

VERIFIED CARBON STANDARD

RE-VALIDATION REPORT ON RENEWAL OF PROJECT CREDITING PERIOD

86 MW HYDRO PROJECT IN HIMACHAL PRADESH

Report No: 8107173618-11/154

Date: 2012-04-23

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Name of Verification company:	Date of the issue:
TÜV NORD CERT GmbH	2012-04-23
Report Title:	Approved by:
86 MW Hydro Project in Himachal Pradesh	Mr. Stefan Winter
Client:	Project Title:
Malana Power Company Limited	86 MW Hydro Project in Himachal Pradesh
Summary:	
Malana Power Company Limited has commissioned the TÜV NORD JI / CDM Certification Program to carry out the re-validation of the Project “86 MW Hydro Project in Himachal Pradesh” located in Jari village of Kullu district of Himachal Pradesh, India with regard to the requirements of VCS Standard version 03.2. The project activity is generation of electricity by installation of renewable hydropower project to displace electricity generated by fossil fuel based thermal power plants in NEWNE Grid, thus achieves GHG emission reduction. The scope of this engagement covers the validation and assessment of requirements for renewable of project crediting period in-compliance with clause 3.9.5 of VCS standard version 03.2. The validation is given as an independent and objective review of the validity of the baseline scenario, regulatory surplus of project activity, project description and monitoring plan (based on approved methodology ACM0002 / Version 12.1.0, Sectoral Scope: 1, EB 58), which are included in the PD^{/PD2/} and other relevant supporting documents. In the course of the validation, eight (08) Corrective Action Requests (CARs) were successfully closed and one (01) Forward Action Request (FAR) will be verified during the first periodic verification. The validation is based on the Project Document (PD^{/PD2/}), validation report^{/VAL/}, emission reduction calculation spreadsheet^{/XLS2/} and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant. As a result of the validation, the validation team confirms that: 1. The project is considered as a regulatory surplus and is not mandated by any local or national laws or any other regulatory framework. 2. The original baseline scenario i.e. “Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources” as ruled out in applied methodology i.e. ACM0002, version 06 is still completely valid. 3. The on-site monitoring procedures and GHG emission reduction calculations are completely in-compliance with latest approved methodology i.e. ACM0002, version 12.1.0. 4. The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions can be achieved within the second (10 years) period crediting period. As the result of the validation, the validation team confirms that the project, as it was described in the project documentation, is in line with all scope of current version of VCS standard version 03.2.	



Baseline Emissions	2755320 t CO ₂ eq
Leakage	0 t CO ₂ eq
Project Emissions	0 t CO ₂ eq
Total Emission Reduction estimated for 2 nd crediting period	2755320 t CO ₂ eq
Work carried out by:	Number of pages:
Mr. Pankaj Mohan(TL) Mr. Archak Pattanaik(TL- till 07/10/2011) Mr. Ashwin A.s.(TM) Mr. Vishnu Patidar(TM – till 09/09/2011)	48

Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO₂	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
KW	Kilo Watt
KWh	Kilo Watt Hour
MPCL	Malana Power Company Limited
MW	Mega Watt
MWh	Mega Watt Hour
NEWNE	North East West North East regional grid
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCS - PD	VCS - Project Description
VCU	Voluntary Carbon Unit
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

The purpose of a re-validation is to have an independent third party assessment of additionality (particularly, regulatory surplus) and baseline scenario. In particular, the project's compliance with

- the requirements of the VCS Standard Version 03.2;
- the requirements of the approved methodology;
- relevant rules, including the host country legislation

are validated in order to confirm that the project additionality, baseline scenario, project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Voluntary Carbon Units (VCUs).

1.2 Scope and Criteria

The re-validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the latest approved methodology, the project's baseline study, additionality justification (particularly, regulatory surplus) and monitoring plan as per latest approved applicable methodology, which are included in the PD other relevant supporting documents, to ensure that the VCS project activity meets all relevant and applicable VCS standard version 03.2 criteria.

The information included in the PD and the supporting documents were reviewed and assessed against the requirements as set out by the VCS standard version 03.2.

The re-validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions. TÜV NORD JI/CDM CP can not be held liable by any entities for making its validation opinion based on any false or misleading information supplied to it during the course of validation.

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

1.3 VCS Project Description

1.3.1 Project Characteristics

Essential data of the project is presented in the following Table 1-1.

Table 1-1: Project Characteristics

Item	Data			
Project title	86 MW Hydro Project in Himachal Pradesh			
Project owner	Malana Power Company Limited			
Project categories	☒ Projects (less than or equal to 1,000,000 tCO ₂ per year) ☐ Mega Projects (Greater than 1,000,000 tCO ₂ per year) ☐ AFOLU project ☐ Grouped project			
VCS PD dated	Draft:	2010-10-05	Final:	2011-05-06
Applied Methodology	ACM0002, version 12.0			
Project starting date	2001-07-05			
Start of 1 st crediting period	2001-07-05			
Start of 2 nd crediting period	2011-07-05			
2 nd Crediting period	Ten years (2011-07-05 to 2021-07-04)			

1.3.2 Project Location

The details of the project location are given in table 1-2:

Table 1-2: Project Location

No.	Project Location
Host Country	India
Region:	Himachal Pradesh
Project location address:	Jari village, Kullu district
Latitude (Power house)	32° 0' 12" N
Longitude (Power house)	77° 14' 30" E

1.3.3 Technical Project Description

The project is a grid connected hydro power plant which is run of the river type with a small reservoir. It involved construction of a barrage across Malana river, 3 Km downstream of Malana village, a head regulator, a de-silting basin storage reservoir to divert water draft of 21 cumecs through a 3.2 Km long headrace tunnel, ending in a 5 m diameter surge shaft.

The water discharged is channelled through a 2.85 m wide D- shaped pressure tunnel or head race tunnel. At the end of headrace tunnel, a surge shaft has been provided which is 72 m high and has an orifice diameter of 1.4 m to certain the height of surges.

A vertical pressure shaft of 2.5 m diameter followed by a steel lined horizontal pressure tunnel of 2.2 m diameter which runs down the hill slope and bifurcates into two branches of 1.5 m diameter each to feed the two vertical axis type Pelton units. To exploit the net head of 480 meters, a power house has been created with two units of 43 MW each and is also housing the step-up transformer. The generated electricity is fed into NEWNE grid through 132 KV transmission lines.

The key parameters of the project are given in table 1-3:

Table 1-3a: Technical data of the project

Parameter	Unit	Value
Capacity of Reservoir	cubic meter	2,35,000
Diameter of Penstock	meter	2.2
Design Discharge	cubic meter/ second	21
Head race tunnel	meter	One head race tunnel with 3280m length
Installed Capacity	MW	86
Size of Power House	-	55m X 18.7m X 28.9 m
Type of Turbines	-	Pelton , Vertical Axis
Generating Units	-	2 Units of 43 MW each
Maximum Gross Head	meter	505

Table 1-3b: Parameters confirmed during validation

Parameter	Name	Unit	Value
Net energy Generated by Malana HEP(kwh) and injected into NEWNE grid (during 2010-04-01 to 2010-09-30)	EG _y	MWh	264,437.490
Toss HEP electricity injected into Malana yard (2010-04-01 to 2010-09-30)	EG _{y Toss}	MWh	32,683.131

1.3.4 Appointment of team members and technical reviewer

On the basis of a competence analysis and individual availabilities a validation team was appointed. Furthermore also the personnel for the technical review and the final approval was determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 1-4 below.

Table 1-4: Involved Personnel

	Name	Company	Function ¹⁾	Qualification Status ²⁾	Scheme competence	Technical competence ⁴⁾	Host country Competence	Team Leading competence
☒ Mr. ☐ Ms.	Pankaj Mohan ¹	TUV India Pvt. Ltd.	TL ^{A)}	LA	☒	S	☒	☒
☒ Mr. ☐ Ms.	Archak Pattanaik ²	TUV India Pvt. Ltd.	TL ^{A)}	LA	☒		☒	☒
☒ Mr. ☐ Ms.	Ashwin A. S.	TUV India Pvt. Ltd.	TM ^{A)}	A	☒		☒	☐
☒ Mr. ☐ Ms.	Vishnu Patidar ³	TUV India Pvt. Ltd.	TM ^{A)}	A	☐		☒	☐
☒ Mr. ☐ Ms.	Samir Beqqal	TUV Nord Germany	TR ^{B)}	LA	☒		☐	☒
☒ Mr. ☐ Ms.	Stefan Winter	TUV Nord Germany	TR ^{B)} /F A	SA	☒	S	☐	☒

1) TL: Team Leader; TM: Team Member; TR: Technical review; OT: Observer-Team; OR: Observer-TR; FA: Final approval

2) GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

3) GHG auditor status (at least Assessor)

4) As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

1.4 Level of Assurance

The validation has been planned and organized to achieve a

☒ reasonable level of assurance

☐ limited level of assurance.

¹ Team Leader from 10th October 2011, Monday. Team member till 10th October 2011

² Team Leader till 07th October 2011, Friday.

³ Team member till 10th September 2011, Friday.

2 METHODOLOGY

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- A desk review of the VCS PD^{/PD/} submitted by the client and additional supporting documents with the use of customised validation protocol
- Validation planning
- On-Site assessment
- Background investigation and follow-up interviews with personnel of the project developer and its contractors
- Draft validation reporting
- Resolution of corrective actions
- Final validation reporting
- Technical review
- Final approval of the re-validation.

The sequence of the validation is given in the table 2.1 below:

Table 2.1: Validation sequence

Topic	Time
Assignment of re-validation	2010-09-06
On-site visit	2010-10-20
Draft reporting finalised	2011-03-21
Final reporting finalised	2012-04-23
Technical review on final reporting finalised	2012-04-20
Final corrections	-

The main re-validation steps are described below.

2.1 Review of Document

The initial VCS PD^{/PD1/}, final VCS PD^{/PD2/} and supporting background documents related to the project's additionality and baseline were reviewed.

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

The references used in the course of this re-validation are summarized in section 5.

2.2 Follow-up Interviews

The validation team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

During re-validation, the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in Table 2-2.

Table 2-2: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives Project consultant (Ref. Table 5.4)	- Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project - Monitoring and measurement equipment and system - Deviations - Crediting period - Project activity starting date - Ownership - Baseline study assumptions - National E+/E- Policies - Additionality - Monitoring - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - Editorial issues of the VCS PD

A comprehensive list of all interviewed persons is part of section 5 'References'.

2.3 Resolution of any material discrepancy

Material discrepancies identified in the course of the validation are addressed either as CARs, CLs or FARs.

A **Corrective Action Request (CAR)** is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

A detailed list of the CARs CLs and FAR raised and discussed in the course of this validation is included in the next section 3 of this report.

3 VALIDATION FINDINGS

In this section the assessments and findings from the desk review of the VCS PD, site visit, interviews and supporting documents as well as the final assessments are summarised. Table 3-1 includes an overview of all raised CARs, CLs and FARs.

Table 3-1: Overview of CARs, CLs and FARs issued

No.	Topic / Chapter	CAR	CL	FAR
3.1.1	Technology			
3.1.2	Project duration, crediting time and project start date			
3.1.3	Ownership / Proof of title			
3.1.4	Double counting			01
3.1.5	Project participation / rejection in other emission trading programme			
3.1.6	VCS Eligibility			
3.1.7	General Aspects of the PD	01		
3.2.1	Application of latest approved version of a baseline and monitoring	01		
3.2.2	The validity of the original baseline scenario or its update			
3.2.3	An impact of new relevant national and/or sectoral policies and circumstances on the baseline scenario			
3.2.4	Correctness of the application of the approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the respective crediting period	01		
3.2.5	Assessment and demonstration of additionality	01		
3.3.1	Validity of the monitoring plan	01		
3.3.2	Collection and archiving of relevant monitoring data			
3.3.3	Responsibility and authority for monitoring	01		
3.4.1	Appropriateness of source, sink and reservoir	01		
3.4.2	Correctness and transparency of formulae and factors used			
3.4.3	Assumptions made for GHG ER estimations	01		
3.4.4	Uncertainties			
	SUM	08	0	01

3.1 Project Description

3.1.1 Technology

Description

- The basic characteristics of the implemented technology have been described in section 1.3.3 of this report. The VCS-PD^{/PD2/} addresses the project description in sections 1.1 and 1.8. On the basis of the on-site observations and interviews^{/IM01/} and investigation of supporting background documents^{/LOG//JMR//CAL//TD/} related to the project implementation, project design and baseline were reviewed, thus, validation team confirmed that the project has been implemented as described in the Project Design Document^{/PDD/} validated as per VCS V01 and is grandfathered to VCS Standard Version 03.2^{/VCS//RMP/}. There is no change in the key equipments as described in Table 1-3a of this report.
- The validation team has assessed the technological project description against the requirement of § 5 of VCS Programme 2007.1 update, dated 2010-01-21 as well clause 3.9.5 of VCS version 03.2 and checked whether the given description is in line with the site visit findings and the VCS requirements (clause 3.9.5 of VCS version 03.2).

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

Final Assessment

The description of the project technology as contained in the VCS-PD^{/PD2/} is complete and accurate and it provides the reader with a clear understanding of the nature of the project activity.

Moreover additional documentation, such as technical details of hydro turbines, generation records^{/JMR//LOG/} has been provided by the project participant to back up details and technical specifications of the project^{/TD/}.

- ☒ The project technology and the description of the same are in line with the applicable VCS criteria.

3.1.2 Project duration, crediting time and project start date

Description

Based on Project Design Document^{/PDD/} validated as per VCS V01, The project lifetime is estimated to be 40 years. The crediting period starting date was considered as 2001-01-05. This is the first day on which the successful commissioning of the run-off-river hydro plant was done and thus the project starts to reduce / remove GHG emissions.

The first crediting period starting date was on 2001-07-05 which ends on 2011-07-04. The project participant has chosen a 10 year crediting period. However, as per VCS PD template 19 November 2007, crediting period can be renewed at most two times. Thus, 2nd crediting period starting date is considered as 2011-07-05.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

Final Assessment

Related evidences like commissioning certificates of TG's issued by BHEL^{/CC/}, implementation agreement, technological details of hydro turbines^{/TD/} etc. have been checked and found suitable to support the statements in the PD.

- ☒ The project duration, crediting time and the project starting date are in line with the applicable VCS criteria.

3.1.3 Ownership / Proof of title

Description

In the VCS-PD^{/PD1//PD2/} **Malana Power Company Limited** is mentioned as the owner of the project inline with VCS Project Design Document^{/PDD/} validated as per VCS V01 and thus claims the right on the carbon credits derived from this project.

However, re-assessment of **Ownership / Proof of title** is not required as per § 5 of VCS Programme 2007.1 and update dated 2010-01-21 (both which were applicable at the start of revalidation process) and clause 3.9.5 of VCS version 03.2.



Still, the validation team has confirmed that the ownership has been established as unchanged, evidenced from the JMR^{/JMR/} and site visit interviews^{/IM01/}. Malana Power Company Limited has the proof of title.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

Final Assessment

Re-assessment of **Ownership / Proof of title** is not required as per § 5 of VCS Programme 2007.1 update, dated 2010-01-21 and clause 3.9.5 of VCS version 03.2.

- ☒ The proof of title could be confirmed.

3.1.4 Double Counting

Description

As per the statement of the PP in section 1.13 of the VCS PD^{/PD1/} (section 1.12 of the VCS PD^{/PD2/}), the project is not participating and/or intends to participate in another emission trading program. Hence no double counting applies for this project.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	3.1.4-1		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding	An undertaking is to be submitted that the project is not a part of any other GHG scheme, and that emission reductions accrued to the project is used only in any one scheme. This is to ensure there is no double counting.		



Corrective Action #1	Undertaking stating that the project is not a part of any other GHG scheme, and that emission reductions accrued to the project is used only in one scheme have been attached as Annexure-1
DOE Assessment #1	The PP has provided undertaking dated 2011-03-08 which clearly and transparently mentions that project has not been rejected and also not created any other form of environmental credits (other than carbon credits under VCS programme) ^{/UND/} . In order to minimize the risk of double counting, the verifying DOE will check at the time of each periodic verification that emission reductions are not claimed or intended to claim for the same monitoring period in other GHG program.
Conclusion	☒ To be checked during the first periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

As per the provided document i.e. undertaking^{/UND/}, no claim will be made for emission reductions (other environmental credits) under two GHG programs. Nevertheless in case of changes in the legal framework in the future, this needs to be re-assessed. Thus, a FAR 3.1.4-1 is raised for the same.

- ☒ There is (currently) no double counting and thus the project is in line with the requirements of the VCS.

3.1.5 Project participation / rejection in other emission trading programme

Description

This issue is addressed in section 1.14 and 8.2 of the VCS-PD^{/PD1/} (section 1.12 of the VCS PD^{/PD2/}).

No information is included that the project has been rejected under any other GHG programme.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Pls. refer section 3.1.4 of this report.

Final Assessment

During interview^{/IM01/} and website investigation and document review^{/UND/}, no evidences were found which indicates that project was rejected under any other GHG programme.

At this stage of the project the undertaking^{/UND/} as described in the PD is considered to be sufficient proof that the project does not rejected in other emission trading programme.

- ☒ The project is in line with the VCS requirements w.r.t. this issue.

3.1.6 VCS Eligibility

Description

As per information provided by the PP in section 1.6, 1.7, 1.12 and 1.13 of the VCS PD^{/PD2/}, the project meets all VCS Standard Version 03.2 eligibility criteria.

The validation team has checked the project activity against the applicable criteria.

However, re-assessment of **VCS eligibility** for renewable of project crediting period except project additionality (regulatory surplus) and baseline scenario is not required as per § 5 of VCS Programme 2007.1 update, dated 2010-01-21 and clause 3.9.5 of VCS version 03.2.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

Final Assessment

As

- the project starting date is after 2002-01-01
- the reduced GHG is one of the 6 Kyoto gases
- an approved CDM methodology was used^{/ACM0002/}
- the 1st crediting period starts on 2001-07-05 (VCS 01)
- the 2nd crediting period starts after 2006-03-28 (on 2011-07-05) (VCS standard version 03.2)

the validation team arrives at the conclusion that all applicable eligibility criteria are met.

☒ The project meets all VCS eligibility criteria.

3.1.7 General aspects of the PD

Description

The VCS PD^{/PD1/} has been drafted on the basis of the VCS PD template^{/VCS-PD-T/} dated 2007-11-19 as available on the VCS website^{/vcs/}. The validation team has thoroughly reviewed the VCS PD^{/PD1/} and found that all the sections of the VCS PD^{/PD1/} are fully filled as per the template^{/VCS-PD-T/} all aspects have been appropriately addressed.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	3.1.7-1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding	The VCS PD has to be updated in VCS version 3 PD template. Also a consolidated CAR is raised on the VCS PD prepared in VCS 2007.1 version. - Section 1.5 of the VCS PD should include GPS Coordinates' up to second's level. - Table and figures are not numbered and captioned. - The project start date as mentioned in section 1.6 of VCS PD (submitted for renewal in crediting period) is contradictory with same provided in the V01 PDD^{PDD/} validated as per VCS V01. Also, project start date needs to be clearly demonstrated in section 1.6 of VCS PD. - Operational life time of the project activity needs to be substantiated by authentic documents and shall be referred in section 7 of VCS PD. - PP is requested to provide full form of acronym on its first instance of its use in the VCS PD. - PP needs to list out all the approvals relevant to the proposed project with date of approval and issuing authority in section 1.10 of PD. - A brief description of the project activity i.e. purpose of the project activity should be added in section 1.2 of the PD. - Some of the web-links provided in VCS PD are not executable. Kindly update. - Section 1.16 of the VCS PD should include all information's i.e. legislative, site-specific and temporal information etc.		
Corrective Action #1	- GPS Coordinates' up to second's level have been incorporated in the section 1.9 of the revised VCS-PD version 2. - Table and figures have been numbered in the revised VCS-PD version 2. - There was a typo error which has been corrected in the section 1.5 of the revised VCS-PD version 2. - Operational life time of the project activity is 40 years which has been substantiated by implementation agreement with Himachal Pradesh Government. . - Full form of acronym has been included in the beginning (page# 4) of revised VCS-PD version 2. - All relevant approval required to go forward has been included under section 1.11 of revised VCS-PD version 2. - A brief description of the project activity i.e. purpose of the project activity have been included in the section 1.8 of the revised PD version 2. - Web link in the revised VCS-PD have been updated		

	9. All information required as per VCS PD has been provided in the revised PD version 2.
DOE Assessment #1	1. The latitude and longitude (GPS coordinates) of the project activities are now updated up to second's level in section 1.9 of the PD^{/PD2/} and checked through web-search and found correct. Validation team has also assessed the location of project activity during on site visit. 2. Captions are found inserted throughout the revised VCS PD^{/PD2/}. The raised finding is closed. 3. The project start date is now corrected to 2001-07-05 as the date on which the successful commissioning of unit 2 (43 MW) has been done by BHEL and thus the project starts to reduce / remove GHG emissions. Validation team has checked the commissioning certificate of 43 MW. Thus, the raised finding of CAR is closed out. 4. Operational life time of the project activity is substantiated by implementation agreement between Governor of Himachal Pradesh and Rajasthan Spinning & Weaving Mills Ltd. (a group company of LNJ Bhilwara, later-on known as Malana Power Company Limited) which states as commercial operational period as 40 years. However, evidenced from manufacturer (BHEL) needs to be submitted. Thus, the raised finding of CAR is open. 5. All the acronyms are now properly described in the revised VCS PD^{/PD2/}. The finding is closed. 6. The relevant regulatory approvals are included in the section 1.11 of revised VCS PD^{/PD2/}. The finding is closed. 7. Although the template of VCS PD is revised based on VCS standard version 03.2, a brief description of purpose of the project activity is reflected in section 1.8 of the revised VCS PD^{/PD2/}. The finding is closed. 8. Web-links provided in revised VCS PD^{/PD2/} are correct and executable. The finding is closed. 9. Since, the template of VCS PD is revised based on VCS standard version 03.2; the raised finding is no more valid. The finding is closed. However in the course of revalidation, the following findings are observed: 10. Project title is not consistent with the previous PDD and also not inline with international SI unit standard

	("Mw" ≠ "MW") 11. Section 4.3, paragraph Energy supplied to Grid: PP is referring for the auxiliary consumption calculation to section 3.3 in PD, but this section is related to leakage. 12. Section 1.8: the emission reduction over the whole crediting period is listed as 2,899,830 tCO₂ but this value is not consistent with the calculated one in the excel sheet "Revalidation Malana Hydro Version 2" and table 1 in section 1.7 of the PD. 13. The project is not updated as per the latest applicable VCS version 3.2
Corrective Action #2	10. Project title has been made in line and consistent with previous PDD in revised PD. 11. There was a typo error in section 4.3 while referring for auxiliary consumption calculation. Correct reference, i.e. section 4.2, has been incorporated in the revised PD. 12. There was a typo error in section 1.8 of the PD. It has been made consistent with excel sheet "Revalidation Malana Hydro Version 2". Correct estimated value of emission reduction over the whole period is 2755320. Same has been incorporated in the revised PD. 13. It has been ensured to follow latest VCS standard version 3.2.
DOE Assessment #2	10. The project title is now in line with the validation PDD during VCS 1, and also is in line with international accepted SI units. #10 of the CAR is closed. 11. The typo error regarding reference to the section in the PD has been rectified. Now the correct section is referenced. #11 of the CAR is closed. 12. The error in depicting the estimated ER is now found corrected. The same is found to be now consistent through out the document. #12 of the CAR is closed. 13. The project documents are found to be updated as per VCS version 3.2 now. #13 of the CAR is closed.
Conclusion	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

All raised CAR / CL have been addressed appropriately.

☒ The PD is in line with the applicable guidelines to fill the VCS-PD template.

3.2 Baseline

3.2.1 Application of latest approved version of a baseline and monitoring methodology

Description

The project was originally validated based on version 06 of ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". For the renewal of crediting period, the revised VCS PD^{/PD2/} dated 2011-05-06 rightly applies the latest versions of the approved baseline methodology (Version: 12.1.0; EB 58)^{/ACM0002/}.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	3.2.1-1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding	The latest version of the applied methodology, i.e. ACM0002 version 12.1.0 has to be used in the revalidation and renewal of crediting period. Cp VCS Policy Guidance dated 21 January 2010.		
Corrective Action #1	Revised revalidation report version 2 has been updated according to the latest version of the applied methodology, i.e. ACM0002 version 12.1		
DOE Assessment #1	As per section 2 of the revised PD ^{/PD2/} , the UNFCCC, CDM EB approved methodology i.e. ACM0002, version 12.1.0 has been applied. Validation team has checked the validity of the applied methodology version on UNFCCC website and found that the applied version of the methodology is latest and valid from 2010-		



	09-17 Thus, the CAR is closed out.
Conclusion	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

ACM0002, version 12.1.0 is approved CDM methodology which is valid. No revisions thereof have been applied. Thus this methodology is applicable for project activity under the VCS.

☒ The applied baseline methodology is duly approved.

3.2.2 The validity of the original baseline scenario or its update

Description

Based on VCS Project Design Document^{/PDD/} validated as per VCS V01 (for 1st crediting period), baseline scenario was established based on ACM0002, version 06.

Validation team confirms that there have been no changes in the relevant national and/or sectoral regulations since the previous (first) crediting period and the original baseline scenario is still valid for 2nd crediting period.

The following steps from the “Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period” from the CDM-EB “Procedures for renewal of the crediting period of a registered CDM project activity”, version 6(EB 63, Annex 29) were applied:

Step 1 – Assess the validity of the current baseline for the next crediting period

Step 1.1 – Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

Validation team confirmed by assessing CEA website^{/cea/} and prevailing CEA regulations i.e. Electricity Act 2003, that no relevant mandatory national and/or sectoral policies applicable to the project activity came into effect after the submission of the project activity for VCS validation (2007-04-25). Central Electricity Authority (CEA) is a statutory body constituted under the erstwhile Electricity (Supply) Act, 1948, hereinafter replaced by the Electricity Act 2003, where similar provisions

exists, functions under Ministry of Power. The CEA is responsible for the technical coordination and supervision of programmes and is also entrusted with a number of statutory functions laid out by Electricity Act 2003.

Based on latest available CEA database, version 06^{/CEA-06/}, Installed capacity is predominantly consisting of coal based (Thermal power plants) with 102453.98 MW capacity as compare to installed capacity of 36863.40 MW and 4560 MW in hydro and nuclear sector respectively. Thus, fossil fuel grid power is available in abundance in the region. Therefore, thermal power generation is a major source of CO₂ emission in India; hence, baseline scenario is the same that was valid at the time of the project's validation process.

Step 1.2 – Assess the impact of circumstances

Validation team confirmed that no mandatory national and/or sectoral policies were enforced and for the renewable electricity generation, baseline scenario could be confirmed from CEA data base version 06^{/CEA-06/} that the circumstances in India remain the same as the ones valid at project validation at the time of first crediting period. However, the northern regional grid was unified into a common grid i.e. NEWNE grid and emission factor of NEWNE grid has been revised as detailed out in step 2.2. Thus, validation team confirmed by assessing CEA website^{/cea/} that no changes in relevant circumstances applicable to the project activity came into effect after the submission of the project activity for validation.

Step 1.3 – Assess whether the continuation of the use of current baseline equipment(s) is technically possible

This step is not applicable as the baseline is not the continuation of the use of current baseline equipment(s) in the sense of EB 46, Annex 11.

Step 1.4 – Assessment of the validity of the data and parameters

The baseline grid emission factor for northern grid is calculated ex-ante for the first crediting period and same needs to be updated, as per the "Tool to calculate the emission factor for an electricity system, Version 02.2.1 (EB 63 annex 19).

Step 2 – Update the current baseline and the data and parameters

Step 2.1 – Update the current baseline

Not applicable, since the original baseline scenario remains valid as demonstrated in step 1 above.

Step 2.2 – Update the data and parameters

The identification of the baseline scenario has been carried out as per corresponding section II of the applied monitoring methodology ACM0002 “consolidated baseline methodology for grid-connected electricity generation from renewable sources”^{ACM0002/}, version 12.1.0. The baseline scenario is identifies as:

“Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the .Tool to calculate the emission factor for an electricity system”.

Thus, based on the definition of the grid “Power plant/unit that supplies electricity to an electricity grid”, the northern regional grid (as defined in the validated VCS PDD^{PD/}) was unified into a common grid i.e. NEWNE grid^{CEA-06/}, thus grid emission factor ($EF_{grid,CM, y}$) is updated based in the most recent information available at the time of the revalidation start from CEA data base, version 06^{CEA-06/}.

Thus, according to the “Tool to calculate the emission factor of an electricity system”, version 2.2.1, EB 63 Annex 29, the NEWNE grid emission factor ($EF_{grid,CM, y}$) is updated ex-post, as described in chapter 3.4.2 of this report.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Final Assessment

The original baseline scenario remains valid as demonstrated in step 1 in-line with EB 63, Annex 29. Also, all applicable the data and parameters ($EF_{grid,CM, y}$) are updated based on latest available CEA data base version 06.

- ☒ The project activity is in line with the applicability criteria of clause 3.9.5 of VCS standard, version 03.2.

3.2.3 An impact of new relevant national and/or sectoral policies and circumstances on the baseline scenario:

Description

There are no new relevant national or sectoral policies and circumstances on the baseline scenario, since the applicable ones were already in place at the time of the project validation. See previous section 3.2.2 for further discussion.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

Final Assessment

There are no new relevant national or sectoral policies and any circumstances which might affect the baseline scenario.

- ☒ The original baseline scenario remains valid as demonstrated in line with EB-46, Annex 11 and thus in compliance with the clause 3.9.5 of VCS standard, version 03.2.

3.2.4 Correctness of the application of the approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the respective crediting period

Description

The project applies the approved baseline methodology ACM0002, version 12.1.0–“Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, in combination with “Tool to calculate the emission factor of an electricity system”, version 2.2.1, EB 63 annex 19 for the grid emission factor calculation.

The justification of the choice of the applied methodology is given in section 2.2 of



the VCS-PDD^{/PD1//PD2/}. As per this section all applicable criteria of the applied methodology are justified and thus as per this section all applicable criteria met.

Validation team confirmed during the site visit that the project meets the applicability conditions of ACM0002, version 12.1.0, such as-

- The project activity is green-field project which involves installation of a new grid connected run-of-the river hydro power project and does not involve construction of reservoir with stagnant water. Still, the construction of gravity dam creates some storage area, thus, in accordance with ACM0002; the power density of project activity is calculated. The power density at full reservoir level has been arrived as 4712.32 W/m².
- The estimated amount of GHG emission reductions from the project is 2,755,320 tCO₂e during the second crediting period (10 years) from 05 July 2011 to 4 July 2021, resulting in estimated average annual emission reductions of 275,532 tCO₂e. For an assessment of the ex-ante emission reductions estimates, please refer to chapter 3.2.4 of this report.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	3.2.2-1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding	1. PP is requested to properly demonstrate the applicability criteria #3 of the applied methodology ACM0002, version 12.1.0 with proper justifications. 2. As per section 2.3 of VCS PD, methane (CH₄) is considered as main emission source of the project activity still not included as project emissions. Thus, clarifications and proper corrections shall be provided for the same.		
Corrective Action #1	1. Applicability criteria # 3 of the applied Methodology ACM0002 Version 12.1.0 has been demonstrated in the section 2.2 of the revised VCS-PD version 2. 2. There was a typo error which has been corrected in the revised VCS-PD. Since project activity is run of the river so methane (CH₄) has been excluded as main emission sources.		



DOE Assessment #1	1. Although the project activity is a run-off-the-river project and not involve construction of reservoir with stagnant water. Still, the construction of gravity dam creates some storage area, thus, in accordance with ACM0002; the power density of project activity is calculated. The power density at full reservoir level has been arrived as 4712.32 W/m². The calculation has been verified by the validation team and the same is reflected in revised PDD^{PDD2/}. Moreover the power density is greater than 4 W/m² which is also in compliance with the applied methodology. Validation team has checked the detailed engineering drawing in support for above. Thus the finding is closed out. 2. The said error is removed in revised VCS PD^{PD2/}. Moreover, as demonstrated above, the power density of the project is far greater than 4 W/m², which again substantiate laxity of methane (CH₄) emission. Thus the finding is closed out.
Conclusion	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

The project applies the latest and approved baseline methodology ACM0002, version 12.1.0. The applicability criteria and the assessment thereof are summarized in table 2 section 2 of VCS PD^{PD2/}. All applicable applicability criteria have been duly addressed in the VCS-PD. The validation team arrived at the conclusion that all applicability criteria are met, considering the above mentioned deviation.

- ☒ The approved baseline methodology for the determination of the continued validity of the baseline or its update is correctly applied. The baseline identification is in line with the applicable VCS criteria.

3.2.5 Assessment and demonstration of additionality

Description

Based on clause 2.5 of VCS standard, version 03.2, full re-assessment of **project additionality** for renewable of project crediting period not required. However, in accordance with section 2.5 (regulatory surplus), PP has demonstrated that the project activity is not mandated by any enforced law, statute or other regulatory

framework and is thus regulatory surplus. Validation team has assessed the **Regulatory Surplus** applicable to the project activity in-line with EB 22, Annex 3.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	3.2.5-1
Classification	☐ CAR ☐ CL ☐ FAR
Description of finding	VCS PD shall clearly and transparently demonstrate the additionality w.r.t. Regulatory Surplus applicable to the project activity in details. Cp VCS policy guidance dated 21 January 2010.
Corrective Action #1	The project activity is not mandated by any enforced law, statute or other regulatory framework. And project activity is in compliance with applicable laws and regulations. Same is mentioned in section 2.5 of the revised VCS PD.
DOE Assessment #1	As discussed in section 3.2.2, no relevant mandatory national and/or sectoral policies applicable to the project activity came into effect after the submission of the project activity for VCS validation. Based on the requirements of EB 22, Annex 3 and EB 54, Annex 3 (Draft), validation team has undergone through background research^{/USEA/} and assessed national and sectoral specific policies of Ministry of Power^{/mop/}, Ministry of New and Renewable Energy^{/mnre/}, Himachal Pradesh Energy Development Agency^{/him/} etc. Following are the relevant policies from Indian laws which relates to promotion of renewable energy; 1. The Electricity Act 2003 2. The National Electricity Policy 2005 3. the National Tariff Policy 2006 In line with EB 22, Annex 3 and clause 4.6.1 of VCS standard, version 03.2, we need not to assess all E⁻ policies since November 2001 in additionality demonstrations. Validation team confirmed that there were not any policies before 11 November 2001 that gives comparative advantage to less emission intensive technologies i.e. hydro power project and also project activity is not mandated by any enforced laws or any regulatory framework, therefore, project activity is regulatory



	surplus. Hence, the CAR is closed out.
Conclusion	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

In line with EB 22, Annex 3 and clause 4.6.1 of VCS standard, version 03.2, project activity is not mandated by any enforced laws or any regulatory framework and also there were not any policies before 11 November 2001 that gives comparative advantage to less emission intensive technologies. Thus, inclusion of all E⁺ policies since November 2001 in additionality demonstrations is not required. The project is regulatory surplus.

☒ The project is regulatory surplus.

3.3 Monitoring Plan

3.3.1 Validity of the monitoring plan

Description

The approved monitoring plan of the methodology ACM0002 Version 12.1.0 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" / ACM0002/ has been applied.

As per section III of applied methodology, PP has described the monitoring plan in section 4 of the VCS PD^{/PD2/}.

Validation team confirmed that the on-site monitoring procedures are in-line with the revised approved monitoring plan^{/RMP/}, dated 2009-12-07.

The grid emission factor is calculated from the database developed by Central Electricity Authority (CO₂ Baseline database for the Indian power sector, Version 6.0). The database is Government of India's official publication. Validation team has checked the calculation of EF_{CM,grid, y} and found in-line with 'Tool to calculate the emission factor for an electricity system', version 2.2.1.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	3.3.1-1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding	- Section 3.2 of the VCS PD should include the complete information's related to project activity monitoring (Cp. VCS PD Template). - In section 3.3 of the PD, Pl. separate out and specify the parameters which are available at validation (ex-ante fixed value) and the monitoring parameters for the crediting period. - Section 3.2 of VCS PD shall demonstrate the negligence of project emissions with supportive evidences. - Pls. mention the value of data applied for the purpose of calculation of expected emission reductions for 2nd crediting period for all parameters (Cp. VCS PD Template). - Pls. Include all monitoring parameters i.e. Cap_{PJ}, A_{PJ} etc. as required by section III of applied methodology in section 3.3 of VCS PD. Also to be noted that the VCS PD has to be updated in the latest version.		
Corrective Action #1	- Complete information related to the project activity monitoring has been incorporated in the section 4 of the revised VCS-PD version 2. - Ex-ante fixed and monitoring parameters have been separate out in under section 4.1 and 4.2 respectively in the revised VCS-PD version 2. - Reason for the negligence of project emission has been elaborated in the section 3.2 of the revised VCS-PD version 2. - Value of data applied for the estimated emission reduction has been incorporated under section 4.2 of the revised VCS-PD version 2. - Required monitoring parameters e.g. Cap_{PJ}, A_{PJ} etc have been incorporated under section 4.2 of the revised VCS-PD version 2.		
DOE Assessment #1	- Revised VCS PD^{/PD2/} has been checked and found to be filled as per the VCS-PD template, VCS standard version 03.2. - Section 4.1 and 4.2 of the revised VCS PD^{/PD2/} transparently described the ex-ante (fixed value) parameter available at the validation and all the monitoring parameter for the crediting period in separate sub-heading. The CAR is closed. - As per applied methodology, ACM0002, version 12.1.0, project emissions is negligible for most of the renewable power generation project. Also, being a run-off-river project, PP has		



	demonstrated the negligence of emissions of CH₄, CO₂ etc. by calculating the power density. For detailed assessment, kindly refer closure of CAR 3.2.2-1. Since, reason for the negligence of project emission has been elaborated in the section 3.2 of the revised VCS-PD^{/PD2/}. The CAR is closed. 4. Section 4.2 of VCS PD^{/PD2/} is now revised and values for all the monitoring parameters now included in section 4.2 of the revised VCS-PD^{/PD2/}. The CAR is closed. 5. All monitoring parameters e.g. Cap_{PJ}, A_{PJ} in line with applied methodology, ACM0002, version 12.1.0 have been incorporated in section 4.2 of the revised VCS-PD^{/PD2/}. The CAR is closed.
Conclusion	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

On-site monitoring procedures are in line with the approved monitoring plan of the methodology ACM0002 Version 12.1.0 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" / ACM0002/.

☒ The applied monitoring methodology is duly approved.

3.3.2 Collection and archiving of relevant monitoring data

Description

The data to be monitored is summarized in section 4.1 of the VCS-PD^{/PD2/}. The description of the monitoring plan is further detailed in section 43. The monitoring plan takes into account baseline emissions and project emissions, considering the quality control and quality assurance for data monitoring.

Details of data to be collected, frequency of data recording and data recording format are described in the VCS-PD^{/PD2/}.

All data will be kept for two years after the end of the last crediting period.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

_Pls. refer to CAR 3.3.1 and 3.3.2.

Final Assessment

The description of the monitoring parameters is in line with the requirements of the VCS project description template^{VCS-PD-T/}. For each parameter all relevant information as given in the template table has been filled completely. All information given is assessed to be suitable to enable an unambiguous interpretation of the requirements during the verification.

- ☒ The monitoring plan is in line with the VCS requirements.

3.3.3 Responsibility and authority for monitoring

Description

The PP's roles and responsibilities for monitoring of parameters, frequency of recording, reporting, archiving, calibration, Internal audit etc are described in sections 4.3 of the VCS-PD^{PD2/}. The PD was checked and found to be in line with the roles and responsibility provided to the individuals as verified during the site visit.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

Finding:	3.3.4-1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding	VCS PD shall describe the roles and responsibilities of PP in relation of proposed GHG emission reduction project.		

Corrective Action #1.	Roles and responsibility has been included under section 1.3 and section 4.3 of the revised VCS-PD version 2.
DOE Assessment #1	Section 4.3 of VCS PD ^{/PD2/} is now updated and describes the organisation structure which details the roles and responsibilities of monitoring team in-order to ensure the verifiable emission reductions. The PP's roles and responsibilities for monitoring of parameters, frequency of recording, reporting, archiving, calibration, Internal audit etc are described in sections 4.3 of the VCS-PD ^{/PD2/} . The PD ^{/PD2/} is checked and found to be in line with the roles and responsibility provided to the individuals as verified during the site visit. The description of section 4.3 is in-line with VCS PD template, VCS standard version 03.2. Thus, CAR is closed out.
Conclusion	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Final Assessment

The responsibility for the project monitoring are duly described in the VCS-PD^{/PD2/}. During the site visit this topic was discussed in detail. Taking into consideration that most of the monitoring parameters are already measured as part of regular plant operations and that PP provides an experienced and qualified team of experts for the monitoring equipment, the validation arrived at the above conclusion.

- ☒ The responsibilities and authorities for monitoring are defined in line with the requirements of the VCS.

3.4 Calculation of GHG emissions

3.4.1 Appropriateness of the source, sink and reservoir

Description

As per section II (Project boundary) of the applied methodology i.e. ACM0002, version 12.1, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project power plant is connected to sources, sinks and reservoirs of GHGs are appropriately identified in the section 2.3 of the VCS PD^{/PD2/}.

ERs are claimed exclusively for the abatement of CO₂ emissions which will occur in the absence of the project activity.



- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	3.4.1-1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding	VCS PD shall provide a clear depiction of the project boundary.		
Corrective Action #1	Project boundary has been included under section 1.9 of the revised VCS-PD version 2.		
DOE Assessment #1	Section 2.3 is now clearly and transparently described project boundary with correct schematic diagrams and is in line with the ACM0002, version 12.1.0. Thus, the raised finding is closed.		
Conclusion	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Final Assessment

In line with ACM0002, Leakage emission need not be considered and also reason for the negligence of project emission has been elaborated in the section 3.2 of the revised VCS-PD^{/PD2/}

- ☒ Regarding the appropriateness of the source, sink and reservoir the project activity is in line with the applicable VCS criteria.

3.4.2 Correctness and transparency of formulae and factors used

Description

All formulae are given in section 4.1 of the VCS-PD^{/PD2/}. Nevertheless the calculation of the baseline emission is as per equation 6 of ACM0002, version 12.1. The emission factors applied (e.g. $EF_{grid, CM, Y}$) is calculated as per CEA data base version 06 in-line with "Tool to calculate the emission factor for an electricity system" Version 02.2.1, EB 63 Annex 29.

Also, detailed calculations of EG_y based on apportioning has been described in section

3.1 in-line with the approved revised monitoring plan^{/RMP/}.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

Final Assessment

All applied formulae and factors are in line with ACM0002, version 12.1.0 and approved revised monitoring plan^{/RMP/}.

- ☒ The formulae and factors applied are correct and transparent and thus in line with the VCS criteria.

3.4.3 Assumptions made for GHG emission reduction estimations

Description

The parameters used for ex-ante calculation are partly based on measured and estimated data.

The baseline emission factor ($EF_{grid, CM, Y}$) is CEA data base version 06 in-line with “Tool to calculate the emission factor for an electricity system” Version 02.2.1, EB 61, Annex 12 which is in line with the requirements of the applied methodology^{/ACM0002/}.

The other parameters monitored ex post as mentioned in section 4.2 of VCS PD^{/PD2/} were also checked and verified during the site visit by checking the logbooks. These were found to be satisfactory.

The parameters used for ex-ante calculation of the baseline emission are based technical specification turbo-generator as well PLF, Auxiliary consumption and transmission losses on actual based on historical data.

Related Findings

- ☐ No CARs, CLs or FARs have been identified in this context
- ☒ The following finding(s) have been addressed:

Finding:	3.4.2-2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding	All ER calculations shall be updated as per the latest version of the applied methodology.		
Corrective Action #1	All ER calculations have been updated as per the latest version of the applied methodology ACM0012 version 12.1.0		
DOE Assessment #1	The calculations of baseline emissions for project activity in section 3.1 of VCS PD^{PD2/} are revised in-line with ACM0012 version 12.1.0. Validation team has checked the emission reduction calculations and verified all the the input data and parameter used for calculation of emission reductions from the technical specification turbo-generator^{TD/}, historical data and found consistent. Thus, assumptions made for the purpose of the ex-ante ER calculation are reasonable and backed up by appropriate evidences. Also, the emission factors applied (e.g. EF_{grid, CM,Y}) is calculated as per CEA data base version 06 in-line with EB 63 Annex 29. The ER calculation approach is in-line with applied methodology ACM0012 version 12.1.0.		
Conclusion	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Final Assessment

The assumptions made for the purpose of the ex-ante calculation can be assessed as reasonable and backed up by technical design specifications provided by the manufacturer as well as from the historical records of plant operation in first crediting period. The calculated emission reductions of 2755320 tCO_{2eq} are most likely to be achieved throughout the second crediting period.

- ☒ The project technology and the description of the same are line with the applicable VCS criteria.

3.4.4 Uncertainties

Description

The applied CDM methodologies ACM0002, version 12.1.0 does not addresses any

uncertainties as part of the project monitoring for monitoring parameter and for ex-ante calculation.

No uncertainties in the ex-ante calculation of baseline emission and hence ER calculations are found correct.

Related Findings

- ☒ No CARs, CLs or FARs have been identified in this context
- ☐ The following finding(s) have been addressed:

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The calculation includes detailed spreadsheet^{/XLS1/} comprising of technical input parameters i.e. Installed capacity, PLF, auxiliary consumptions etc with proper references to ensure that all assumptions made for calculation are correctively and conservatively applied so that the danger of overestimation of ER can be considered as negligible. Validation team has checked the applied formulae for ex-ante calculations of baseline emission and No uncertainties are found in ER calculations.

- ☒ The consideration of uncertainties is in line with the applicable VCS criteria.

4 VALIDATION STATEMENT

Malana Power Company Limited has commissioned the TÜV NORD JI / CDM Certification Program to carry out the re-validation of the Project “86 MW Hydro Project in Himachal Pradesh” located in Jari village of Kullu district of Himachal Pradesh, India with regard to the requirements of VCS Standard version 03.2. The project activity is generation of electricity by installation of renewable hydropower project to displace electricity generated by fossil fuel based thermal power plants in NEWNE Grid, thus achieves GHG emission reduction.

The scope of this engagement covers the validation and assessment of requirements for renewable of project crediting period in-compliance with clause 3.9.5 of VCS standard version 03.2. The validation is given as an independent and objective review of the validity of the baseline scenario, regulatory surplus of project activity, project description and monitoring plan (based on approved methodology ACM0002 / Version 12.1.0, Sectoral Scope: 1, EB 58), which are included in the PD^{/PD2/} and other relevant supporting documents.

In the course of the validation, eight (08) Corrective Action Requests (CARs) were successfully closed and one (01) Forward Action Request (FAR) will be verified during the first periodic verification.

The validation is based on the Project Document (PD^{/PD2/}), validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of the validation, the validation team confirms that:

1. The project activity is regulatory surplus and not mandated by any local or national laws or any other regulatory framework.
2. The original baseline scenario i.e. “*Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources*” as ruled out in applied methodology i.e. ACM0002, version 06 is still completely valid.
3. The on-site monitoring procedures and GHG emission reduction calculations are completely in-compliance with latest approved methodology i.e. ACM0002, version 12.1.0.
4. The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions can be achieved within the second (10 years) period crediting period.

As the result of the validation, the validation team confirms that the project, as it was described in the project documentation, is in line with all scope of current version of VCS standard version 03.2.

Baseline Emissions	2755320 t CO ₂ eq
Leakage	0 t CO ₂ eq
Project Emissions	0 t CO ₂ eq
Total Emission Reduction estimated for 2 nd crediting period	2755320 t CO ₂ eq



The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation against the VCS standard version 03.2 without any qualifications or limitations.

Pankaj Mohan

New Delhi,, 2012-04-20

A handwritten signature in blue ink, appearing to read 'Pankaj Mohan', written in a cursive style.

TÜV NORD JI/CDM
Certification Program

Validation Team Leader

Stefan Winter

Essen, 2012-04-20

A handwritten signature in black ink, appearing to read 'Stefan Winter', written in a cursive style.

TÜV NORD
JI/CDM Certification Program

Final Approval

5 REFERENCES

Table 5-1: Documents provided by the project participant

Reference	Document
/CAL/	1. Calibration records for the generation, transmission and sub-station energy meters for the monitoring period from 2010-04-01 to 2010-09-30. 2. Calibration records for the meters at the Toss injection point at Malana yard for the monitoring period from 2010-04-01 to 2010-09-30. 3. Details of changes in the trivector meters at generation, injection, substation points and the Toss injection point during the monitoring period.
/CC/	Erection and Commissioning of 2x43 MW Hydro generating units of Malana Hydroelectric Project issued by Bharat Heavy Electricals Limited: • Commissioning of Unit I: 2001-07-09 • Commissioning of Unit II: 2001-07-05
/INV/	1. Sample monthly invoice copies to cross check the energy supplied to the grid. 2. Sample weekly invoice copies to cross check the energy supplied to the grid.
/RMP/	Revised monitoring plan dated 2009-12-07 approved during the fourth periodic verification.
/JMR/	1. Monthly Joint Meter Reading (JMR) certificates of Malana HEP indicating main and check meter numbers and the energy generated at the site and that injected at Sarabai Sub-station at Bajaura by HPSEB covering entire reported monitoring period (2010-04-01 to 2010-09-30), including the auxiliary consumption and transmission losses. 2. Weekly Joint Meter Reading (JMR) certificates of Malana HEP indicating main and check meter numbers and the energy generated at the site and that injected at Sarabai Sub-station at Bajaura by HPSEB covering entire reported monitoring period (2010-04-01 to 2010-09-30), including the auxiliary consumption and transmission losses. 3. Meter readings of Toss HEP covering entire reported monitoring period (2010-04-01 to 2010-09-30) issued by HPSEB.
/LOG/	1. Sample of daily log book records showing Malana HEP generation. 2. Sample of weekly data from the Data Collecting Device (DCD). 3. Sample of daily reports sent to the head office (HO).



Reference	Document
	4. Records of the electricity from the Toss Hydro project injected at Malana yard from 2010-04-01 to 2010-09-30.
/PD1/	VCS PD titled "86 MW Hydro project in Himachal Pradesh" dated 2010-10-05, which forms the basis for the DVR.
/PD2/	Final VCS PD titled "86 MW Hydro project in Himachal Pradesh" dated 2012-03-20, which forms the basis for the FVR.
/PT/	Certificate of Incorporation of Malana Power Company Limited (S.N. 06-19959) issued by Registrar of Companies on 1997-05-20.
/PHOTO/	Photographs of the site visit.
/SD/	1. Proof of start date of the project: Commissioning of Unit II: 2001-07-05. 2. A letter to the Dy. Chief Engineer, SLDC, HPSEB regarding synchronisation of unit, Malana HEP, dated 2001-07-04
/SC/	1. Environmental clearance (S.N.: J-12011/9/92-1A-1) issued by Ministry of Environment and Forest, Govt. of India. 2. Renewable of consent to operate under water (prevention and control of pollution) Act, 1974 and Air (prevention and control of pollution) Act, 1981, issued by member secretary, H.P. State pollution control board, dated 2011-03-11
/TD/	1. Technical Specifications of the turbines (each 43 MW installed capacity) 2. Proof of average operational life time. 3. Detailed engineering drawing of upstream area (storage capacity of dam reservoir)
/TRG/	Training details of personnel at MPCL during the monitoring period.
/UND/	1. A certificate of undertaking stating that the proposed project activity has not applied for and thus, not rejected under any GHG programme other than VCS, 2011-03-12 2. The project has not created another form of environmental credit, dated 2011-03-08.
/XLS1/	Estimated emission reduction calculation spread sheet incorporating calculation of PLF, Auxiliary consumption and transmission losses based on historical plant records.

Table 5-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	- ACM0002: "Consolidated baseline methodology for grid connected electricity generation from renewable sources" (Version 12.1.0, EB 58) - ACM0002: "Consolidated baseline methodology for grid connected electricity generation from renewable sources" (Version 06)
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/CON/	The signed contract between TÜV NORD and Malana Power Company Limited for carrying out re-validation of project activity dated 2010-10-06.
/CEA/	- CO2 Baseline Database for the Indian Power Sector, version 06, published by Central Electricity Authority, Ministry of Power, Government of India. - The electricity Act, 2003. - National Action Plan on Climate Change, Prime Minister's Council On Climate Change
/IPCC/	1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/ISO 14064/	- Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals - Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements - Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions
/PDD/	Validated project document of the project "86 MW Hydro project in Himachal Pradesh" against VCS V01.
/TOOL/	"Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period" - Tool to calculate the emission factor for an electricity system; (Version 02.2.1) EB 63, Annex 29. - Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios (version 02); EB 22, Annex 3.

Reference	Document
/USEA/	The handbook on best practices for the successful deployment of grid-connected renewable energy, distributed generation, cogeneration, and combined heat and power in India (handbook); United States Energy Association.
/VAL/	Validation Report and opinion for the project “86 MW Hydro Project in Himachal Pradesh” issued by TUV Nord, Report number 53213807-07/36 dated 2007-04-25
/VER3/	3rd Periodic Final Verification Report No. 53206509-09/166-V03 for the CDM project: “86 MW Hydro Project in Himachal Pradesh” for the period 2008-04-01 to 2009-03-31, dated 2009-05-26.
/VCS/	VCS Standard: VCS Version 3.2
/VCS-UPDATE/	Voluntary Carbon Standard 2007.1; Program Guidelines; VCSA Rules ;and VCS Guidance Document
/VVM/	CDM Validation and Verification Manual (Version 1.2 as per EB 55)

Table 5-3: Websites used

Reference	Link	Organisation
/cea/	http://www.cea.nic.in/	Central Electricity Authority, India
/iso/	www.iso.org/iso/en	The International Organisation for Standardisation
/hpseb/	http://www.hpseb.com/	Himachal Pradesh State Electricity Board Limited
/him/	http://himurja.nic.in/	Himachal Pradesh Energy Development Agency - HIMURJA
/ieta/	http://www.ieta.org/	International Emissions Trading Association
/mnre/	http://www.mnre.gov.in/	Ministry of New and Renewable Energy, Govt. of India

Reference	Link	Organisation
/mop/	http://www.powermin.nic.in/	Ministry of Power, Govt. of India
/mpcl/	http://www.malanamodelhep.com/	Malana Power Company Limited
/unfccc/	http://cdm.unfccc.int/	UNFCCC-CDM
/VCS/	http://www.v-c-s.org/	The Voluntary Carbon Standard

Table 5-4: List of interviewed persons

Reference	MoM ¹		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms.	J. K. Beri	Malana Power Company Limited- General Manager, Operation & Maintenance
/IM01/	V	☒ Mr. ☐ Ms.	Abhishek Garg	Malana Power Company Limited- Executive (Commercial)
/IM01/	V	☒ Mr. ☐ Ms.	M. A. Rafiq	Malana Power Company Limited- Assistant Manager-Electrical
/IM01/	V	☒ Mr. ☐ Ms.	Chandan Singh	Malana Power Company Limited- Electrical Engineer
/IM01/	V	☒ Mr. ☐ Ms.	Ankit Baksht	Malana Power Company Limited- Engineer (C.R.)
/IM02/	V	☒ Mr. ☐ Ms.	Satyapal Singh	Emergent Ventures India Private Limited, Consultant
/IM02/	V	☒ Mr. ☐ Ms.	Amit Gupta	Emergent Ventures India Private Limited, Sr. Consultant



Reference	MoM ¹		Name	Organisation / Function
/IM03/	V	☒ Mr. ☐ Ms.	Dharam Chand	Asst. Electrical Engineer (A. A.E.), HPSEB, Bajaura substation
/IM03/	V	☒ Mr. ☐ Ms.	Charan Singh	ALM, HPSEB, Toss Injection point at Malana yard.

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