



Verified Carbon Standard

IMPROVED COOK STOVE MARKET DEVELOPMENT IN RURAL NEPAL



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Summary:

Carbon Check India Pvt. Ltd. (CCIPL) has been appointed by Value Network Venture Advisory Services Pte. Ltd., has validated & verified the greenhouse gas emission reductions reported for the project activity “Improved cook stove market development in rural Nepal” in Nepal, with regard to the relevant requirements for VCS activities.

The objective of the validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the VCS version 4.0 Requirements, VCS validation and verification manual version 3.2 and GHG program applied, on the basis of the project design document. The validation scope is to review the VCS PD against VCS Requirements and applied methodology and other relevant UNFCCC rules and requirements.

Validation was conducted using Carbon Check’s procedures in line with the requirements specified in the CDM M&P, the VCS validation and verification manual version 3.2, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques. The validation consisted of desk review, off-site assessment and the resolution of outstanding issues and the issuance of the final validation report.

The objective of the verification is to have an independent review ex-post determination of the monitored reductions in GHG emission reductions, Verification was conducted using Carbon Check’s procedures in line with the requirements specified in the VCS Version 4.0 Requirements, VCS validation and verification manual version 3.2, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques. The verification consisted of desk review, off-site assessment and the resolution of outstanding issues and the issuance of the final verification report and certification

The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS / CDM requirements in order to be certified.

The GHG emission reductions were calculated on the basis of the approved methodology AMS-II.G ‘Energy efficiency measures in thermal applications of non-renewable biomass’ (version 11.1) and the monitoring plan included in the joint project description & MR, version 4.1 of 13/09/2021.

During this validation & verification, 6 Corrective Action Request (CAR) and 1 Clarification Requests (CLs) were identified related to operation, GHG emission reduction estimation, monitoring and baseline scenario of the VCS project activity in relation to all relevant VCS requirements for the project activity and the applied baseline and monitoring methodology, and these CARs and CRs are successfully closed after necessary corrections/clarifications by the client. The same has been discussed in Appendix B of this verification report.

In conclusion, it is Carbon Check’s opinion that the project activity “Improved cook stove market development in rural Nepal” in Nepal, VCS project ID 2357, meets all relevant requirements for VCS standard and guidelines and correctly applies the baseline and monitoring methodology ACM-II.G ‘Energy efficiency measures in thermal applications of non-renewable biomass’ version 11.1. The monitoring system is in place and the emission reductions are calculated without material misstatement. Hence, Carbon Check is able to certify that the emission reductions from the project during the monitoring period 01/11/2018 to 31/10/2020 amount to 46,931 tCO₂e.

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1 INTRODUCTION

1.1 Objective

Value Network Venture Advisory Services Pte. Ltd (VNV) has appointed Carbon Check to carry out joint validation & verification of the project “Improved cook stove market development in rural Nepal” project in Nepal.

This report summarizes the findings of the validation & verification of the project, performed on the basis of VCS Requirements and UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The objective of the validation & verification is to have an independent evaluation of a project activity by an accredited validation and verification body against the requirements of the VCS Version 4.0 and GHG program applied, on the basis of the project design document. In particular, the project’s baseline, monitoring plan, and the project’s compliance with relevant VCS Version 4.0 requirements, GHG program requirements and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Verified Carbon Units (VCUs).

The verification is for the period from 01/11/2018 to 31/10/2020. The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The project activity has been implemented and operated as per the project description (PD) and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Monitoring report and other supporting documents are complete;
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.

To confirm that the monitoring system is implemented and fully functional to generate Verified Emission Reductions (VCUs) without any double counting, and to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The validation scope is to review the joint VCS PD & MR against VCS Version 4.0 Requirements and UNFCCC criteria.

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the procedures for registration of program of activity as a single CDM and the subsequent decisions by the CDM Executive Board.

Validation is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- to verify that reported GHG emission data is sufficiently supported by evidence.

The project is assessed against the requirements of VCS standard version 4.0, VCS program guide version 4.0, validation and verification manual version 3.2 and related rules and guidance. Carbon Check has, based on the recommendations in the latest version of CDM Validation and Verification Standard, VCS validation and verification manual and employed a rule-based approach (as criteria) in the verification, focusing on the identification of significant reporting rules and the reliability of project monitoring.

Verification is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

All the revisions of the validation and verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation & verification activities had been completed according to the pertinent Carbon Check's instructions, with **reasonable level of assurance**.

The technical review was performed by a technical reviewer(s) qualified in accordance with Carbon Check's qualification procedure. The validation & verification team and the technical reviewers consist of the following personnel.

Role/Qualification	Last Name	First Name	Country
VCS Team Leader, VCS Validator & Technical Expert	Buragohain	Champok	India

Technical Reviewer	Anand	Amit	India
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1.4 Summary Description of the Project

The purpose of the project activity is to install 15,292 improved cooking stoves (ICS) in ten districts namely Baglung, Argakhanchi, Bara, Chitwan, Gulmi, Kaski, Makwanpur, Myagdi, Parbat, and Syangja Districts of Nepal replacing conventional cooking stoves. The baseline stoves are conventional system with no improved combustion air supply or flue gas ventilation system as verified from off-site review and interview. The project stoves are having better efficiency compared to baseline cooking system and therefore results in saving firewood compared to baseline scenario. Each user of project ICS included in the project activity transfers the ownership right of carbon credit to project developer (Practical Action) /9/. VNV advisory acts as focal point of contact for the project under VERRA /21/.

The project ICSs are single pot rocket stoves with model name 'HPNJE-01ND' and 'Greenway Jumbo' ICS with efficiency of 30.29% and 29.79% respectively as certified by Renewable Energy Test Station (RETS), Nepal /11/. The project ICSs are metallic stoves with is a single pot hole rocket stoves with natural draft. The 'Greenway Jumbo Stoves' manufactured by Greenway Grameen Infra Pvt. Ltd. of India and supply, distribution and after sales services is being provided by Smart Power Pvt. Ltd., Nepal. The 'HPNJE-01ND' stoves are manufactured and supplied by Husk Power Nepal Pvt. Ltd. The project technology was witnessed by the validation team during off-site review (video call), photographic evidence, sales receipt, test certificates and confirm to be correct. Each ICS has a technical life of at least 7 years as confirmed from stove manufacturer /15/.

As per baseline study conducted by Practical Action, baseline quantity of firewood consumed in pre-project scenario is 3.80 tonnes/year/HH /10/. The validation team also checked publicly available report prepared by GIZ which states average solid fuel use in traditional stoves is 5.6 tonne per year /14/. In addition, similar projects registered under UNFCCC (PoA-9902) and Gold Standard (GS 6212, GS 6597) refer the same data. Therefore, PP has considered a reasonable value. This was further found to be correct as per discussion with end users during off-site interview. Accordingly, a project ICS of 'HPN JE-01 ND' model can save 2.55 tonne/year of firewood and 'Greenway Jumbo' model can also save 2.81 tonne/year of firewood as calculated using approved methodology AMS-II.G, version 11.1.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

Validation was conducted using Carbon Check's procedures in line with the requirements of VCS Version 4.0 and the requirements specified in the CDM M&P, the latest version of the CDM Validation and Verification Standard, VCS validation and verification manual version 3.2 and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The validation consisted of the following phases:

- Document review;
- Off-site assessment (video call, telephonic interview);
- Resolution of outstanding issues
- Issuance of the validation opinion

Verification was conducted using Carbon Check's procedures in line with the requirements specified in the VCS Requirements, i.e. VCS Program Guide version 4.0 and VCS Standard version 4.0. The GHG emission reductions are on the basis of the approved Baseline and monitoring methodology AMS-II.G 'Energy efficiency measures in thermal applications of non-renewable biomass' version 11.1.

The verification consisted of the following three phases

- Document review;
- Off-site assessment including Interviews and video call;
- Resolution of Any Material Discrepancy and the issuance of the final verification report and certification.

The following sections outline each step in more detail.

2.2 Document Review

The joint VCS PD and monitoring report version 01 of 16/09/2020 and version 1.1 of 03/01/2021, version 2.0 06/01/2021, version 3.0 of 15/01/2021, version 4.0 of 22/06/2021, version 4.1 of 13/09/2021 /1/, in particular the applicability of the methodology, the baseline determination, the additionality of the project activity, the starting date of the project, the monitoring plan, the emission reduction calculations provided in the form of a spreadsheet “Nepal ICS ER estimate VNV.xlsx” and /2/ were assessed as part of the validation & verification.

The following table lists the documentation that were reviewed during this joint validation and verification:

/1/	VNV: VCS PD & monitoring report for “Improved cook stove market development in rural Nepal” in Nepal, version 01 of 16/09/2020 and version 1.1 of 03/01/2020, version 2.0 of 06/01/2021, version 3 of 15/01/2021, version 4.0 of 22/06/2021, version 4.1 of 13/09/2021
/2/	VNV: Emission Reduction Calculation Spreadsheet “Nepal ICS ER estimate VNV.xlsx” and verification worksheet ‘Nepal ICS_ER monitored.xlsx’.
/3/	VCS: VCS Program Guide, version 4.0 of 19/09/2019
/4/	VCS: VCS Standard, version 4.0 of 19/09/2020
/5/	VCS: Joint VCS Project Description & monitoring report Template VCS Version 4.0 of 19/09/2019
/6/	CDM Executive Board: Baseline and Monitoring Methodology “AMS-II.G”, “Energy efficiency measures in thermal applications of non-renewable biomass”, version 11.1
/7/	UNFCCC: Project search: https://cdm.unfccc.int/Projects/projsearch.html
/8/	Gold Standard Foundation: https://registry.goldstandard.org/projects?q=&page=1
/9/	Practical Action: Sample copies of sales receipt of project cook stoves
/10/	Practical Action: Baseline survey report. July 2018 (Survey period January- March 2018)
/11/	Renewable Energy Test Station (RETS), Nepal: Result of performance test of ICS (HPNJE-01ND and ,Greenway ICS) as per WBT, Test report dated 18/08/2015 and 18/01/2017
/12/	Muna Thapa, Lokendra Subba: Analysis of available models of improved cook stoves and their suitability in different ecological zones in Nepal
/13/	UNFCCC: Methodological tool ‘Demonstration of additionality of small scale project activities’
/14/	GIZ: Nepal Energy Efficiency Programme, December 2011
/15/	Greenway Grameen Infra Pvt. Ltd : Declaration of ICS life, Official declaration dated 15/12/2020
/16/	Ministry of Forest and Environment, Nepal: Confirmation of f_{NRB} for Nepal which can be used for projects securing carbon credit
/17/	VERRA: https://verra.org/covid-19-travel-guidance
/18/	UNFCCC: https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html

/19/	Practical Action: Sales/Implementation record of project ICSs
/20/	Ministry of Forest and Environment, Nepal: Confirmation of fNRB for Nepal which can be used for projects securing carbon credit, dated 25/11/2018
/21/	VERRA registry communication agreement executed on 11/11/2020
/22/	Practical Action: Confirmation of participating the project only in VCS program, dated 02/11/2020
/23/	VERRA: https://registry.verra.org/app/projectDetail/VCS/2357
/24/	Practical Action: Project installation database
/25/	UNFCCC: Tool 21 “Demonstration of additionality of SSC project activities, version 13.1
/26/	UNFCCC: guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities, Ver. 4.0 (EB86, Annex 4)
/27/	UNFCCC: Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 08.0
/28/	Practical Action: Project NPV worksheet.
/29/	National Planning Commission Statistics, Govt. of Nepal: National Climate Change Impact Survey 2016
/30/	AEPC: Annual progress report 2017-18

2.3 Interviews

The key personnel interviewed and the main topics of the interviews are summarized in the table below:

	Date	Name and Role	Organization	Topic
/a/	04/01/2020	Sandeep Roy Choudhury	VNV	Description of the project activity, ownership, avoidance of double counting, Baseline and Additionality Eligibility Criteria Emission reductions calculations Monitoring plan and monitoring arrangements Monitoring, recording, QA/QC procedures.
/b/	04/01/2020	Nayan Deka	VNV	
/c/	04/01/2020	Pooja Sharma	Practical Action	
/c/	04/01/2020 - 05/01/2020		End Users	
				ICS operational status, commissioning details, Carbon right transfer, project investment etc.

2.4 Site Inspections

Site visit for the subject project activity was avoided due to travel restrictions imposed in the host country due to COVID-19 impact. The validation body noted VERRA guideline on travel due to COVID-19 (<https://verra.org/covid-19-travel-guidance/>)^{17/} and e-mail communication between validation body and VERRA which clarifies that VERRA standard do not mandate site visit to be conducted in person. The validating body also noted CDM Executive Board's decision to relax mandatory site visits by DOEs for a period from 23 March to 31 December 2020 because of COVID-19 /18/. The alternative means used for the purpose of validation and verification are demonstrated as follow.

The audit team has carried out off site interviews (over phone call and video call)¹ in order to assess the information included in the project description & monitoring report and to gain additional information regarding the compliance of the project with monitoring plan. During the desk review, the relevant documents such as commissioning reports, test certificate of ICS, carbon right transfer agreement copies and other relevant background documents were provided and assessed. Audit team can confirm the operation and monitoring are in consistent with the monitoring plan.

The relevance records and documents comparing the same with details outlined in the project description and monitoring report and off-site interview with the PP representative and operation staff through telephone and video call, Carbon Check team has confirmed that the project is implemented in line with the project description and the monitoring system is in line with the VS-PD. There is no change of the project design, construction, operation and monitoring plan. During video call, the auditor asked end users to operate the project ICS so as to cross check the operational status. Further users were asked whether pre-project cooking system was used during the monitoring period. The results of off-site assessment found consistent with project proponent's survey results. Therefore, **a reasonable level of assurance was achieved** without an in-person site visit.

2.5 Resolution of Findings

¹ Refer Appendix C- sample of remote audit snaps

The objective of this phase of the validation & verification is to resolve any outstanding issues which need to be clarified for CCIPL's positive conclusion on the project description. To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria. The verification protocol consists of three tables; the different columns in these tables are described below.

A corrective action request (CAR) is raised if one of the following occurs:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

In summary, 1 CL and 6 CARs were raised during this joint validation & verification which were closed successful and details are given under Appendix B of this report.

2.5.1 Forward Action Requests

No FAR is raised during the Validation & verification.

3 VALIDATION FINDINGS

3.1 Project Details

The purpose of the project activity is to install 15,292 improved cooking stoves (ICS) in ten districts namely Baglung, Argakhanchi, Bara, Chitwan, Gulmi, Kaski, Makwanpur, Myagdi, Parbat, and Syangja Districts of Nepal replacing conventional cooking stoves. The total energy saving from the project is expected to result 180 GWh per year. The validation team has confirmed the project size (number of ICS) by cross checking the project database with sales database /19/. The project ICSs are metallic single pot hole rocket stoves with model name HPNJE-01ND and Greenway ICS with efficiency of 30.29 and 29.79% respectively as certified by Renewable Energy Test Station (RETS), Nepal /11/. As per baseline study conducted by Practical Action, baseline quantity of firewood consumed in pre-project

scenario is 3.80 tonne/year/HH /10/. Accordingly, a project ICS of 'HPN JE-01 ND' model can save 2.55 tonne/year of firewood and 'Greenway Jumbo' model can save 2.81 tonne/year of firewood as calculated using approved methodology AMS-II.G, version 11.1.

The audit team could confirm that in absence of the project ICS end users were using conventional cooking stoves. As per National Climate Change Impact Survey 2016, conducted by the Central Bureau of Statistics, Govt. of Nepal, 88.7% households reported use of firewood for cooking /29/. As per AEPC's (Alternative Energy Promotion Center, Govt. of Nepal) progress report 2017-18, around 69% population of Nepal relies on solid biomass for cooking. The promotion of ICS by gov't. of Nepal also suggests the usage of conventional cooking system in baseline case /30/. The baseline survey confirms that firewood is the primary option for the end users to use as fuel for thermal energy needs /10/. The validation team during off-site interview found that users are dependent on fire-wood based conventional cooking system. Therefore, baseline scenario is identified transparently for the project activity.

It is evident from data provided by project proponent and other publicly available data, the conventional cooking system with firewood is the most economically viable option for users over other available sources such as ICS, biogas and LPG. The baseline identified (firewood based cooking system) require no cost or very minimal cost compared to other options.

Project proponent

The project proponents and their responsibility are clearly defined under Section 1.5 of the VCS PD version /1/. Practical Action is the project proponent with carbon credit rights transfer executed with end users. This is evident from sales receipts /9/. Value Network Venture Advisory Services Pte. Ltd. is another project participant in the project which has agreement with Practical Action /21/.

Project start date

The starting date of project activity is 01/11/2018 on which the first batch of project ICS were installed and commissioned. This is checked from project database and commissioning reports /19/. The start date is in line with the VCS Standard /04/.

Project crediting period

A crediting period of 10 years has been chosen for the project activity. The start date of crediting period is from 01/11/2018 until 31/10/2028.

Project scale and estimated GHG emission reductions or removals

The estimated average annual emission reductions from the project are estimated to be on the average 32,664 tCO_{2e} per year over the initially selected 10 years of first crediting period.

Projects are categorized by size according to their estimated average annual emission reductions or removals according to VCS Standard /4/. Since the estimated annual emission reductions resulting from the project is less than 300,000 tCO₂e, the category of the project is defined as “Project” as per the VCS Standard /4/.

Project location

The project is located in ten districts namely Baglung, Argakhanchi, Bara, Chitwan, Gulmi, Kaski, Makwanpur, Myagdi, Parbat, and Syangja Districts of Nepal. The project involves 15,292 ICSs spread in ten districts of Nepal. The validation team cross checked the project location from project database, commissioning reports, interview with project proponent.

Project compliance with applicable laws, statutes and other regulatory frameworks

The project does not require any specific license/approval from host country. End users voluntarily install ICS with financial support from Practical Action. This is cross checked while interviewing project proponent, end users and sales receipt. However, the entitlement of the emission reductions generated by the project is transferred to the project developer (Practical Action) from the beneficiary households through mutually agreed agreement.

Ownership and other programs

Right of use: The ownership of the emission reductions belongs to Practical Action as confirmed through sales receipts of ICS /9/.

Emissions trading programs and other binding limits: Net GHG emission reductions or removals generated by the project will not be used for compliance with an emissions trading program or for meeting binding limits on GHG emissions.

Additional information relevant to the project

Eligibility criteria for grouped projects:

The project is not a grouped project.

Commercially sensitive information:

Not applicable.

Any further information:

Not applicable.

3.2 Participation under Other GHG Programs

The project has not been registered or seeking registration under other GHG programs as confirmed through the GS or CDM project activity /17/, /18/. PP has also provided a declaration for the same /22/.

Other forms of environmental credit sought or received: The project has not created another form of Environmental Credit.

Rejection by other GHG programs: The project has not been rejected by other GHG programs as confirmed through the GS, VCS and CDM project data base /17/, /18/.

3.3 Safeguards

3.3.1 No Net Harm

The project activity involves energy saving from using efficient cooking stoves. There is no negative environmental and socio-economic impact from the project activity.

3.3.2 Local Stakeholder Consultation

The project proponent organized the local stakeholder consultation process on 30/10/2020 at DCRDC office in village Baglung, Nepal to appraise the stakeholder about the project. The stakeholders were invited via local newspaper advertisement, notice in public places and personal invitations and the documents were made available to the validation and verification body. The same also confirmed from stakeholders during off-site interview. Details of stakeholder consultation is transparently explained in section 2.2 of the joint PD-MR. No negative comment or grievance found recorded during the stakeholder meeting.

3.3.3 Environmental Impact

The project does not have any negative environmental impact and does not require any specific license/approval from host country. The project has positive environmental impacts as discussed below:

- The project being implementation of improved cooking stoves saves energy which leads to overall emission reductions. The energy supply is not hampered compared to baseline but improved.
- The project involves use of improved cook stoves which does not need any water for its operation. Therefore, the project does not have any impact on water.

The project involves use of improved cook stoves which does not involve any landscape modification or leads to vulnerable natural disasters. It also does not involve any manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or

materials. It leads to less pollution (air pollution due to firing of firewood) compared to baseline scenario as the project technology itself is saving in less firewood consumption compared to baseline scenario.

3.3.4 Public Comments

This project was open for public comment from 25/11/2020 to 25/12/2020. No comment found raised during public commenting period /23/.

3.3.5 AFOLU-Specific Safeguards

The project is a non-AFOLU project. Hence, this section is not required.

3.4 Application of Methodology

3.4.1 Title and Reference

The CDM approved baseline and monitoring methodology AMS-II.G version 11.1: “Energy efficiency measures in thermal applications of non-renewable biomass” /6/ is correctly applied for the project activity.

3.4.2 Applicability

The applicability conditions of the methodology are discussed below:

Applicability Condition 1:

This methodology comprises efficiency improvements in thermal applications of non-renewable biomass. Examples of applicable technologies and measures include the introduction of high efficiency biomass fired project devices (cookstoves or ovens or dryers) to replace the existing devices and/or energy efficiency improvements in existing biomass fired cookstoves or ovens or dryers.

VVB Assessment –

The project cookstoves are efficient stoves with efficiency 30.29% and 29.79% /11/ which replaces conventional stoves as verified from baseline survey report /10/ and during off-site assessment. Hence, meets the methodology requirement.

Applicability Condition 2:

In the case of cookstoves, the methodology is applicable to introduction of single pot or multi pot portable or in-situ cookstoves with rated efficiency of at least 20 per cent. The Water

Boiling Test (WBT) method shall be used to test the efficiency of the cookstove to meet this eligibility requirement, following the requirements indicated in “Data / Parameter table 11” which details the options for testing and certification as well as supporting documentation (e.g. certificate issued by third party or test results) that needs to be presented to the validating DOE.

VVB Assessment –

The project cookstoves are efficient stoves with efficiency of 30.29% and 29.79% /11/ which replaces conventional stoves as verified from baseline survey report /06/ and during off-site assessment. Hence, meets the methodology requirement. The efficiency test was based on water boiling test.

Applicability Condition 3:

The aggregate energy savings of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input.

VVB Assessment –

The project is expected to save not more than 180 GWh thermal per year as verified from emission reduction worksheet /02/. Hence, meets the methodology criteria.

Applicability Condition 4:

Project participants are able to show that non-renewable biomass has been used since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.

VVB Assessment –

As per EB 67, annex 22 NRB value has been approved for host country Nepal. It further states that the NRB is applicable under AMS-II.G. Therefore, it substantiates that non-renewable biomass has been used since 31 December 1989 in the host country.

CC IPL hereby confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein and the selected version is valid at the time of submission of the proposed project activity for registration. It is also confirmed that the methodology is correctly applied by comparing it with the actual text of the applicable version of the methodology.

Applicability Condition 5:

For cases where the biomass is sourced from renewable sources, the project participants should use a corresponding Type I methodology.

VVB Assessment –

The project baseline is non-renewable biomass and hence the condition is not applicable for the project.

Applicability Condition 6:

If the project device requires a specific fuel for this device (e.g. briquettes, pellets, woodchips), the consumption of the fuel should be monitored during the crediting period.

VVB Assessment –

The project baseline is non-renewable biomass and hence the condition is not applicable for the project.

Applicability Condition 7:

The CDM-PDD or CDM-PoA-DD/CPA-DD shall explain the proposed method for distribution of project devices including the method to avoid double counting of emission reductions such as unique identifications of product and end-user locations (e.g. programme logo).

VVB Assessment –

The project disseminates two types of ICS model and each ICS is marked with a unique ID which has been verified from sales record and pictures of ICS /19/,24/. Therefore, avoidance of double counting measures are in place. This is explained in the joint PD and MR.

Applicability Condition 8:

The CDM-PDD or CDM-PoA-DD/CPA-DD shall also explain how the proposed procedures prevent double counting of emission reductions, for example to avoid that project stove manufacturers, wholesale providers or others claim credit for emission reductions from the project devices.

VVB Assessment –

The project disseminates two types of ICS model and each ICS is marked with a unique ID which has been verified from sales record and pictures of ICS /19/,24/. Therefore, avoidance of double counting measures are in place. The sales record clearly state the carbon credit right belongs to Practical Action. This is explained in the joint PD and MR.

3.4.3 Project Boundary

As per applied methodology, the project boundary is the physical, geographical site of the efficient devices that utilize biomass. Therefore, the project boundary covers each project ICS location. As the project ICS are spread in ten districts of Nepal, the project boundary covers all ten districts of Nepal where the project ICS is installed. The project ICS installation location is verified from installation database and commissioning certificates /19/, /24/.

3.4.4 Baseline Scenario

As per applied methodology AMS.II.G version 11.1, the baseline is pre-defined as “the use of fossil fuels for meeting similar thermal energy needs as those provided by the project devices”.

PP has been able to demonstrate that fire-wood is the baseline fuel used in conventional cooking stoves. Majority of households in the project districts use firewood to meet their cooking needs. National Climate Change Impact Survey 2016, conducted by the Central Bureau of Statistics, Govt. of Nepal, 88.7% households reported use of firewood for cooking /29/. As per AEPC’s (Alternative Energy Promotion Center, Govt. of Nepal) progress report 2017-18, around 69% population of Nepal relies on solid biomass for cooking. The promotion of ICS by govt. of Nepal also suggests the usage of conventional cooking system in baseline case /30/. The baseline survey conducted by Practical Action in July 2018 /10/ confirms that firewood is the primary option for the end users to use as fuel for thermal energy needs /10/. The validation team during off-site interview found that users are dependent on fire-wood based conventional cooking system. Therefore, baseline scenario is identified transparently for the project activity.

There is no national or local policy/law that mandates to use ICS or prohibit to use conventional cooking devices. Therefore, the baseline identified by project proponent meets national policy.

It is evident from data provided by project proponent and other publicly available data, the conventional cooking system with firewood is the most economically viable option for users over other available sources such as ICS, biogas and LPG. The baseline identified (firewood based cooking system) require no cost or very minimal cost compared to other options. Therefore, baseline scenario is identified correctly by project proponent.

3.4.5 Additionality

The additionality of the project activity is demonstrated as per option 2 of applied methodology AMS-II.G version 11.1 /6/. Option 2 requires additionality to be demonstrated using Tool 21 “Demonstration of additionality of SSC project activities” /25/. Accordingly, investment barrier has been discussed for the project. The project involves two type of ICS

device. 'Greenway Jumbo' model which cost NPR 3000 and 'HPN JE-01 ND' model which cost NPR 2000. Greenway Jumbo' model is distributed to end users at subsidised price of NPR 1025 and 'HPN JE-01 ND' model is distributed to end users at distributed cost of NPR 262. The actual and final cost to end users are verified from sales receipts /19/. With dissemination of 2,877 'Greenway Jumbo' ICS and 12,415 of 'HPN JE-01 ND' model ICS, the project proponent's NPV stands negative NPR of 23,177,144. The project has no other return expect carbon revenue to cover the project cost. This justifies the project faces investment barrier and is additional. The NPV sheet has been cross checked and computation found to be correct /28/.

3.4.6 Quantification of GHG Emission Reductions and Removals

The emission reductions for the project activity is estimated as per equation 1 of AMS-II.G version 11.1 as follows:

$$ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y$$

Where:

- i = Indices for the situation where more than one type of project device is introduced to replace the pre-project devices
- j = Indices for the situation where there is more than one batch of project device
- ER_y = Emission reductions during year y in t CO₂e
- $ER_{y,i,j}$ = Emission reductions by project device of type i and batch j during year y in t CO₂e
- LE_y = Leakage emissions in the year y

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossil\ fuel}$$

Where:

- $B_{y,savings,i,j}$ = Quantity of woody biomass that is saved in tonnes per cookstove device of type i and batch j during year y
- $f_{NRB,y}$ = Fraction of woody biomass that can be established as non-renewable biomass (fNRB)
- $NCV_{biomass}$ = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried')
- $EF_{projected_fossilfuel}$ = Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers. Use a value of 64.4 t CO₂/TJ for South Asia region

- $N_{y,i,j}$ = Number of project devices of type i and batch j operating during year y
- μ_y = Adjustment to account for any continued use of pre-project devices during the year y when applying equations 7 and 9 (fraction). Use 1.0 in other cases

$B_{y,savings}$ (Quantity of woody biomass that is saved) is determined using option 3 of the methodology as below:

$$B_{y,savings,i,j} = B_{old,i,j} \times \left(1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}}\right)$$

Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j ($B_{old,i,j}$) is determined ex-ante to be 3.80 ton/household/year as per baseline survey /10/. Efficiency of pre-project device ($\eta_{old,i,j}$) is taken 10% default value as per applied methodology /6/. Efficiency of project device ($\eta_{new,i,j}$) is 30.29% for HPNJE-01ND model and 29.79% for Greenway ICS model as certified by Renewable Energy Test Station (RETS), Nepal /11/.

Number of project devices of type i and batch j operating during year y is 15,292 as verified from project commissioning details /19/,/24/.

Fraction of woody biomass that can be established as non-renewable biomass (f_{NRB}) is calculated following procedures outlined in the tool to calculate fraction of NRB referred in the methodology AMS-II.G, version 11.1. The resulted f_{NRB} is 86.1%. The f_{NRB} is endorsed by Ministry of Forest and Environment, Nepal dated 25/11/2018 /20/ which is calculated as per the tool and therefore, justifies the f_{NRB} value for the project activity.

Accordingly, Baseline emissions estimated to be 33,667 tCO₂ per annum. As per paragraph 39 of the methodology, $B_{y,savings}$ is multiplied by a net to gross adjustment factor of 0.95 to account for leakage. Therefore, the annual baseline emissions estimated ex-ante from the project activity is 31,983 tCO₂e/year.

Achieved emission reductions from the monitoring period:

The number of project devices of type i and age a that are operating in year y ($N_{y,i,a}$) during the monitoring period was monitored as per annual sample survey with 90/10 confidence precision and for the period 01/11/2018 to 31/10/2019 the result appeared to be 100% for both the models and accordingly the operational number of ICS during that period is 15,292. The adjustment to account for any continued use of pre-project devices during the year y (μ_y) found to be 96.9% for HPNJE-01ND model ICS and 98.4% for Greenway Jumbo model ICS.

Accordingly, the achieved emission reduction for the period from 01/11/2018 to 31/10/2019 calculated considering batchwise commissioning resulted to be 18,946 tCO₂.

Similarly for the period from 01/11/2019 to 31/10/2020 $N_{y,i,a}$ resulted 14,360 with 93.9% operational result of HPNJE-01ND stoves and 93.7% operational results of Greenway Jumbo stoves as per sample survey and adjustment to account for any continued use of pre-project devices during the year y (μ_y) found to be 95.5% for HPNJE-01ND model ICS and 96.9% for Greenway Jumbo model ICS. Accordingly, the achieved emission reduction for the period from 01/11/2019 to 31/10/2020 resulted to be 27,985 tCO₂. Therefore, total actual baseline emissions for the monitoring period from 01/11/2018 to 31/10/2020 is 46,931 tCO₂.

The emission reductions estimation can be replicated using the data and parameter values provided in the VCS-PD and supporting file submitted for registration. The data sources mentioned have been verified by the audit team. CCIPL confirms that the estimates provided in the VCS-PD are reasonable and the project participant has correctly applied the methodology; the calculations are complete and transparent and the data accuracy has been verified.

3.4.7 Methodology Deviations

No deviation from the applied methodology is applied.

3.4.8 Monitoring Plan

The monitoring plan meets the requirements stipulated in applied methodology AMS-II.G, version 11.1 and 'general guidelines for SSC CDM methodologies'. Below tables describe applicable parameters fixed ex-ante and to be monitored ex-post:

Data and parameters fixed ex-ante:

	Data/parameter	Unit	Value applied	Assessment
1	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j ($B_{old,HH}$)	tonnes/ household/year	3.80	As per baseline study conducted by Practical Action, baseline quantity of firewood consumed in pre-project scenario is 3.80 ton/year /10/. Similar projects registered under UNFCCC (PoA-9902) and Gold Standard (GS 6212, GS 6597) refer the higher value. The audit team also checked publicly available report prepared by GIZ which

				states average solid fuel use in traditional stoves is 5.6 tonne per year /14/. Therefore, PP has considered a reasonable value.
2	Efficiency of pre-project device ($\eta_{old,i,j}$)	%	10%	This value is default as per applied methodology (AMS-II.G, version 11.1) /6/.
3	Fraction of woody biomass that can be established as non-renewable biomass (f_{NRB})	%	86.1%	Calculated following procedures outlined in tool to calculate f_{NRB} referred in the methodology AMS-II.G, version 11.1 which is duly approved by Ministry of Forest and Environment, Nepal on 25/11/2018 /20/. Hence, accepted.
4	Net calorific value of the non-renewable woody biomass that is substituted ($NCV_{biomass}$)	TJ/tonne	0.0156	IPCC default for wood fuel /6/
5	Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers ($EF_{projected}$). $_{fossilfuel}$	CO ₂ /TJ	64.4	Default value as per applied methodology /6/.
6	Leakage adjustment factor	Fraction	0.95	Default value as per paragraph 39 of the applied methodology /6/.

Data and parameters to be monitored:

	Parameter	Description/Assessment
1	Number of project devices of type i and age a that are operating in year y $N_{y,i,a}$	To be monitored as per third party survey. Sampling standard shall be used for determining the sample size to desired confidence precision as per the applied methodology. If households are found continuing the use of traditional stoves, such households will be counted for having non-operational project device and equal proportion of households will not be counted towards emission reductions.

2	Efficiency of the device of each type i and batch j implemented as part of the project activity ($\eta_{new,i,j}$)	Either monitored in sample project ICS with WBT or default linear decrease in efficiency up to the terminal efficiency assumed as 20 per cent shall be applied through the life span of the project device (As per paragraph 37 (a) of the methodology).
3	Adjustment to account for any continued use of pre-project devices during the year y (μ_y)	Survey to conduct at least once in two years. Representative sample households were surveyed to check if the devices are operating or not. Sample for survey as per the "Guidelines for sampling and surveys for CDM project activities and programme of activities, version 4 (EB 86, annex 4)".
4	Life of project ICS	The life span should be reported in case where the PP are opting to account the efficiency loss as per paragraph 32. As per manufacturer specification life of project ICS is 7 years /15/.
5	Date of commissioning of project device i	The latest date of commissioning of a project devices used as the date of commissioning for the entire set of project devices. Entire project ICS of 15,292 are commissioned within 01/11/2018 to 21/06/2019 and verified from project database.
6	Number of project ICS distributed per house	Fixed and recorded at the time of commissioning/distribution of the project devices.

CC IPL has checked all the parameters presented in the monitoring plan against the requirements of the methodology; no deviations relevant to the project activity have been found in the plan.

CC IPL confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed VCS project activity can be reported ex post and verified.

3.5 Non-Permanence Risk Analysis

There is not any risk for the project activity.

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

The accuracy of GHG emission reductions are discussed in section 3.4.6 of this report. Operational status of project cook stoves are taken from survey results provided in the

emission reduction sheet. The survey records operational status of sample ICS and also records number of days user used traditional stoves. The reported results are consistent with survey forms and calculation is correctly done in consistent with applied methodology.

Sample plan:

PP's sampling approach:

PP has proposed simple random sampling plan using 90/10 as confidence / precision. This is in line with the applied methodology /6/. The sample size for operational status of project ICS is determined following guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0 (EB86, Annex 4) /26/.

CCIPL's verification sampling approach:

CCIPL has considered para 39 (a) of "Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 08.0" for determining the sampling size to be visited by VVB /27/. In case of the current validation & verification, the estimated emission reduction is 32,664 tCO₂e per year, the validation team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities' version 08.0 /27/: Considering Acceptable Quality Level (AQL): 0.5% Unacceptable Quality Level (UQL): 20% and producer risk of 5% and consumer risk of 20% a sample size of 8 was required as per Table 2 in the referred Standard /27/. Acceptance number (c) thus determined for the sample size is 0. CCIPL verified 15 samples to validate the project activity. The validation team selected random samples from PP's sample list. VVB has assessed (by off-site interview, telephonic and video call interview & desk review of contract document between PO & user) a total of 15 samples. The stoves details (unique serial number, date of installation, type of ICS, name of user and address) were also checked and found to be consistent with that reported in the installation database. No inconsistency was observed for any of the 15 samples with respect to telephonic interviews & document review of PO & user agreement, and that reported in the stove installation database. This assessment of the selected samples was done to ascertain the implementation status of the project activity w.r.t. the stove types, serial number, location etc. of ICS.

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

Number of ICS within the project activity ($N_{y,i,a}$): The project includes 15,292 ICS installed between 01/11/2018 to 21/06/2019 which has been checked from installation database /24/ and sales records /19/. During the monitoring period from 01/11/2018 to 31/10/2019 monitored was done considering annual sample survey with 90/10 confidence precision and

the result appeared to be 100% for both the models and accordingly the operational number of ICS during that period is 15,292. The adjustment to account for any continued use of pre-project devices during the year y (μ_y) found to be 96.9% for HPNJE-01ND model ICS and 98.4% for Greenway Jumbo model ICS.

The efficiency ($\eta_{new,i,j}$) for both the type of stoves remained same during the first year of monitoring period as PP opt to consider linear decrease in efficiency as per the applied methodology. Accordingly, the achieved emission reduction for the period from 01/11/2018 to 31/10/2019 calculated considering batchwise commissioning resulted to be 18,946 tCO₂.

Similarly for the period from 01/11/2019 to 31/10/2020 $N_{y,i,a}$ resulted 14,360 with 93.9% operational result of HPNJE-01ND stoves and 93.7% operational results of Greenway Jumbo stoves as per sample survey and adjustment to account for any continued use of pre-project devices during the year y (μ_y) found to be 95.5% for HPNJE-01ND model ICS and 96.9% for Greenway Jumbo model ICS. The efficiency ($\eta_{new,i,j}$) following paragraph para 37, (a) of AMS-II.G, version 11.1, considered 28.82% for HPNJE-01ND model ICS and 28.40% for Greenway Jumbo ICS with linear decrease in efficiency. Accordingly, the achieved emission reduction for the period from 01/11/2019 to 31/10/2020 resulted to be 27,985 tCO₂.

Total emission reductions for the monitoring period is 46,931 tCO_{2e}.

5 VALIDATION AND VERIFICATION CONCLUSION

Carbon Check (India) Pvt. Ltd. (CC IPL), appointed by Value Network Venture Advisory Services Pte. Ltd, has validated & verified the greenhouse gas emission reductions reported for the project activity “Improved cook stove market development in rural Nepal” in Nepal with regard to the relevant requirements for VCS Version 4 activities.

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

The project correctly applies the approved baseline and monitoring methodology “AMS-II.G”, “Energy efficiency measures in thermal applications of non-renewable biomass”, version 11.1 /6/.

With improved efficiency compared to baseline cooking devices, the project results in reduction of CO₂ emissions that are real measurable and giving long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline

scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project “Improved cook stove market development in rural Nepal” are estimated to be on average 32,664 tCO_{2e} per year over the selected 10 years renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project’s emission reductions and of the sustainable development indicators. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is CCIPL’s opinion that the project participants are able to implement the monitoring plan.

In conclusion, it is CCIPL’s opinion that the project activity “Improved cook stove market development in rural Nepal” in Nepal, as described in the joint VCS PD & monitoring report version 4.1 of 13/09/2021, meets all relevant UNFCCC and VCS Version 4 requirements for the VCS VER and all relevant host Party criteria and correctly applies the baseline and monitoring methodology “AMS-II.G, “Energy efficiency measures in thermal applications of non-renewable biomass”, version 11.1. CCIPL thus requests registration of the project as a VCS project activity.

Also, the verification of the emission reductions reported for the period from 01/11/2018 to 31/10/2020 with regard to the relevant requirements for VCS activities.

The project participants of “Improved cook stove market development in rural Nepal” project are responsible for:

The preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the joint project description and monitoring report.

The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project

It is the responsibility of CCIPL to express an independent verification opinion about the project’s conformity with the requirements of VCS and on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an off-site assessment, CCIPL can confirm that:

the project has been implemented and operated as per the design document;

the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS requirements;

the monitoring is in place as per the applied baseline and monitoring methodology;

It is CCIPL's opinion that the GHG emission reduction stated in the joint project description and monitoring report version 4.1 of 13/09/2021 for the "Improved cook stove market development in rural Nepal" project in Nepal for the period 01/11/2018 to 31/10/2020 are fairly stated. The GHG emission reductions were calculated correctly on the basis of the approved monitoring methodology AMS-II.G, "Energy efficiency measures in thermal applications of non-renewable biomass" version 11.1 and the monitoring plan contained in the VCS-PD.

Hence, CCIPL is able to certify that the emission reductions from the project during the monitoring period from 01/11/2018 to 31/10/2020 amount to 46,931 tCO_{2e}.

Verification period: From [01-November-2018] to [31-October-2020]

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO _{2e})	Project emissions or removals (tCO _{2e})	Leakage emissions (tCO _{2e})	Net GHG emission reductions or removals (tCO _{2e})
01/11/2018 to 31/12/2018	3,916	0	0	3,916
01/01/2019 to 31/12/2019	23,433	0	0	23,433
01/01/2020 to 31/10/2020	19,581	0	0	19,581
Total	46,931	0	0	46,931

APPENDIX A: ABBREVIATIONS

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CC IPL	Carbon Check India Pvt. Ltd.
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission Factor
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of Verification
MR	Monitoring Report
NGO	Non-governmental Organization
NPV	Net Present Value
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission

PP(s)	Project Participant(s)
Ref.	Document Reference
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VCU	Verified Carbon Unit
VVS	Validation and Verification Standard
VVB	Validation and verification body

APPENDIX B: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUEST

Table 1. CL from this validation/verification

CL ID	01	Section no.	1.4	Date : 30/12/2020
Description of CL				
<ol style="list-style-type: none"> 1. <i>PP is requested to clarify how the ownership as project proponent by 'Practical Action' is claimed with documentary evidence.</i> 2. <i>Please provide commissioning details of project ICS to demonstrate start date</i> 3. <i>The evidence for efficiency of ICS under the project</i> 4. <i>The evidence for life of ICS under the project</i> 5. <i>Please provided declaration clarifying the project status in other carbon credit platforms</i> 6. <i>Please provide supporting documents for the stakeholder consultation (newspaper advertisement, stakeholder invitation documents, attendance sheet, minutes of the meeting etc.</i> 				
Project participant response				Date : 03/01/2021

1. The sales invoice containing the carbon waiver declaration by the users has been submitted as proof of ownership of project.
2. The start date proof has been provided to establish start date.
3. ICS efficiency test certificate has been provided.
4. Evidence of lifetime of ICS has been provided.
5. Declaration that the project is not registered under any other carbon mechanisms has been provided.
6. Supporting document for LSC meeting are provided.

Documentation provided by project participant

Sales invoice

ICS test certificate

Lifetime certificate

Declaration of project not registered under any other carbon mechanism

LSC meeting documents

VVB's assessment

Date: 06/01/2021

The sales invoice clearly mention carbon credit rights ownership lies with Practical action which justifies the ownership of the project activity.

Sales invoices justify the start date as the project ICS are metallic stoves which can be used on the same day of its sale.

Lifetime certificate from project ICS manufacturer are submitted and consistent with PP's reporting in the project design.

The project proponent has declared the project is applied only for VCS registration.

The supporting documents justify the local stakeholder consultation was held on the day reported in the project design and public notice inviting stakeholders and attendance sheet of participants in the stakeholder meeting was submitted.

In summary, CL is closed.

Table 2. CAR from this validation/verification

CAR ID	01	Section no.	1.11/3.4	Date: 30/12/2020
Description of CAR				
<ol style="list-style-type: none"> 1. As per ER sheet the project includes couple of models with different efficiency, whereas the PDD provides only two model details in various sections. Please clarify the discrepancy. 2. The section 3.4 should update with detailed information on baseline selection and data parameters used in baseline estimation. 				
Project participant response				Date: 03/01/2021
<ol style="list-style-type: none"> 1. In the project only two model of ICS are disseminated, the error in the PDD has been corrected. 2. The section 3.4 has been update to describe the baseline identification. 				
Documentation provided by project participant				
<i>Revised PDD</i>				
VVB's assessment				Date: 06/01/2021
<p>Two improved model of cookstoves are disseminated in the project activity which is consistent with sales receipt and project implementation database. The baseline selection is justified in detailed and consistent with relevant survey and publicly available details. Hence, CAR is closed.</p>				

CAR ID	02	Section no.	3.5	Date: 30/12/2020
Description of CAR				
<ol style="list-style-type: none"> 1. The additionality section mention PoA and CPA. Please clarify. 2. The additionality is demonstrated with NPV analysis. However no NPV analysis worksheet provided to cross check or detailed calculation/input values provided in the VCS-PD 				
Project participant response				Date: 03/01/2021
<ol style="list-style-type: none"> 1. The typo errors are corrected in the revised PDD. 2. NPV analysis sheet has been submitted now. 				
Documentation provided by project participant				
<i>Revised PDD</i>				
<i>NPV analysis sheet with supporting's of cost</i>				

VVB's assessment	Date: 06/01/2021
The NPV analysis submitted clearly shows the project is additional and carbon credit is essential for the project to sustain. The additionality is justified as per the additionality tool referred by the applied methodology and hence CAR is closed.	

CAR ID	03	Section no.	5.1	Date: 30/12/2020
Description of CAR				
1. $B_{old,HH}$ is applied as 4.23 tonnes/HH/year whereas the justification states 'Default value baseline firewood consumption i.e. 0.5 tons/capita/year is applied. Baseline Survey shows there are averagely 4.03 persons / household. Based on the above, $B_{bold,p} = 0.5 \text{ tons/capita/year} * 4.03 \text{ persons/household} = 2.015 \text{ tons/household/year}$ '. Kindly clarify the inconsistency.				
2. Kindly provided the report "Preparation of Baseline for Improved Cook Stoves (ICS) Programme in Hilly Districts of Far Western Development Region". September 2012 referred in the project.				
Project participant response				Date: 03/01/2021
1. <i>the $B_{old,HH}$ source and justification has been corrected which is as 4.23tone/hh/year as per the baseline survey carried out the project developer.</i>				
2. <i>The mention of report was erroneously included in the PDD which has been removed now.</i>				
Documentation provided by project participant				
<i>Revised PDD</i>				
VVB's assessment				Date: 06/01/2021
The baseline firewood consumption value is sourced from baseline survey report correctly and value is found appropriate when cross checked with other publicly available reports. Hence, CAR is closed.				

CAR ID	04	Section no.	5.3	Date: 30/12/2020
Description of CAR				
<i>The sample size calculation formula is not provided for mean value parameter.</i>				
Project participant response				Date: 03/01/2021

<p>Since the efficiency of ICS are not monitored through WBT, thus there are no mean value parameters involved except the proportional parameters which are already included in the excel sheet for monitoring emission reductions.</p>	
<p>Documentation provided by project participant</p>	
<p>N/A</p>	
<p>VVB's assessment</p>	<p>Date: 06/01/2021</p>
<p>PP's justification is accepted, as the mean value parameters is required which efficiency is monitored. However, PP has applied linear decrease in efficiency and hence the mean value parameter formula for sample size is not required. CAR is closed.</p>	

CAR ID	05	Section no.	6.1	Date: 30/12/2020
<p>Description of CAR</p>				
<ol style="list-style-type: none"> For monitoring parameter $N_{y,i,a}$, how the monitoring is done, is not provided in the joint PD-MR. If annual survey was conducted, details of survey shall be provided. For monitoring parameter $\eta_{new,i,j}$, please clarify in the joint PD-MR whether reported efficiency is monitored value or as per linear decrease in efficiency. Appropriate option is only required to mention in the joint PD-MR. Number of project devices distributed per household is mentioned as 15,292. Please clarify the appropriateness of the value. 				
<p>Project participant response</p>				<p>Date: 03/01/2021</p>
<ol style="list-style-type: none"> Monitoring survey records are now provided for monitoring parameter $N_{y,i,a}$. The reported efficiency are the values as per para 37 of AMS II G, ver 11.1, i.e. as per linear decrease in efficiency. Now the number of project devices distributed per households has been revised to correctly reflect the information in the revised PDD under monitored parameter table. 				
<p>Documentation provided by project participant</p>				
<p>Monitoring survey records</p> <p>Revised PDD</p>				
<p>VVB's assessment</p>				<p>Date: 06/01/2021</p>

It is noted monitoring survey was conducted in October 2019 and September 2020 with annual frequency considering desired confidence precision of 90/10. Desired confidence precision achieved. The linear decrease in efficiency has been correctly considered by PP while calculating emission reductions. Therefore, CAR is closed.

CAR ID	06	Section no.	6.2	Date: 30/12/2020
Description of CAR				
<ol style="list-style-type: none"> 1. The actual sample approach used for the monitoring period is not provided in the 2. How the efficiency loss has been applied in actual emission reductions achieved is not transparent in the emission reduction worksheet. 3. Vintage-wise emission reductions are not provided in the joint PD-MR and emission reduction worksheet. 				
Project participant response				Date: 03/01/2021
<ol style="list-style-type: none"> 1. <i>The PDD has been revised and the actual sampling approach has been included under Appendix of the PDD.</i> 2. <i>The worksheet has been correct to reflect how the efficiency loss has been applied. Pls refer the comments balloon under the efficiency values of MP-02 ER calculation sheet.</i> 3. <i>Vintage wise ER are provided in the joint PD-MR.</i> 				
Documentation provided by project participant				
<p><i>Revised PDD</i></p> <p><i>Emission reduction sheet</i></p>				
VVB's assessment				Date: 06/01/2021
<p>The actual sampling details are provided in the joint PD and MR which is consistent with emission reduction worksheet and UNFCCC sampling standard. The updated emission reduction worksheet correctly considers the linear decrease in efficiency as per the applied methodology and vintage wise emission reductions are correctly provided in joint PD-MR and emission reduction worksheet. Hence, CAR is closed.</p>				

APPENDIX C- Sample of remote audit snaps and audit check list



Remote Survey Assessment Questionnaire – ICS projects

Date of interview:	Time of interview:
Stove serial number	
Name of the person being interviewed	
The person being interviewed is	<input type="checkbox"/> Buyer <input type="checkbox"/> End-user <input type="checkbox"/> Both
Is the respondent the same person who was interviewed during Monitoring Survey	<input type="checkbox"/> Yes <input type="checkbox"/> No If No, then please specify the relationship of the respondent with the household/stove owner/the person who was interviewed during monitoring survey:
Contact number	

Sl. No.	Questions	End-users response	Assessment by Verification Team	Observations / Comments
1.	Are you in possession of project ICS?			
2.	How many devices do you have with you?			
3.	Please confirm the following: a) Model of the ICS b) Serial number of ICS			
4.	What is your family size?			
5.	What is the composition of your family? (Please specify the number of males, females and children)			
6.	For how many members do you cook food on daily basis?			
7.	How many times in a day you use the project ICS?			

8.	What type of stove/s were you using before you bought the project ICS?			
9.	What did you do with the old stove after buying the project ICS? (if the end-user replies that it has been dismantled or destroyed then no further questions.)			

10.	If you are still in possession of the baseline stove, then please provide the reason for possession of the baseline stove?			
11.	How many times do you use the baseline stove in a day / week / month?			
12.	Do you use any additional stoves along with?			
13.	How often do you use the other stove along with project ICS?			
14.	What fuel/s do you use in the additional stove/s?			
15.	What other kind of stoves / fuels (viz., charcoal, kerosene, LPG, electricity) do you use for cooking in your household?			
16.	What is the source of firewood that you use in the stoves? a) Purchase from market / local shops b) Collect it from the forest?			
17.	How often do you purchase the fuelwood?			
18.	How much quantity of firewood do you purchase at once?			
19.	Is there any special / traditional meal that requires use of traditional stoves?			
20.	If yes, please confirm how often do you cook such dishes?			
21.	Are there any occasions (such as guest visits or party or family get together), which forces the use of traditional / additional stoves in parallel with project ICS?			
22.	Was Water Boiling Test conducted on your project stove?			
23.	Where was the WBT conducted: a) At / near your house? b) Was the stove taken by PP for testing?			

24.	In case the stove was taken away for testing, was a replacement stove provided to the household for that duration?			
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