project activity cannot be considered barriers and shall be assessed by investment analysis. (Defined in this context as those issues whose impacts can be expressed in monetary terms with reasonable certainty) Whether this does not refer to either	Para.114 VVM	NA	
(a)	Risk related barriers, for example risk of technical failure, that could have negative effects on financial performance,	ditto	NA	
(b)	or Barriers related to the unavailability of sources of finance for the project activity.	ditto	NA	
6.17	A two-step process is applied to assessing the barrier analysis performed, as follows:	Para.115 VVM		
(a)	<u>Step-1 Determine whether the barriers are real</u> The available evidence and/or undertake interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) are assessed to determine whether the barriers listed in the PDD exist.	ditto	NA	
	The existence of barriers is substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics.	ditto	ditto	
	If existence of a barrier is substantiated only by the opinions of the project participants, this barrier is not considered to be adequately substantiated.	ditto	ditto	
	If a barrier is not real or is not supported by sufficient evidence, which is judged on the basis of sectoral or local expertise, it shall raise a CAR to have reference to this barrier removed from the project documentation.	ditto	ditto	


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
(b)	<u>Step-2 Determine whether the barriers prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives.</u> Since not all barriers present an insurmountable hurdle to a project activity being implemented, it is judged on the basis of local and sectoral expertise that a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of <i>at least one of the possible alternatives</i> , in particular the identified baseline scenario.	ditto	NA	
6.	Additionality of a project activity	Para. 93-119 VVM	--	--
(e)	Common practice analysis	Para.117-119 VVM	--	--
	<Requirement to be validated> For large-scale CDM project activities, <u>unless the proposed project type is first-of-its kind</u> , common practice analysis shall be carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality. This is a test to complement the investment analysis (Step 2 of the additionality tool) or barrier analysis (Step 3 of the additionality tool) to confirm that the project activity is not widely observed and commonly carried out in the region..	Para.117 VVM	--	--
6.18	It is judged on the basis of local and sectoral expertise to assess the followings,	Para.118 VVM	NA	
(a)	Is the geographical scope (e.g. the defined region) of the common practice analysis appropriate for the assessment of common practice related to the project activity's technology or industry type?	ditto	ditto	
	Is for certain technologies the relevant region for assessment local and for others it may be transnational/global?	ditto	ditto	
(b)	If a region other than the entire host country is chosen, is the explanation why this region is more appropriate assessed?	ditto	ditto	
	Using official sources and local and industry expertise; Is it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, have been undertaken in the defined region?	ditto	ditto	
(c)	If similar and operational projects, other than CDM project activities, are already "widely observed and commonly carried out" in the defined region; Is it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	ditto	ditto	
7.	Monitoring plan	Para. 120-122 VVM		--


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
	<Requirement to be validated> The PDD shall include a monitoring plan. This monitoring plan shall be based on the approved monitoring methodology applied to the proposed CDM project activity.	Para. 120 VVM	--	--
7.1	The two-step process to assessing compliance with this requirement is applied, as follows	Para.121 VVM	--	
(a)	<u>Step-1 Compliance of the monitoring plan with the approved methodology</u> (i) By means of document review, are the list of parameters required by the selected approved methodology identified?	ditto	Yes	
	(ii) Does the monitoring plan contain all necessary parameters, that they are clearly described and that the means of monitoring described in the plan complies with the requirements of the methodology?	ditto	Yes	
(b)	<u>Step-2 Implementation of the plan</u> By means of review of the documented procedures, interviews with relevant personnel, project plans and any physical inspection of the proposed CDM project activity site in accordance with Section 4.1-4.4, the followings are assessed,:	ditto	-	
	(i) Are the monitoring arrangements described in the monitoring plan feasible within the project design?	ditto	Yes	
	(ii) Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified?	ditto	The relevant evidences shall be provided	CL-10 CL-11 CL-12
8.	Sustainable development	Para. 123-125 VVM	--	--
	<Requirement to be validated> CDM project activities shall assist Parties not included in Annex I to the Convention in achieving sustainable development.	Para.123 VVM	--	--
8.1	Is the letter of approval by the DNA of the host Party included the contribution of the proposed CDM project activity to the sustainable development of the host Party?	Para.124 VVM	To be confirmed by LOA	CAR-1
9.	Local stakeholder consultation	Para. 126-128 VVM		
	<Requirement to be validated> Local stakeholders shall be invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website. For definition of stakeholders see glossary of CDM terms < http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM_v04.pdf >	Para.126 VVM Glossary of CDM terms		
9.1	By means of document review and interviews with local stakeholders as appropriate, are followings determined?;	Para.127 VVM		


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TABLE 1 REQUIREMENTS CHECKLIST

Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	CAR, CL FAR
(a)	Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited;	ditto	The relevant evidences shall be provided	CL-18 CL-19
(b)	The summary of the comments received as provided in the PDD is complete;	ditto	ditto	
(c)	The project participants have taken due account of any comments received and have described this process in the PDD.	ditto	ditto	
10.	Environmental impacts	Para. 129-131 VVM	--	--
	<Requirement to be validated> Project participants shall submit documentation to the DOE on the analysis of the environmental impacts of the project activity in accordance with paragraph 37(c) of the CDM modalities and procedures.	Para. 129 VVM Para. 37(c) CDM M & P	--	--
10.1	By means of a document review and/or using local official sources and expertise, have the project participants undertaken an analysis of environmental impacts and, if required by the host Party, an environmental impact assessment?	Para. 130 VVM	The evidences shall be provided	CL-15 CL-16 CL-17 CL-20


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Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CAR	Corrective Action Requests			
CAR-1	Approval <Requirement to be validated> The project shall have the written letters of Approval of voluntary participation from the DNA of each party involved. (China and Japan)	1.1	The copy of LoA by China has been provided.	OK DOE received the copies of LoAs by China and by Japan. The statement in LoAs of each Party were confirmed to be comply with the requirement CAR-1 was closed out



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No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CAR-2	Project boundary In order to define the baseline emission, describe the project boundary covering NWCPG as the connected electricity system, according to the Table 7 in Annex 3, where CCPG imports electricity from NWCPG in year 2006.	5.7 5.13	The project will generate electricity using a water source and will be connected to the CCPG, which exports electricity to other regional grids and imports electricity from Northwest China Power Grid (NWCPG) in 2006. As a result, the project boundary includes the project activity and all power plants connected to the CCPG, covering Henan, Hubei, Hunan, Jiangxi, Sichuan and Chongqing provincial grids, also including NWCPG as a connected electricity system and exported electricity to the CCPG. Therefore the project boundary has been defined as including NWCPG.	OK Accordingly the statement has been added at B3.and B.6.1. Step1 in Revised PDD. CAR-2 was closed out
CAR-3	BM calculation based on Table 13 Capacity addition is calculated as “D=C-B”(17.48%), which is less than 20%, not “D=C-A”(25.96%), based on NDRC’s data.	5.12	The present calculation by NDRC is as D=C-B”(17.48%).	DOE has requested further clarification according to the procedure described at EB35 Annex12 “Methodological tool Ver.01.1. II Step 4.”



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Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
	Explain the NDRC's idea for confirmation.		The calculation by NDRC has changed as $D=C-A$ (25.96%) at their December 2008 edition. Accordingly Table 13 and EFBM were corrected at Revised PDD.	OK As a result, EFBM was corrected, therefore emission reduction value was corrected CAR-3 was closed out
CAR-4	Prior consideration of the CDM To understand whether the serious consideration of CDM was conducted properly and also whether the steps of project proceedings are totally consistent as CDM project, PP shall provide the "Project Milestones" table with the key date. Also describe the timeline of major milestones in a table form at the end of the section B.5. in PDD.	6.14	The Project Milestones table was generated on 21/11/2008.	OK The Project Milestone Table was confirmed with the evidences of MOMs of PO at On-Site Assessment. PP shall provide the timeline in the section B.5. in PDD.
			The Timeline of the project implementation was added in Revised PDD.	DOE verified the milestones after 2003 by the supporting documents. PO shall clarify the background of slow progress before 2003 in spite of FIRR was 19%



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No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CAR-4			The PDR of the project was approved by Ya'an Water Conservancy & Electricity Bureau and Ya'an Committee of Plan & Economy on September 8th, 1997. According to the PDR, the FIRR of the project is 19%. However, because of lacking in technology and capital, the developing work of the project was suspended from 1997 to 2003.	PP shall provide the outline of the evidences to show that there was not any asset transfer from the previous project owners.
			according to Contract of Haiyang hydropower station's transfer, no tangible asset and debt was transferred from previous project	OK No asset transfer was confirmed with the provided document CAR-4 was closed out
CAR-5	Investment Analysis The active spreadsheet for IRR calculation including the sensitivity analysis shall be provided	6.9 6.12	The active spreadsheet for IRR calculation has been provided in Revised PDD.	PDD author shall provide the active spreadsheet for IRR calculation of Revised PDD
			IRR spreadsheet has been provided	OK The parameters and calculation procedure were appropriately corrected in Revised PDD CAR-5 was closed out



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Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CL-1	Describe the average annual total electricity generation in addition to an annual average electricity delivered to CCPG. In addition, also describe the rough schedule of the project activity including the start date and the completion date.	4.1	The average annual total electricity generation value was confirmed with Design Report as 19011MWh The start date and the commissioning date was in Milestones attached.	OK Stated at A.2. and B.5. in Revised PDD CL-1 was closed out
CL-2	It is requested to explain how the annual operating hours of the proposed project are determined during the on-site assessment. Relevant evidences shall also be provided.	5.12	The annual operating hours was designed according to the hydrological data of related rivers during the past years by the PDR author.	OK Verified by PDR and the design institute, and confirmed at revised PDD. CL-2 was closed out
CL-3	Explain about the load factor of the plant, the efficiency of the water turbine/generator, delivery loss, and the electricity consumption in the station with reasonable evidences during the on-site	5.12	The related evidence has been provided to DOE during the on-site assessment.	The annual average electricity delivered value was corrected according to PDR data, and stated at TableB.5.-2 in Rev. PDD. PP shall demonstrate in the PDD on defining load factor, and its source.
			The value and its derived source have been described in B.5.	OK They were verified by PDR and related approvals. CL-3 was closed out



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Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CL-4	Clarify whether the applied benchmark IRR 10% (after tax) is Project IRR or Equity IRR	6.12	The applied benchmark IRR 10% (after tax) is Project IRR	OK Statement was revised accordingly in Revised PDD. CL-4 was closed out
CL-5	Table B.5. -1 1. Preliminary Design Report should be provided to the DOE for the confirmation of the values listed in Table B.5.-1. The followings are to be additionally described in the PDD: <ul style="list-style-type: none"> Who prepared PDR? When PDR was completed? Who approved PDR? 2. The official document in which the tariff is regulated shall be provided. 3. As for the estimated CER price, please add the exchange rate assumed in the Table B.5. -1. It is essential for the IRR calculation on CNY basis. 4. It is supposed that there is a `Feasibility Study Report` prior to the work for	6.1 6.9 6.12 6.14	1. The PDR has been provided to DOE during the on-site assessment. The PDD has been revised accordingly. 2. The market value and announced value by Sichuan Price Bureau were explained during the on-site assessment. The copy of PPA contracted after the operation has been provided. 3. The exchange rate of 7.4 ¥/\$ assumed was added in the Table B.5.-1. 4. FSR is not required for small projects.	1.OK The PDR in addition to Revised PDR were provided. 2.OK They were verified with appropriate evidences both during On-site assessment and follow-up validation work. 3.OK It is stated at Table B.5.-1 in Revised PDD. 4.OK DOE confirmed the necessary information are described at PDR.



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Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
	<p>`Preliminary Design Report`.</p> <p>It is also requested to describe the followings in the PDD:</p> <ul style="list-style-type: none"> ● Who prepared FSR? ● When FSR was completed? ● Who approved FSR? <p>5. Detailed explanation is requested for the inconsistency, if any, of the key parameters for the investment analysis between FSR and PDR.</p>			
			5.Key parameters for investment analysis were reviewed during On-site Assessment	<p>5.1. DOE verified with supporting evidences, which were confirmed in CL-2, CL-3, CL5-2A and CL5-2B.</p> <p>OK</p>
				<p>5.2.</p> <p>PP shall clarify the incentive condition of the income tax value and static investment value in PDR, and IRR calculation procedure</p>
			5-2A. The supporting document issued by the tax department for your reference.	<p>OK</p> <p>The tax condition of the project was confirmed by the provided document.</p>
			5-2B. PDD and IRR sheet have been revised	<p>OK</p> <p>The static investment value and calculation procedure were corrected.</p> <p>Thus IRR value was corrected.</p>



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Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
	6.What does “other” tax rate mean? Please describe the specific name of the tax. 7.Project life time” should be “Project operational lifetime” to have the consistency with the description in Section C.1.2.		6. Other tax means City Construction & Maintenance Tax and Educational Surcharge	6.OK Stated in revised PDD.
			7. The PDD has been revised according to this comment.	7._OK Confirmed in revised PDD.
			CL-5 was closed out	
CL-6	Table B.5.-2 To make it consistent with the financial benchmark IRR(10%, after tax), please indicate as “IRR % (after tax)”	6.12	The PDD has been revised accordingly	OK Revised in Table B.5.-2 in Revised PDD. CL-6 was closed out
CL-7	Figure 3 1. In the sensitivity analysis, four (4) parameters are chosen as variables which may have an impact on IRR to a considerable degree. Please justify such assumption that those parameters could fluctuate in the range of $\pm 10\%$ would be realistic. Fourth parameter, which is ‘Elec. sales’, is missing in the figure. Please explain why.	6.12	1. The expected variation range of $\pm 10\%$ of the input parameters is based on the experience and expectation of the industry in China. 2. It doesn’t missing in the figure, it almost superpose ‘Elec. Tariff’	1.OK Stated at Figure in Revised PDD. The addition of Table B.5.-3 in Revised PDD reasonably justified the range of the parameters fluctuation 2.OK
				The actual static investment expense summary shall be provided for justifying the investment value of PDD



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Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
			The actual static investment expense summary has been provided.	The audit report provided by PP justified the investment value of PDD CL-7 was closed out
CL-8	Project Emissions(PEy) Clarify the source of the relationship between “a newly constructed run-of river hydropower station without reservoir” and “PEy = 0”	6.13	In compliance with the AMS.I.D., the description as for the project emission (PEy) and the power density (PD) have been deleted in the PDD.	OK The appropriate description was confirmed in revised PDD. CL-8 was closed out
CL-9	Select an operating margin(OM) method Define “the low- cost/must run resources” and clarify how to calculate the stated amount of ‘low- cost/must run resources’ accounts as shown in this paragraph, i.e. 35.9% in 2002, 34.4% in 2003, 38.5% in 2004, 38.6% in 2005, and 35.1% in 2006. These data may be summarized in Annex 3 of the PDD.	5.13	‘Low-cost/must-run resources are defined as power plants with low marginal generation costs or power plants that are dispatched independently of the daily or seasonal load of the grid. Low-cost/must-run resources in CCPG typically include hydro, wind, and nuclear resources.’ This description has been added in the revised PDD. The calculation has been clarified during the on-site assessment.	OK Stated at Footnote of 13 page and Annex 3 in Revised PDD. CL-9 was closed out



CDM Validation Protocol for Shimian Haiyang Hydropower Project

Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CL-10	<p>1.Organization</p> <p>It is requested to describe more details about the responsibility of each member in the identified organization. Especially the responsibility of “CDM Assistant (Leader?)” is not clarified.</p> <p>For example, following missions are to be assigned to one of team members:</p> <ol style="list-style-type: none">1) To keep in touch with EB,DOE and relevant agencies2) To supervise the project operation related to data monitoring, including negotiations with the grid company3) To calibrate and maintain the ammeter, and checking .archiving and managing data4) To collect financial data such as receipts of electricity sales5) To measure and record relevant readings, and to make regular summary according to the requirements as CDM project	7.1 .b.(ii)	<p>The responsibility of each member of CDM team has been added in the revised PDD in according with Monitoring Plan.</p> <p>The Monitoring Plan has been provided during the on-site assessment.</p>	<p>OK</p> <p>Stated at B.7.2.1 in Revised PDD.</p> <p>Confirmed by the Manuals provided.</p>



CDM Validation Protocol for Shimian Haiyang Hydropower Project

Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CL-10	2.Data to be monitored	7.1 .b.(ii)	1. A simplified diagram has been added in the revised PDD. 2. This has been confirmed with the PO during on-site assessment. Thus more detailed description has been added in the revised PDD.	1.OK The Figure was generated in Revised PDD Figure number was changed in Revised PDD, and “Main” monitoring point was defined in the Figure. 2.OK Statement was revised at B.7.2. 2 in Revised PDD.
			CL-10 was closed out	
CL-11	1. It is requested to describe a simplified diagram for the instrumentation which presents the entire monitoring system indicating the relative positions of Generators, Ammeters, Transformer, and Substation, to help PDD readers understand the mechanical structure, and confirm appropriateness of the proposed monitoring plan. 2. Clarify who is “a designated third party” to check the metering devices.	7.1 .b.(ii)		PP shall clarify the measured Parameter of net electricity supply to the grid. Also it would be appropriate to write the voltage value at the supply point in the Figure, because the tariff may vary according to the voltage value
			It has been clarified.	OK EG _{pi,y} was appropriately defined in Revised PDD



CDM Validation Protocol for Shimian Haiyang Hydropower Project

Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
	3. Installation of Metering Devices Specify an accredited third party for the calibration.		3. This will be confirmed with the PO during on-site assessment, and more detailed description has been added in the revised PDD.	OK Statement is revised at B.7.2. 3 in Revised PDD.
	4. Data Management System The specific feature of the data management system may be explained in detail here.		4. The specific feature of the data management system has been explained to DOE during on-site assessment, and more detailed information will be added in the revised PDD.	OK Statement was revised at B.7.2. 5 in Revised PDD.
	5. Disposing process of abnormality / Abnormality Handling Clarify how the abnormality of the reading is judged. For example, the criteria of allowance or the procedure of judgment of inaccuracy should be clearly demonstrated.		5. This has been explained to DOE during on-site assessment, and more detailed information will be added in the revised PDD.	Further quantitative description on the allowance criteria is requested, although the description is revised at B.7.2. 6 in Revised PDD.
			The PDD has been revised according to this comment.	OK Statement was revised at B.7.2. in Revised PDD.
			CL-11 was closed out	



CDM Validation Protocol for Shimian Haiyang Hydropower Project

Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CL-12	As a new item of 8, the description about "Training of staff/operator including CDM team members and the preparation of manual for operation and maintenance" may be added.	7.1 .b.(ii)	Specialized worker and graduates studied for related major are hired. In order to operate/maintain the hydropower station smoothly, training in the station and in similar station has been conducted. Operation/maintenance manual has been compiled and accessible to staff. In addition, a CDM team has been organized and trained for the implementation of CDM monitoring. In addition, during the crediting period, CDM training will be organized at regular intervals.	OK The statement was generated as B.7.2. 8 in Revised PDD. Also justified by the CDM Monitoring Plan provided. CL-12 was closed out
CL-13	It is requested to describe the action taken on this Starting date (dd/mm/yyyy) of the project activity. Also provide the formal document which clearly shows the action was taken on the starting date.	6.3	The starting date of the project activity is the date when the PO signed Construction Contract with the construction company. The Construction Contract has been provided during the on-site assessment.	OK Stated in Revised PDD. Confirmed by the Contract Provided. CL-13 was closed out
CL-14	Regarding "Starting date of the first crediting period", it would be more realistic to describe "dd/mm/yyyy or the registration date, whichever comes later."	4.1	The PDD has been revised according to this comment.	OK Revised in Revised PDD. CL-14 was closed out
CL-15	Describe the date of EIA Report prepared. The report shall be reviewed during the On-site assessment. Furthermore, the resolutions listed in the PDD shall be confirmed by DOE during the On-site assessment.	10.1	The date of EIA has been added in the revised PDD.	OK Date was described in Revised PDD. Also confirmed by the Report provided. CL-15 was closed out



CDM Validation Protocol for Shimian Haiyang Hydropower Project

Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CL-16	In Construction Stage Water: Clarify what kind of particular effort is made to meet the strictest national standards? Air: Clarify what is the relevant emission standard. Noise: Clarify what are the safety regulations for explosion issued by the state? Social: Social impacts should be explained in detail during the site visit.	10.1	Water: The wastewater should be pre-treated before discharging. During the operation period, the minimum let-down flow should be kept. Air: the relevant emission standard is Integrated Emission Standard of Air Pollutions (GB16297-1996). Noise: Safety Regulations for Explosion (GB6722-2003).	OK The mitigation measures were described in Revised PDD. CL-16 was closed out
	In Operation Stage Water: Clarify what are the strictest discharging standards applied here and what is the specification of the water treatment plant? Noise: Noise enclosure or buffers shall be confirmed during the site visit or by the design documents.		Water: <i>Integrated Emission Standard of Wastewater (GB8978-1996).</i> Water treatment plant and Noise mitigation measures has been reviewed during on-site assessment.	


 JCI CDM Center	APPENDIX A	No : JCI-CDM-VAL- 08-038	Rev.No 07
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Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
CL-17	Clarify what are stringent environmental monitoring and mitigation measures to be carried out.	10.1	The description on monitoring and mitigation measures has been added in the PDD.	OK Confirmed they were appropriately described in Revised PDD. CL-17 was closed out
CL-18	It is requested to indicate the date of carrying out the survey with the evidence. (The date of distributing questionnaire and collecting answers are needed.) In addition, the questions and respective unfiltered responses should be provided during the on-site assessment for the validator's confirmation.	9.1	The survey process has been explained to the DOE during the on-site assessment. The questionnaire has been provided during the on-site assessment.	OK The questionnaire and the responses were summarized at E.1.&E.2.of in Revised PDD. The comments by the Local Stakeholders were confirmed by the document provided during the on-site assessment CL-18 was closed out
CL-19	Clarify what kind of media was used to notify the proposed project.	9.1	A notice posted on local bulletin boards prior to the meeting to tell local public the main information about the proposed project and where and when the meeting would be held.	OK



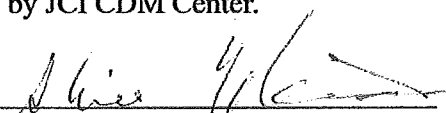
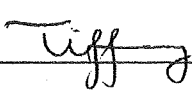
CDM Validation Protocol for Shimian Haiyang Hydropower Project

Table 2. Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in Table 1	Summary of project owner response	Validation team Conclusion
	The copy of the notification on the proposed project by the media (newspaper, public advertisement etc.) and the minutes of “relevant meetings” shall be provided.		The copy of the notification on the proposed project and the minutes has been provided during the on-site assessment.	The notification was verified by the provided evidences. CL-19 was closed out
CL-20	Scheme of Water and Soil Conservation for the concerned Hydropower Project which was approved by the local Water Conservancy Bureau shall be shown and explained.	10.1	Scheme of Water and Soil Conservation for the concerned Hydropower Project has been provided during the on-site assessment.	OK Confirmed by Water/Soil Preservation Report & Approval
	It is requested to show the mitigation measures taken (waste water treatment, green measures etc.) during the site visit.		The mitigation measures has been reviewed by the DOE during the on-site assessment.	OK The mitigation measures and the implementation status of the project were confirmed by the interview with the local EPB office during the on-site assessment. CL-20 was closed out

Appendix B

Certificate of Appointment of Validation Team

Project Title	Shimian Haiyang Hydropower Project
Applied Methodology	AMS I.D.(Version 13)
	Sectoral Scope 1
Date: 17 November 2008	
Designated Operational Entity: Japan Consulting Institute (JCI)	
<p>Reflecting the competence criteria of JCI, this is to certify the appointment of validation team of JCI specified below for the CDM project activity above, as per CDM Project Activity Registration Form, "F-CDM-REG" adopted at the 24th Meeting of CDM Executive Board, and Validation Procedure established by JCI CDM Center.</p> <p style="text-align: right;">Signature  Akio Yoshida, Executive Director, JCI CDM Center</p>	
Date: 2 / November 2008	
Client: Japan Trading Ecology Consultant Co., Ltd.	
<p>Reflecting the curricula vitae provided, this is to agree the validation team of JCI specified below for the CDM project activity above, as per Validation Procedure established by JCI CDM Center.</p> <p>It is also agreed that Mr. Mutsuo KATO of JCI participates in the validation activities of the said project for the quality issues under its quality management scheme.</p> <p style="text-align: right;">Signature  (Name) TIFFANY (Title) President</p>	

Validation Team

Validation Team	Name	Assigned Role
Leader	Junji YOSHIZAWA	All relevant issues
Member	Takayuki ABE	CDM auditor
Member	Shigeo AOKI	CDM auditor
Member	Haruo SAWADA	CDM auditor
Technical Reviewer	Masaki OKADA	Sectoral Scope 1

01 Dec. 2008

25 Dec 2008