



SMG- COOKSTOVE PROGRAM 3



Document Prepared by:

LGAI Technological Center, S.A. (Applus+ Certification)

Project Title	SMG - COOKSTOVE PROGRAM 3
Report Title	SMG - COOKSTOVE PROGRAM 3
Version	01.4
Report ID	TQC 18723
Verification Period	01-December-2022 to 30-June-2023
Client	Shri Maa Marketing Private Limited
Pages	97
Date of Issue	19- September-2024
Prepared By	LGAI Technological Center, S.A. (Applus+ Certification)
Contact	Campus UAB – Ronda de la Font del Carme, s/n 08193 Bellaterra – Barcelona (Spain)

	Tel.: +34 93 567 20 08 Fax.: +34 93 567 20 01 www.appluscertification.com agustin.calle@applus.com carla.debat@applus.com
Approved By	LGAI Technological Center S.A. (Applus+ Certification) VVB Technical Manager – Mr. Agustín Calle de Miguel
Work Carried Out By	Lead Auditor & Technical Expert: Mr. Deepak Pundlik Technical Expert-in-Trainee: Dr. Atul Takarkhede Observer: Mr. Deepak Prajapati Technical Reviewer: Mr. Nikunj Agarwal

Summary:

LGAI Technological Center (hereinafter referred to as Applus+ Certification) is contracted by Shri Maa Marketing Private Limited to conduct the joint validation and verification of the project “SMG-COOKSTOVE PROGRAM 3”, VCS ID 3771 against VCS standard version 4.5^{7(b)/}

The grouped project’s design description, baseline, monitoring plan, and compliance with applicable VCS and host party criteria are all confirmed as part of the joint validation and verification process. The monitoring plan of the Joint PD&MR (Project ID 3771) is also implemented, and the monitoring methodology is used in accordance with the VCS methodology VMRO006 “Energy efficiency and fuel switch measures in thermal application”, Version 1.2^{6/} of the methodology. A site visit was performed to confirm the information provided by PP^{9/}.

The main purpose of the project is the distribution of fuel-efficient improved cook stoves (ICS) in Madhya Pradesh, state of India. The Improved cookstove distributed through this project have replaced the low-efficient traditional cookstoves. Through this project, the distribution, and installation of high thermal efficient improved cook stoves (ICS) has been undertaken for households. The ICS burns wood more efficiently thereby improving thermal energy transfer to pots, hence saving fuel wood and greenhouse gases. This will not only lead to reduce deforestation but will also reduce health hazards from indoor air (smoke) pollution, decrease in time spent by women and children for collecting the firewood.

The first crediting period’s expected annual average emission reductions over a seven-year period are 88,940 tCO₂e/year and 622,580 tCO₂e will be reduced during the course of the seven years of the crediting period. During the 1st monitoring period from 01-December-2022 to 30-June-2023 (inclusive of both the dates) 67,652 tCO₂e GHG emissions were reduced.

Applus+ certification now has enough proof to confirm that the stated criteria, as per VCS requirements and applied methodology, have been met after reviewing the joint Project Description and Monitoring report (Joint PD & MR) and additional documents pertaining to baseline and monitoring methodology, as well as after conducting background research, conducting onsite visit, follow-up interviews and speaking with stakeholders^{9/}.

In particular, the project’s baseline, monitoring plan, and compliance with pertinent VCS and host party criteria was thoroughly and independently evaluated against the appropriate VCS requirements as part of the Joint validation and verification process. These are verified to ensure that the project design is legitimate, reasonable, and fits the specified requirements. All VCS initiatives must undergo joint validation and verification, which is regarded vital to assure stakeholders of the project’s quality and the expected generation of emission reductions. The goal of Applus+ certification is to carry out a thorough, impartial evaluation of the grouped project activity’s joint validation and verification.

A review of the Joint PD & MR that is impartial and unbiased is what is meant by the joint validation and verification scope. The VCS Program Guide (v4.4)^{7/}, VCS Standard (v4.5)^{7/}, Program Definitions (v4.4)^{7/}, VCS Registration & Issuance Process (v4.3)^{7/} applicable at the time are compared to the Joint PD & MR to ensure that the project complies with the requirements of the applied baseline and monitoring methodology, namely VMRO006, Version 1.2^{6/}.

Reviewing the Joint VCS PD & MR for the monitoring results and confirming that the monitoring methodology was applied in accordance with the monitoring plan and monitoring parameters which are the main goals of the verification. After reviewing the submitted ER sheets (ex-ante and ex-post), it was confirmed that the reductions due to the anthropogenic emissions by sources are sufficient, conclusive, and presented in a clear and understandable way. In order to establish that the project has been implemented in line with design and conservative assumptions, as specified, the monitoring plan, Joint PD & MR, submitted ER sheets (ex-ante and ex-post) and the project's compliance with relevant VCS guidelines and host party criteria were specifically checked.

Verification of project implementation and operation with regard to the Joint PD & MR, implemented monitoring plan with the Joint PD & MR, and applied baseline & monitoring methodology were all included in the scope of the verification. It was also verified that the actual monitoring systems and procedures are adhered to, as per the monitoring systems and procedures outlined in the monitoring plan. Identification of any substantial inaccuracies in the stated GHG emission reduction estimations and articulating a conclusion with a fair degree of assurance was part of the assessment. It is confirmed by the assessment team that the stated GHG emission data is appropriately supported by evidence.

This joint validation & verification has been carried out using a risk-based methodology. 04 Corrective Action Requests (CARs) and 09 Clarification Requests (CLs) were raised during joint validation and verification and successfully closed. No FAR was raised as a part of joint validation and verification.

The project has successfully been validated and verified, and further certified for emission reductions under VCS as it meets the criteria outlined by the Joint PD & MR template version 4.2^{6/}, the VCS Standard version 4.5^{7/}, and the applied methodology VMR0006, Version 1.2^{6/}. The project is recommended for registration and issue after further confirmation of a combined positive validation and verification opinion showing the project complies with the relevant VCS requirements.

Our view refers to the projects' claimed GHG emissions, GHG emission reductions as a result, and to the project's legitimate baseline, monitoring, and supporting papers. Based on the information viewed and assessed, we confirm that the grouped project activity "SMG - COOKSTOVE PROGRAM 3" reduced emissions by 67,652 tCO_{2e} from 01-December-2022 to 30-June-2023, including both the days.

CONTENTS

1	INTRODUCTION	6
1.1	Objective	6
1.2	Scope and Criteria	7
1.3	Reasonableness of Assumptions and Level of Assurance	8
1.4	Summary Description of the Project	8
2	VALIDATION AND VERIFICATION PROCESS	9
2.1	Method and Criteria	9
2.2	Document Review	15
2.3	Interviews	15
2.4	Site Visits	16
2.5	Resolution of Findings	17
3	VALIDATION FINDINGS	18
3.1	Project Details	18
3.2	Participation under Other GHG Programs	29
3.3	Safeguards	29
3.4	Application of Methodology	31
3.5	Non-Permanence Risk Analysis	58
4	VERIFICATION FINDINGS	59
4.1	Accuracy of GHG Emission Reduction and Removal Calculations	59
4.2	Quality of Evidence to Determine GHG Emission Reductions and Removals	72
5	VALIDATION AND VERIFICATION OPINION	73
	APPENDIX 01: DOCUMENT REFERENCE	76
	APPENDIX 02: ABBREVIATIONS	78
	APPENDIX 03: FINDINGS OVERVIEW	79
	APPENDIX 04: COMPETENCE STATEMENTS	93
	APPENDIX 05: TECHNICAL SPECIFICATIONS OF IMPROVED COOKSTOVE	95

1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (hereinafter referred to as Applus + Certification or the VVB) has been contracted by Shri Maa Marketing Private Limited (Project proponent), to undertake the joint validation and verification of the project titled “SMG - COOKSTOVE PROGRAM 3”. The assessment team have reviewed the GHG data collected for the monitoring period from 01-December-2022 to 30-June-2023 (both days included) covered in this joint validation and verification. The objective of the joint validation and verification is to have an independent third- party assessment of the Joint PD & MR/^{1/} and supporting documentation to ensure compliance with the rules, regulations and guidelines by VCS requirements. In particular;

- The project's baseline is assessed against “VMR0006 - Energy Efficiency and Fuel switch measures in thermal applications, Version 1.2”/^{6/}
- The project’s monitoring plan is assessed against “VMR0006 - Energy Efficiency and Fuel switch measures in thermal applications, Version 1.2”/^{6/}
- The project’s additionality justification is assessed against “VMR0006 - Energy Efficiency and Fuel switch measures in thermal applications, Version 1.2”/^{6/}
- The projects compliance with, the requirements of and other relevant rules, including the Host Country legislation and sustainability criteria along with
- VCS standard version 4.5 /^{7/}
- VCS Program definition 4.4 /^{7/}
- VCS program guide version 4.4/^{7/}
- VCS Methodology VMR0006 version 4.2 /^{6/}
- VCS Registration and Issuance Process, version 4.3/^{7/}
- CDM Methodology AMS.II.G. Version 13.0 /^{6/}
- CDM Tool 12 - Project and leakage emissions from transportation of freight, version 1.1.0 /^{6/}
- CDM Tool 30 - Calculation of the fraction of non-renewable biomass, version 4.0 /^{6/}

LGAI Technological Center, S.A. (Applus+ Certification) as the Validation/Verification Body (VVB) for the grouped project activity is accredited as a DOE by UNFCCC and also meets the competence requirements as set out in the normative reference ISO 14065:2020.

Validation and verification are a requirement for all VCS projects and are seen as necessary to, through the provision of objective evidence, provide assurance to stakeholders of the quality of the project and that the requirements for a specific intended future use or application have been fulfilled regarding the GHG claims (i.e. generation of estimated/real verified carbon units (VCUs)).

This report contains the findings and resolutions from the validation and verification of the grouped project activity.

1.2 Scope and Criteria

For Validation:

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan (VMR0006, Energy Efficiency and Fuel switch measures in thermal applications, Version 1.2)^{/6/} which are included in the VCS joint PD & MR^{/1/} and other relevant supporting documents. The scope of work covered in the validation is described as below:

- To validate whether the grouped project activity meets the requirements of VCS Standard (V4.5)^{/7/} and VCS program guide (v4.4)^{/7/} including additionality, proof of title and compliance with local laws.
- To evaluate whether the baseline and monitoring plan are in conformance with the applied methodology from the VCS approved GHG program
- To confirm that the information presented are completed, consistent, transparent and free of omission or material error.
- Background investigation and follow up interviews
- Issuance of draft validation report with CARs, CRs & FARs, if any
- Final validation opinion

The information in the VCS joint PD & MR^{/1/} is reviewed against the criteria of VCS Standard (v4.5)^{/7/}; the VCS program guide (v4.4).^{/7/}

Applus+ Certification has performed validation based on a risk-based approach focusing mainly on the significant risks to meet the qualification criteria and the ability to generate Verified Carbon Units (VCUs).

For Verification:

The scope of the verification was the independent and objective review and ex-post determination of the monitored reductions in GHG emissions from “SMG – COOKSTOVE PROGRAM 3”. The verification of this project was based on the validated VCS joint project description & monitoring report and supporting documents submitted by the project proponent to the verification team. The documents were reviewed against the following guidance and protocols:

- VCS Program Guide (v4.4)^{/7(a)/}
- VCS Standard (v4.5)^{/7(b) /}
- VCS Program Definitions (v4.4)^{/7/}
- VCS approved methodology VMR0006, version 1.2, ^{/6/}
- CDM approved methodology AMS II.G, version 13.0 and applicable tools i. e. CDM tool 12, v. 1.1.0 and CDM tool 30, v.04.0

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the Joint VCS PD & MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VCUs. The joint validation and verification is not meant to provide any consulting towards the project

proponent. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

The only purpose of the joint validation and verification is its usage during the registration & issuance processes as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the joint validation and verification opinion, which will go beyond that purpose.

1.3 Reasonableness of Assumptions and Level of Assurance

The joint validation and verification report is based on the joint PD & MR, supporting evidences made available to the VVB and information collected through performing interviews and during the On-site visit (OSV). The joint validation and verification report expresses a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement. VVB applied a materiality threshold of 5% with respect to omission or misstatements concerning reported quantities as per VCS standard.^{/7/} The level of assurance of the joint validation and verification report falls under reasonable assurance engagements as selected by the PP. The joint validation and verification team validated/verified the random selected samples from project proponent random sample data applied on total household (30,000) and confirms that the reported emission reductions are free from any type of material errors.

1.4 Summary Description of the Project

The project presently implemented in Madhya Pradesh states of India. As the target populations are unable to afford these stoves (ICS), project promoters have distributed ICS free of cost.

The end-user has been informed in advance that the use of ICS generates carbon finance which in turn is used to cover the price of ICS and for recovering project implementation costs. Shri Maa Marketing Private Limited identified the potential locations where the majority of the population is using the traditional cookstoves, based on available information or baseline survey, for the distribution of improved cookstoves.

The project locations of initial Project Activity Instance are in Madhya Pradesh state of India. Shri Maa Marketing Private Limited has distributed 30,000 ICS in Madhya Pradesh as confirmed based on the submitted monitoring database.^{/14/}.

The current project is a grouped project activity. This grouped project activity includes multiple project activity instances. Each project activity instance is the cookstove distributed to the end users. VVB has confirmed during onsite visit that each project activity instance would be one ICS distributed to each end user. The first project activity instance i.e. first ICS was implemented and commissioned on 01-December-2022 under this grouped project activity. 30,000 project activity instances (ICS) have been implemented as a part of this project activity.

Technical specifications of the distributed ICS are mentioned in appendix 05 of this report.

PP may adopt the modified stove models with improves efficiency for future distribution under the current grouped project activity.

Technical details that is mentioned in Appendix 05 of this report are checked with the Manufacturer's Technical specification,

and found correct. Same is confirmed during the onsite assessment.

The first crediting period's expected annual average emission reductions are 88,940 tCO₂e and 622,580 tCO₂e over the course of the seven-year crediting period.

For current first monitoring period from 01-December-2022 to 30-June-2023, the project has reduced 67,652 tCO₂e of GHG emissions.

Based on an examination of the Joint PD & MR^{/01/}, ER estimation and verification spreadsheet^{/02/}, the estimated emission reductions were validated and actual emission reductions were verified.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

Joint validation and verification was conducted using Applus+ Certification's procedures in line with the requirements specified in the VCS standard version 4.5 requirements, 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 proposed implementation and operation of the grouped project activity, as well as the measures employed to report emission reductions, must be evaluated and decided to meet with the criteria and pertinent recommendations provided by the VCS. The validation and verification process consists of the following phases;

- A desk review of the Joint PD&MR.
- A physical site visit and follow-up interviews with project stakeholders.
- Findings were raised and resolved.
- The resolution of outstanding issues and issuance of the final report and opinion.

Since the project requires sampling, based on the provisions of CDM Standard: Sampling and surveys for CDM project activities and programmes of activities, version 9.0- VVB has undertaken the following sampling plan with respect to the project validation and verification.

Para 30 and 31 of the CDM sampling standard version 09 states, in order to determine the sample size, the VVB should specify in advance, using its own professional judgement:

- (a) **Acceptable quality level (AQL) or the level of assurance**, that is the proportion of acceptable discrepancies between the project participants' or the coordinating/managing entity's sample records and the VVB sample records (i.e. VVB field/on-site inspection results) (e.g. 1 per cent);
- (b) **Unacceptable quality level (UQL)**, that is the proportion of unacceptable discrepancies between the project participants' or the coordinating/managing entity's sample records and the VVB sample records, e.g. 20 per cent.

Para 31 of CDM sapling standard, version 9.0 states, the maximum errors associated with the determination indicated in paragraph 30 above should remain at levels indicated below:

- (a) A 10 percent chance that the VVB will wrongly reject the project participants' or the coordinating/managing entity's records (i.e. reject a set of records of acceptable quality);
- (b) A 10 per cent chance that the VVB will wrongly accept the project participants' or the coordinating/managing entity's records (i.e. accept a set of records which is unacceptable).

Thus,

AQL: 1%

UQL: 20%

Producer risk: 10%

Consumer risk: 10%

Based on the above allowance given by the CDM sampling standard, VVB selected 18 randomized households from the state of Madhya Pradesh for acceptance surveying based on PP's database for baseline survey project survey. Households already surveyed by the PP and the samples selected by PP are based on sampling calculation presented in the VCS joint PD& MR which is found appropriate. The choice of 18 households is the minimum allowed number of samples as per the CDM sampling standard with 1 acceptance number. Since this is an acceptance sampling in line with para 28 of CDM sampling standard, version 9.0, no oversampling was attempted by VVB, as it would go against the sampling guidance.

As mentioned above, since the project involves joint validation and verification scope; VVB has conducted random sampling from the baseline survey sample dataset and project survey sample dataset submitted by PP.

Assessment of PP's sample size calculation:

PP has selected sampling calculation method as per CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities, version 04.0. VVB noted that there are different ways available to obtain the estimates of the parameter of interest: Project proponent referred to option: preliminary sample which is in line with the requirement and hence accepted.

As per para 12 of CDM guideline for sampling, if the population is homogeneous then simple random sampling can be conducted using equation 1.

PP has used 95% confidence level and 10% relative precision level which is acceptable as VVB noted that use of 90% confidence level and 10% relative precision is not mandated by the guideline.

Hence the no. of samples are calculated by PP using the following formula which is found to be correct.

$$n \geq \frac{1.96^2 N V}{(N - 1) \cdot 0.1^2 + 1.96^2 \cdot V}$$

Where:

$$V = \left(\frac{SD}{p} \right)^2$$

N		Sample Size
N		Population Size (Total number of households or ICS)
P		Weighted overall expected mean
SD²		Weighted overall expected variance
1.96		Represents the 95% confidence required (In the case of 90% confidence, 1.645 shall be used)
0.1		Represents the 10% relative precision

Based on the above equation, PP has selected 31 samples each randomly from the baseline survey results and monitoring survey results.

VVB has checked the calculation presented in the excel datasheet for sample calculation and found it appropriate.

From the selected XX samples by PP, VVB has randomly selected 18 samples based on the criteria defined in the CDM sampling standard, version 3.0.

Table 1: Person interviewed as a part of baseline survey:

Name	Baseline Survey ID number	Date	Reason	Points discussed
Jitendra Sahu	480551	16-October-2023 to 18-October-2023	Household for baseline survey	- General information - Number of people in household - Baseline stove type - Baseline fuel type - Baseline cook time - Environmental and health issues of Baseline stove
Bhagwan Singh	462036			
Mahesh Patidar	451442			
Sunilkumar Das	852111			
Pappu Yadav	851214			
Sulochna Donekar	840008			
Mohammed Rustamabbasi	821112			
Manju Bharti	821109			
Nasima Khatun	813104			
Aadil Raza	805124			
Sangeeta	792051			
Ramkrishna Das	743271			
Abdul Sattar	741001			
Shyamlal Gehlod	548883			
Goma Erwal	458775			

Dhannibai Ji	458883			
Gulaba Jagne	481226			
Seema Ji	457222			

Table 2: Persons interviewed as a part of project ICS survey:

NAME	ICS SR. NO.	Date	Subject discussed
Lavya warde	BA 6866	16-October-2023 to 18-October-2023	- General information
Baka Dawar	AG1333		- Number of people in household
Ramu Chotu	AG1395		- Time started using ICS stove
Laxmi	AH0124		- Baseline stove
SanjayKumar Ahirwar	AE8678		- fuel type
Anrkali Bai	AH0151		- cook time
Annu Pandey	AF5173		- Unique ID of stove
Maalti Bai	BA4744		- Fuel saving
Genda Bai	AF7816		- Using time and cooking frequency
Kamla Bai	AF7114		- Old stove handling method
Sont Gupta	AF5366		- SD impact
Anita Bai	AG1301		- Environmental and health issues of new stove
Tofan Singh	AF7839		- Difference in usage of new stove between dry and wet season
Bhayram Mangilal	AG1321		
Bodelal Vishwakarma	AF5097		
Mohan Bai	AF8309		
Pyar Singh	AG1306		
Kabhu Bai	AF7893		

All the randomly selected stakeholders/end users were interviewed by VVB audit team during the on-site visit.

Validation and Verification schedule:

Sr. No.	Description	Date
1	Desk review of the documents	11-October-2023 to 13- October-2023
2	Onsite visit	16-October-2023 to 18-October-2023
3	Release of Findings	26-October-2023

The on-site interviews were conducted with the baseline users and end users and following questions were asked to them:

Questions asked to end users of Baseline Stove:

The households who were using baseline stove in baseline scenario were asked the following questions:

- General information of households
 - Interviewee Name
 - ID No.

- Age, Gender
- Household location
- 2. Old cookstoves using situation
 - Are you the main user of the Old Cookstove at home?
 - How many people are there in your household?
 - What type and number of Stoves did you use? Three-stone fire, Self-built low efficient clay stove, Traditional low efficient stove or Others. If others, the type and number of stoves are
 - What kind of fuel do you use for the stove(s)? Charcoal, Firewood, or Others. If others, the kind of fuel is
 - Did an investigator come to your home to measure the fuel consumption for the cookstove during September to October, 2021? if yes, how long is the measurement period?
 - Do you think the Cookstove will generate smokes and cause respiratory or itching issues?

Feedback Received through the Interview: All the interviewees provided the general information of households. All of them were main users of the old cookstoves at home. There were 3-7 people in their household. All of them used three-stone fire. The number of stoves they used are 1 or more than 1 (only for 1 user). The fuel they used is firewood, no other fuel is used. All of them confirmed that the investigator came to their home to measure the average fuel consumption each day used for the cookstove and performed Kitchen Performance Test (KPT). The test period with each household is 3 successive days. Surveyor visited each household for 4 times and kept each visit being at roughly the same time each day. All of them expressed that the old cookstove will generate smoke and cause respiratory or itching issues. With old stove, all of them has to visit the field for collection of firewood at least 3 times a week and average collection time was 5-6 hours.

Questions asked to end users of Project Stove:

The households surveyed who used project stove in the project scenario and the monitoring & usage survey (M&U) for monitoring usage rate in project scenario were asked the following questions:

1. General information of households
 - Interviewee Name
 - Age, Gender
 - Household location
2. Project cookstoves using situation
 - Are you the main user of the Project Cookstove at home?
 - How many people are there in your household?
 - When did you buy the Project Cookstove?
 - Do you know you have waived ownership of ERs before used the Cookstove?
 - What document do you sign or what information do you provide when you were distributed the Project Cookstove?
 - When did you start using the Project Cookstove?
 - Does your Project Cookstove have unique serial No.? if yes, the No. is
 - After using the Project Cookstove, did Potential Energy/distributor come to your home to check the use of the Project Cookstove?
 - Please specify the using frequency and cooking times.
 - What type and number of old Stoves did you use? Three-stone fire, Self-built low efficient clay stove, Traditional low efficient stove or Others. If others, the type and number of stoves are

- What kind of fuel do you use for old stove(s)? Charcoal, Firewood, or Others. If others, the kind of fuel is
- What kind of fuel do you use for project stove? Charcoal, Firewood, or Others. If others, the kind of fuel is
- What type and number of Project Stove are you using? BDS or others. If others, the type and number is
- Are you still using other cookstove(s) after buying the Project Cookstove?
- Do you think the Project Cookstove is cleaner than the old stove? If yes, the reason is Less smoke, less respiratory issues, less itching issues or others. If others, please specify.
- Do you think using a Project Cookstove saves money or time compared to using the old stove?
- Did an investigator come to your home to measure the fuel consumption for the Project Cookstove by monitoring instrument?
- Are there any difference in usage of project cookstove between dry and wet seasons?

Feedback Received through the Interview: All the interviewees provided the general information of households. There are 3-8 people in their household. All of them are the main user of the Project Cookstove at home. They received the cookstoves free of cost from PP. All of them confirmed that they have waived ownership of ERs before used the Cookstove. When they received the stoves, they were provided with agreement/receipt. All of them confirmed that they start using the cookstove the same day as the receipt day. Their cookstoves have unique serial numbers. Before using the Project Cookstove, training sessions were conducted on how to use the Project Cookstove. After using the Project Cookstove, PP representative had visited to their home to check the use of their Cookstoves. All of them use the stove every day. The old stoves they used were Three-stone fire stove. They used firewood for their old stoves. All of them used 1 project cookstove at home. They use firewood for their project stoves. None of them still using the old stoves. All of them thought the project cookstove is cleaner than the old ones, bringing less smoke, less respiratory issues, less itching issues. All of them thought using a project cookstove saves fuel (also money and time) compared to using the old stoves. All of them confirmed there are no difference between dry and wet seasons in usage of project stove.

Questions asked to employees from project implementer:

- Interviewee Name
- Age, Gender
- Education
- Location
- Position
- When did you join the company?
- How did you obtain this job?
- What is your main work?
- What about the working condition?
- How many and what kind of job opportunities have been created through the project activities?
- When did Chinansi Foundation sell the first Project Cookstove under this project?
- How many Cookstoves have been sold by the company?
- How did Chinansi Foundation select monitoring team members?
- Any training provided to them?
- What kind of after-sales service is provided to the households?

Feedback Received through the Interview: All the interviewees provided the general information of themselves. The 3 staff interviewed are supervisor, stove distributor and PP representative. They

joined the company during 2021 and 2023. They are satisfied with the working condition and salary. They confirmed that there is more than 20 person employed by the company, including production, quality and marketing etc. The after-sales service included visiting households and visiting household on usage of project cookstoves.

Questions asked to field surveyors from project implementer:

- Interviewee Name
- Age, Gender
- Education
- Location
- Position
- When did you join the monitoring team?
- What is the main work, do you know your target and purpose of the work?
- Do you have any working instruction manual and procedure documents?
- What did you monitor during field survey?
- Have you attended any training? When and what is the content of the training?
- Whether your work is supervised by the employer?
- On the first day of your monitoring and investigation work, did someone supervise and guide you on how to do the monitoring and investigation?

Feedback Received through the Interview: All the interviewees provided the general information of themselves. All of them joined the monitoring team in late 2021. Their main work is monitoring fuel consumption of end user of project stoves and non project stoves. They monitoring the amount of fuel used per day for households. All of them attended the training about monitoring. Their monitoring and survey work is supervised by a supervisor. On the first day of the monitoring and investigation work, a supervisor guided them with their work.

2.2 Document Review

The joint PD & MR and other related documents were reviewed as a part of the joint validation and verification process, which is described in detail in Appendix 1 of this document. The assessment team uses a standard protocol to do the assessment of both validation and verification.

2.3 Interviews

The assessment team (As mentioned in Appendix 04 below) visited the site between 16-October-2023 to 18-October-2023 PP representatives and end users were questioned. The table includes information on the interviewees from PP side. ICS Users interviewed List is mentioned in the section 2.1 of this document.

Name	Role	Organization
Ms. Prachi Singh	Project Supervisor	Shri Maa Marketing Private Limited
Mr. Yogesh Malaviya	Stove Distributor	Shri Maa Marketing Private Limited

Mr. Satyendra Sharma	PP Representative	Shri Maa Marketing Private Limited
----------------------	-------------------	------------------------------------

The topics discussed during the interview range from the project's general characteristics and implementation to its technical details, including design and technical specifications, project implementation status, project start date, location, baseline identification, additionality, monitoring survey, local stake holder consultation, ongoing grievance mechanism, data recording and archiving procedures, and baseline/ project stove use. The evaluation was created using the interview input together with the paperwork and observations.

2.4 Site Visits

Total 18 sample (baseline users and end users each) were visited as part of the site visit. These interviewed stakeholders were selected through VVB sampling which is explained above in section 2.1. The selected samples i. e. 18 baseline users and 18 end users were interviewed separately by the assessment team.

The assessment team visited multiple locations between 16-October-2023 to 18-October-2023 to perform the following tasks:

- A review of information flows for generating, aggregating, and reporting the monitoring parameters;
- Interviews with relevant personnel to ascertain whether the operational and data collection procedures are carried out in accordance with the monitoring plan in the Joint PD&MR;
- A cross check of the information collected during the above-mentioned processes
- A comparison of the ICS functioning, observations of monitoring practices, applied methodology, including relevant tool(s), and, if appropriate, the applied standardized baseline, to the Joint PD&MR standards;
- A review of the calculations and presumptions used to calculate the GHG data and emission reductions;
- A determination of the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.
- A check of thermal efficiency test performed by an independent third party.
- A cross check of Local stakeholder consultation and training related details
- A review of the SDG parameters (SDG- 1, 3, 5,7 ,8 and 13) such as improvement of reduction of fuel wood expenses, saving wood fuel, improvement of indoor air quality, time spent on cooking and meaningful employment that is provided to SMG buddies.
- A cross check of baseline study report/^{15/} that was conducted by the project proponent.

In order to decrease audit risk to an acceptable low level and to obtain a fair degree of certainty for the current joint validation and verification, the assessment team has verified adequate appropriate audit evidences.

2.5 Resolution of Findings

The goal of this step is to identify, discuss, and draw conclusions about any problems that may affect the grouped project activity's ability to reduce emissions or have an impact on the recording, monitoring, and reporting of those reductions. These problems may be related to the project description, technical specifications, baseline and additionality, monitoring parameters and monitoring plans, implementation status, or operations of the grouped project activity. Based on the deskreview and site evaluation, this was carried out. The assessment team creates and/or maintains a validation and verification procedures (internal document) that documents conformities and non-conformities, which may include the following kinds of issues:

Corrective Action Request (CAR) is raised if one of the following occurs:

Non-compliance with the project description, applicability of monitoring methodology and its tools, additionality tools and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient:

Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;

Modifications to the implementation, operation and monitoring of the project activity has not been sufficiently documented by the project participants;

Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;

Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

Clarification request (CL) is raised if:

Information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

Forward Action Requests (FARs) is raised if:

Information is not available during the present validation or verification process, which would need to be verified in subsequent verification or monitoring period.

04 Corrective Action Requests (CARs) and 09 Clarification Requests (CLs) were raised and successfully closed during the current joint validation and verification.

Appendix 3 contains all of the findings that are brought forward and shared with project participants during the assessment. The section also covers the project participants' responses, if any, and the assessment team's evaluation subsequently for any open findings.

The grouped project activity is undergoing Joint Validation and Verification under VCS, and no FAR was raised.

3 VALIDATION FINDINGS

3.1 Project Details

Promoting improved cooking stoves (ICS) to residents of socially disadvantaged communities in Madhya Pradesh state of India is the main focus of this grouped project activity. In order to replace the traditional cooking stoves in the kitchen with stoves that are more efficient, the initiative aims to provide households with clean cooking alternatives. By substituting traditional cooking stoves with ICS, the project will reduce deforestation through less consumption of firewood. And, family members—particularly women—will be exposed to less indoor air pollution, saving money on health-related expenses

The grouped project activity started on 01-December-2022, which is also the date that the first beneficiary households sign the end user agreement, marking the beginning of the first batch distribution and started using the cookstove. VVB during on-site interviews have confirmed that the ICS's commissioning occurs when it is delivered to the beneficiary household and put into service (i.e. start cooking). As a result, the project's commercial functioning begins on the same day that ICS is delivered to the beneficiary family. However, for emission reduction purpose, the same are considered from the next day which is found appropriate.

A 07-year crediting period is expected to result in annual emission reductions of 88,940 tCO₂e and 622,580 tCO₂e over the seven-year crediting period, which runs from 01-December-2022 to 30-November-2029 (inclusive of both dates).

Details of the PP

Organization name	Shri Maa Marketing Private Limited
Contact person	Mr. Deep Ram Gupta
Title	Vice President – Green Projects
Address	Plot 1, Sector C, Govindpura Industrial Area, Bhopal, India – 462023
Telephone	+91- 989 375 8888
Email	deep.gupta@shrimaagroup.in

VVB team verified the details about the project proponent from the project web page¹ of the registry and found the data consistent.

No Other entities involved in the grouped project activity

Assessment team has verified the ownership of the cookstoves with the help of the End user agreement/^{12/} by crosschecking the name beneficiary and unique serial number mentioned in the end user agreement that is found that in lined with the project database. Moreover, Ownerships of carbon rights is with the Shri Maa Marketing Private Limited, which was also confirmed with the help of end-user agreements. This was also crosschecked during the onsite assessment interviews with the end users and PP. Same is mentioned in the Joint PD&MR/^{1/}, Hence, accepted.

Currently only one type of cookstove is distributed. The assessment team has checked the technical details of the cook stoves with the help of technical specification/^{8/} brochure provide by the PP. Assessment team has also confirmed the efficiency with same document. Efficiency is also crosschecked with the help of third-party efficiency certificates/^{5/} and found it correct and accurate. Hence accepted.

VVB team has also confirmed with the PP that there is no commercial sensitive information that is being withheld.

Contributions related to the Sustainable development Goals are mentioned in the section 4.1 of this document. Same is checked and confirmed by the VVB team.

The project will reduce 67,652 tCO₂e GHG emissions during the first monitoring period, which is from 01-December-2022 – 30-June-2023 (inclusive of both the dates).

As per the calculation mentioned in the Ex-ante ER sheet each ICS will reduce emissions by approximately 3.44 tCO₂e in Madhya Pradesh, (based on average total emissions projected by the average total number of cookstoves over the 1st crediting period²), according to the computation in the section (net of leakage and continued use of the baseline stoves). The project proponent has commissioned 30,000 ICS during current monitoring period as confirmed based on ICS database.

The current initiative is a voluntary endeavor by the project proponent because there is no mandatory rule or regulation in the host country – India mandating the implementation of ICS. The project complies with all applicable statutes, laws, and regulatory frameworks. No Indian regulations, ordinances, or other regulatory frameworks are violated by the project.

The grouped project activity is planned to be in multiple districts and distribution will be in phases, The Geographical area of grouped project activity is considered as Madhya Pradesh State of India. The geo co-ordinates for the state of Madhya Pradesh mentioned in the Joint PD&MR were checked against the https://www.mapsofindia.com/lat_long/madhyapradesh/ and found to be correct.

For the first instance PP stoves are distributed in the Chhindwara district of Madhya Pradesh. VVB during the onsite audit confirms the location of the distributed stoves and found the data mentioned in the Joint PD&MR to be consistent.

PP has submitted the declaration/^{4/} that the project is not rejected by any GHG registry. Same declaration mentions that the project is not registered/seeking registration in any GHG registry apart from Verra. VVB has verified the declaration and checked various registries including GS, GCC, CDM etc. and found that the project is not registered in any of them.

¹ <https://registry.verra.org/app/projectDetail/VCS/3771>

² Referred values in column H58:64 and I58:64 in the worksheet - Detailed Calc of Ex-ante ER workbook.

PP has also submitted the declaration/^{4/} that the emission generated from the grouped project activity will not include in the Emissions trading programs or for any other binding limits. Moreover, PP has not claimed any other forms of environmental credit and will not claim from the grouped project activity. Thus, avoiding double counting. Same has been confirmed by the Assessment team by checking REC registry. Other form of credits (scope 3 emissions) are not applicable as PP has already calculated leakage for initial ICS distribution which is found appropriate.

PP has considered the scale of the grouped project activity as “Project” based in the number of estimated emission reductions from the grouped project activity. Assessment team has crosschecked and found that the estimated annual ERs 88,940 is less than 300,000 tCO₂ hence project is not large scale it is just project.

There exists no mandatory law or regulation in the host country requiring the introduction of ICS in India, therefore the project is a voluntary effort by the project proponent. PP will distribute ICS free of cost to the end users.

The project is in compliance with relevant laws, statutes and other regulatory frameworks. The project does not violate any laws, statutes and or other regulatory frameworks in India.

Baseline scenario:

The baseline scenario that existed prior to the implementation of the project activity instances involves the use of conventional biomass fuel and inefficient cook stoves which use more firewood and are with poor ventilation, which causes excessive indoor air pollution (IAP) and poses a serious health risk to women and children who spend a lot of time in the kitchen.

VVB team has confirmed that, PP conducted the baseline survey during the month of November, 2022 i. e. before the 1st installation and commissioning of ICS, and copy of the baseline survey record are submitted which was checked and found acceptable to the assessment team.

The baseline for this project is located in the same area where a similar project has already been implemented (VCS 3769³). Accordingly, the baseline for this project is the ongoing use of non-renewable wood fuel in traditional cookstoves or three-stone fire stove within a specific region.

Additionally, a baseline survey is carried out at the project site to ensure the baseline situation. Based on the survey it is confirmed that a traditional cookstoves or three-stone fire stove is being used in project location.

Also, VVB during the on-site visit has visited the households to confirm that there is no other source of energy available for their daily needs except for baseline stoves. The baseline survey conducted by PP has also established that there is no other fuels are being used within the surveyed households.

This assessment is now added in section 3.4.4 (baseline scenario)

Detail about the baseline survey: -

As per applied methodology, the baseline scenario is the continued use of non-renewable wood fuel – firewood by the target population to meet similar thermal energy needs as provided by project cookstoves in absence of project activity.

As confirmed by the assessment team, in the absence of project activity the baseline scenario would have been continued use of non-renewable wood fuel – firewood by the end users to meet similar thermal energy needs and hence, it adheres to the applied methodology.

Assessment team further confirmed that;

³ <https://registry.verra.org/app/projectDetail/VCS/3769>

Project activities are implemented in domestic premises;

The project stoves have high-power thermal efficiency of 35.40% as confirmed based on the manufacturer's specifications provided ICS exclusively use woody biomass (fuel wood) and are single pot; Moreover, three ICS were distributed to the Maulana Azad National Institute of Technology Bhopal (MANIT) had performed the efficiency test and MANIT Bhopal certified that, device has comply with the Water Boiling Test Protocol 4.2.3 as required by the applied methodology and had efficiency of 35.40%.

Since 31-December-1989, non-renewable biomass has been used in India, according to secondary research on the basis of the data of forest survey of India 2021 ⁴ that is noted by PP in the Joint PD&MR;

The project has been implemented, in order to generate less GHG emissions from the baseline for later removal, reduction, or destruction. And, same has been assessed by VVB through submitted Ex ante ER sheet. ^{/2/}

The application for VCS registration by the project or any of its components has been confirmed in the Joint PD & MR^{/1/} and up to this point, it has not been registered under any GHG programme.

The assessment team affirms that the description provided in the Joint PD & MR^{/1/} is accurate, complete, and provides an understanding of the nature of the project based on its evaluation through review of pertinent documentation (as cited above), and the project has been implemented as described in the Joint PD & MR^{/1/}

For the inclusion of new project activity instances i.e., ICS, the project proponent ensures that it meets the eligibility criteria below:

No.	Criterion	How the new project activity instances comply	VVB assessment
1	Meet the applicability conditions set out in the methodology applied to the project	New project activity instances (Energy Efficient Cook Stoves) will meet the applicability conditions set out in Section 3.2 of the joint PD&MR where the target of the end-user is household and the project device deployed is at least 25% of thermal efficiency.	Assessment team has verified by the third-party stove efficiency certificate ^{/5/} that PP has distributed ICS with efficiency of 35.40% and since each ICS is treated as a new instance. Hence, applicable and accepted
2	Use the technologies or measures specified in the project description.	The technology used for the project activity is energy-efficient cookstoves. Only energy efficient cook stoves are to be adopted in the project by replacing traditional cookstoves in households.	During the onsite visit VVB has confirmed that PP has distributed only one model of ICS which is energy efficient (verified from 3 rd party testing report ^{/5/}) Hence applicable and accepted.

⁴ <https://fsi.nic.in/forest-report-2021-details>

3	Apply the technologies or measures in the same manner as specified in the project description.	Only energy efficient cook stoves are to be adopted in the project by replacing traditional cook stoves in households. And same will be provided at free of cost.	PP has distributed only one model of ICS which is energy efficient (verified from 3 rd party testing report/ ^{5/}) Moreover, during the onsite audit and interview with the beneficiaries VVB team found that, no money has been taken by the PP from the beneficiaries. Hence applicable and accepted.
4	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The new project activity instances will be installed within Madhya Pradesh, state of India and subject to the same baseline scenario determined in Section 3.4	From the submitted monitoring data, ^{/14/} VVB has confirmed that all the cookstoves are distributed within state Madhya Pradesh of India. Hence, applicable and accepted.
5	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	All new project activity instances will use the activity method for demonstration of additionality. Step 1: Regulatory Surplus There is no mandated government programme or policy in the host country of this project ensuring the distribution of new energy efficient cook stoves for each project activity instance. Step 2: Positive List The inclusion of new project activity instances will comply with the positive list as it satisfies criterion 1 where it meets all the applicability conditions of the methodology.. Project activity installs or distributes stoves at zero cost to the end-user and has no other source of revenue other than the sale of GHG credits, the project activity shall be deemed additional. Project activity is not implemented as part of government schemes or supported by any multilateral funds; the project activity shall be deemed additional.	Since each instance is within India and there is no mandated government program in host country for distribution of cookstove. Hence accepted and Applicable. The inclusion of new project activity instances complies with the positive list as it satisfies criterion 1 where it meets all the applicability conditions of the methodology.

6.	Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit. Further, no single cluster of project activity instances shall exceed the capacity limit, determined as follows: Each project activity instance that exceeds one percent of the capacity limit shall be identified. Such instances shall be divided into clusters, whereby each cluster is comprised of any system of instances such that each instance is within one kilometer of at least one other instance in the cluster. Instances that are not within one kilometer of any other instance shall not be assigned to clusters. None of the clusters shall exceed the capacity limit and no further project activity instances shall be added to the project that would cause any of the clusters to exceed the capacity limit.	No project activity Instance shall exceed the applicable limit, which is 180 GWhth/y. Since the project activity instances installed to date and proposed to be installed have/will have the same model, hence expected annual energy saving for each instance is less than 0.1442 GWhth/y which is less than 0.01% of the threshold limit. As the annual energy saving is below 1% of the limit, therefore no project activity instance is identified and divided into clusters.	Since the project activity instances have the same model and expected annual energy saving for each instance is less than 0.1442 GWhth/y which is less than 0.01% of the threshold limit. As the annual energy saving is below 1% of the limit, therefore no project activity Instance is identified and divided into Clusters hence Verified and accepted.
----	---	--	---

7.	Not be or have been enrolled in another VCS project.	The project proponent provides a self-declaration stating that the respective project is not enrolled in any other GHG programs. Hence, the respective project is not enrolled in another VCS project.	CME has provided a self-declaration that the current project is not enrolled in another VCS project. The same has been checked by VVB through checking the VCS projects on the VCS registry and confirmed.
8.	Adhere to the clustering and capacity limit requirements for multiple project activity instances as follows: 3.6.8 The project proponent shall include in a singular project all project activity instances within ten kilometers of another instance of the same project activity and with the same project proponent 3.6.9 Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit. Further, no single cluster of project activity instances shall exceed the capacity limit, determined as follows: 1) Each project activity instance	The project proponent has implemented the first instance of the grouped project activity in the respective project location described in section 1.12. PP has not implemented any additional project activity instance in the project location of the first instance, Hence the condition is satisfied. The conditions are satisfied as per the information provided in Row 6 of this table.	CME will ensure that all project activity instances will be included in a singular project within ten kilometers of another instance of the same project activity and with the same project proponent (i.e., instances of the same project activity may not be spread across more than one project if they are within ten kilometers of each other). Since the project activity instances have the same model and expected annual energy saving for each instance is less than 0.1442 GWhth/y which is less than 0.01% of the threshold limit. As the annual energy saving is below 1% of the limit, therefore no project activity Instance is identified and divided into Clusters hence Verified and accepted.

that exceeds one percent of the capacity limit shall be identified. 2) Such instances shall be divided into clusters, whereby each cluster is comprised any system of such instances such that each instance is within one kilometer of at least one other instance in the cluster. Instances that are not within one kilometer of any other instance shall not be assigned to clusters. 3) None of the clusters shall exceed the capacity limit and no further project activity instances shall be added to the project that would cause any of the clusters to exceed the capacity limit.		
--	--	--

In addition to above, PP has envisaged few additional parameters for new project activity instance inclusion in section 1.4 of JPD&MR as below which were assessed and confirmed by VVB.

No.	Criterion	How the new project activity instances to comply	VVB assessment
1.	Occur within one of the designated geographic areas specified in the project description	New project activity instances (Energy Efficient Cook Stoves) will be occurring in the designated geographic areas specified in the project description.	VVB during on-site interviews has confirmed that existing project activity instances are added in the designated geographic area and PP will ensure that new ones are added in the same

			region. Hence this is accepted.
2.	Comply with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial compliance with multiple sets of eligibility criteria is insufficient.	New project activity instances will comply with the complete set of eligibility criteria as mentioned above for the inclusion of new project activity instances.	VVB during on-site interview has confirmed that the new project activity instances will comply with set of eligibility criteria in section 1.4 of JPD&MR which is found appropriate and accepted.
3.	Be included in the monitoring report with sufficient technical, financial, geographic, and other relevant information to demonstrate compliance with the applicable set of eligibility criteria and enable sampling by the validation/verification body.	New project activity instances information will be included in the monitoring report with sufficient technical, financial, geographic, and other relevant information to demonstrate compliance with the applicable set of eligibility criteria and enable sampling by the validation/verification body	VVB during on-site interview has confirmed that the new project activity instances will comply with set of eligibility criteria in section 1.4 of JPD&MR and this information will be included in the monitoring report prepared by PP. The database of ICS inclusion will ensure that sampling can be conducted by VVB which is found appropriate and accepted.
4.	Be validated at the time of verification against the applicable set of eligibility criteria	New project activity instances should be included by validating eligibility criteria as mentioned in this document	VVB during on-site interview has confirmed that the new project activity instances will comply with set of eligibility criteria in section 1.4 of JPD&MR and this information will be included in the

			monitoring report prepared by PP which is found appropriate and accepted..
5.	Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance (i.e., the date upon which the project activity instance began reducing or removing GHG emissions)	New project activity instances ownership needs to be evidenced from the start date of respective project activity instance.	VVB during on-site interviews has confirmed that PP will ensure that project instance ownership will be established for each instance from the start date of respective instance which is appropriate and accepted.
6.	Have a start date that is the same as or later than the grouped project start date	New project activity instances start date should be after the start date of grouped project activity	VVB during on-site interviews has confirmed that PP will ensure that new project activity instances will have start date after the start date of grouped project activity.
7.	Be eligible for crediting from the start date of the instance through to the end of the project crediting period (only). Note that where a new project activity instance starts in a previous verification period, no credit may be sought for GHG emission reductions	New project activity instances are eligible to claim credits from crediting period start date to the end of the project crediting period. Double counting of ICS is avoided between one project instance and another, as each beneficiary is assigned a unique code issued by the government along with an identity card. There are similar projects being undertaken by same PP within the same project boundary. However,	VVB during on-site interviews has confirmed that PP will ensure that new project activity instances will have start date after the start date of grouped project activity and will be eligible to claim crediting from crediting period start date. The same VVB is/has conducted validation for similar projects by same

	or removals generated during a previous verification period (as set out in Section 3.4.4 of VCS standard version 4.1) and new instances are eligible for crediting from the start of the next verification period	the double counting issue is avoided across all projects via the Unique Serial no. embedded on the metal plate on each project stove. The project proponent will also share the project database with the VVB containing the unique serial numbers. Hence, despite having overlapping boundaries no double counting occurs across different projects	PP within the same geographical area. For each project activity, PP has submitted project database of project activity instances with unique serial numbers for each ICS. This unique serial no's are linked with government IDs of the end user. Thus, PP ensures that no double counting will occur which was cross checked and confirmed during on-site audit by VVB.
--	---	--	--

The current project is non AFOLU project.

VVB noted that PP has considered leakage estimation for the current project based on the initial distribution of ICS conducted in the 1st year. VVB noted that PP has used Tool 12 : Project and leakage emissions from transportation of freight, version 01.1.0 to calculate the leakage emissions due to transportation of ICS. More assessment about the same is provided in section 3.4.6 below. Along with the same, the project has adopted a net gross adjustment factor of 95% to account for leakage.

No commercially sensitive information has been excluded from the public version of the project description. The project contributes to social, environmental, economic and technological benefits which contribute to sustainable development of the local environment and the country.

The key benefits are provided below which have been assessed by the VVB.

- Reduces drudgery to women due to reduced fuel wood use
- Improves overall health of women and children by reducing smoke –
- Better cooking time
- Reducing rate of degradation of forests and deforestation in the project area.
- Reduction in use of non-renewable biomass thus leading to reduction in GHG emissions.
- Employment opportunities for local communities through the VCS activity.
- Introduction of new technology to the rural communities

Based on its assessment through review of relevant documentation (as cited above), the assessment team confirms that the description given in the VCS PDMR is accurate, complete, and provides an understanding of the nature of the project.

The selected sustainable development goals are discussed in section 1.17.2 of VCS Joint PD & MR which are assessed below in section 4.1 of the report and found appropriate.

VVB noted and accepts that the description in the Joint PD &MR is accurate, complete, and provides an understanding of the nature of the project, and the project has been implemented as described. VVB found that the project is likely to achieve estimated GHG emission reduction or removals and the actual results varies since the estimates are based on assumptions that are subject to change as discussed in section 4.2 below.

Findings: CL 05, CL 07, CAR 01 and CAR 03 were raised and closed successfully. Kindly refer appendix 03 for more information.

3.2 Participation under Other GHG Programs

In order to receive carbon benefits during the grouped project activity's crediting period, Shri Maa Marketing Private Limited has not registered for, nor is it pursuing registration under, any other GHG emission programme. This was confirmed from the undertaking letter/^{4/} and by checking other GHG project registries like CDM⁵, GS⁶ and GCC⁷ etc. and found that the project is not claiming any other form of environmental form of credit during then current monitoring period. Thereafter assessment team concluded that grouped project activity is eligible to participate under the VCS Program.

Findings: CL04 was raised and closed successfully. Kindly refer appendix 03 for more information.

3.3 Safeguards

3.3.1 No Net Harm

The proposed grouped project activity has not noted any potential detrimental effects on the environment or society. Because clean technology of cook stoves is installed and used, there are no greenhouse gas emissions that result due to the grouped project activity, which supports socio-economic and environmental well-being.

The assessment team has determined that this complies with the para 3.19 of the VCS Standard(version 4.5) /^{7(b)/} and is therefore acceptable.

No finding were raised.

3.3.2 Local Stakeholder Consultation

⁵ <https://cdm.unfccc.int/contest/Projects/projsearch.html>

⁶ <https://registry.goldstandard.org/projects?q=&page=1>

⁷ <https://projects.globalcarboncouncil.com/>

The Joint PD & MR/^{01/}'s section 2.2 and appendix contains a detailed explanation of the local stakeholder consultation process conducted. Stakeholders were defined as individuals who are impacted by grouped project activities and those whose actions directly or indirectly affect the project.

The stakeholder consultation meetings conducted in various districts/^{13/} and their details are as follows:

S. No	Location	Stakeholder Meeting Date
1	Khargone, Madhya Pradesh, India	22-November-2022
2	Chhindwara, Madhya Pradesh, India	24-November-2022
3	Mandsaur, Madhya Pradesh, India	25-November-2022
4	Jabalpur, Madhya Pradesh, India	27-November-2022
5	Khaikheda, Mandsaur, Madhya Pradesh, India	16-December-2022

VVB has checked the submitted copies of invitation letters/^{13/} which confirmed that invitations were sent at least 30 days in advance to the identified stakeholders.

School teachers, vendors, farmers, representatives from neighborhood NGOs, and locals all showed up to the meeting. The purpose of the meeting was to explore any concerns that the stakeholders may have had about the project's environmental and social implications. Throughout the stakeholders meeting, opinions and recommendations were welcomed.

The assessment team conducted stakeholder interviews on-site/^{9/}. The validation team confirmed by the stakeholder's responses that the stakeholder consultation process had been carried out in accordance with the joint PD & MR/^{01/}. The stakeholder acknowledged that they received an invitation to attend the meeting via inviting letters, public notices and through telephonic conversations. The stakeholders were also intimated about the carbon mechanism & its requirement for the current project. After the detailed introductory brief, the session was open for questions from stakeholders. Most of the question from the stakeholders were related to improved cookstoves usage, its impact, benefits from the project to villagers, and other development activities and there were no negative comments and feedback registered during the stakeholder's consultation. There no comments/ suggestion/ recommendations from the stakeholders during the consultation regarding the project design, technology or any other aspects related to the grouped project activity. The question and answer evidences for each district during the stakeholder's consultation meeting is submitted by the project proponent which is verified by the assessment team. The invitation procedure specified in the joint PD & MR/^{01/} was determined to be consistent with this claim. When the assessment team asked stakeholders about the grievance reporting mechanism, they confirmed that they had been informed during the stakeholder consultation process.

VVB team has verified the Questionnaire sheets presented to check and confirm the responses received from the local stakeholders. The stakeholder consultation report confirmed that there were no negative comments were received during the meeting conducted.

Further during interview with local stakeholders, VVB team confirmed that PP has taken all due accounts of all inputs made by local stakeholders and no negative comments/issues received during the monitoring period. The interviewed stakeholders confirmed that they are aware of grievance mechanism which is established through telephone no. shared with them and they also confirmed that PP representative visits the villages on a periodic basis.

Therefore, the assessment team was able to confirm that the stakeholder meeting was adequate and appropriate.

CL 02 was raised and closed successfully. Kindly refer appendix 03 for more information.

3.3.3 Environmental Impact

The validation team confirms that EIA is not mandatory as per the legal requirements due to the scale and distribution nature, and hence is not applicable for the present grouped project activity. No negative environmental impacts have been identified from the project. The current grouped project activity supports various positive environmental impacts such as –

- Improves the local environment by reducing the rate of degradation of forests and deforestation in the project area.
- Reduce indoor pollution – ICS emits less smoke and reduces morbidity from respiratory diseases and other health hazards.
- Reduce global and local environmental pollution and environmental degradation by a reduction in the use of non-renewable biomass thus leading to a reduction in GHG emissions.

Less water and effort are needed for cleaning vessels as the cooking process is relatively smoke-free.

3.3.4 Public Comments

The project was open for public comments from 05-September-2023 to 05-October-2023⁸. During the time for public comment, no comments were received.

3.3.5 AFOLU-Specific Safeguards

This project is not an AFOLU project. This section is not required for non-AFOLU project.

3.4 Application of Methodology

3.4.1 Title and Reference

Title: Energy efficiency measures in thermal applications of non-renewable biomassType: Type II – Energy Efficiency Improved Projects

VCS Methodology: VMR0006: Energy efficiency and fuel switch measures in thermal applications, Version 1.2

Sectoral scope: 3 Energy Demand

<https://verra.org/methodologies/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/>

⁸ <https://registry.verra.org/app/projectDetail/VCS/3771>

This methodology also refers to the latest version of AMS II.G version 13 – Energy efficiency measures in thermal applications of non-renewable biomass

<https://cdm.unfccc.int/UserManagement/FileStorage/6TOUCX21D0BHNVRZFWMEKALY94GS7>

For the calculation of Project and leakage emissions from transportation of freight, the below tool is used “Tool 12 version 1.1.0: Project and leakage emissions from transportation of freight”

<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-12-v1.1.0.pdf>

For the calculation of the fraction of non-renewable biomass, the below tool is used “TOOL 30 version 4.0: Calculation of the fraction of non-renewable biomass”

<https://cdm.unfccc.int/methodologies/Pamethodologies/tools/am-tool-30-v4.0.pdf>.

3.4.2 Applicability

The grouped project activity uses VMR0006, Version 1.2^{6/}, of the VCS methodology.

The assessment team evaluated the applicability criteria for the baseline methodology through document review and interview. The project activity’s compliance with the methodology’s requirements is attested to by the assessment team.

S. N.	VMR0006, Version 1.2 Requirements	Project activity applicability	Means of verification
1.	This methodology applies to project activities that introduce energy efficiency and fuel switch measures in thermal applications (including cookstoves, ovens, and dryers) that: 1) Increase thermal efficiency to reduce the consumption of non-renewable biomass; or 2) Switch from fossil fuel (coal or kerosene) to renewable biomass in new or existing improved thermal energy generation units.	1) Complies, as the project device (Shri Stove) having thermal efficiency of 34.5% (0.345) which will reduce the consumption of non-renewable biomass 2) Not Applicable, as project activity involves only wood for thermal energy generation.	1) This was verified on the basis of Water boiling test report provided by the PP. 2) at the onsite visit VVB has verified that Project activity involves only wood for thermal generation. Hence this criterion is not applicable.
2.	This methodology is applicable to both ‘Projects’ and ‘Large Projects’ under the following conditions:	1) Complies, and explained below. 2) The project activity is implemented in households	1. VVB observed that, this project fulfils all the applicability criteria of latest version of AMS II G.

	1) All applicability conditions of the latest version of AMS II.G. must be met. 2) The project activities must be implemented in households, community-based kitchens, institutions (e.g., schools), or small and medium-sized enterprises (SMEs).		Hence, this criterion is applicable. VVB has confirmed the same by the through the mentioned applicability criterion in section 3.2 of the Joint PD&MR. 2. Under this project activity cookstoves are distributed for household use and same has been verified during onsite visit by VVB team.
3.	For fuel switch activities, the following additional conditions must be met: 3) Projects must exclusively use renewable biomass, and meet the following additional conditions: (a) If biomass residues are used, they have been left for decay or burned without energy recovery before the implementation of the project activity. (b) If biomass residues from a production process are used, the implementation of the project does not result in an increase of the processing capacity of raw input or any other substantial changes (e.g., product change) in this process. (c) If biomass from dedicated plantations is used, the applicability conditions of TOOL 16 “Project and leakage emissions from biomass” must be satisfied.	Fuel switch is not applicable in the project activity.	VVB has verified that Fuel switch is not applicable in the project activity. Hence, this criterion is not applicable

	4)The renewable biomass sources must be documented in the project description and monitoring periods, including origin, quantities, and pre-project conditions. If the biomass is sourced from a third-party, proof of purchase must be provided (e.g., contractual agreements or purchase receipts). 5) More than one type of biomass may be used (e.g., briquettes and wood chips).		
--	---	--	--

S. N.	AMS II G, Version 13 Requirements	Project activity applicability	Means of verification
1.	Applicable to the introduction of single pot or multi pot portable or in-situ cookstoves with rated efficiency of at least 25 per cent.	The single pot improved cookstoves that are deployed in the project boundary have a thermal efficiency of 35.40% as per the manufacturer's specifications and hence the project activity complies to the applicability requirement of the methodology.	This was verified by the stove test certificate issued by credited laboratory MANIT Bhopal, Madhya Pradesh (MANIT is nodal center for energy theme under Indo-UK RECs project in 1994 by Government of India. The center has developed nine laboratories in various specialized area like energy conservation, energy audit solar thermal and PV technology, wind energy, heat transfer systems etc. the same information can be verified through https://www.manit.ac.in/content/energy) Same has been crosschecked online and it was found acceptable to the assessment team. Hence, this criterion is applicable.
2.	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.	Since the project activity instance has the same model, hence expected annual energy saving for each instance is 0.0064 GWh per year. As per section	Assessment team confirms that the energy savings meet the specified threshold i.e. annual energy saving for single instance is not exceeding 60 GWh or 180 GWh thermal per year. Based on review of the KPT test and supporting documentation provided by the PP. Hence this criterion is applicable for project activity.

		2.2 para 4, AMS-II. G, the aggregate energy savings of a single project activity shall not exceed the equivalent of 60 GWh per year in fuel input, which satisfies the condition.	
3.	Non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports, or statistics.	The proof that the use of biomass has been popular since 31st December 1989 is available through widespread documentations, one of reports by National Sample Survey Organization (NSSO) ⁹ shows that 79% of the Indian population were dependent on firewood and chips in the year 1987-88. This clearly shows that the project region, the rural part of India, has been dependent on firewood and other non-renewable biomass as a source of thermal energy before and after 1989.	This was verified using literature references presented by PP in Joint PD&MR, & also criteria has been checked based on publicly available literature and reports of Food and Agricultural Organization of United Nation and State of Forest Report 1987. Also as per Forest Survey report 2011 (In India, Forest survey was happening every 10 years, and this is latest survey report for India. Due to COVID-19, no survey done for year 2021), the demand is more than supply, thus continued use of non-renewable biomass in India is justified.
4.	For the specific case of biomass residues	Not applicable, no biomass residue	AS the project activity uses non-renewable biomass and not the biomass residues

⁹ https://www.mospi.gov.in/download-reports?main_cat=Nzly&cat=All&sub_category=All

	processed as a fuel (e.g., briquettes, wood chips), it shall be demonstrated that: (a) It is produced using exclusively renewable biomass (more than one type of biomass may be used). (b) The consumption of the fuel should be monitored during the crediting period and (c) Energy use for renewable biomass processing (e.g., shredding and compacting in the case of briquetting) may be considered as equivalent to the upstream emissions associated with the processing of the displaced fossil fuel and hence disregarded.	processed as a fuel is used in project activity. The ICS is being introduced as an energy efficient replacement to the traditional stoves and to also reduce the use of non-renewable biomass.	processed as fuel, this criteria is not applicable.
5.	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).	Every improved cookstove that is distributed with unique serial number. During the distribution, the serial number and the exact location of ICS sold will be recorded in our app. No double counting of emission reductions occurred due to unique	By cross-checking the unique identifiers during the onsite inspection against the project documentation, the VVB team has validated self-reported data by the project proponent was accurately monitored and reported at the individual cookstove level without repetition or inflated figures. The submitted Joint PD&MR provides this information which is checked and confirmed. Hence this criterion is fulfilled by project activity.

		identifications of product and end-user location.	
6.	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.	The project proponent make sure that no double counting for carbon emission takes place in specified period. All the credit generated from the project is owned by the project proponent, i.e., Shri Maa Marketing Private Limited.	By cross-referencing the cookstove identification numbers and records across the onsite inspection and project documentation i.e. VCS PD&MR, the validation and verification team was able to validate that the emission reductions from each cookstove were appropriately monitored and reported without double counting. Also, the project proponent also submitted a "no double counting" letter to the VVB

Applicability of Tool 12, version 01.1.0:

Applicability Criteria	Project activity applicability	Means of verification
This tool is applicable to project activities which involve freight transportation by road and where transportation is not the main project activity. This tool is not applicable to project activities where transportation is the main source of greenhouse gases emissions. This tool does not provide procedures to estimate baseline emissions from road transportation of freight. The tool only provides to determine CO ₂	The applicability conditions of the compliance ensure that transportation-related emissions are relatively small compared to the expected total emission reductions. This allows using a simplified approach to estimate project or leakage emissions from truck transportation.	PP has considered leakage emissions due to transportation/freight by road of the distributed ICS in the 1 st year of operation from their HO to respective district headquarters. Hence this criterion is applicable.

emissions. CH ₄ and N ₂ O emissions are excluded for simplification as they are small compared to CO ₂ emissions.		
In addition, the tool is applicable for the determination of project or leakage emissions from freight transportation by rail in project activities where transportation is not the main project activity.	Not applicable	Emissions due to freight transportation by rail are not part of the project and hence criterion is not applicable.

Applicability of Tool 30, version 4.0:

Applicability Criteria	Project activity applicability	Means of verification
(a) DNAs to submit region- or country-specific default f_{NRB} values, following the procedures for development, revision, clarification and update of standardized baselines (SB procedures); or (b) Project participants to calculate project- or PoA-specific f_{NRB} values.	Complies, calculate f_{NRB} by determining the share of renewable and non-renewable woody biomass in the total quantity of woody biomass consumption for the project area and compare the calculated values against the values for f_{NRB} reported in relevant scientific literature as mentioned in monitored parameter. Justification: Detailed calculation of f_{NRB} with reference data is mentioned in section 5.4 in accordance with TOOL 30, v.04.0, utilizing the latest data sourced from the "Socio-Economic Contribution of Forests: Production and Consumption of Forest Resources in India" and the "Indian Forest Report 2021. As per Tool 30, Version 4, there is a difference in the values of calculated FNrb and the values	(a) The project uses non-renewable biomass for the grouped project activity however DNA approved value is not available in the host country and hence same is not used. (b) PP has calculated f_{NRB} value and submitted the datasheet for the same which was cross checked and confirmed.

	mentioned in Bailis, R.; Drigo, R.; Ghilardi, A. & Masera, O. (2015) due to the latest data from India. The value of FNrb in Bailis, R.; Drigo, R.; Ghilardi, A. & Masera, O. (2015) is calculated based on data available until 2015, while the recently updated IPCC and India Forest Survey for 2021 provide revised and more current information. The PP used the most recent available data to calculate the FNrb for Madhya Pradesh, India. The more details on the assessment of f_{NRB} is provided below in section 3.4.6.	
--	--	--

3.4.3 Project Boundary

The project boundary is specified as "the physical, geographical site of the efficient devices that utilize biomass" in accordance with the applicable methodology VMR0006 version 1.2 and CDM methodology AMS II G, version 13 ^{/6/}

The Joint PD & MR ^{/01/} accurately stated the information pertaining to the project boundary. PP has distributed cook stove in various parts of Madhya Pradesh State of India. As a result, the project boundary for the VCS project activity has taken into account the entirety of Madhya Pradesh.

The VVB team certifies that there are CH₄, N₂O, CO₂ gases and the sources of gases inside the project boundary for the project instances same is reflecting in joint PD&MR, which is based on the applied methodology^{/6/}.

For the purpose of calculating project and baseline emissions for the project, the physical delineation of the project boundary and the description of the emission sources and GHGs that are included in the boundary are appropriate.

CL 06 was raised and closed successfully. Kindly refer appendix 03 for more information.

3.4.4 Baseline Scenario

The grouped project activity involves installation and commissioning of new and enhanced cookstove systems in households previously reliant on firewood for their thermal energy needs. During the on-

site visit^{9/}, this was verified as all the end users are using new ICS distributed to them. The default scenario calls for increased use of firewood for home thermal energy requirements viz., for cooking purposes. As a result, it adheres to the requirements of the methodology.

The utilization of non-renewable biomass serves as the actual baseline. According to Methodology VMR0006, Version 1.2, section 06, *“The baseline scenario is the target Population’s continued use of non- renewable biomass or fossil fuel to meet similar thermal energy needs, as provided by project devise”*.

The initiative's targeted beneficiaries would continue using outdated, inefficient cooking stoves that used a lot of non-renewable biomasses if project activities weren't carried out which was confirmed based on the submitted baseline survey and interviews conducted with baseline users as well as project ICS users.

The baseline scenario has been determined in accordance with the demands of the used methodology VMR0006, Version 1.2^{6/}, and it is accepted to be reasonable and justifiable.

The baseline for this project is located in the same area where a similar project has already been implemented (VCS 3769¹⁰). Accordingly, the baseline for this project is the ongoing use of non-renewable wood fuel in traditional cookstoves within a specific region i. e. Madhya Pradesh state of India. Additionally, a baseline survey was carried out in the month of November, 2022 to check the baseline situation. Based on the survey it was confirmed by the PP and verified by the VVB during the onsite assessment interviews with the end users that the traditional cookstoves were being used in project location and firewood was used as baseline fuel.

Detail about the baseline survey: -

As per applied methodology, the baseline scenario is the continued use of non-renewable wood fuel firewood by the target population to meet similar thermal energy needs as provided by project cookstoves in absence of grouped project activity.

As confirmed by the assessment team, in the absence of grouped project activity the baseline scenario would have been continued use of non-renewable wood fuel – firewood by the end users to meet similar thermal energy needs and hence, it adheres to the applied methodology.

3.4.5 Additionality

The project’s additionality is shown by how well it adheres to the standards established in VMR0006, Version 1.2^{6/}.

Activity Approach

Step 01: Regulatory excess

The distribution of residential fuel-efficient cookstoves is not mandated by any government programme or policy in the country where this project is being implemented. The project is not required by any

¹⁰ <https://registry.terra.org/app/projectDetail/VCS/3769>

legislation, statute, regulatory framework, or for UNFCCC non-Annex I nations, any law, statute, or other regulatory structure that is consistently applied.

Only voluntary participation is allowed from households in this study. Shri Maa Marketing Private Limited declaration of the voluntary participation of the planned project was verified and found to be appropriate^{/3/}.

Step 02: Positive List

The positive list is represented by the application requirements of this methodology. The project satisfies each of the requirements for applicability listed in Section 3.2. The project also follows the conditions stated below:

1. The project distributes or installs stoves at no cost to the end user and derives all of its funding from the sale of GHG credits. During on-site visit interviews, PP has discussed with VVB about possible gross average revenue and capital expenditure, the values of the same are confidential and hence not discussed here. IT was noted that, the grouped project activity's gross annual revenue (including cost savings) excluding from the sale of GHG credits does not exceed five percent of capital expenditure
2. Neither the initiative nor its activities are funded by multilateral agencies or government programmes as confirmed during interview with PP during which PP demonstrated that all the expenditures incurred are through their own finance. Therefore, the project is additional and voluntary.

Assessment team checked the end user agreements^{/12/} and also confirmed from the end users during the on-site audit that the ICS were distributed at free of cost. Team also checked the national and the sated governments schemes portal to verify that the project is not implemented as a part of any government scheme. Based on the aforementioned data, the Validation Team draws the conclusion that the data in the Joint PD&MR complies with methodology requirements.

VVB team further verify that, copy of user agreement^{/12/} submit by project developer and it is reviewed during site visit. it conforms that ICS has been distributed free of cost and this was also cross checked and verified during onsite visit interview with the beneficiaries. VVB interviewed the household selected based on sampling basis, during the interview household conformed that, they receive this ICS at zero cost and they did not pay a single penny to the project developer

3.4.6 Quantification of GHG Emission Reductions and Removals

In the Joint PD & MR ^{/1/}, the equations and choices specified in the applied methodology VMR0006, Version 1.2^{/6/}, are accurately cited. The formulas listed in the applied methodology are used to calculate the project's emission reductions.

The validation and verification team certifies that the formulas are accurately stated for the determination of emissions reductions based on their review of the Joint PD & MR ^{/1/}. The facts and requirementssupplied in the applied methodology^{/06/} have been compared with the parameters and equations presented in the Joint PD & MR ^{/01/} and other pertinent papers. In order to establish compatibility between all the formulas contained in the Joint PD & MR^{/01/} and ER validation spreadsheets ^{/02/} and the applied methodology ^{/06/}, an equation comparison has also been done.

The improved cookstove is introduced as energy efficiency measure in the project, therefore equations 1 and 2 of the methodology will be applied to calculate the net GHG emission reductions.

$$ER_y = \sum_i \sum_j B_{y,savings,i,j} \times N_{0,i,j} \times n_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times (EF_{wf,CO_2} + EF_{wf,non\ CO_2}) \times Adj_{LE} \times (1 - u_d) \quad (1)$$

Where:

ER_y	Emission reductions in year y (tCO ₂ e)
$B_{y,savings,i,j}$	Quantity of woody biomass that is saved per project device i and batch j in year y (tonnes)
$N_{0,i,j}$	Number of project devices of type i and batch j commissioned (number)
$n_{y,i,j}$	Proportion of commissioned project devices of type i and batch j ($N_{0,i,j}$) that remain operating in year y (fraction)
μ_y	Adjustment to account for any continued use of pre-project devices during the year y
$f_{NRB,y}$	Fraction of woody biomass that can be established as non-renewable biomass (%)
$NCV_{biomass}$	Net calorific value of the non-renewable woody biomass that is substituted or reduced (TJ/tonne)
u_d	Uncertainty deduction for fnrb (%)
Adj_{LE}	Adjustment factor to account for leakage related to the non-renewable woody biomass saved by the project activity (fraction)
EF_{wf,CO_2}	CO ₂ emission factor for non-renewable woody biomass (tCO ₂ /TJ)
$EF_{wf,non\ CO_2}$	Non-CO ₂ emission factor for non-renewable woody biomass (tCO ₂ e/TJ)

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

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 (t CO₂e)

$ER_{y,i,j}$ = Emission reductions by improved cook stove of type i and batch j during year y (t CO₂e)

LE_y = Leakage emissions in the year y (tCO₂e)

The quantify of woody biomass saved $B_{y,savings,i,j}$ due to implementation of improved cook stoves can be estimated by the following equation:

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

Where:

η_{old} = Efficiency of the old devices being replaced by project devices of type i and batch j (fraction)

$\eta_{new,y,i,j}$ = Efficiency of the project device i and batch j (fraction)

$B_{y=1,new,i,j,survey}$ = Quantity of woody biomass used by project devices in tonnes per device of type i and batch j (tonnes)

For the scope our project area, following points are considered:

- The grouped project activity distributed 30,000 project devices in the first instance.
- Life span of Improved Cook Stoves is 7 years, as provided by the project device specifications

Calculation 1: Yearly new stove efficiency

As per applied AMS II G v 13.0 “Energy efficiency measures in thermal applications of non-renewable biomass” para 37 (a), A default schedule of 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. The thermal efficiency is 35.40 %, after linear decrease of 20 percent it will be 34.30 %.

Output:

Year	$\eta_{new,i,y}$
1	34.30%
2	32.10%
3	29.90%
4	27.70%
5	25.50%

6	23.30%
7	21.10%

Calculation 2: Yearly number of operational stoves

$NO_{ij} \times N_{y,,}$ = Number of stoves in scope x (1-(y-1)* loss rate %)

Loss Rate: Annual stove loss rate is estimated at 5%. This is assumed as conservative as compared with survey results. This value will vary during actual verification based on survey results.

Example of calculation:

If y = 2, for Project Stove

$N_{y,,} = 30,000 \times [1 - 0.05]$

=28,500

Outputs:

Stove operational (($NO_{ij} \times N_{yij}$))	
Year	$NO_{ij} \times N_{y,i,j}$
1	30,000
2	28,500
3	27,075
4	25,721
5	24,435
6	23,213
7	22,053

Calculation 3: Yearly woody biomass saved in tonne per Shri Stove per year

Assumptions:

- Upon initial survey with the households in our project region, it is concluded that Estimated wood biomass consumption in households is ~4.02kg, resulting into $B_{y=1,new}$ to be 1.47/ tonne/stove/year; assuming stove being operational 365 days
- Efficiency of traditional stoves being replaced – 9.26%

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

Outputs:

Year (y)	$B_{y=1,new,i,survey}$	$\eta_{new,i,y}$	η_{old}	$B_{y,savings,i,j}$
1	1.47	34.30%	9.26%	3.97
2	1.47	32.10%	9.26%	3.62
3	1.47	29.90%	9.26%	3.27
4	1.47	27.70%	9.26%	2.92
5	1.47	25.50%	9.26%	2.57
6	1.47	23.30%	9.26%	2.22
7	1.47	21.10%	9.26%	1.88

Calculation 4: Yearly emission reductions by SHRI STOVE

$$ER_y = \sum_i \sum_j B_{y,savings,i,j} \times N_{0,i,j} \times n_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times (EF_{wf,CO_2} + EF_{wf,non\ CO_2}) \times Adj_{LE} \times (1 - u_d) \quad (1)$$

Where:

$$f_{NRB,} = 0.8628$$

NCV_{wood} is 0.0156 TJ/ tonne, as per default value indicated in the (IPCC default value for wood fuel, 0.0156 TJ/tonne

$EF_{wf,2}$ to be 112 tCO₂/TJ and $EF_{wf,non\ CO_2}$ to be 9.46 tCO₂/TJ, as per default value indicated in the equation 2 of the applied VCS methodology

Calculation of the fraction of non-renewable biomass

As per equation 3, Tool 30 ver., 4,

$$H = HW \times N + CE + NE$$

Equation (3)

Where:

<i>HW</i>	=	Average consumption of wood fuel per household, including fuelwood and charcoal, in the applicable area in the relevant period (tonnes//household)
<i>CE</i>	=	Commercial woody biomass consumption for energy applications (e.g. commercial, industrial or institutional uses of woody biomass in ovens, boilers etc.) that are extracted from forests or other land areas in the applicable area in the relevant period (tonnes)
<i>NE</i>	=	Commercial woody biomass consumption for non-energy applications (e.g. construction, furniture) that are extracted from forests or other land areas in the applicable area in the relevant period (tonnes)
<i>N</i>	=	Number of households consuming wood fuel within the applicable area in the relevant period (number)

<i>H</i>	:	30.54	in million tonnes (annually)
<i>HW</i>	:	1.23	tonnes/household
<i>N</i>	:	11.09	Million
<i>NE</i>	:	16.87	in million tonnes (annually)
<i>CE</i>	:	0	Value Not Available

$$RB = \sum (MAI_{forest,i} \times (F_{forest,i} - P_{forest,i})) + \sum (MAI_{other,i} \times (F_{other,i} - P_{other,i}))$$

Equation (4)

Where:

<i>MAI_{forest,i}</i>	=	Mean Annual Increment of woody biomass growth per hectare in sub-category <i>i</i> of forest areas in the relevant period (tonnes/ha/yr)
<i>MAI_{other,i}</i>	=	Mean Annual Increment of woody biomass growth per hectare in sub-category <i>i</i> of other land areas in the relevant period (tonnes/ha/yr)
<i>F_{forest,i}</i>	=	Extent of forest in sub-category <i>i</i> in the relevant period (ha)
<i>F_{other,i}</i>	=	Extent of other land in sub-category <i>i</i> in the relevant period (ha)
<i>P_{forest,i}</i>	=	Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest areas (in sub-category <i>i</i>) in the relevant period (ha)
<i>P_{other,i}</i>	=	Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within other land areas (in sub-category <i>i</i>) in the relevant period (ha)
<i>i</i>	=	Sub-category <i>i</i> of forest areas and other land areas ³

MAI_{forest,i} and *MAI_{other,i}* is calculated as per recent report of IPCC, Forest Land, Volume 4, Table-4.9 and Extent of forest is calculated as per Chapter-13 India state of forest report-2021.¹¹

¹¹ <https://fsi.nic.in/forest-report-2021-details>

$$f_{NRB} = \frac{NRB}{NRB + RB} \quad \text{Equation (1)}$$

Where:

- f_{NRB} = Fraction of non-renewable biomass in the applicable area in the relevant period (fraction or %)
- NRB = Quantity of non-renewable biomass consumed in the applicable area in the relevant period (tonnes)
- RB = Quantity of renewable biomass that is available on a sustainable basis in the applicable area in the relevant period (tonnes)

Parameters	Symbol	Description	Value	Unit
Total consumption of woody biomass in the applicable area in the relevant period (tonnes)	H	Calculated	30.54	million tonne
Quantity of renewable biomass that is available on a sustainable basis in the applicable area in the relevant period (tonnes)	RB	Calculated	4.19	million tonne
Quantity of non-renewable biomass consumed in the applicable area in the relevant period	NRB	Calculated	26.348	million tonne
	FNRB		86.28%	

VVB noted that the registered project (VCS 3769¹²) by same PP uses f_{NRB} value as 86.28% and the estimated value for this project is conservative and hence found to be appropriate.

VVB noted that as per requirement of tool 30 version 4.0, the values presented above for f_{NRB} shall be compared with literature, preferably with, Bailis, R.; Drigo, R.; Ghilardi, A. & Masera, O. (2015). The carbon footprint of traditional wood fuels. Nature Climate Change, 5(3), pp. 266–272.

PP has prepared a detailed analysis as how and why comparative analysis with the above report is not appropriate for the current project which is presented in appendix 2 of Joint PD&MR. Based on the analysis, VVB noted the following points which affected the calculation of f_{NRB} value and appropriateness of the value considered in the VCS Joint PD&MR.

VVB noted that PP has selected f_{NRB} demonstration on a regional level i. e. state level. This is found appropriate. As per para 3 of tool 30, PP can identify and clearly delineate the applicable area for

¹² <https://registry.terra.org/app/projectDetail/VCS/3769>

fNRB. PP has demonstrated in the Joint PD&MR that to assess and use the area from which woody biomass is sourced for end-users included in the grouped project activity, PP has to consider regional (state) specific databases as ecological conditions vary significantly at the subnational level in India, resulting in differences in the mean-annual growth of wood biomass within and outside forested areas. This is acceptable as it also satisfies requirement of par 6 (b) of tool 30 i. e. *“Calculate fNRB by determining the share of renewable and non-renewable woody biomass in the total quantity of woody biomass consumption for the country/region or the project area (hereinafter referred as the applicable area)”*.

The same para mentions that *“The project participants shall compare and analyse the calculated values against the values for fNRB reported in relevant scientific literature and justify any differences. This analysis shall be included in the appropriate section of the PDD”*. PP has demonstrated the comparison with the relevant scientific literature (Bailis, Drigo, & Ghilardi, 2015), referenced in Tool 30 in the appendix 2 of Joint PD&MR. VVB found the PP’s approach correct and VVB noted that the concerned literature does not use the most recent data,

Bailis report^{16/} uses global-level data from the Food and Agriculture Organization (FAO), the International Energy Agency (IEA) and the United Nations (UN) for various data along with other published literature for specific countries and is not state specific data from the local government. E. g. VVB noted that for specific fNRB data for India, Bailis report estimates the NRB values of the region using the WISDOM Model which takes the values of supply and demand module of a given spatial base of the region, and reliance on the local surveys for the same was one of the parameters in the model. However, there was no survey conducted in the project region for the demand of the wood fuel, the Bailis report has referred to the published data of wood fuel consumption for India as per two reference literature as below;

- a) Paper titled “Comparative study of fuelwood consumption by villagers and seasonal “Dhaba owners” in the tourist affected regions of Garhwal Himalaya, India”. This report refers to wood fuel consumption for “Dhaba owners” i.e., small restaurants in local language. The region of study was tourist affected region of Garhwal which is in Uttarakhand state of India. This paper was published in year 2010 and VVB noted that it is not associated with the project region.
- b) Paper titled “Firewood consumption along an altitudinal gradient in mountain villages of India”. This report refers to fuel wood consumption of village households in Uttaranchal state of India. This paper was published in year 2004 and VVB noted that it is not associated with the project region.

Thus, the data used by Bailis report specifically for India is based on a paper of 2004 and 2010 and does not represent the latest data as published by the national agencies as well as regional data available for the project boundary, i.e. for each state within the project boundary. There is considerable difference in the values as published by the national agencies. VVB found that this inference is appropriate

VVB also noted that in section “Discussion and Implementation” on page 4 of Bailis report, it is mentioned that *“One limitation of the study is a lack of reliable wood fuel consumption data. When possible, we used national and sub national data sets. However, for most countries, we relied on data compiled by international organizations containing unknown uncertainties that make it difficult to communicate the uncertainty in these results. A second limitation is that the analysis considers*

a single year and does not account for potential behavioural changes among wood fuel users". Thus, VVB found argument by PP that Bailis report is not a correct representative of the f_{NRB} for the given project boundary, multiple states within India as the report itself has submitted the limitations if faced. Whereas, PP has calculated the value based on the most recent available data for the project region from the government agencies and hence is acceptable to VVB.

PP has further detailed out comparison for each parameter in the appendix 2 of Joint PD&MR with the supporting evidences in the form of reports/weblinks which were assessed by VVB and the comparative account provided proves that the approach selected by PP is the most appropriate.

VVB has noted that there is no other scientific literature available for f_{NRB} value within India for the identified regions available which can be used to compare the value calculated by PP.

PP in the appendix 2 has further presented for countries like Myanmar, Bolivia, Columbia and Guatemala, the f_{NRB} values which are calculated are substantially higher than calculated as per Bailies report. The detailed information presented in the Joint PD&MR was checked and this is found correct by VVB. This further substantiates that though value calculated by PP is on higher side than as per the literature referred by Tool 30, it is also the case for other countries too.

Further, the data presented by PP in the table for registered project and f_{NRB} values used in the same, demonstrates that PP has used a conservative value of f_{NRB} .

VVB has assessed the presented analysis and accepted that with the most recent data available to PP, use of correct sources for data to be used in the equation and use of renewable biomass/non-renewable biomass, the f_{NRB} value calculated by PP for the current project is appropriate and hence accepted.

EMISSION CALCULATIONS							
Year	Biomass Savings Tonn/year	Wood NCV TJ/tonne	Non-renew Biomass fraction	EF_CO ₂ + EF_nonCO ₂ tCO ₂ /tJ	(1 - ud) (fraction)	Operational Stoves (No _{ij} x n _{yij})	ER (tCO ₂ e)
1	3.97	0.0156	0.8628	121.46	0.74	30,000	136,800
2	3.62	0.0156	0.8628	121.46	0.74	28,500	118,541
3	3.27	0.0156	0.8628	121.46	0.74	27,075	101,767
4	2.92	0.0156	0.8628	121.46	0.74	25,721	86,374
5	2.57	0.0156	0.8628	121.46	0.74	24,435	72,265
6	2.22	0.0156	0.8628	121.46	0.74	23,213	59,352
7	1.88	0.0156	0.8628	121.46	0.74	22,053	47,549

Calculation 5: Leakage Emission due to transportation of project stove

As per tool 12 v 01.1.0 "Project and leakage emissions from transportation of freight"

Project emissions from transportation as per tool 12 equation (1) is

$$\left. \begin{matrix} PE_{TR,m} \\ LE_{TR,m} \end{matrix} \right\} = \sum_f D_{f,m} \times FR_{f,m} \times EF_{CO_2,f} \times 10^{-6}$$

- $PE_{TR,n}$ = Project emissions from transportation of freight monitoring period m (tCO₂)
 $LE_{TR,n}$ = Leakage emissions from transportation of freight monitoring period m (tCO₂)
 $D_{f,n}$ = Return trip distance between the origin and destination of freight transportation activity f in monitoring period m (km)
 $FR_{f,n}$ = Total mass of freight transported in freight transportation activity f in monitoring period m(t)
 $EF_{CO_2,f}$ = Default CO₂ emission factor for freight transportation activity f
(g CO₂/t km) or
 f = Freight transportation activities conducted in the project activity in monitoring period m

District	Number of devices that Can be accommodated in a single vehicle (nos.)	Distance between manufacturing unit and the distribution unit (in km)	LE _{TR,n} (tCO ₂ e)	LE _{TR,n} per Cookstove (tCO ₂ e)
Jabalpur	2,300	313	5.37	0.00233
Chhindwara	2,300	314.1	5.39	0.00234
Khargone	2,300	318.4	5.46	0.00237
Betul	2,300	178.2	3.06	0.00133
Mandsaur	2,300	346.7	5.95	0.00259
Bhopal	2,300	0	0.00	0.00000
Hoshangabad	2,300	77.2	1.32	0.00058
Seoni	2,300	378.8	6.50	0.00282
Rewa	2,300	538.8	9.24	0.00402
Dewas	2,300	152	2.61	0.00113
Dhar	2,300	263	4.51	0.00196
Sagar	2,300	169.1	2.90	0.00126
Sehore	2,300	38.4	0.66	0.00029
Ratlam	2,300	294.1	5.04	0.00219
Morena	2,300	467.4	8.02	0.00349
Balaghat	2,300	463.5	7.95	0.00346
Jhabua	2,300	348.8	5.98	0.00260
Indore	2,300	194.1	3.33	0.00145
Vidisha	2,300	53	0.91	0.00040
Khandwa	2,300	257.3	4.41	0.00192

Raisen	2,300	47.2	0.81	0.00035
Satna	2,300	453.2	7.77	0.00338
Gwalior	2,300	432	7.41	0.00322
Harda	2,300	148	2.54	0.00110
Guna	2,300	210	3.60	0.00157
Alirajpur	2,300	402.7	6.91	0.00300
Bhind	2,300	517	8.87	0.00386
Neemuch	2,300	401	6.88	0.00299
Ujjain	2,300	191.5	3.28	0.00143
Mandla	2,300	405	6.95	0.00302
Datia	2,300	408	7.00	0.00304
Shahdol	2,300	494.7	8.48	0.00369
Anuppur	2,300	506	8.68	0.00377
Singrauli	2,300	714.9	12.26	0.00533
Burhanpur	2,300	351	6.02	0.00262
Panna	2,300	373	6.40	0.00278
Damoh	2,300	243	4.17	0.00181
Ashoknagar	2,300	154	2.64	0.00115
Sidhi	2,300	608	10.43	0.00453
Shajapur	2,300	151	2.59	0.00113
Katni	2,300	402	6.89	0.00300
Sheopur	2,300	427	7.32305	0.003183935
Dindori	2,300	456.6	7.83069	0.003404648
Shivpuri	2,300	225	3.85875	0.001677717
Narsinghpur	2,300	188	3.2242	0.001401826
Chhatarpur	2,300	300	5.145	0.002236957
Narmadapuram	2,300	73	1.25195	0.000544326
Agar Malwa	2,300	183	3.13845	0.001364543
Tikamgarh	2,300	283	4.85345	0.002110196
Barwani	2,300	348	5.9682	0.00259487
Niwari	2,300	356	6.1054	0.002654522
Rajgarh	2,300	53	0.90895	0.000395196
Total Expected Leakage for grouped project activity			67.42	0.00225

VVB has checked and confirmed that,

- all relevant assumptions and data are listed in the VCS PDMR including their references and sources

- b. All data and parameter values used in the VCS PDMR are considered reasonable in the context of the project.
- c. All estimates of the baseline emissions can be replicated using the data and parameter values provided in the VCS PDMR.

VVB further confirms that the methodology and applied tools have been applied correctly to calculate baseline emissions, project emissions, leakage and net GHG emission reductions and removals during the project crediting period.

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
Year 1 (01-December-2022 to 30-November-2023)	136,800	0	67.42	136,732
Year 2 (01-December-2023 to 30-November-2024)	118,541	0	0	118,541
Year 3 (01-December-2024 to 30-November-2025)	101,767	0	0	101,767
Year 4 (01-December-2025 to 30-November-2026)	86,374	0	0	86,374
Year 5 (01-December-2026 to 30-November-2027)	72,265	0	0	72,265
Year 6 (01-December-2027 to 30-November-2028)	59,352	0	0	59,352
Year 7 (01-December-2028)	47,549	0	0	47,549

to 30-November-2029)				
Total	6,22,648	0	0	6,22,580
		Total number of crediting years		7 Years
		Average annual ERs		88,940

The calendar year wise emission reductions are presented below:

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1 (01-December-2022 to 31-December-2022)	11,394
Year 2 (01-January-2023 to 31-December-2023)	135,216
Year 3 (01-January-2024 to 31-December-2024)	117,143
Year 4 (01-January-2025 to 31-December-2025)	100,484
Year 5 (01-January-2026 to 31-December-2026)	85,198
Year 6 (01-January-2027 to 31-December-2027)	71,189
Year 7 (01-January-2028 to 31-December-2028)	58,368
Year 8 (01-January-2029 to 30-November-2029)	43,587
Total estimated ERRs during the first crediting period	622,580
Total number of years	7
Average annual ERs	88,940

Assessment team certifies that the relevant tools and the applied methodology were used correctly to determine baseline emissions and net GHG emission reductions during the project crediting period. VVB team further verify that, the calculation of the f_{NRB} is found accordance with TOOL 30, v.04.0, latest data utilize from the sourced "Socio-Economic Contribution of Forests: Production and Consumption of Forest Resources in India" and the "Indian Forest Report 2021. The values are found consistent with Joint PD&MR, thus accepted by VVB team.

3.4.7 Methodology Deviations

Not applicable

3.4.8 Monitoring Plan

The project uses VCS methodology, specifically VMR0006, Version 1.2. The assessment of parameters considered ex-ante and ex-post is presented below:

Parameters kept ex-ante:

1. NCV_{wood fuel}: Net calorific value of the non-renewable woody biomass that is substituted or reduced.

This parameter is a default value as per the applied methodology VMR0006, version 1.2. PP has used default value as 0.0156 TJ/tonne which is correct.

2. f_{NRB} : Fraction of non-renewable biomass in the applicable area in the relevant period (fraction or %)

The value of the parameter is calculated by PP using tool 30, version 4.0 using the most recent data available from the host country. The assessment of the value calculated is provided above in section 3.4.6 and the value was confirmed. The considered value i. e. 86.28% is appropriate and is fixed ex-ante for the 1st crediting period.

3. EF_{WF, CO_2} : CO₂ emission factor for the use of wood fuel in baseline scenario

VVB has checked that PP has used a default value i. e. 112 tCO₂/TJ as per the applied methodology – VMR006 version 1.2 which has used this value based on the 2006 IPCC guidelines and is found acceptable.

4. $EF_{WF, non-CO_2}$: Non-CO₂ emission factor for the use of wood fuel in baseline scenario

VVB has checked that PP has used a default value i. e. 9.46 tCO₂/TJ as per the applied methodology – VMR006 version 1.2 which has used this value based on the 2006 IPCC guidelines and is found acceptable.

5. η_{old} - Efficiency of baseline cookstove

VVB checked and confirmed that PP had appointed a 3rd party to check the efficiency of baseline stove at different locations within the project boundary. The result of this assessment conducted by an accredited laboratory - Maulana Azad National Institute of Technology (MANIT) following national or international standards were checked by VVB to confirm that the value of 0.0926 i. e. 9.26% is appropriate.

6. U_d : Uncertainty deduction for f_{NRB}

PP has calculated f_{NRB} value as per tool 30, version 4.0. Hence as per the methodology requirement, PP has used value as 26% i. e. option 2) as mentioned in the methodology which is correct.

7. η_p : Efficiency of project stove at the start of project activity

VVB has checked and confirmed that PP has used the value i. e. 35.40% which is based on the manufacturer's specifications which were established based on test conducted at an accredited laboratory - Maulana Azad National Institute of Technology (MANIT) following national or international standards.

8. Adj_{LE} : Adjustment factor to account for leakage related to the non-renewable woody biomass saved by the project activity

VVB noted that PP has used the value as 0.95 which is in line with the requirements mentioned in the applicable CDM methodology - AMS-II.G v13, section 5.4 and hence accepted.

VVB noted that all these values are fixed for the 1st crediting period which is appropriate.

Parameters to be monitored are:

Parameter (s)	Units	Frequency	Description	Source of monitoring Data	Means of verification
$N_{0,i,j}$	Number	-	Number of commissioned project devices of type i and batch j	Survey of a representative sample.	VVB noted that PP will conduct survey to measure and confirm the no. of commissioned project devices (i.e. project activity instances). This is found acceptable as it is in line with the applied CDM methodology
$n_{y,i,j}$	Fraction	Biennial (at least Once in two years)	Proportion of commissioned project devices of type i and batch j ($N_{0,i,j}$) that remain operating in year Y (fraction)	Based on monitoring survey.	VVB noted that PP will conduct biennial survey to measure and confirm the proportion of commissioned project devices (i.e. project activity instances). This is found acceptable as it is in line with the applied CDM methodology.
$B_{y=1,new,i,j,survey}$	Tones	Determined in the 1 st year of implementation	Quantity of woody biomass used by project device in tonnes per device of type i	Based on the monitoring survey,	VVB noted that the value of the parameter will be established by PP in the 1 st year of project implementation which is found acceptable.
$\eta_{new,i,j}$	fraction	Annual	Efficiency of the device of each type i and batch j implemented as part of the project activity	Manufacturer specification or Certification by a national standards body or an appropriate certifying agent recognized by that body	VVB noted that this parameter will be monitored on the annual basis and as per equation mentioned in para 37 of AMS II G: A default schedule of linear decrease in

					efficiency up to the terminal efficiency assumed as 20 per cent will be applied throughout the life span of the project device which is acceptable. PP has provided the efficiency values in decreasing order in the VCS PDMR and ER sheet which were checked and found correct.
Life Span	Number of years	Once at the time of installati on of batch of type of stove	The operating lifetime of the project device. The life span should be reported if the methodology equation 5 is adopted to determine the project stove efficiency	Manufacturer specification	VVB noted that the life span is determined based on manufacturer's specification which were submitted to VVB and checked to confirm the value.
μ_y	Fraction	At least once in 2 years	Adjustment to account for any continued use of pre-project devices during the year y	Monitoring survey	VVB noted that this parameter will be established based on the monitoring survey to be conducted which is acceptable.
Date of commissioning of batch j	Date	Fixed and recorded at the time of commissioning/distribution of the last project device in the batch	To establish the date of commissioning, the Project Participant may opt to group the devices in "batches" and the latest date of commissioning of a device within the batch shall be used as the date of commissioning for the entire batch.	Project Database	VVB noted that the value of the parameter will be established based on the project ICS database and the date of commissioning of ICS i. e. start of emission reductions will be recorded which is appropriate.

The annual ICS survey shall be the source of the annual values of the monitoring parameter, as indicated in the Joint PD & MR. The annual survey data on functioning devices will be the foundation for the

calculations of emission reductions. The evaluation team will examine it to confirm the results of the emission decrease.

VVB has checked the VCS Joint PD&MR which detailed out the monitoring plan to be implemented. The assessment of the same is provided below.

VVB noted that the monitoring of the project will involve data collection during distribution of ICSs as well as its usage information post distribution. PP has developed its proprietary cloud-based mobile application that will be used to gather end-user data, including customer contact details along with identification number, wherever applicable and photographs of customers receiving ICS. During on-site visit, this application was checked by VVB and noted that it records the following information in real time basis for each ICS distributed.

- Name of the customer
- Address of the customer
- Phone Number of the customer
- Customer's government identification
- Total number of family members
- Date of Distribution

After distribution monitoring will involve choosing a sample of ICS customers from several districts/ villages where ICS has been distributed and these locations will be visited for verification. Other methods that will be used for monitoring will involve calls to random customers to get updates about ICS and its performance.

PP will ensure that the data collection and handling will be done in a transparent way on the mobile application and will be available on the cloud server to be accessed anytime. If any uncertainty occurs, it will be rectified, and a revised monitoring plan will be implemented.

The key elements of the project monitoring are as follows -

1. Data collection procedures
2. Distribution and Monitoring Database
3. Spot Checking of ICS (ongoing)
4. Sample Plan for the Monitoring Survey
5. Data Quality, Consistency and Duplication Checks
6. Monitoring Reporting

Further PP has detailed following steps for project implementation:

User Registration:

- Project implementers collect necessary information during the registration process.

- Information may be collected through physical cards, filled by project staff, or Application.
- Accuracy is verified, and additional clarifications are sought if needed.

Data Logging:

- Trained staff input data into the database manually and automatically (application).
- Information is double-checked, and duplicates are investigated and corrected or excluded.

Spot-Checking (Ongoing):

- Field staff randomly check units in the database against factual evidence in the field.
- Inconsistencies are updated; unused stoves are marked and excluded from emission calculations.

Monitoring:

- Project implementers follow PD requirements to collect necessary information for monitoring reports.

Monitoring Report Preparation:

- The project implementers or PP prepare the final monitoring report for VVB verification.
- A copy of the report is retained by the PP.

Overall Coordination:

- The PP coordinates and manages each project implementer, ensuring adherence to the monitoring plan.
- Regular audits throughout the project lifespan ensure stove functionality and determine their lifespan.
- Training is provided to the field team prior to the monitoring
- Regular campaigns and trainings provided for the optimum uses of project device.

The evaluation team affirms that thorough monitoring procedures, monitoring structure, management team, monitoring items, and monitoring functions have been amply proven based on the review of the Joint PD & MR/01/

All data will be electronically archived and maintained for 2 years post issuance.

VVB concludes that the monitoring plan mentioned in the VCS PD & MR adheres to the requirements of the applied methodology and referenced tools.

CAR 04 was raised and closed successfully. Kindly refer appendix 03 for more information.

3.5 Non-Permanence Risk Analysis

Since the present grouped project activity is a non-AFLOU project, this section is not applicable as per the guidance of Verra.

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

The following list includes the information and factors used to determine the removal and reduction of GHG emissions:

Ex-ante parameters (parameters having default values):

SI No	Parameter	Description	Value	Unit	Source
1.	$f_{NRB,y}$	Fraction of woody biomass (fuel wood) saved by the project activity during year y that can be established as non-renewable biomass	For Madhya Pradesh – 86.28% (0.8628) (calculated as per meth tool)	%	Fraction of non-renewable biomass is calculated as per the f_{NRB} calculation TOOL30: Calculation of the fraction of non-renewable biomass ^{14/} in ER sheet tab “ f_{NRB} ” ^{2/} . Further sources used to calculate f_{NRB} in ER sheet have been verified from weblinks provided in the sheet and the evidences submitted. PP has referred State of Forest report (Forest Survey of India Ministry of Environment, Forest & Climate Change, Gol, 2019) ^{24/} . Assessment team found that the report is publicly available and the reference have been checked and found correct. Hence accepted.
2.	$NCV_{wood\ fuel}$	Net calorific value of the non-renewable woody biomass (fuel wood) that is substituted or reduced	0.0156	TJ/Tonne	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction

3.	EF_{WF,CO_2}	CO ₂ emission factor for the use of wood fuel in baseline scenario	112	tCO ₂ /TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
4.	$EF_{WF,non\ CO_2}$	Non-CO ₂ emission factor for the use of wood fuel in baseline scenario	9.46	tCO ₂ /TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
5.	$\eta_{old,i,j}$	Efficiency of baseline cookstove	0.0926	Fraction	Calculated based on representative sample survey in line with methodology requirement of AMS II.G version 13.0 and then measured by 3 rd party appointed by the PP. The submitted survey records and efficiency test records by 3 rd party - MANIT Bhopal (Maulana Azad National institute of technology) were checked to confirm the same.
6.	U_d	Uncertainty deduction for f_{NRB}	0.26	Fraction	Methodology default value
6.	η_p	Efficiency of the project stove at the start of project activity	0.354	Fraction	Verified by stove test certificate issued by accredited laboratory MANIT Bhopal (Maulana Azad National institute of technology)
7.	Adj_{LE}	Adjustment factor to account for leakage related to the non-renewable woody biomass saved by the project activity	0.95	Fraction	Methodology default value

As a part of monitoring plan, the assessment team found, checked and confirmed that following sustainable development goals are considered which are appropriate and are measurable.

Sr. No.	SDG Target	SDG Indicator	Current Project contribution	Means of verification
1.	1.4	1.4.1 Proportion of population below the international poverty line	30,000 households who got high-energy efficient project improved cookstoves saved fuelwood and cooking time, thereby reducing fuelwood monthly expenses, and providing extra time for alternate jobs.	VVB has checked the project databased submitted which confirmed that total 30,000 ICS were distributed.
2.	3.9	3.9.1 Mortality rate from air pollution	Around 30,000 household, with an average of two people per household, were able to enjoy improved indoor air quality due to the use of improved cookstoves. These cookstoves reduced the emission of fine particulate matter during cooking, resulting in better health and wellbeing for the people using them.	During on-site interviews with the end users of ICS, they confirmed that the air pollution is reduced and hence SDG parameter 3.9.1 is confirmed.
3.	5.4	5.4.1 Time spent on unpaid domestic and care work, by sex, age & location	Distributed ICS to reduce drudgery, and time spent by women/girls in 30,000 households on cooking or care work. We considered at an average of 1hr/day default factor, per household was reduced in rural areas	During on-site interviews with the end users of ICS, they confirmed that time spent for firewood collection is reduced and hence SDG parameter 5.4.1 is confirmed.
4.	7.1	7.1.2-Proportion of population with primary reliance on clean fuels and technology	The project has resulted in increased reliance on clean technology through distribution of 30,000 numbers of improved cookstoves.	VVB has checked the project databased submitted which confirmed that total 30,000 ICS were distributed.
5.	8.3	8.3.1 Proportion of informal employment in non-agriculture employment, by sex	The project provides training to 150 individuals who are employed to manage project activities. This initiative not only increases employment opportunities in rural areas but also equips these individuals with the skills to secure jobs in the future.	During on-site interview, VVB has confirmed that 150 individuals were trained on the basis of training records submitted.

6.	13	13.2.1 Quantity of emission reductions achieved from the project activity	The average annual GHG emission reduction is 88,940 tCO ₂ e. and total 622,580 tCO ₂ e for the grouped project activity over the entire crediting period with 67,652 tCO ₂ e for the current monitoring period.	The submitted ER sheet was checked the accuracy of data, parameters and equations used to confirm that emission reduction calculation is correct.
----	----	---	--	---

Parameter(s) monitored ex-post

Parameter	N _{y,i,j} (Proportion of commissioned project devices of type i and batch j (N _{0,i,j}) that remain operating in year y (fraction))	
Means of verification		
	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	At least once in two years. For current monitoring period it is measured through survey which is checked and confirmed.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the Joint PD & MR and monitoring methodology. This parameter is monitored once every two years through ICS survey.
	Monitoring equipment	monitoring survey
	Value applied	0.95 / 95% The value is checked and confirmed based on monitoring survey submitted for the 1 st year of operation.
	How were the values in the monitoring report verified?	Measured directly or based on a 90-representative sample. PD has used sampling standard, version 4.0 to determine the sample size to achieve 90/10 confidence precision. From each state, PP has randomly selected the ICS applying random sampling function in excel and accordingly the target ICS sample is determined for survey. Data collected:

		Questionnaire survey form used by third party surveyor and a detailed survey report has been provided. Since the relative margin of error obtained is less than 10% for the monitored parameter, relative precision of the data is statistically acceptable and deemed representative of the population. The submitted survey was checked and confirmed.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On-site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable. Assessment team verified operational ICS during the on-site visit from ICS survey report
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	$N_{o,i,j}$ (Number of commissioned project devices of type i and batch j in)	
Means of verification		
	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Annual
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the Joint PD & MR and monitoring methodology. This parameter is monitored on continual basis in line with paragraph 45 of AMS II.G version 13.0
	Monitoring equipment	monitoring survey
	Value applied	30,000 The value is checked and confirmed based on monitoring survey submitted for the 1 st year of operation.
	How were the values in the monitoring report verified?	Measured directly or based on a 90-representative sample. PD has used sampling standard, version 4.0 to determine the sample size to achieve 90/10 confidence precision. From each state, PP has randomly selected the ICS applying random sampling function in excel and accordingly the target ICS sample is determined for survey. Data collected: Questionnaire survey form used by third party surveyor and a detailed survey report has been provided. Since the relative margin of error obtained is less than 10% for the monitored parameter, relative precision of the data is statistically acceptable and deemed representative of the population. The submitted survey was checked and confirmed.
	Does the data management ensure correct transfer of data	On-site assessment of the project activity confirms that the

	and reporting of emission reductions and are necessary QA/QC processes in place?	necessary QA/QC procedures are in place and the data management system is effective and reliable. Assessment team verified operational ICS during the on-site visit from ICS survey report
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	$\eta_{new,y,i,j}$ The efficiency of the improved cook stove type i and batch j determined as per equation 5 of methodology during year y		
Means of verification	Criteria/Requirements		Assessment/Observation
	Measuring /Reading /Recording frequency		PP has decided to measure the efficiency once at the time of project cookstove installation at the start of installation which is appropriate.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)		Yes. The reporting frequency is in line with the monitoring plan as outlined in the Joint PD & MR and monitoring methodology. It will be monitored at time of each new cookstove installation which is acceptable.
	Monitoring equipment		As per the applied methodology AMS.II.G para 37, It was possible to measure the efficiency ex-ante. However, the grouped project may add a different type of cook stove during its operational life time and hence PD has decided to measure this parameter ex- post which is acceptable
	Value applied		34.30%
	Year (y)	Description	$\eta_{new,i,j}$

		$\eta_{new,y,i,j}$ vintage 1	Efficiency of the system being deployed as part of the project activity (Vintage 1)	0.3430	
		$\eta_{new,y,i,j}$ vintage 2 Year 2	Efficiency of the system being deployed as part of the project activity (Vintage 2)	0.3210%	
	How were the values in the monitoring report verified?	Efficiency test carried out by third party who is authorized by government. PD has submitted efficiency test report by MANIT Bhopal, Government of India which was checked for the value and was found correct. Further, in line with equation 5, PD has decided to apply efficiency loss per year which is correct.			
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On-site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.			
Findings	No findings were raised.				
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.				

Parameter	Life Span (The operating lifetime of the project device. The life span should be reported if the methodology equation 5 is adopted to determine the project stove efficiency)	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The operating lifetime of the project device. The life span should be reported if the methodology equation 5 is adopted to determine the project stove efficiency
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. As per the applied methodology, the parameter is fixed and recorded at the time of commissioning/distribution. This accepted.
	Monitoring equipment	NA
	Value applied	7
	How were the values in the monitoring report verified?	The value is cross checked against manufacturer's specifications submitted to VVB.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On-site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	U _y (Adjustment to account for any continued use of pre-project devices during the year y) fraction	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	At least once every two years (biennial)
	Is measuring and reporting	Yes. VVB has confirmed that the

	frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	measuring frequency is in line with the applied methodology AMS II.G, version 13.0
	Monitoring equipment	Monitoring survey
	Value applied	1 The value is checked and confirmed based on monitoring survey submitted for the 1 st year of operation.
	How were the values in the monitoring report verified?	Measured directly or based on a 90-representative sample. PD has used sampling standard, version 4.0 to determine the sample size to achieve 90/10 confidence precision. From each state, PP has randomly selected the ICS applying random sampling function in excel and accordingly the target ICS sample is determined for survey. Data collected: Questionnaire survey form used by third party surveyor and a detailed survey report has been provided. Since the relative margin of error obtained is less than 10% for the monitored parameter, relative precision of the data is statistically acceptable and deemed representative of the population. The submitted survey was checked and confirmed.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On-site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring	

	plan.
--	-------

Parameter	Date of commissioning of batch j (To establish the date of commissioning, the Project Participant may opt to group the devices in “batches” and the latest date of commissioning of a device within the batch shall be used as the date of commissioning for the entire batch).	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Fixed and recorded at the time of commissioning/distribution of the last project device in the batch
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. VVB has confirmed that the measuring frequency is in line with the applied methodology AMS II.G, version 13.0
	Monitoring equipment	NA
	Value applied	Start Date 01-December-2022
	How were the values in the monitoring report verified?	The submitted project database was cross checked and confirmed on sampled basis against the interviewed/visited end users to confirm the date along with end user agreements submitted to VVB.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On-site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	By=1,new,l,j,survey Annual quantity of woody biomass (fuel wood) used by improved cook stoves in tonnes per device of type i and batch j, determined in the first year of the implementation of the project through a sample survey.	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Determined in the first year of project implementation through monitoring survey which is submitted, checked and confirmed.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the Joint PD & MR and monitoring methodology. This parameter is determined in the first year of project implementation.
	Monitoring equipment	Weighing Scale. VVB noted that PP had purchased new weighing scale prior to fuel measurement, which was pre-calibrated and acceptable. The weighing scale will be calibrated annually. .
	Value applied	1.600 tonnes/device/year The value is established based on monitoring survey conducted by PP and which was confirmed through on-site interviews and measuring campaign by VVB.
	How were the values in the monitoring report verified?	PD has decided to conduct monitoring survey and the sample size was selected in line with the guidelines provided in methodology Section 8.4 option (b). Determined in the first year of the introduction of the devices (e.g., during the first year of the crediting period, y=1) through measurement campaigns at representative households and/or sample surveys. The

		conducted surveys were submitted and checked by the assessment team and found correct.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On-site site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

The Joint PD & MR formulae for calculating emission reductions, as certified by the used methodology VMR0006 Version 1.2 have been examined and deemed to be accurate. The Joint PD & MR values and the ER verification sheet values have been compared. Additionally, the formulas used in the ER spreadsheet were examined and confirmed to be in line. The assessment team certifies that all calculations are performed in accordance with the formulae specified in the applied methodology VMR0006 Version 1.2 and the monitoring plan requirements, that all parameters are used correctly, that all results are transparent and verifiable, and that all assumptions are described and supported by verifiable evidence.

CL 01, CL 08, CL 09 and CAR 02 were raised and closed successfully. Kindly refer appendix 03 for more information.

For the monitoring period from 01-December-2022 to 30-June-2023 (inclusive of both the dates) Joint PD&MR has achieved to reduce 67,652 tCO₂e GHG emissions. The ER sheet was used to verify the emission calculation, which was confirmed to be accurate and accepted.

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01-December-2022 to 31-December-2022	2,992	0	0	2,992

01-January-2023 to 30-June-2023	64,660	0	0	64,660
------------------------------------	--------	---	---	--------

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

Review of ER sheets (ex-ante and ex-post) reveals that the comparison of actual GHG emission reductions with those in VCS PDMR estimates:

Details and steps taken by the assessment team related to the sufficiency of quantity, and appropriateness of quality, of the evidences to verify the monitoring parameters are mentioned under section 4.1 of this report. Assessment team has checked the calculation for the determination of the emission reductions and found them correct and accurate and assessment team confirms the sufficiency of quantity, and appropriateness of quality, of the evidence used to determine the GHG reductions and removals for this verification period.

VVB as a part of desk review and during on-site interviews checked and confirmed these evidences and same were found sufficient and appropriate for the respective values considered. VVB confirms that;

- The submitted evidences were found reliable and the source and nature of the evidence (external or internal, oral or documented) for the determination of GHG emission reductions or removals were checked and confirmed and found appropriate.
- The information flow from data generation and aggregation, to recording, calculation and final transposition into the Joint PD&MR is checked and confirmed.
- As a part of monitoring, PP has used weighing scale for measurement of firewood. During the site visit the weighing scale used was checked. Also, VVB have assessed the submitted calibration certificate dated 01-July-2022 that was calibrated in the lab of MANIT (Maulana Azad National institute of technology).

Thus, VVB confirms that the evidence to determine GHG Emission Reductions and Removals for this verification period is sufficient and appropriate.

CL 03 was raised and closed successfully. Kindly refer appendix 03 for more information.

5 VALIDATION AND VERIFICATION OPINION

Shri Maa Marketing Private Limited hired LGAI Technological Center, S.A. (also known as Applus+ Certification), to carry out a joint validation and verification of the VCS project activity "SMG - COOKSTOVE PROGRAM 3."

The VCS Standard (version 4.5), VCS Program Guide (version 4.4), and Registration & Issuance Process (version 4.3)^{07/} were all used as the foundation for the joint validation and verification process.

The findings of the joint validation and verification process can each be summed up as follows:

The grouped project activity complies with the requirements of the applied baseline & monitoring methodology, VMR0006, Version 1.2^{6/}, and according to Applus+ Certification, delivers the information in Joint PD & MR as needed by VCS Standard, version 4.5^{7(b)/}. As previously mentioned, the validation was carried out utilizing a risk-based methodology. The grouped project activity is anticipated to reduce emissions by 650,851 tCO₂e over the length of its crediting period (seven years).

As stated in the Joint PD & MR /1/, Applus+ Certification concludes the validation with a positive opinion and affirms that the VCS Project Activity "SMG – COOKSTOVE PROGRAM 3" complies with all applicable VCS requirements, including those outlined in the methodologies, tools, and guidelines.

Verification Analysis: The verification strategy used by Applus+ Certification is based on an understanding of the risks involved in reporting GHG emission data and the mitigation measures put in place. In order to provide a reasonable level of assurance that reported GHG emission reductions are accurately stated, Applus+ Certification prepared and carried out the verification by gathering documentation, additional information, and justifications.

The joint validation & verification is based on the VCS Joint PD&MR, additional documents related to baseline and monitoring methodology; the subsequent background investigation, on-site visit and supporting documents made available to the assessment team by project proponent.

The management of the 'Shri Maa Marketing Private Limited.' is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's final Joint PD Monitoring Report. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the 'Shri Maa Marketing Private Limited'. The development and maintenance of records and reporting procedures are in accordance with the final Joint PD Monitoring Report.

In our opinion, the Joint PD&MR^{01/} accurately states the GHG emissions reductions reported for the grouped project activity for the time period of 01-December-2022 to 30-June-2023 (inclusive of both the dates). Based on the approved baseline & monitoring methodology, as well as the VCS standard, the GHG emission reductions were computed accurately.

Estimated Emission reduction over the crediting period is:

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1 (01-December-2022 to 31-December-2022)	11,394
Year 2 (01-January-2023 to 31-December-2023)	135,216
Year 3 (01-January-2024 to 31-December-2024)	117,143
Year 4 (01-January-2025 to 31-December-2025)	100,484
Year 5 (01-January-2026 to 31-December-2026)	85,198
Year 6 (01-January-2027 to 31-December-2027)	71,189
Year 7 (01-January-2028 to 31-December-2028)	58,368
Year 8 (01-January-2029 to 30-November-2029)	43,587
Total estimated ERs	6,22,580
Total number of crediting years	7 Years
Average annual ERs	88,940

Period of verification: from 01-December-2022 to 30-June-2023 (including both days).

Year	Ex-ante emissions reductions/removals	Achieved emissions reductions/removals	Percent difference	Justification for the difference
01-December-2022 to 31-December-2022	11,562	2,992	-74 %	All the project ICS were not installed on the first date of monitoring
01-January-2023 to 30-June-2023	69,372	64,660	-7%	
Total	80,934	67,652	-16%	

Verified reduction and removals from GHG emissions over the aforementioned 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}) ¹³
01 December 2022 – 31 December 2022	3,881	0	357	2,992
01 January 2023 – 30 June-2023	68,266	0	99	64,660
Total	72,147	-		67,652

¹³ After applying 0.95 as the proportion of commissioned project devices that remain operating in year y (fraction) i.e. Proportion of installed ICS operating

APPENDIX 01: DOCUMENT REFERENCE

No.	Author	Title	References to the document	Provider
1.	PP	Joint PD & MR (Initial) Joint PD&MR (Final)	Version 01 dated 28-September-2022 Version 1.9 dated 13-September-2024	PP
2.	PP	Emission reduction spreadsheet (Initial) Estimated Emission reduction spreadsheet (Final) fNRB calculation sheet Baseline and project sampling database	Version 01 dated 28-September-2022 Version 1.7 dated 06—September-2024 Version 02 dated 13-September-2024 Version 01 dated 28-September-2022	PP
3.	NA	Board resolution	15-November 2022	PP
4.	PP	Declaration(s) from Project proponent on double accounting	12-May-2023	PP
5.	NA	Efficiency certificate of ICS issued by MANIT Bhopal	01-August-2022	PP
6.	NA	VMR0006 “Energy efficiency and fuel switch measures in thermal application”, Version 1.2 CDM Methodology AMS.II.G “Energy efficiency measures in thermal applications of non-renewable biomass”, version 13.0 CDM TOOL 12: Project and leakage emission from transportation of freight, version 1.1.0 CDM TOOL 30: Calculation of fraction from non-renewable biomass, Version 4.0	https://verra.org/methodologies/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/ https://cdm.unfccc.int/methodologies/DB/GNFWB3Y6GM4WPXFRR2SXKS9XR908IO	VERRA
7.	NA	VCS Requirements: a) Verified Carbon Standard Program Guide, version 4.4; b) Verified Carbon Standard, version 4.5; c) VCS Program Definitions, version 4.4	-	VERRA

		d) VCS Registration and Issuance Process, version 4.3 e) VCS Joint Project Description & Monitoring Report Template, version 4.2 f) VCS Joint Validation & Verification Report Template, version 4.2		
8.	NA	Technical specification of cookstove		PP
9.	NA	Site assessment –interviews of staff personnel, photographs, physical inspection of monitoring system	-	PP
10.	PP	Employment records	-	PP
11.	PP	Training records	-	PP
12.	PP	Copy of end user agreement	-	
13	PP	- Local stakeholder consultation reports for the meetings held - Invitation letters - Minutes of meeting for each meeting held - Meeting photographs etc.		PP
14	PP	- Baseline survey record - Monitoring survey record - Beneficiaries database		PP
15	PP	Baseline survey report	Dated 16- November-2022	PP
16	Other	Bailis, R.; Drigo, R.; Ghilardi, A. & Masera, O. (2015). The carbon footprint of traditional woodfuels. Nature Climate Change, 5(3), pp. 266–272. https://www.researchgate.net/publication/271503594_The_Carbon_Footprint_of_Traditional_Woodfuels	January, 2015	Other

APPENDIX 02: ABBREVIATIONS

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM VVS	Clean Development Mechanism Validation and Verification Standard
ER	Emission Reductions
CL	Clarification Request
DNA	Designated National Authority
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
IPCC	Intergovernmental Panel on Climate Change
Joint PD & MR	Joint project description and monitoring report
MANIT	Maulana Azad National institute of Technology
MP	Monitoring Plan
MR	Monitoring Report
PD	Project Description
PP	Project Proponent
PS	Project Standard
SMG	Shree Maa Group
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVB	Validation and Verification Body
VVS	Validation and Verification Standard

APPENDIX 03: FINDINGS OVERVIEW

Table 1: CL from this validation / verification

CL ID	01	Section no.	4.1	Date: 26-October-2023
Description of CL				
For f_{NRB} calculation, as per Tool 30, version 4: "The project participants shall compare and analyze the calculated values against the values for f_{NRB} reported in relevant scientific literature and justify any differences. This analysis shall be included in the appropriate section of the PDD. The relevant scientific literature should include at least: (i) Bailis, R.; Drigo, R.; Ghilardi, A. & Masera, O. (2015). The carbon footprint of traditional wood fuels. Nature Climate Change, 5(3), pp. 266–272". This comparison not present in the submitted PDMR. Clarification sought.				
Project participant response				Date: 10-November-2023
PP confirmed that the project proponent elaborated on the calculation of f_{NRB} in accordance with TOOL30, v.04.0, utilizing the latest data sourced from the "Socio-Economic Contribution of Forests: Production and Consumption of Forest Resources in India" and the "Indian Forest Report 2021." The detailed calculations for H, Rb, and NRB as per TOOL30, incorporating the most recent data available, were provided by the project				
Documentation provided by project participant				
F _{NRB} sheets				
VVB assessment				Date: 01- December-2023
PP response is accepted. However, it was checked and observed that the calculation of f_{NRB} with the sourced value is not mentioned in the submitted joint PD&MR. Hence, this part of CL is open. CL 01 is open				
Project participant response				Date: 08- December-2023
Detailed calculation of f_{NRB} with reference data is mentioned in joint PD & MR in accordance with TOOL30, v.04.0, utilizing the latest data sourced from the "Socio-Economic Contribution of Forests: Production and Consumption of Forest Resources in India" and the "Indian Forest Report 2021. As per Tool 30, Version 4, there is a difference in the values of calculated F_{NRB} and the values mentioned in Bailis, R.; Drigo, R.; Ghilardi, A. & Masera, O. (2015) due to the latest data from India. The value of F_{NRB} in Bailis, R.; Drigo, R.; Ghilardi, A. & Masera, O. (2015) is calculated based on data available until 2015, while the recently updated IPCC and India Forest Survey for 2021 provide revised and more current information. The PP used the most recent available data to calculate the F_{NRB} for Madhya Pradesh, India."				

Documentation provided by project participant	
FNRB sheet and Joint PD & MR	
VVB assessment	Date: 26-December-2023
The submitted Joint PD&MR and F_{NRB} sheet are checked and calculations were found correct. VVB noted that PP has compared the calculated value with Bailies et al report and since the said report uses values which are not the most recent ones and the submitted F_{NRB} calculation is based on the most recent values available to PP, the same is accepted. CL 01 is closed.	

CL ID	02	Section no.	3.2.2	Date: 26-October-2023
Description of CL				
PP has provided detailed information related to local stakeholder consultation in the submitted joint PD&MR. However, evidence to verify the same is yet to be submitted.				
Project participant response				Date: 10-November-2023
PP shared the details of local stakeholder consultation including local stakeholder involvement, date of meeting and outcomes.				
Documentation provided by project participant				
Local consultation report				
VVB assessment				Date: 01-December-2023
PP has submitted the local stakeholder consultation report dated 16- December-2022, which has been reviewed and found to be correct. Hence, this part of CL is closed. CL 02 is closed				

CL ID	03	Section no.	4.2	Date: 26-October-2023
Description of CL				
1. PP shall submit supporting documents for the monitored parameters as mentioned under section 6.2 of the submitted joint PD&MR. 2. PP shall submit supporting documents for SDG indicators achieved during current monitoring period as explained in section 1.17 of PD&MR.				
Project participant response				Date: 10-November-2023

1. PP submitted supporting documents for the monitored parameters including survey conducted onfield, wood saving and thermal efficiency of project device and baseline stove. 2. PP submitted the i) employment list of individual benefitted in project activity along with their feedback for SDG 8.3 9.3 and 1.4 to VVB ii) A monitoring survey For 3.9 And 5.4 SDG iii) distribution database for SDG 7.1 attendance to VVB as a supporting document for training of SMG field team, along with, ER SHEET for SDG 13,	
Documentation provided by project participant	
Monitoring survey report, Training attendance, Er Sheet, Attendance sheet	
VVB assessment	Date: 01-December-2023
1. PP response is accepted. However, it was checked and observed that PP has not mentioned the parameter as per the latest version of the methodology. Hence, this part of CL is open. 2. PP has submitted Employment list, Monitoring Survey report and Project database to verify the mentioned SDGs for the project activity. However, it was observed that SDG 9.3 talks about “Increase in resilient infrastructure and sustainable industrialization through the purchase of ICS for the project activity’ whereas PP submitted Employment list for the respective SDG. Please clarify. Hence, this part of CL is open.	
CL 03 is open	
Project participant response	Date: 08- December-2023
1. PP submitted supporting documents for a. Monitoring Excel report for monitored parameters including survey conducted onfield, wood saving b. thermal efficiency test certificate for baseline stove. c. Manufacturer specification containing thermal efficiency test certificate of project device 2. The cookstove manufacturer significantly contributes to the attainment of SDG 9.3 by positioning Improved Cookstoves as a resilient form of infrastructure, providing efficient and sustainable solutions for clean cooking practices. By incorporating energy-efficient manufacturing processes and waste reduction strategies, the industry aligns with the principles of sustainable industrialization outlined in the SDG. Job creation and economic growth generated by the cookstove manufacturing sector underscore its role in promoting inclusive and sustainable industrialization, addressing key aspects of SDG 9.3. Moreover, the industry positively impacts local communities by improving access to clean cooking solutions, enhancing health outcomes, and fostering sustainable development, further supporting the broader goals of SDG 9.3.	
Documentation provided by project participant	
1. Monitoring Excel report, Baseline Excel report, thermal efficiency test certificate for baseline stove, Manufacturer specification	
VVB assessment	Date: 26 -December -2023

1. Revised PDMR was checked and found that:

a. As per version 1.2 of the applied methodology, the parameter - $\eta_{PJ,BL}$ (Efficiency ratio of project and baseline devices) is to be measured which is not part of the submitted PDMR.

b. Joint PD&MR mentions parameter - $\eta_{new,i,j}$ (Efficiency of the device of each type i and batch j implemented as part of the project activity), The value applied is written as 0.354 at start of operations and then the table mentions values in '%'. PP shall maintain consistency in the unit of measurement. Further, it is not clear why the efficiency which is 0.354 at the start of operations is 34.30% for the 1st year.

This part of CL is open.

2. PP response is unclear. The UN SDG 9.3 talks about – “Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets”. Job creation and economic growth generated by ICS manufacturing does not increase assess of small-scale industrial and other enterprises, to financial services, including affordable credit, and their integration into value chains and markets. This part of CL is open.

CL 03 is open

Project participant response

Date: 31-December-2023

1. a. As per version 1.2 of the applied methodology, the parameter - $\eta_{PJ,BL}$ (Efficiency ratio of project and baseline devices) is not required. As the project proponent used equation 1 of applied methodology “energy efficiency and fuel switch measures in thermal applications” version 1.2 in which efficiency of project device is used to calculate the biomass savings as per AMS II G.

1. b. Joint PD&MR mentions parameter - $\eta_{new,i,j}$ (Efficiency of the device of each type i and batch j implemented as part of the project activity), The value applied is written as 0.354 at start of operations and consistency is maintained throughout the Joint PD&MR. Further, the efficiency of Shri Stove (project Device) is 0.354 at the start of operations and taken as is 34.30% for the 1st year is clearly mentioned in the Ex Ante calculation sheet. As per AMS II G” Energy efficiency measures in thermal applications of non-renewable biomass” para 37: A default schedule of linear decrease in efficiency up to the terminal efficiency assumed as 20 per cent shall be applied through the life span of the project device¹.

2. PP removed the SDG 9.3 “Increase the access of small-scale industrial and other enterprises.

Documentation provided by project participant

1. Ex ante sheet

2. Joint PD&MR

VVB assessment

Date: 16-January-2024

1. a. PP response is accepted as VVB noted that equation 1 is applied for emission reduction calculation. Hence this part of CL is closed.
b. PP response is accepted and since linear decrease of 20% is applied is found appropriate. Hence this part of CL is closed.
2. Revised PDMR was checked and confirmed that PP has removed SDG 9.3 in the joint PD&MR. Hence, this part of CL is closed.

CL 03 is closed

CL ID	04	Section no.	3.2	Date: 26-October-2023
Description of CL				
1. PP requested to submit declaration in effect of avoiding double counting with regard to Participation under other GHG Programs/Other forms credits. Further, information on participation in REC mechanism of India or international is not clear. Correction sought. 2. PP shall submit baseline survey detailed results as well as complete monitoring survey database.				
Project participant response				Date: 10-November-2023
1. PP submitted the declaration in effect of avoiding double counting with regard to Participation under other GHG Programs/Other forms credits. 2. PP submitted the baseline survey detailed results as well as monitoring survey database				
Documentation provided by project participant				
monitoring survey database and baseline survey				
VVB assessment				Date: 01-December-2023
1. It was checked and confirmed that PP has submitted a declaration letter on the letterhead of 'Shree Maa Marketing Private Limited' dated 15-November-2022, where it is mentioned that <i>"this project is listed on VERRA Registry and the credits shall not be double counted anywhere else"</i>. Hence, this part of CL is closed. 2. It was checked and confirmed that PP has submitted baseline report dated 16-November -2022 which was checked and found to be correct. PP has also submitted Monitoring survey database on sample basis. However, in the submitted joint PD&MR PP to mention the sampling procedure which is applied to conduct monitoring survey. Hence, this part of CL is open				
CL 04 is open				
Project participant response				Date: 08- December-2023
2. Information updated on joint PD&MR section 1.14.				
Documentation provided by project participant				
Joint PD&MR				
VVB assessment				Date: 26-December-2023

PP has now submitted baseline survey and monitoring survey database which were checked and found acceptable. Hence this part of CL is closed.

CL 04 is closed

CL ID	05	Section no.	3.1	Date :01-December-2023
Description of CL				
1. In section 1.1 of the joint PD&MR, PP stated that the location of the project activity is 'Madhya Pradesh'. However, in section1.13 of the submitted joint PD&MR the geographical boundary for the project activity is mentioned as 'India'. Also, on the VCS web page (https://registry.verra.org/app/projectDetail/VCS/3771), the project activity's location (State/province) is listed as 'Chhattisgarh.' PP to clarify the location of the project. 2. In section 1.2 of the submitted report, PP stated that the period of validation is from 01-December-2022 to 30-December-2029, which is more than seven-year duration. Additionally, in the total table, PP indicated a period from 01-November-2022 to 30-April-2023. PP to clarify the period for validation and for the Verification also. 3. In section 1.1 of the submitted report, PP mentioned <i>"one instance of the project activity is scheduled to include the delivery of 30,000 ICS. This number is subject to change during implementation and will be updated. Average annual GHG emission reduction from the first project activity instance is 92,989 tCO2e and 138,814 tCO2e respectively."</i> PP to clarify the values of estimated annual average and total reduction.				
Project participant response				Date : 08- December-2023
1. As the distribution database is entirely on state of Madhya Pradesh, India, the project location is considered to be Madhya Pradesh. Section 1.13 is updated with location of the project activity. 2. Validation and verification table is updated in section 1.2 of the joint PD&MR separately. 3. In section 1.1 of the submitted report, Average estimated annual GHG emission reduction and total estimated annual GHG emission reduction is 92,974 tCO2e and 650,816 tCO2e respectively. Is updated as per Ex Ante calculation sheet shared with VVB				
Documentation provided by project participant				
1. KML file and joint PD&MR 2. Joint PD&MR				
VVB assessment				Date: 26-December-2023
1. It was checked and confirmed that in the revised PD version 1.1 dated 08-December-2023, PP has revised the location and made it consistent throughout the PDMR. Hence, this part of CL is closed. 2. Section 1.2 of revised PDMR was checked and observed that verification period of the project activity is still inconsistent. PP to clarify. Hence, this part of CL is open. 3. The revised PDMR version 1.1 was checked and confirmed that now PP has revised the section and update the value of Emission reduction according to the ER sheet. Hence, this part of CL is closed.				
CL 05 is open				
Project participant response				Date: 31-December-2023
2. Verification period is made consistent throughout the Joint PD&MR.				
Documentation provided by project participant				

Joint PD&MR.	
VVB assessment	Date: 16-January-2024
1. Revised PDMR was checked to confirm that the project location is now mentioned as Madhya Pradesh in section 1.13 which is checked and confirmed. Hence this part of CL is closed. 2. Section 1.2 of Joint PD&MR is revised which was checked and found appropriate. Hence this part of CL is closed. 3. PP has revised the values in the revised PDMR which were checked and are matching with the ex-ante emission reduction worksheet and hence accepted. Hence this part of CL is closed.	
CL 05 is closed	

CL ID	06	Section no.	3.4.3	Date :01-December-2023
Description of CL				
In section 5.4 of the submitted joint PD&MR, PP mentioned the calculation of leakage emissions arising from the transportation of the project stove and identified the table incorporating District, distance, and fuel consumption. However, it was observed that while the project activity is situated in 'Madhya Pradesh,' the mentioned districts extend beyond the designated project boundary. Please clarify.				
Project participant response				Date : 08- December-2023
Section 5.4 is updated with the leakage emission calculation including areas of Madhya Pradesh geography only. In addition to this Ex ante sheet is also updated. Updated values of estimated emission reduction is updated in entire Joint PD&MR.				
Documentation provided by project participant				
Ex ante revised, Joint PD&MR and Leakage emission sheet				
VVB assessment				Date: 26- December -2023
Revised PD&MR version 1.1 was checked and observed that in section 5.4 of the PD&MR districts of other states are still mentioned. PP to clarify the project boundary. Hence, this CL is open.				
CL 06 is open				
Project participant response				Date: 31-December-2023
District are revised and added as per project location in section 5.4 and leakage emission table in Ex Ante sheet				
Documentation provided by project participant				
Ex Ante sheet and Joint PD&MR				
VVB assessment				Date: 16-January-2024

Revised PDMR was checked and it was noted that section 5.4 now provides appropriate information. Hence this part of CL is closed.

CL 06 is closed.

CL ID	07	Section no.	3.1	Date :26-December-2023
Description of CL				
1. It is not clear how many project ICS that shall be distributed/ installed per household. Please clarify. 2. Also, kindly clarify the basis of its determination. 3. PP to clarify whether the cookstove technology is patented ? If so, kindly share the same. 4. PP to clearly mention ICS name throughout PDMR for better clarity. 5. In section 1.3, PP has mentioned 'traditional stoves' which shall be elaborated to explain the type of stove used in the baseline and baseline fuel.				
Project participant response				Date: 31- December -2023
1. Only one project device is distributed per household, and it was inspected by the field team. The field representative assessed the household conditions and identified those meeting the criteria. They distributed the project device while recording the beneficiary's unique government ID and household details. The same information has been shared with the VVB. 2. The detailed baseline report, along with the baseline responses, was shared with VVB. 3. Cookstove technology is not patented by PP. 4. PP mentioned ICS name "Shri Stove" throughout Joint PD&MR 5. The term "traditional stoves," as referenced by PP, pertains to mud stoves. This clarification is explicitly outlined in the Joint PD&MR and baseline documents. Further elaboration in these documents will provide detailed explanations regarding the specific type of stove utilized in the baseline assessment, as well as information on the corresponding baseline fuel.				
Documentation provided by project participant				
1. Joint PD&MR 2. Technical specification 3. Baseline Document				
VVB assessment				Date: 16-January-2024
1. PP response is accepted and same was confirmed during the on-site visit. Hence this part of CL is closed. 2. PP has submitted baseline survey report and it was noted that PP is distributing the ICS to the stakeholder who is using identified baseline i. e. mud stove and hence found acceptable 3. PP response is accepted. 4. It was checked and confirmed that PP mentioned ICS name "Shri Stove" throughout Joint PD&MR. Hence, this part of CL is closed. 5. PP response is accepted.				
CL 07 is closed				

CL ID	08	Section no.	4.1	Date :26-December-2023
Description of CL				

Clarification is requested about the reference source for the applicability criteria mentioned under section 1.5 of the Joint PD&MR.	
Project participant response	Date: 31-December-2023
Clarification of the applicability criteria is mentioned in the Joint PD&MR with justification and relevant documents are already shared with VVB including efficiency of project devices, distribution database and capacity limit.	
Documentation provided by project participant	
Joint PD&MR	
VVB assessment	Date: 16-January-2024
PP response is accepted and same is checked in the revised joint PD&MR which is found appropriate to the assessment team. Hence, this part of CL is closed.	
CL 08 is closed	

CL ID	09	Section no.	4.1	Date : 26-December-2023
Description of CL				
The project implementation plan over the project crediting period as supporting evidence for the details mentioned under section 4.1 of Joint PD&MR has not been submitted, Kindly clarify.				
Project participant response				Date: 31-December-2023
From the start date of the project activity 30000 improved cookstoves are distributed thereby achieving the distribution target. Continuous monitoring is done by the field team and feedback is taken from the beneficiaries. Grievances are addressed in case of any difficulties related to the project activity. The implementation is carried out according to the monitoring plan specified in the MR.				
Documentation provided by project participant				
Distribution database				
VVB assessment				Date: 16-January-2024
VVB noted that PP has distributed 30,000 ICS which is target for the current project activity which is confirmed based on distribution database, on-site interviews and ER calculations.				
CL 09 is closed.				

Table 2:.CAR from this validation / verification

CAR ID	01	Section no.	3.1	Date: 26-October-2023
Description of CAR				
The joint PD&MR shall be submitted in the latest VCS template version 4.3. Hence corrective action sought.				
Project participant response				Date: 10-November-2023
<i>PP submitted the revised PDMR as per version 4.3 to VVB</i>				
Documentation provided by project participant				
<i>Revised PDMR version 4.3</i>				
VVB assessment				Date: 01-December-2023
Revised Joint PD&MR was checked and observed that PP has applied the latest version, version 4.3, of the VCS Joint PD&MR template. However, PP has not fulfilled the section as per the requirements of the latest template. Hence, this CAR is open.				
CAR 01 is open				
Project participant response				Date : 08- December-2023
PP has fulfilled the section as per the requirements of the latest template.				
Documentation provided by project participant				
Joint PD&MR				
VVB assessment				Date: 26-December -2023
It was checked and confirmed PP has fulfilled the section as per the requirement of the latest template. Hence, this part of CAR is closed.				
CAR 01 is closed				

CAR ID	02	Section no.	4.1	Date: 26-October-2023
Description of CAR				

PP shall correct the following inconsistencies observed in the submitted Joint PD&MR.	
1. PP is not clear about the type of fuel. Since the wood and woody biomass are two different things. 2. Details about the indoor pollution is not clear in section 2.3 of Joint PD&MR. 3. The geographical location and geo-coordinates of the project activity under section 1.12 is not clearly stated in the submitted joint PD&MR. 4. Date format is inconsistent throughout the Joint PD&MR with respect to VCS PD-MR template guidelines.	
Project participant response	Date: 10-November-2023
1. PP updated the information in PDMR. 2. Details about the indoor pollution is updated in respective section of Joint PD&MR. 3. The geographical location and geo-coordinates of the project activity under section 1.12 is updated in the joint PD&MR. Date format is updated in Joint PD&MR.	
Documentation provided by project participant	
Joint PD&MR	
VVB assessment	Date: 01-December-2023
1. Revise Joint PD&MR was checked and confirmed that PP has revised the terminology accordingly. Hence, this part of CAR is closed. 2. It was checked and confirmed that PP has revised the details of indoor pollution in submitted joint PD&MR. Hence, this part of CAR is closed. 3. The revised PD&MR was checked and observed that the date format is still not consistent with the VCS guidelines. Hence, this part of CAR is open. CAR 02 is open	
Project participant response	Date : 08- December-2023
The revised PD&MR was updated with the specified date format.	
Documentation provided by project participant	
PD&MR	
VVB assessment	Date 26- December - 2023
Revised PD&MR dated 08-December-2023 was checked and confirmed that PP has revised the format of the Date as per the VCS guideline. Hence, this part of CAR is closed. CAR 02 is closed	

CAR ID	03	Section no.	3.1	Date :01-December-2023
Description of CAR				

1. PP to justify the alignment throughout the submitted joint PD&MR, correction is sought. 2. PP to make the consistency of font and font size throughout the submitted report. Correction is required. 3. As per the instruction of applied template VCS Joint PD&MR version 4.3 “Where a section is not applicable, explain why the section is not applicable (i.e., do not delete the section from the final document and do not only write “not applicable”). PP to revise the submitted report as per respective instruction. 4. As per the applied template in section 1.1 of the submitted joint PD&MR, PP to mention the total GHG emission reductions or removals generated in the current monitoring period.	
Project participant response	Date : 08- December-2023
1. PP justified the alignment throughout the submitted joint PD&MR 2. PP made consistency of font and font size throughout the submitted report 3. Section updated as per template 4. Section 1.1 of joint PD&MR updated with the total GHG emission reductions or removals generated in the current monitoring period	
Documentation provided by project participant	
joint PD&MR	
VVB assessment	Date: 26-December -2023
1. PP response is accepted. However, it was checked and reviewed that setting of the text alignment is not ‘justified’ throughout the PDMR.PP to revise the PD&MR. Hence, this part of CAR is open. 2. Consistency of font and font size is still not consistent in some section of the revised report. PP to revise the PD&MR accordingly. Hence, this part of CAR is open. 3. It was checked and confirmed that PP has updated the report as per the instructions of the template. Hence, this part of CAR is closed. 4. Section 1.1 of the revised PD&MR was checked and confirmed that PP has mentioned the emission reduction for the current monitoring period. Hence, this part of CAR is closed.	
CAR 03 is open	
Project participant response	Date : 31-December-2023
1. PP justified the alignment throughout the submitted joint PD&MR 2. Consistency of font and font size is maintained consistent throughout Joint PD&MR	
Documentation provided by project participant	
Joint PD&MR	
VVB assessment	Date: 16-January-2024

1. Revised PDMR was checked and found appropriate for the alignment. Hence this part of CAR is closed.
2. Revised PDMR was checked and found appropriate for the font used and font size. Hence this part of CAR is closed.
3. Revised PDMR was checked and found appropriate as the sections which are not applicable are marked accordingly. Hence this part of CAR is closed.
4. Section 1.1 of the submitted joint PD&MR was checked to confirm that PP has mentioned the total GHG emission reductions or removals generated in the current monitoring period. Hence this part of CAR is closed.

CAR 03 is closed.

CAR ID	04	Section no.	3.4	Date :01-December-2023
Description of CAR				
1. PP has mentioned tool 30 version 3.0 in section 3.1 of the submitted report. However, PP to use the latest version of the tool. Correction is required. 2. In section 3.1 of the submitted report PP mentioned the applied methodology is VMR0006 version 1.2 titled 'Methodology for installation of high efficiency firewood cookstoves'. However, the title of the applied methodology version 1.2 is 'Energy efficiency and fuel switch measures in thermal application'. Correction is sought. 3. In section 3.2 of the submitted report, PP has implemented VMR0006 using the most recent version, namely version 1.2. However, the conditions of applicability do not align with the applied version of the methodology. Corrections are required. 4. As per the template guidelines, in section 3.2, PP to demonstrate and justify the applicability conditions of applied tools also. 5. In section 5.4 of the joint PD&MR PP has mentioned the formula with respect to applied methodology VMR0006 version 1.2, However, the description of the parameters is not consistent with the latest version of the methodology. Correction is sought.				
Project participant response				Date : 08- December-2023
1. Tool 30 version 4.0 is used to calculate the values of Fnrb and information along with version is updated in entire Joint PD&MR 2. Section 3.1 is updated 3. The conditions of applicability aligned with the applied version of the methodology in section 3.2 of the joint PD&MR 4. Section 3.2 is updated with applicability conditions of applied tools. 5. Section 5.4 of the joint PD&MR is updated.				
Documentation provided by project participant				
joint PD&MR				
VB assessment				Date: 26-December-2023

1. Revised PD &MR version 1.1 dated 08-December-2023 was checked and confirmed that PP has revised and updated the version of Tool 30. Hence, this part of CAR is closed.
2. PP response is accepted. However, in section 5.1 of the revised PD&MR, title of the methodology is still not consistent. Hence, this part of CAR is open.
3. Section 3.2 of the revised PD&MR was checked and observed that PP has still not revised the applicability as per the latest version of the applied methodology. Hence, this part of CAR is open.
4. It was checked and observed that in section 3. 2 of the revised PD&MR, PP to still demonstrate the applicability of applied methodology and tools also. Hence, this part of CAR is open.
5. Section 5.4 of the revised PD&MR was checked and observed that, some parameters are still no consistent with the applied methodology. Also, PP to replace the screenshot of description of parameter with text to facilitate better understanding for a third-party reader. Correction is sought. Hence, this part of CAR is open.

CAR 04 is open

Project participant response

Date : 31-December-2023

2. Section 5.1 of the revised PD&MR, title of the methodology is revised as per applied methodology.
3. Section 3.2 of the revised PD&MR was updated with applicability as per the latest version of the applied methodology.
4. Applicability of applied methodology and tools was demonstrated in the revised Joint PD&MR.
5. Section 5.4 of the revised PD&MR updated with parameters and made consistent with the applied methodology. Also, PP replaced the screenshot of description of parameter with text.

Documentation provided by project participant

PD&MR

VVB assessment

Date: 16-January-2024

2. Revised PDMR was checked and it was noted that section 5.1 now correctly mentions the methodology name. Hence this part of CAR is closed.
3. Section 3.2 of the PDMR is now revised to mention correct applicability criteria which is checked and confirmed. Hence this part of CAR is closed.
4. Section 3.2 of the PDMR is now revised to mention correct applicability criteria for the tools too which is checked and confirmed. Hence this part of CAR is closed.
5. Section 5.4 of the PDMR is checked and noted that appropriate changes were made. Hence this part of CAR is closed.

CAR 04 is closed.

APPENDIX 04: COMPETENCE STATEMENTS

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interviews	Verification findings
1.	Lead Auditor /Technical Expert	OR	Pundlik	Mr. Deepak	TQC-Outsourced entity	Yes	Yes	Yes	Yes
2.	Technical Expert in Trainee	OR	Takarkhede	Dr. Atul	TQC-Outsourced entity	Yes	Yes	Yes	Yes
3.	Observer	OR	Prajapati	Mr. Deepak	TQC-Outsourced entity	Yes	Yes	Yes	Yes

Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e. g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer (TR)	EI	Agarwal	Mr. Nikunj	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Mr. Agustin	Applus+ Certification

Short CVs of the Team:

1. **Mr. Deepak Pundlik:** has an experience in climate change, waste management and environmental management. After completing Masters in Environment Sciences from Pune university, He has worked in waste management field. As a GHG consultant, He handled projects

under renewable energy, waste management sectors during his stint with companies - MITCON and Thermax. Post Thermax, Deepak was involved in organic farming research project with Tata Institute of Social Sciences. As a GHG auditor, He has validated/verified projects under CDM/VCS/GS and GCC mechanisms from renewable energy, energy demand, waste management sectors. Mr. Deepak Pundlik is based in Pune, India. He participates as a Lead Auditor and Technical Expert for the assessment. Currently he is associated with True Quality Certifications Pvt. Ltd. (Applus+ Certification's Outsourced Entity).

2. **Dr. Atul Takarkhede** is Ph.D. (Environmental Sciences) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical papers related to environmental sciences. He counts with more than 11 years of experience in field of Environmental Auditing, consulting and accreditation. He is an expert in ISO 9001-14001, CO2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management reporting for His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; conducting environmental/water audits; NABET requirements appliance, functional area expert in Water Pollution & Solid & Hazardous Waste management among others. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. Currently he is associated with True Quality Certifications Private Limited and empaneled with Applus+ Certification to carry out GHG audits in the aforementioned schemes. Dr. Atul Takarkhede is based in Nagpur, India. He participates as the Technical Expert in Trainee for the assessment. Currently he is associated with True Quality Certifications Pvt. Ltd. (Applus+ Certification's Outsourced Entity).
3. **Mr. Deepak Prajapati** is Chemical Engineer graduated from Government Engineering College, Ujjain. He went on to pursue a Masters in Environmental Management from Rajiv Gandhi Prodyogiki University, where his research focused on reducing carbon emissions from the cement industry. He is based in Indore and participates as an observer for the assessment. Currently he is associated with True Quality Certifications Pvt. Ltd. (Applus+ Certification's Outsourced Entity).
4. **Mr. Nikunj Agarwal** has very extensive experience (17 years) in the field of carbon market. He had been working with the different Europeans DoE's (Verification Bodies) accredited by UNFCCC for the Carbon Credits Certification. He had also worked as consultant for Energy Efficiency projects. Apparently, he had worked as Monitoring and Verification Experts in Energy Efficiency Projects. He had worked more than 300 Carbon projects under CDM/VCS/GS) in South Asia and others Region such as: India, Philippines, Malaysia, Fiji, Indonesia, China, Israel, Pakistan, Chile, Peru, Columbia, South Africa, Singapore, Nepal & Thailand. He is the Certified Energy Manager by the Bureau of Energy Efficiency, Government of India. He is in the Pool of Methodology Expert by the UNFCCC. He was part of the Gold Standard Advisory Panel for the CLIMATE SMART AGRICULTURE (CSA). Mr. Nikunj Agrawal is based in Kronberg, Germany. Mr. Nikunj Agarwal participates as a Technical Reviewer for the assessment.

APPENDIX 05: TECHNICAL SPECIFICATIONS OF IMPROVED COOKSTOVE

Technical details			
A	Cook Stove type/Category	Shri Stove Natural Draft	
B	Shri Stove Components	Utensil Stand	Utensil stands are designed to keep in mind the different vessel sizes that communities may use on a daily basis. It goes through a surface chemical treatment process post manufacturing, including 6-tank dips and a hot galvanizing dip to enhance its life and prevent corrosion.
		Covering Body	Outer covering body is designed for higher durability, keeping in mind more-than-average wear and tear of the stove. It is made up of aluminum, which prevents corrosion and lasts longer. A set of heat insulating bake-lite handles is attached to the body to maneuver stove easily
		Insulating Skirt	Insulating skirt is designed using the aerodynamics principle to ensure oxygen-rich air reaches the top of stove to provide maximum heat at the surface of the utensil for faster and more efficient cooking. It is also designed to maximize the insulation of heat and prevent from corrosion.
		Heat Chamber	Heating chamber is made up of stainless steel to maximize durability and minimize corrosion. The outer chamber has diamond-cut holes to control the flow of air. It also has a layer of our proprietary geo-thermal coating which is approved by an accredited institute to further insulate heat and enhance life.

		Stove Base	Sturdy stove stands are placed at the base of the stove that has precisions holes for primary flow of air. It goes through a surface chemical treatment process post manufacturing, including 6- tank dips and a hot galvanizing dip to enhance its life and prevent corrosion.	
		Glass Wool	For extra insulation of heat, we give an option to add a layer of high-quality glass wool surrounding the conical skirt. It prevents heat leakages throughout the surface and enables communities to cook more efficiently.	
		Wood Stand	A heavy-duty stand that is built using steel wires is included with the stove for users to be able to have the flexibility to use longer wood sticks, without having to chop them	
C	Operational Life	7 Years		
D	Parameters	Unit	Shri Stove	
	Weight	g	3500+	
	Top Diameter	cm	26	
	Bottom Diameter	cm	26	
	Stove top thickness	cm	0.1	
	Combustion chamber diameter	cm	12	
	Combustion chamber height	cm	22.3	
	Length of primary air inlet	cm	15.5	
	Height of primary air inlet	cm	12.9	
	Area of primary air inlet	sq.cm	200	

	Number of primary air holes	cm	21
	Pot rest height	cm	2
	Pot rest length	cm	8
	Distance of handles from stove body	cm	6.5
	Stove height above ground	cm	4
	Length/Diameter of the Grate	cm	12
	Number of Holes on the Grate	nos.	56 holes
	Length of Wood Rest	cm	30
	Skirt Height	cm	21.2
	Skirt Thickness	cm	0.1
	Skirt Diameter – Top	cm	13
	Skirt Diameter – Bottom	cm	19
E	Energy efficiency	35.40 %	