



Voluntary Carbon Standard 2007.1 Validation Report

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Validation Report:

Name of Verification company:	Date of the issue:
TÜV NORD CERT GmbH	2010-03-30
Report Title:	Approved by:
5 MW Brahm Ganga Hydro – Electric Project at Kullu district of Himachal Pradesh, India	Rainer Winter
Client:	Project Title:
Harisons Hydel Construction Co. (P) Limited (HHCCPL)	5 MW Brahm Ganga Hydro – Electric Project at Kullu district of Himachal Pradesh, India
Summary:	

Harisons Hydel Construction Co. (P) Limited (HHCCPL) has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: “ 5 MW Brahm Ganga Hydro – Electric Project” at Kullu district of Himachal Pradesh, India” with regard to the relevant requirements of the VCS, as well as criteria for consistent project operations, monitoring and reporting.

The project intends to generate electricity by exploiting the hydro energy potential of the Brahmanganga Nallah (Tributary of River Parbati) in Kullu District of Himachal Pradesh, India. The project comprises installation of 5 MW (2 x 2.5 MW) small scale grid connected power generation units. This renewable energy project is based on the run-of-river schem. Net electricity supplied to the grid from the project activity has been estimated to be approx. 21.27 GWh of electricity. The generated electricity will be exported to the NEWNE grid of India. The project started generating commercial power since 2nd April 2008.

The review of the VCS PD and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

A risk based approach has been followed to perform this validation. In the course of the validation 15 Corrective Action Requests (CAR) and 16 Clarification Requests (CL) were raised and successfully closed out.

The validation is based on the VCS PD, proof of title, proof of right, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validator by project proponent.

As a result of the validation, the validates confirm that:

- The project fulfils criteria of VCS 2007.1 provided.
- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and inline with applied baseline and monitoring methodology of AMS I D, version 15.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 1,78,680 t CO₂e (total) is most likely to be achieved within the 10 years renewable crediting period which will be renewed once.
- No restrictions or uncertainties were identified related to the validation.

Work carried out by:	Number of pages:
Mr. Pankaj Patel Mr. Hemang Shah Mr. Saroj Sahoo	41

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1 Introduction

1.1 Objective

The purpose of this validation is to have an independent third party assess the project design. In particular the project’s baseline, the monitoring plan (MP), and the project’s compliance with

- The requirements of VCS 2007.1 program guidelines
- Requirements of the Approved methodology, AMS I.D version 15, EB-50
- To assess the project’s compliance with other relevant rules, including the host country (India) legislation;
- Other relevant rules, of VCS sustainability criteria are validated in order to confirm that the project design as documented is sound and reasonable and meet the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Verified emission reductions (VERs).

1.2 Scope and Criteria

The validation scope is given as an independent and objective review of the project design, the project’s baseline study and monitoring plan which are included in the PD and other relevant supporting documents.

The items covered in the validation are described below:

- **VCS 2007.1 & Host Country Criteria**
 - All relevant VCS 2007.1 requirements
 - Host Country requirement / criteria
- **VCS Project Description /PD/**
 - Project design
 - Project boundaries
 - Predicted project GHG emissions
- **Project Baseline**
 - Baseline methodology
 - Baseline GHG emissions
- **Project Additionality**
- **Monitoring Plan**
 - Monitoring methodology
 - Indicators/data to be monitored and reported
 - Responsibilities
- **Background investigation and follow up interviews**
- **Stakeholder Consultation**
 - Review of comments
- **Draft validation reporting with CARs & CLs, if any**
- **Final validation reporting.**

The information included in the VCS PD^{/PD01/PD02/} and the supporting documents were reviewed against the requirements and criteria mentioned above. The TÜV NORD JI/CDM CP has, based on the recommendations in the Validation and Verification Manual^{/VVM/}, employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of VERs. The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

The validation is not meant to provide any consulting to the project proponent. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 VCS project Description

The project intends to generate electricity by exploiting the hydro energy potential of the Brahm Ganga Nallah (Tributary of River Parbati) in Kullu District of Himachal Pradesh, India. The project comprises installation of 5 MW (2 x 2.5 MW) horizontal axis Francis Turbines coupled with generators. Project activity is a small scale grid connected power generation units. This renewable energy project is based on the run-of-river scheme. The diversion of the water from Brahm Ganga Nallah is done by construction of a diversion weir and allowing water through power tunnel to the project site. Net electricity supplied to the grid from the project activity has been estimated to be approx. 21.27 GWh of electricity. The generated electricity will be exported to the NEWNE grid of India. The project started generating commercial power since 2nd April 2008.

1.4 Level of assurance

The validation report is based on VCS PD^{/PD01/PD02/}, ER calculation sheet^{/XLS1/XLS2/}, supporting documents made available to the validator and information collected through performing interviews and during the on-site assessment. The validation opinion is assured provided the credibility of all above.

2 Methodology

The validation of the project was carried out in December 2009 to March 2010.

Preparations	:	2009-12-01 to 2010-01-21
On-site validation	:	2010-01-22
(Draft) Reporting	:	2010-01-23
(Final) Reporting	:	2010-03-30

The validation consisted of the following three phases:

- a desk review of the project design and the baseline and monitoring methodology
- follow-up interviews
- the resolution of outstanding issues and the issuance of the final validation report and opinion

2.1 Review of Document

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical literature referring to the project design or to the basic conditions and technical data.

The documents that were considered during the validation process are given in chapter 5 of this report. They are listed as follows:

- Documents provided by the project proponent (Table 5.1)
- Background investigation and assessment documents (Table 5.2)
- Websites used (Table 5.3).

2.2 Follow-up Interviews

On 2010/01/22 , the TÜV NORD JI/CDM CP performed Pre validation visit with the project proponent. During this visit, as well as earlier and after, interviews with the project proponent, the consultant, project stakeholders and with local authorities had been carried out to confirm selected information and to resolve issues identified in the document review.

The key interviewee and main topics of the interviews are summarised in Table 2-1.

Table 2.1 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives ^{/IM01/} Consultants ^{/IM02/} Local stakeholder ^{/IM03/}	- Chronological description of Project - Technical details of the project realisation – specification, engineering, operational life time - Equipment Performance data - Monitoring and measurement equipment - Project activity starting date/ commissioning date - Crediting period - VER allocation /ownership - Baseline study assumptions - Sustainable development issues - Analysis of Environmental Impact - Analysis of local stake holder consultation - Roles & responsibilities, competency and training of the staff members w.r.t project management, monitoring and reporting - Operational Data - technical specification, capacity, estimated life time of the project plant units - Editorial aspects of PD - Procedural aspects - Debundling aspects - Base line study, project emissions, leakage and additionality - Details of emission reduction calculation

The detailed list including the functions or designations of the interviewed persons is given in chapter 5.

2.3 Resolution of any material discrepancy

During the validation of the project some discrepancies were observed and communicated to the project proponent in the form of CARs/CLs. Necessary corrections were made in the VCS PD and corresponding documents to address the CARs/CLs

After reviewing the revised and resubmitted project documentation^{/PD02/}; resolving the CARs & CLs raised and outstanding concerns, TÜV NORD JI/CDM CP issues this final validation report and opinion.

In this validation 15 CARs and 16 CLs were raised. The CARs / CLs are documented in the validation report and summarised in table 2.2 below.

Table 2-2: Summary of CAR and CL issued

Validation topic ¹⁾	No. of CAR	No. of CL
General description of project activity (3.1) - Project boundaries - Participation requirements - Technology to be employed - Contribution to sustainable development	03	-

Validation topic ¹⁾	No. of CAR	No. of CL
Project baseline (3.2) - Baseline Methodology - Baseline scenario determination - Additionality determination	10	16
Monitoring plan (3.3) - Monitoring Methodology - Monitoring of Project emissions Baseline emissions Leakage Sustainable development indicators / environmental impacts Project management planning	01	-
Emission Reduction Calculations (3.4) - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Emission reductions	-	-
Environmental impacts (3.5)	01	-
Stakeholder Comments (3.6)	-	-
SUM	15	16

1) The letters in brackets refer to the validation protocol

For an in depth analysis/evaluation of all CARs and CLs can be referred to the below sections from 3.1 to 3.6.

3 Validation Findings

3.1 Project Design

The project activity involves setting up a 5 MW (2 x 2.5 MW) hydro electric power project and harnessing renewable power from the stream of the natural water flow of the run-of river ROR).The electricity produced would be supplied to the regional grid namely NEWNE Grid of India. The details of the project activity are shown in the table below. Technical details of the project activity are cross checked with the Detailed project report /DPR/ and techno economic clearance ^{/TEC/}.Detailed project report is a pre feasibility study report prepared by the third party. It includes Technical details, hydrology, physiology, topography, geology, climatic conditions, financial evaluation, project cost break up, financial analysis, performance indicator, capital cost etc.

Table 3.1 : Details of the project activity

Parameter	Value
Diversion Tunnels	
Shape	D-shaped

Parameter	Value
Lengths	996 m
Power House	
Type	Surface
Turbines	2 Nos 2500 kW, Horizontal axis Francis
Installed Capacity	5 MW
Generator	Synchronous, brushless type
Net Head	229.3 m

The project duration is 30 years.

Project start date is 02/04/2008 – Project commissioning.

Crediting period is 10 years renewable crediting period.

Validation team has reviewed the commissioning certificate^{/CC/} issued by Himachal Pradesh State Electricity Board and confirmed that the unit no 1 and 2 was started commercially on 02/04/2008. Thus this has been considered as the start date of the project. The crediting period start date is 02/04/2008.

From the documents provided by the project proponent including the loan agreement^{/LA/}, Detailed project report^{/DPR/}, Commissioning Certificate^{/CC/}, power purchase agreement^{/PPA/} and Statutory Clearance^{/SC/} it was verified that the ownership of the proposed project activity belongs to Harison Hydel Construction Co Pvt Ltd.

As the project start date of the project activity is 02/04/2008 and validation activity is started within two years from the start date it was found that the proposed project activity is eligible under VCS as per VCS Program guidelines Clause no 5.2.1 of VCS 2007.1.

Based on the independent review of details available in public domain for the project activity under various GHG programme carried out by validation team and by review of the declaration given by the project proponent^{/DEC/} it is evident that the emission reduction was not double counted and as the project has not applied for carbon benefits under any other GHG programme nor there is no rejection history for the project activity.

As the annual emission reduction due to implementation of the project activity is less than 1,000,000 tonnes CO2 equivalent and more than 5000 tonnes CO2 equivalent, project is falling between Mega project and Micro project as per the VCS guidelines.

As verified during the site visit and by conducting document review, validation team confirmed that the project activity is implemented as per the description provided in the VCS PD.

The following CAR 1.1 to 1.3 has been raised and closed successfully.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 1.1 Project boundary is not specified in section	/PD01/ /section 1.5/	The VCS PD has been revised and	/PD02/ /section 1.5/	Name of the grid is now specified in the

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
1.5 of the VCS PD		has been submitted to DOE		revised VCS PD. Same is verified during the site visit. CAR is closed
CAR 1.2 Technical details of the turbine and generator is not described in section 1.9 of VCS PD	/PD01/ /section 1.9/	Please refer to the revised VCS PD (page no. 8)	/PD02/ /section 1.9	Same is included in the revised PD. Same is also verified from detailed project report and also during the site visit. CAR is closed.
CAR 1.3 Version no of tool to calculate emission factor shown in section 4.1 under step 2 of VCS PD is not consistent	/PD01/ /section 4.1/	Please refer to the revised VCS PD (page no. 27)	/PD02/ /section 4.1/	Version no is corrected as per the latest version. CAR is closed.

3.2 Baseline

The selected baseline methodology is the approved baseline methodology “Grid connected renewable electricity generation” (AMS I D Version 15: EB 50).

The project satisfies all applicability criteria for AMS I D Version 15. The information given in the section 2.2 of the VCS PD^{/PD01/PD02/} were reviewed by the validation team and has been assessed as correct based on the Detailed project report^{/DPR/}, Loan agreement^{/LA/} gathered during site visit and the review of commissioning certificate^{/CC/} and technical specification^{/TS/} submitted to the DOE. Thus the DOE conclude that the project does not involve the addition of renewable energy generation units at an existing renewable power generation facility nor does the project activity involves retrofitting or modification of exiting facility for renewable energy generation. Project activity is a new installation having capacity of 5 MW which is less than 15 MW.

The selected baseline methodology, i.e., AMD I D Version 15 is correctly applied to this type of grid connected renewable generation project. There is no methodology deviation or revision.

As per the approved methodology AMD I D Version 15, baseline emission are the product of electrical energy baseline expressed in kWh of electricity produced by the renewable generating unit multiplied by an emission factor calculated as per “Tool to calculate the emission factor for an electricity system”.

Project proponent has selected option (a) of paragraph 11 i.e. A combined margin (CM), consisting of the combination of simple operating margin (OM) and build margin (BM) according to the procedures prescribed in the ‘Tool to calculate the emission factor for an electricity system’ for calculating emission factor.

The resultant combined margin figure of 0.84006 tCO₂/MWh worked out on the basis of data according to CO₂ Baseline Database (Version – 5.0)^{/CEA/} published by CEA of India and the default weight factors of W_{OM}=50% and W_{BM}=50% is deemed as correct, transparent and conservative. The following table shows the ex-ante emission factor (Simple OM and BM) chosen for the project activity which would be remain fixed through out the entire crediting period.

Build Margin		Simple Operating Margin	
Year	tCO ₂ /MWh	Year	tCO ₂ /MWh
2008-09	0.67518	2006-07	1.008
		2007-08	0.999
		2008-09	1.006
		Weighted Average OM	1.00493

The above data has been verified from the database of Central Electricity Authority (CEA) version 5.0^{/cea/}.

Nevertheless the following CAR/CL had to raise and closed successfully.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 2.1 The operating margin emission factor chosen for the calculation of baseline emission should be the generation weighted average of last 3 years’ operating margin emission factor.	/PD01/ /section 4.1/	The revised ER Calculation spread sheet is submitted to DOE. Please also refer to the revised VCS PD (page no. 3, 4, 20, 28-31)	/PD02/ /section 4.1/	Generation weighted average emission factor is considered as a conservative approach. Values applied is checked from the CEA database. CAR is closed.

ADDITIONALITY:

Demonstration of additionality:

The additionality was demonstrated in PD as per the section 5.8, of the VCS 2007.1.^{/VCS/} The PP had chosen Test 1 (the Project Test) to prove additionality. Under step 1 of the project test it has been assured that project is not implemented to meet any systematically enforced law, applicable local and national regulatory requirements, and policies. No specific laws are implemented which gives specific advantage to less emission incentive technologies since 11/11/2001. The same is confirmed by conducting document review^{/DPR/PPA/TEC/}. Based on the local and technical expertise of the validation team it is ensured that this meets the requirements of VCS 7.1 program updates of 21/01/2010 and 26/01/2010. The same was checked by studying the orders and regulations of national and state ministries, about any mandates regarding hydro projects.

Under step 2 (implementation barrier), investment barrier have been chosen to argue additionality. DOE has done thorough check of the documents submitted to cross check each claim of additionality. Interviews also were conducted to ascertain this.

Step 3, common practice analysis has been found to be in line with chapter 7 of guidance on GHG protocol for project accounting. The demonstration of common practice has been found to be acceptable.

Table 3.2: Additionality assessment

Step # / Barrier	Demonstration	Assessment
Step 1: Regulatory Surplus	Project is not implemented to meet any systematically enforced law, applicable local and national regulatory requirements, policies. No specific laws are implemented which gives specific advantage to less emission incentive technologies since 11/11/2001 Same is confirmed by conducting document review ^{/DPR/PPA/TEC/} . This meets the requirements of VCS 7.1 program updates of 21/01/2010 and 26/01/2010 . The same was checked by studying the orders and regulations of national and state ministries, about any mandates regarding hydro projects	☐ Argument not justified ☐ Argument not convincing ☐ Argument justified but not a decisive barrier ☒ Argument justified / significant barrier
Step 2: Implementation barrier	Project developer has demonstrated through the investment analysis that the financial returns of the project activity are insufficient to justify the required investment. DOE has adopted a six-pronged strategy to ascertain the veracity of the conclusion drawn by the project developer, viz. a) determining the suitability of the benchmark applied for the type of financial indicator presented; b) conducting an assessment of parameters and assumptions used in calculating the financial indicator and determining the accuracy and suitability of parameters; c) cross-checking the parameters against third-party or publicly available sources; d) reviewing annual financial reports related to the project participant;	☐ Argument not justified ☐ Argument not convincing ☐ Argument justified but not a decisive barrier ☒ Argument justified / significant barrier

¹ Tool for the demonstration and assessment of additionality (Version 05.2) p.6

Step # / Barrier	Demonstration	Assessment
	e) assessing the correctness of computations carried out and documented; and f) Subjecting the critical assumptions of the project activity to reasonable variations to determine under what conditions variations in the result would occur, and the likelihood of these conditions. <u>Suitability of financial indicator and benchmark:</u> The project developer has chosen Project IRR to demonstrate the additionality of the project. Additionality Tool (Ver. 05.2) permits the use of Project IRR, for demonstrating the additionality using benchmark analysis. The tool permits the use of either project IRR or equity IRR¹. Since the project developer demonstrated the financial unattractiveness of the project, Project IRR is appropriate, as it is often used by the project developers to make a decision on investing in the project. As such, the selection of Project IRR as financial indicator to demonstrate the additionality of the project is appropriate and conforms to the Additionality Tool. At the time of decision making i.e. 15/06/2004, PP has chosen the weighted average costs of capital (WACC) as the benchmark for the project activity. Return of equity is calculated by Capital Asset Pricing Model (CAPM) is used. PP has taken risk free return of 6.12 % from Reserve bank of India considering 20 years maturity. Beta value works out to 0.80 based on asset beta for the similar type of company available at the time of decision making. Beta value is calculated	

Step # / Barrier	Demonstration	Assessment
	form the data for the period 2001 to 2004. Same is considered appropriate as The electricity bill 2001 is introduced in the year 2001 and project is conceptualised in the year 2004. Market rate of return considered is 27.89 %. Accordingly Rate of return on equity works out to 23.63 %. Based on Rate of return of 23.63 %, Interest on term loan of 10.5%, debt equity ratio of 70:30, the weighted average Cost of capital (WACC) calculated as 13.61 % which is taken as a benchmark for the project. This is also in line with the para 12 of the Annex 58 of EB 51 <u>Parameters and assumptions used :</u> The three important parameters, which determine the project IRR of the project, are project cost, financing pattern, and profitability estimates. The project cost includes land, buildings, generating plant and machinery, transmission lines, switch gears, dam, barrage, tunnels, channel, transformer, electrical, erection and commissioning cost. All these costs are based on Techno economic clearance issued by Himachal Pradesh State electricity Board (HPSEB) vide letter HPSEB/CE(C&A)/CC-Brahmganga/2002/2/62/70 dated 27/06/2002 and financial data sheet of detailed project report^{/DPR/} copies of which have been submitted to DOE for verification. PP submitted the Chartered Accountant’s certificate providing the details of cost break up for cost over run. Validation Team had, therefore, accepted the	

Step # / Barrier	Demonstration	Assessment
	cost. The financing pattern yields a gearing of 70:30, which is based on CEA approval. The profitability estimates of the project, which forms the basis for IRR calculation is based on installed capacity, Net Annual Generation, power tariff, O&M cost, depreciation, taxation. The installed capacity is a computed figures based on the capacity of hydro units, which is evidenced by the purchase orders. Net annual Generation is based on the Detailed Project report^{/DPR/} prepared by third party i.e. Dr. Hutarew & Partner (I) Pvt. Ltd. and confirms to Annex 11 of EB 48 . Power tariff is based on PPA signed by the project proponent with HPSEB, to whom the entire power would be exported. O&M cost is based on Detailed project report. The project developer has adopted CERC recommended straight line depreciation for computing book profit and Income Tax Act stipulated WDV depreciation for plant and machinery and civil works for income tax calculation, which are accepted accounting methods. The block of assets has been computed for depreciation purpose as per the accepted accounting principles. Tax liability has been calculated as per the income tax rules and the rulings given. <u>Cross checking parameters:</u> The cost of project, power tariff, O&M cost, interest costs, depreciation and tax rate have been cross checked with Techno economic Approval	

Step # / Barrier	Demonstration	Assessment
	and Detailed project report^{/DPR/}, furnished by the project developer, Income Tax Act, PPA entered into by the project developer with the HPSEB. The input costs considered appear to be in order. <u>Assessment of correctness of computation:</u> The assessment involved checking the data input taken from Detailed project report^{/DPR/}, adoption of correct accounting principle and arithmetical accuracy. Validation Team checked the Techno economic clearance from HPSEB documents and ensured that right input has been taken in the project cost and projections. The accounting principles adopted with respect computation of interest, block of assets and tax computation were found to be in order. The arithmetical accuracy is found to be correct. The project IRR has been computed for a period of 30 years, which is the life time of the project and is in conformity with the Annex 58 of EB 51 and Annex 15 of EB 50. As required by Annex 58 of EB 51 the expected profit on the sale of assets at the end of the operating life has been taken as salvage value in the terminal year. In computing the IRR, the project developer has taken into account profit after tax, depreciation and interest on term loan, and salvage value (in the terminal year). The principle adopted conforms to the accepted accounting and taxation principles. Based on the above, the project IRR works out to 11.88% in contrast to the benchmark of 13.61%. In the above background, the Validation	

Step # / Barrier	Demonstration	Assessment
	Team is convinced that the project is additional and not a business-as-usual scenario. The robustness of this conclusion was checked by subjecting critical factors to reasonable variations. Two factors have been identified as critical, viz., Power generation, and project cost. These factors have been subjected to 10 % variation on either side and sensitivity analysis reveals that negative variation of the project cost by 10 % will touch the benchmark. Validation team has verified that as the project is already implemented project cost will not change. Further it is verified from the chartered engineers certificate that the project cost actually incurred is 7.98 % higher than the estimated project cost. Hence the possibility of negative variation in the project cost is ruled out. For other parameter, the IRR would not cross the benchmark return. Details of the sensitivity analysis are presented on the next page.	
Step 3: Common Practice Analysis	Project activity is operating in the northern part and delivering electricity to the NEWNE grid of India. Total installed capacity of the northern grid was 31,963 MW at the time of conceptualisation of the project. Further total installed capacity of hydropower is 10,790 MW. However small scale hydropower only contributes 107.05 MW, which is less than 1 % in the region. At the time of conceptualisation of the project, there is no small-scale hydropower commissioned in the himachal Pradesh from private sector. Same is verified by the validation team by reviewing the Central electricity database.	☐ Argument not justified ☐ Argument not convincing ☐ Argument justified but not a decisive barrier ☒ Argument justified / significant barrier

Step # / Barrier	Demonstration	Assessment
	DOE is convinced that the implementation of small hydro power projects is not a common practice in Himachal Pradesh. (Northern region)	
Assessment of the validation team		☒ Project is additional ☐ Project is not additional

Sensitivity analysis:

The Guidance on Assessment of Investment Analysis requires the robustness of the conclusion arrived at to be proved through a sensitivity analysis by varying the critical assumptions to a reasonable variation ($\pm 10\%$). The project developer has identified Power generation, project cost, as the most critical assumptions. Power tariff is not considered for the sensitivity because PP has entered into PPA for entire project life time. Also O&M cost is not considered because it contributes only 1.5 % of the project cost. Accordingly, sensitivity analysis was done by the project developer to analyze the impact of a reasonable change ($\pm 10\%$) in the chosen parameters on the additionality of the small scale project activity. The sensitivity analysis reveals that negative variation of the project cost by 10 % will touch the benchmark. Validation team has verified that as the project is already implemented, project cost will not vary. Further it is verified from the chartered engineers certificate that the project cost actually incurred is 7.98 % higher than the estimated project cost. Hence the possibility of negative variation in the project cost is ruled out. For other parameter, the IRR would not cross the benchmark return as given in the following table:

Sensitive factors	-10 %	Baseline	+10 %
Annual Power generation	10.37 %	11.88 %	13.30 %
Project cost	13.63 %	11.88 %	10.38 %

The following CARs/ CLs are raised and closed successfully.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 2.2 Auxiliary consumption at 8% appears to be very high. CERC has recommended only 1% and HPERC Order released in 2007 also provides for only 1% for auxiliary consumption and transmission losses.	/XLS1/ /PD 01/	○ The losses are inclusive of transmission and transformation losses of 4.5% & 0.5%, auxiliary consumption 0.5% and outage values of 2.5% respectively. Based on this, the value has been estimated as 8% as sourced from the Detailed Project Report (DPR); Executive Summary. The hard copy of the DPR has been submitted to DOE. ○ These values are also supported by the Power Purchase Agreement (PPA) signed with Himachal State Electricity Board (HPSEB), Please refer to the PPA; page no. 4 for Auxiliary consumption & page no. 9 for Transformation & transmission losses). ○ For the outage value, please refer to the web link (http://www.powermin.nic.in/reports/pdf/himachal%20pradesh.pdf; page no. 15), which shows 90% availability of the grid, thereby justifying outage value @ 2.5% on conserva-	/XLS2/ /PD02/	Break up of 8 % of total losses presented in the VCS PD is verified with the Detailed project report/^{DPR} and Power purchase agreement/^{PPA}. Auxiliary consumption considered is only 0.5 % and meets the CERC and HPERC guidelines. CAR is closed.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
		tive side.		
CAR 2.3 While CERC and HPERC provide for only 4% escalation in O&M cost, 5% escalation has been assumed in the worksheet, which is not appropriate.	/XLS1/ /PD01/	○ 5% escalation in the O&M cost has been considered from the DPR, Chapter 14: Financial Evaluation, page no 2 of 3, pt no. 14.2: Financial Analysis: O & M cost. This is further supported by the web link reference (http://www.economy-watch.com/database/price/inflation.html) as considered during the decision making time.	/XLS2/ /PD02/	Validation team has verified the Detailed project report ^{/DPR/} , Chapter 14 on Financial evaluation. And convinced that the value of 5 % applied for escalation in the O&M cost is correct and appropriate related to project activity. CAR is closed.
CAR 2.4 As per the sanction letter and a few pages of loan documents enclosed, IREDA had sanctioned loan of Rs.166 mn. at 11.50% in August 2004 and Rs.25 mn. in March 2008 at 10.75%. In the above background, assuming SBI PLR of 10.5% as interest on loan does not appear to be appropriate.	/XLS1/ /PD01/	○ During the decision making period (15 th June, 2004), the available interest rate from the PLR is 10.5% from the commercial banks, which has been considered for the financial assessment of the project (Source: http://rbi.org.in/scripts/AnnualReportPublications.aspx?Id=353).	XLS2/ /PD02/	Validation team has reviewed Reserve bank of India, Prime Lending rate at the time of decision making period from web site and confirmed that interest rate considered as 10.5 % is appropriate. CAR is closed.
CAR 2.5 Loan documents submitted does not contain the loan tenure, moratorium and instalment amount.	/XLS1/	○ During the investment decision, the value of loan tenure, moratorium have been taken from the DPR (Please refer to Chapter 14; Financial Evaluation;	XLS2/ /PD02/	Validation team has referred detailed project report ^{/DPR/} submitted by PP to ascertain the input values taken for loan tenure and moratorium.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
		page 3 of 3; Cash flow of the DPR) attached as Annexure 1. The installment amount has been calculated accordingly.		CAR is closed
CAR 2.6 When the project life is more than 30 years, restricting the IRR computation to 20 years seems to have resulted in the under-estimation of IRR	/XLS1/	○ The financial model has been revised for 30 years	XLS2/	Projections have been revised to 30 years . CAR is closed
CAR 2.7 IT depreciation has been provided at 15% on the entire investment, which does not appear to be in conformity with Appendix I of IT rules	/XLS1/	○ As per the IT Rules, 25% and 10% Depreciation is allowed on E & M works and Civil works respectively. For simplicity, 15% weighted depreciation was considered. However, the financial model (Depreciation spreadsheet) has been revised as per IT rules	XLS2/	Financial model has been revised. CAR is closed.
CAR 2.8 As the taxable profit in the first three years of operation is negative, restricting 80IA benefits to 10 years does not appear to be in conformity with the provisions of IT Act	/XLS1/	○ The Financial model has been revised accordingly. Please refer to Revised Financial model .	XLS2/	Calculations have been corrected. CAR is closed

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 2.9 Financial years (like 2006-07, 2007-08 etc. and not 1, 2,3) should be used in the projections. Moreover, first year generation, revenue and cost should be in conformity with the expected date of commencement of generation.	/XLS1/	○ The Financial model has been revised and has been attached as Annexure 3. The construction period has been considered as around three years and accordingly phasing of investment has been done.	XLS2/	The financial model has been revised. Further validation team has reviewed Detailed Project Report^{/DPR/} and confirmed that the construction period of 3 years is correct. CAR is closed
CAR 2.10 Common practice analysis does not seem to conform to step 3 of VCS 2007.1	/PD01/	○ The VCS Project Description (PD) has been revised. Please refer to page no. 21-22 of the revised VCS PD attached as Annexure 4. ○ Please refer to Annexure 5 for Common Practice reference Excel sheet.	/PD 02/	Since it is a small scale project, common practice analysis is not mandatory. The modified VCS PD is considered adequate to prove that SHPs are not common practice in HP. CAR is closed

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CL 2.1 Project IRR has been used to demonstrate additionality. Please clarify how this financial indicator conforms to guidance 15 of Annex 45 of EB 41.	/PD01/	○ Please refer to the “Guidance on the Assessment of Investment Analysis”, in EB 41, Annex 45, page 4, point no. 15. The present project activity is a grid-connected investment project, which is located in the state of Himachal Pradesh, India. The project activity is supplying power to the Northern regional grid of India, which is mainly dominated by thermal based power projects. In absence of the project activity, the equivalent amount of electricity generation will take place from the respective thermal dominated grid system with subsequent emission of Greenhouse Gases (GHG). Therefore, as per the above-mentioned guideline, a benchmark approach has been considered appropriate to assess the financial viability of the project considering project IRR as a financial indicator	/PD 02/	This explanation should form part of VCS PD. Subject to the modification of VCS PD, this CL is closed
CL 2.2 A standard text book or a research article	/PD01/	○ Please refer to Revised Financial model attached as		CAPM is accepted.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
published in a reputed finance journal advocating the methodology used for estimating the benchmark (p.18 of PDD) and application of the methodology to general industrial scenario may be submitted as evidence. The computation requires clarifications on following issues: a) Projects considered for beta calculation does not seem to include all major power generating companies;		Annexure 3. The Capital Asset Pricing Model (CAPM) has been used as per Financial Management by Mr. I. M. Pandey (Attachment enclosed). o The VCS PD has also been revised.. <u>Revised Response:</u> a) Beta value was calculated considering major power sector companies listed in BSE-500 during Project Conceptualisation time.CESC being mainly into the business of Power Distribution has not been considered in to the Benchmark analysis, Reliance Infra has a diversified portfolio including power distribution, road and infrastructure, etc. such projects cannot be truly considered for representative of generation company and has been excluded from the analysis.NTPC is purely a Government Utilities has been excluded		CL is closed a) Validation team has verified the same from data available on the web site and confirmed that the Beta value is calculated considering major power sector companies at the time of project decision. CL is closed

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
b) The companies considered seem to include those which are not engaged in power generation; c) No reason has been given for choosing the duration May/ June 2000 to March 2004; d) No reason has been given for choosing the duration April 2001 to March 2004 for computing market return (while for beta calculation duration		from the analysis as it will not truly reflect a private sector operation in practice and the data was available for NTPC from November, 2004 and for JP Hydro from April, 2005. Hence these two companies have not been considered. b) The financial model has been revised. Alstom and L & T have been removed. c) Most of the Companies as considered during decision making, got listed in the year 2000, therefore, to have a better view of the market risks faced by such companies, beta was considered from the time since inception. d) The duration of April 2001 to March 2004 was taken to calculate the Market Return. The Electricity Bill came up in the year 2001 and the		b) Model has been revised by excluding Alstom and I&T. CL is closed. c) As the data since inception is given it is accepted. CL is closed d) Model has been revised. Revised Benchmark considered is 13.61% which is conservative from initial

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
from May/June 2000 has been considered In some cases beta has been computed from May 2000 to March 2004, in some cases June 2000 to March 2004, in some cases Jan 2001 to March 2004. The data consists of gaps and missing months); e) No reason has been given for considering one year average YTM for risk free rate;		project was conceptualized in the year 2004. Considering a better subjective view of the market because of reforms that were introduced in the Power Sector after the introduction of Electricity Bill 2001, the proponent has chosen these 3 years as the best assessment period for the project. Please refer to the link: (http://www.rediff.com/money/2003/apr/11hot4.htm). The financial model has been revised to make the beta computation consistent. e) For conservative estimation maturity period of 20 years has been taken for the bond issued by Government for getting clear picture of Risk Free Rate and consistently February 2023 to January 2024 has been considered. f) The investment decision has been taken on the basis		submission CL is closed. e) Risk free rate considered for benchmark calculation is for one year average works out to 6.12 % which is conservative then

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
f) expected return on equity is far in excess of 14%, ROE recommended by HPERC and CERC, and hence cannot be considered conservative; g) In computing WACC, cost of debt has not been adjusted for tax shield and consequently, it represents a mix of post tax and pre tax costs		of ROE being calculated using CAPM, which is a scientific and universally accepted method for calculating return on equity for investment, taking all market risks and scenarios in consideration. g) Please refer to the revised benchmark analysis The VCS PD has also been revised accordingly.		the risk free rate of 6.77 % for the month of February 2023 As this is conservative, it is accepted. CR is closed. f) All input values used for calculating CAPM is checked by validation team and confirmed that the benchmark considered is correct. CL is closed. g) Cost of debt has been corrected. CL is closed

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CL 2.3 Clarify the reasons for considering certain input values based on ‘management assumption’, when the DPR should be containing these values. Moreover, mere ‘management assumptions’ as the basis for input values without being supported by documentary evidence is not acceptable	/PD01/	○ All the input values which have been referred as “Management Assumption” in the VCS PD as well as in the financial model, have been sourced from the Detailed Project Report (DPR), which is approved by Himachal Pradesh State Electricity Board (HPSEB), Government of India. The hard copy of the DPR has been submitted to DOE ○ The financial model and VCS PD (page no. 20-21) have been revised accordingly.	/PD02/	The response is accepted. Validation team has verified the Detailed project report and office order issued by chief engineer, HPSEB according techno Economic Clearance (TEC) based on the DPR to confirm the input values. CL is closed.
CL 2.4 It is observed from the documents enclosed that IREDA has sanctioned loan to the extent of Rs.166 mn. in August 2004 and Rs.25 mn. in March 2008. Clarify whether the project experienced cost over-run and if so furnish the original cost and re-	/PD01/	○ The project has experienced cost over-run. The final cost of the project construction is 354.94 millions, whereas the DPR cost is 328.71 millions. ○ The copy of the DPR and the audit certificate copy of the revised cost has been submitted to	/PD02/	PP has submitted chartered engineers certificate for the cost incurred by the PP. Project cost is also verified from the detailed project report and found to be correct. CL is closed.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
vised cost with break up		DOE. Please refer to the Detailed Project Report (DPR), Financial Data Sheet; Particulars of Capital Cost and the Techno-economic Clearance (TEC) for the Detailed break up of the project cost considered during investment decision and: Detailed break up of Project Cost Overrun.		
CL 2.5 The project cost has been estimated at Rs.328.71 mn. and is projected to be financed by term loan of Rs.230.1mn. and the balance by equity. As per loan documents submitted, IREDA has sanctioned a total amount of Rs.191 mn. in two tranches. In the above background, clarify how the gap in term loan is filled.	/PD01/	○The gap in the term loan has been arranged from the Equity. Please refer to the Detailed Project Report (DPR), Financial Data Sheet; Particulars of Capital Cost and the Techno-economic Clearance (TEC) for the cost considered during investment decision and chartered engineers certificate for Detailed break up of Project Cost Overrun.		A certificate from the Chartered Accountant is furnished giving the financing pattern of the project. Same is verified and confirmed that the project cost considered is correct. CL is closed.
CL 2.6 The EPC contract is reported to have been awarded on 01.01.2005. The investment decision, therefore, must have been taken in November/December 2004.	/PD01/ /XLS01/	○The financial model has been revised accordingly	/PD02/ /XLS02/	Tax rate has been modified. CL is closed

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
Clarify whether the then prevailing tax rate was 33.99% and 11.33%				
CL 2.7 Tariff has been taken at Rs.2.50/kWh. HPERC has fixed the tariff at Rs.2.87/kWh. Clarify whether this tariff is applicable to this project or not.	/PD01/	◦ The tariff defined by HPERC i.e. Rs.2.87/ kWh is not applicable to the project as the project has long term PPA signed with HPSEB @ Rs. 2.50 / kWh. Please refer to the PPA (page no. 16; para 6.2), Please refer to Invoice raised by the project proponent to HPSEB.	/PD 02/	A copy of the latest invoice raised by the company on HPSEB is submitted and cross checked that tariff rate is correct. CL is closed
CL 2.8 While 2 months receivables and 1 month O&M cost is as per the HPERC norms, clarify the basis for assuming 1% of project cost included in the working capital calculations	/PD01/	◦ As per the Central Electricity Regulatory Commission (CERC): Discussion Paper on terms & conditions of tariff (Source: www.cercind.gov.in/Terms_Condition_of_Tariff.pdf , page no 29, point no. 3.4.4), the working capital requirement consist of 1 month of O&M expenses and 2 months of Receivables and 1% of the total project cost with the annual escalation of 6% for provision of maintenance of spare parts.	/PD 02/	Same is verified by the validation team. CL is closed

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CL 2.9 Projections assume 100% bank finance for working capital. Clarify whether this in conformity with accepted banking practice.	/XLS01/	○ The financial model has been revised considering working capital finance 90% from the bank & 10% as margin	/XLS02/	Financial model is revised. CL is closed.
CL 2.10 Clarify the basis for the book depreciation rate and the depreciable amount (90% of the asset value) assumed	/PD01/ /XLS01/	○ As per Himachal Pradesh Electricity Regulatory Commission, F. No HPERC/381, dated 8th June 2004, the maximum depreciation allowed is 90% (Source: http://www.hperc.org/termsc04.doc, page no.7/18, point no 14). ○ The book depreciation rate has been calculated as per Straight Line Method (SLM) considering 90% depreciable value and the assessment period of 30 years.	/PD02/ /XLS02/	Basis of assumption is given by PP. CL is closed.
CL 2.11 Investment has been phased out over 4 years. Normally the implementation period of a SHP does not exceed 1 to 2 years. PP may therefore furnish the basis for phasing	/PD01/	○ The construction period has been considered as around three years and accordingly phasing of investment has been done. The project is lo-		Phasing out of investment is in conformity with detailed Project Report ^{DPR} / Same is cross checked by validation team. CL is closed.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
of investment		cated in the extreme hilly terrain with an isolated geological location. This caused for additional implementation time for the project activity.		
CL 2.12 Clarify how is it appropriate to apply the inflation rate to the O&M costs while keeping the tariff fixed throughout the 20-year period	/PD01/	○ A fixed rate of tariff of Rs. 2.50 has been considered during the financial analysis, which is in line with the Power Purchase Agreement (page no. 16, para 6.2) signed between Himachal Pradesh State Electricity Board (HPSEB) and the project proponent..		Accepted. CL is closed
CL 2.13 Clarify how the project life conforms to Annex 15 of EB 50 and PLF conforms to Annex 11 of EB 48	/PD01/	○ The expected life of the project has been considered as per the Certificate from the Equipment supplier, which is in line with the Annex 15 of EB 50. ○ The project generation has been sourced from the DPR, which is prepared by Dr. Hutarew & Partner (I) Pvt. Ltd., third party contracted by the project proponent. This is in line with the Annex 11 of EB 48 guideline. DPR; Executive sum-		Validation team has reviewed Certificate issued by equipment supplier regarding expected lifetime and is in line with Annex-15 of EB 50. Also projected power generation are sourced from Detailed Project Report prepared by third party i.e. Dr. Hutarew & Partner (I) Pvt. Ltd. and confirms to Annex 11 of EB 48 CL is closed.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
		mary.		
CL 2.14 Since there is a significant gap between the decision making date of the project activity and the commencement of validation (the investment decision should have been taken in 2004 as EPC contract was signed in January 2005 and the DOE was appointed in end 2009), PP may explain how was it possible for the project participant to commit funds to the project in advance of receiving a positive validation opinion.	/PD01/	○ As per “Voluntary Carbon Standard 2007.1 guideline”, page 12, “<i>For non-AFOLU projects, VCS 2007.1 validation shall be completed within two years of the Project Start Date, or shall be completed or contracted before 19 November 2008</i>”. ○ As per the above guideline, the project proponent has engaged the DOE within 2 years from the commencement of the project activity (Please refer to Commissioning certificate dated 2nd April, 2008).		The project may conform to the methodology, but the very fact that the DOE was appointed after the project commenced generation seems to prove that the project is viable even other wise. However, as the project conforms to methodology, CL is closed
CL 2.15 It may be clarified how the VCS benefits were considered essential to overcome the investment barrier to this project activity, in particular that the benchmark represents a rate below which the investment could not be made	/PD01/	○ From the financial analysis, it can be seen that the project return as estimated is much below than the benchmark value. After the consideration of the Emission Reduction (ER) revenue only, project return has been improved and crossed the benchmark. Therefore, ER revenue has become the deciding factor for the project investment decision. A		The submission is accepted. CL is closed

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
		Board meeting was held to justify the project investment decision with the help of the revenue generated from carbon credits. Please refer to the copy of the Board Meeting Resolution (BMR).		
CL 2.16 Following documents/documentary evidence should be submitted: a) Detailed Project Report b) PPA c) Loan sanction letters (complete set) d) Conformity to Annex 11 of EB 48 e) Conformity to Annex 15 of EB 50 f) Board resolution wherein serious consideration of carbon finance was discussed	/PD01/	a) Submitted to DOE; b) Submitted to DOE c) Submitted to DOE d) DPR submitted to DOE e) Certificate from the Equipment supplier is submitted to DOE f) Submitted to DOE.		a) Received b) Submitted to DOE and same is verified c) loan agreement letter is submitted. d) Checked and confirmed e) Checked and confirmed f) Received and verified. CL is closed

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion

3.3 Monitoring Plan

The monitoring plan^{/PD01/} provides detailed information related to the collection and archiving of all relevant data.

The project applies monitoring methodology

AMS-I.D.:” Grid-connected renewable electricity generation” version 15, EB 50

As per paragraph 17 of the methodology, Monitoring shall consist of metering the net electricity supplied by the project activity to the grid. Measurement results shall be cross-checked with records for sold electricity. Hourly measurement and monthly recording are required.

As verified during the site visit, monitored parameter EG_y i.e. net electricity supplied by the project activity to the grid is measured by three phase four wire electronic tri vector meters installed at the interconnection point in 33 KV substation at Jari. Monthly Joint meter readings (JMR) are taken jointly by representatives of Himachal Pradesh State Electricity Board (HPSEB) and PP. Accuracy, calibration, periodical testing and maintenance procedures of monitoring equipment are clearly mentioned in the section 3.4 of VCS PD^{/PD01/PD02/}. Validation team has reviewed the Joint meter Reports^{/JMR/}, Calibration certificates^{/CC/}, Daily log sheets^{/LOG/}, and convinced that the same is adequate, and will lead to correct measurement of the net electricity exported to the grid. Also the HPSEB is a State governmental body and Monthly Generation Statement^{/MGS/} issued by HPSEB is used for commercial purpose and can be considered as authentic and correct. Validation team has validated the same by referring Monthly Generation Statement^{/MGS/} issued by HPSEB.

The following CAR has been raised and is to be closed successfully.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 3.1 As per para 17 of the approved methodology AMS I D V 15, hourly measurement and monthly recording is	/PD01/ /Section-3.4/	The VCS PD (page no. 26) has been revised	/PD02/ /Section-3.4/	Same is verified during the site visit. Same is now included in the revised VCS PD.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
required for the project activity. Though hourly measurements are carried out at site, same is not addressed in the section 3.4 of the VCS PD (page 29,36)				CAR is closed.

3.4 Calculation of GHG Emissions

As per the approved methodology AMS I D Version 15, baseline emission are calculated by multiplying net electricity exported by the project activity in MWh with combined margin grid emission factor.

The combined margin grid emission factor determined ex-ante as 0.84006 t CO₂/MWh and fixed for entire crediting period is found to be correct and conservative as explained in section 4.1 of VCS PD.

The calculation of the project emission, baseline emission and leakage used for calculating the emissions reduction presented in the VCS PD^{/PD01/D02/} section 4 and emission reduction calculation sheet^{/XLS1/XLS2/} is in line with the approved methodology. The calculations were checked by the validation team and found to be correct and presented in transparent manner.

As the project activity does not involve installation of new reservoir, there is no project emission from the project activity. Same is verified by validation team by during site visit and conducting document review.

The leakages are not considered as per the approved methodology.

Total baseline emission is 17,868 tCO₂/year.

Hence Total emission reduction due to project activity is 17,868 tCO₂/year.

3.5 Environmental Impact

As per the Schedule 1 of Ministry of Environment and Forests (Government of India) notification dated 27 January 1994 and further modified on 14 September 2006 mention the Categories of project activities that are required to undertake environmental impact assessment studies.

As verified by the validation team, the proposed project doesn't fall under the list of activities requiring EIA. There are no environmental hazards due to installation of 5 MW hydro project in the region.

The following CAR has been raised and closed successfully.

CAR/CL	Reference	Summary of project owner response	Revised sections (as applicable)	Conclusion
CAR 5.1 Please clarify whether project activity is falling under category A / B1 or B2 as specified by ministry of Env and Forests as per EIA notification 2006.	/VCS PD/ /Section-5/	As per the Schedule of Ministry of Environment and Forests (MoEF), Government of India, Notification dated 14th September, 2006, P - 10, 1 (c), activities which are required to acquire Environmental Clearance, the project activity being a small scale, run-of-the-river hydro-electric project, does not fall under the list of activities (Source: http://envfor.nic.in/legis/eia/so1533.pdf; 1. S.O.1533 (E), [14/09/2006] - Environmental Impact Assessment Notification-2006).		As verified from the Ministry of Env and Forests notification for carrying out EIA, it is confirmed that EIA is not required for small hydro plants. Project activity has already obtained environmental clearance for the project. Same is verified and found OK. CAR is closed.

3.6 Comments by stakeholders

Validation team have checked and found that the stakeholder requirements are not necessary as per the host country requirements vide Ministry of Environment and Forests ^{/imef/} (Government of India) notification dated January 27, 1994 and further modified on 14th September, 2006.

However, local village panchayat meeting was held in presence of project proponent, local villagers, village panchayat members. No objection certificate issued by the local village panchayat. During the site visit, validation team has confirmed that local stakeholders were consulted and there is no adverse comment for the project activity. Proof for local stakeholder consultation process ^{/LSC/} submitted by project proponent was reviewed by validation team.

4 Validation conclusion

Harisons Hydel Construction Co. (P) Limited (HHCCPL) has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: “ 5 MW Brahm Ganga Hydro – Electric Project” at Kullu district of Himachal Pradesh, India” with regard to the relevant requirements of the VCS, as well as criteria for consistent project operations, monitoring and reporting.

The project intends to generate electricity by exploiting the hydro energy potential of the Brahmanga Nallah (Tributary of River Parbati) in Kullu District of Himachal Pradesh, India. The project comprises installation of 5 MW (2 x 2.5 MW) small scale grid connected power generation units. This renewable energy project is based on the run-of-river schem. Net electricity supplied to the grid from the project activity has been estimated to be approx. 21.27 GWh of electricity. The generated electricity will be exported to the NEWNE grid of India. The project started generating commercial power since 2nd April 2008.

The review of the VCS PD and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

A risk based approach has been followed to perform this validation. In the course of the validation 15 Corrective Action Requests (CAR) and 16 Clarification Requests (CL) were raised and successfully closed out.

The validation is based on the VCS PD, proof of title, proof of right, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validator by project proponent.

As a result of the validation, the validates confirm that:

- The project fulfils criteria of VCS 2007.1 provided.
- The project additionality is sufficiently justified in the PD.
- The monitoring plan is transparent, adequate and inline with applied baseline and monitoring methodology of AMS I D, version 15.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 1,78,680t CO₂e (total) is most likely to be achieved within the 10 years renewable crediting period which will be renewed once.

No restrictions or uncertainties were identified related to the validation.

Vadodara, 2010-03-12



Pankaj Patel
TÜV NORD JI/CDM Certification Program

Essen, 2010-03-30



Rainer Winter
TÜV NORD JI/CDM Certification Program

VCS 2007.1_ Validation Report _ 5 MW Brahm Ganga Hydro – Electric Project” at Kullu district of Himachal Pradesh, India

Chapter :5 : Annexure :

Table 5.1: Documents provided by the project proponent

Reference	Documents
/CC/	Commissioning Certificate issued from Himachal Pradesh State electricity Board dated 03/04/2008
/DEC/	Declaration letter from PP regarding confirmation of not creating any other form of environmental credit dated 21/01/2010
/DPR/	Detailed Project Report prepared by Dr Hutarew & Partners (I) Pvt. Ltd
/JMR/	Joint Monthly Metering details.
/LA/	Loan Agreement / document between bank and PP dated 17/08/2004 and 03/03/2008
/LSC/	Proof of local stakeholder consultation:
/PD01/	Initial VCS PD.
/PD02/	Final VCS PD
/PPA/	Power Purchase Agreements dated 08/06/2004
/SC/	Statutory Clearances Forest clearance dated 07/07/2004 Fisheries clearance dated 11/05/2005 Technoeconomic clearance dated 27/06/2002.
/TEC/	Techno economic clearance issued by Himachal Pradesh State electricity Board vide letter HPSEB/CE(C&A)/CC-Brahmganga/2002/2/62/70 dated 27/06/2002
/TS/	Technical specifications
/XLS1/	Initial Excel calculation sheets provided by the project participant.
/XLS2/	Final Excel calculation sheet provided by the project participant

Table 5.2: Background investigation and assessment documents

Reference	Document
/AMS I D/	Grid connected renewable electricity generation .(Version 15)
/ACM 0002/	Consolidated methodology for grid-connected electricity generation from renewable sources

Reference	Document
/TE/	Tool to calculate emission factor for an electricity system.
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/CEA/	CO ₂ Baseline Database for Indian Power Sector –User Guide, Ver 05 published by CEA.
/TA/	Tool for the demonstration and assessment of additionality
/VVM/	Validation and Verification Manual (Version 1.1, Annex 3; EB 51)

Table 5.3: Websites used

Reference	Link	Organisation
/cea/	www.cea.nic.in	Central Electricity Authority, Ministry of Power, Government of India
/imef/	www.envfor.nic.in	Ministry of Environment and Forest,
/imp/	www.powermin.nic.in	Indian Ministry of Power
/NHPC/	http://www.nhpc.nic.in/	National Hydro Electric Corporation Limited.
/unfccc/	http://cdm.unfccc.int	UNFCCC
/VCS/	www.v-c-s.org	VCS website

Table 5.4: List of interviewed persons

Reference	Mol ¹		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Ghanshyam Sood, Director	Harisson Hydel construction Co.(P) Limited (HHCCPL)
/IM01/	V	☒ Mr. ☐ Ms	Suresh Kumar, Manager	Harisson Hydel construction Co.(P) Limited (HHCCPL)
/IM01/	V	☒ Mr. ☐ Ms	K.C.Malhotra. Plant manager	Harisson Hydel construction Co.(P) Limited (HHCCPL)
/IM01/	V	☒ Mr. ☐ Ms	Ajay Sharma, Shift Incharge	Harisson Hydel construction Co.(P) Limited (HHCCPL)

VCS 2007.1_ Validation Report _ 5 MW Brahm Ganga Hydro – Electric Project” at Kullu district of Himachal Pradesh, India

Reference	Moi ¹		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Man Singh, Electrician	Harisson Hydel construction Co.(P) Limited (HHCCPL)
/IM01/	V	☒ Mr. ☐ Ms	Surjeet Chauhan, Fitter	Harisson Hydel construction Co.(P) Limited (HHCCPL)
/IM01/	V	☒ Mr. ☐ Ms	Fatehchand Thakur	Junior Engineer, 33 KV Jari Sub station
/IM02/	V	☒ Mr. ☐ Ms.	Samrat Sengupta	Consultants EIPL
/IM02/	V	☒ Mr. ☐ Ms.	Subrata Chakrabarty	Consultants EIPL
/IM03/	V	☒ Mr. ☐ Ms.	Nathu ram	Panchayat Pradhan, Village-Manikaran

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)