IMPROVED COOKSTOVES FOR COMMUNITIES

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Summary:

LGAI Technological Center (hereinafter referred to as Applus+ Certification) was contracted by INFINITE SOLUTIONS to conduct the joint validation and verification of the project "IMPROVED COOKSTOVES FOR COMMUNITIES", "VCS ID 2922 against VCS standard version 4.4/7(b)/

The project's design description, baseline, monitoring plan, and compliance with applicable VCS and host party criteria are all confirmed as part of the validation and verification process. The monitoring plan of the Joint PD and MR (Project ID 2922) is also implemented, and the monitoring methodology is used in accordance with the VCS methodology VMR0006 "Methodology for Installation of High Efficiency Firewood Cookstoves", Version 1.1 /6/ of the methodology. A site visit was performed to confirm the information provide by PP/9/.

The main purpose of the project is the distribution of fuel-efficient improved cook stoves (ICS) in the India, presently distributed in Madhya Pradesh. The Improved cookstove stove distributed through this project has replaced the low-efficient traditional cookstove. 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. Not only will this halt the rapidly progressing deforestation but will also reduce health hazards from indoor air (smoke) pollution and women and children will have to spend less time collecting firewood

The first crediting period's expected annual average emission reductions over a Seven-year period are 449,956 tCO2e/year. 3,149,689 tCO2e in total emissions will be reduced during the course of the seven-year crediting period. 47,426 tCO2e in total GHG emissions were reduced over the first monitoring period from 20 November 2021 to 31 December 2022 (inclusive of both the dates).

Applus+ certification now has enough proof to confirm that the stated criteria have been met after reviewing the joint PD and Monitoring report and additional documents pertaining to baseline and monitoring methodology, as well as after conducting background research, conducting 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 validation process. These are verified to ensure that the project design is legitimate, reasonable, and fits the specified requirements. All VCS initiatives must undergo validation, 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 project activity's validation.

A review of the Joint PD & MR that is impartial and unbiased is what is meant by the validation scope. The VCS Program Guide (v4.3), VCS Standard (v4.4), Program Definitions (v4.3), Registration & Issuance Process (v4.3) 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 VMR0006, Version 1.1/6/.

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 ER sheet, 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 VCS PD & MR, ER sheet, and the project's compliance with relevant VCS, 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 verification has been carried out using a risk-based methodology. 04 Corrective Action Requests (CARs) and 02 Clarification Requests (CRs) were raised during validation and verification and successfully closed. FAR was not raised during this verification period.

The project has successfully been validated, verified, and further certified for emission reductions under VCS as it meets the criteria outlined by the Joint PD & MR template version 4.2, the VCS Standard version 4.4, and the applied methodology VMR0006, Version 1.1. 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 project activity " IMPROVED COOKSTOVES FOR COMMUNITIES" reduced emissions by 47,426 tCO2e from 20 November 2021 to 31 December 2022, including both the days.

CONTENTS

1 INTRODUCTION

1.1 Objective

Applus+ Certification has been contracted by INFINITE SOLUTIONS, (project proponent), to undertake the validation and verification of the energy efficiency of improved cookstove project titled "IMPROVED COOKSTOVES FOR COMMUNITIES". The assessment team have reviewed the GHG data collected for the monitoring period from 20 November 2021 to 31 December 2022 (both days included) covered in this verification. The objective of the combined 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 Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1"/6/
- The project's monitoring plan is assessed against "VMR0006 Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1"/6/
- The project's additionality justification is assessed against "VMR0006 Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1"/6/
- The projects compliance with, the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS standard version 4.4 /6(b)/
- VCS standard v4.4 /7(b)/
- VCS guideline v4.3 /7(c)/

  Validation and verification are a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified carbon units (VCUs). This report contains the findings and resolutions from the validation and verification of the 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 Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1)/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 project activity meets the requirements of VCS Standard (v4.4) and VCS program guide (v4.3) 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 is reviewed against the criteria of VCS Standard (v4.4); the VCS program guide (v4.3).

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 "IMPROVED COOKSTOVES FOR COMMUNITIES". 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 (v4.3)/7(a)/
- VCS Standard (v4.4)/7(b) /
- VCS Program Definitions (v4.3)/7(c)/
- VCS Registration & Issuance Process (v4.3)/7(d)/
- VCS approved methodology VMR0006 (version 1.1, dated 22/07/2021)/6/

The validation & verification is not meant to provide any consulting towards the client. However, stated request for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Reasonableness of Assumptions Level of Assurance

The level of assurance of the the joint validation and verification report falls under reasonable assurance engagements as selected by the Client. The joint validation and verification team verified the complete monitoring data for all the parameters of the monitoring plan and confirms that the reported emission reductions are free from any type of material errors.

1.4 Summary Description of the Project

The initiative presently implemented in Madhya Pradesh. 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. Infinite Solutions identified the potential locations where the majority of the population is using the traditional cookstoves, based on previous experiences in other projects, or available information or baseline survey, for the distribution of improved cookstoves. Infinite Solutions prioritized the appointment of a local implementation partner for the delivery of ICS and local

men's and women's teams were deployed and trained for the implementation of ICS. This creates more employment opportunities and increases the income of local agents. Awareness about the implementation of ICS will be provided to the local community through awareness programs

The project locations for initial Project Activity Instances are in, Madhya Pradesh, states of India and may expand further to other parts of India. Infinite Solutions has distributed 9200 ICS in Madhya Pradesh, till the submission of the Joint PD & MR.

PP has considered one cookstove as one project activity instance for this group project activity. The first project activity instance was implemented on 20-November-2021 under this grouped project activity. 9200 project activity instances (ICS) have been implemented till the submission of this Joint PD & MR.

TECHNICAL DETAILS			
A)	Cook Stove Type/Category	AGNEEKAA ECO MINI STOVE MODEL4 SE	
		Natural Draft	
B)	Secondary Air Supply	Through Natural Draft	
C)	Stove Material Used	Body	Galvanized Iron Sheet
		Body Material Thickness	0.6mm
		Combustion Chamber	Stainless Steel SS 202 grade
		Combustion Chamber Material Thickness	1 mm
		Insulating Material	Thermal Wool
		Insulating Material Thickness	6 to 8mm
		Top Plate	Stainless Steel
		Top Plate Material Thickness	1 mm
D)	Physical Structure	External Dimension	Length: - 260mm
			Width: - 260mm
			Height: - 248mm
		Combustion Chamber Dimension	Diameter: - 125mm
E)	Grate Thickness	2 mm Material HR sheet	
F)	Wight Of the Stove	3.8 Kg	

G)	Type of Fuel Wood	Firewood 30 to 50 mm diameter	
H)	Feeding Process	Continuous Feeding Front Loading	
I)	Expected life of the stove	07 Years	
J)	Guarantee /Warranty Period	2 Year	
K)	Box Dimension	Outer Side Box Dimension	Length: - 300mm
			Width: - 300mm
			Height: - 270mm
L)	Thermal Efficiency	36.42% Thermal efficiency is determined by the Indian Institute of Technology Delhi	

The first crediting period's expected annual average emission reductions over a seven-year period are 449,956 tCO2e per year. 3,149,689 tCO2e in total emissions will be reduced during the course of the seven-year crediting period. 47,426 tCO2e of GHG emissions were reduced overall in the first monitoring period, which is from 20 November 2021 to 31 December 2022.

Based on an examination of the Joint PD & MR/01/, ER verification spreadsheet/02/, and ICS database/03/, the ER estimate were validated.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

The procedures used by Applus+ Certification for validation and verification were carried out in accordance with the requirements stated in the VCS standard requirements, Based on the provisions of CDM Standard: Sampling and surveys for CDM project activities and programmes of activities, version 9.0/23/, VVB has undertaken the following sampling plan with respect to the above project

Project Proponent had conducted the monitoring survey for current monitoring in two phases. For the parameter $B_{y=1,new,i,j,survey}$ the monitoring survey was conducted in the month of February and April, and for rest other parameters i.e. . $N_{y,i,j}$, η_{new}, η_{old}, the monitoring was carried out between January 10th and January 25th, 2023. The details of the monitoring period and procedure has been mentioned in the section 6.3 of the updated PDMR. VVB also cross verified this information during the site visit and interviewing the beneficiaries

Further to verify the surrey results assessment team has conducted the acceptance sampling details are provided below:

Para 30 and 31 of the standard[23] states:

30. In order to determine the sample size, the DOE 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 DOE sample records (i.e. DOE field/on-site inspection results) (e.g. 0.5 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 DOE sample records, e.g. 20 per cent.

31. The maximum errors associated with the determination indicated in paragraph 30 above should remain at levels indicated below:

(a) A 10 per cent chance that the DOE 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 DOE will wrongly accept the project participants' or the coordinating/managing entity's records (i.e. accept a set of records which is unacceptable).

Based on the above allowance given by the standard, VVB selected 8 randomised households for acceptance surveying. The households were chosen from the, 400, households already surveyed by the CME/PD. The choice of 8 household is the minimum allowed number of samples as per the standard with 0 acceptance number. Since this is an acceptance sampling, no oversampling was attempted by VVB, as it would go against the sampling guidance.

The table from the standard is provided below and the AQL,UQL, producer and consumer risk is highlighted for the present project activity decided by the VVB

Producer Risk			5%	5%		5%		5%	
Consumer Risk			5%	10%		15%		20%	
AQL	UQL	Sample Sie (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)	Sample Sie (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)
0.5%	10%	46	1	38	1	33	1	29	1

0.5%	15%	30	1	25	1	22	1	10	0
0.5%	20%	22	1	18	1	9	0	8	0
1.0%	10%	61	2	52	2	33	1	29	1
1.0%	15%	30	1	25	1	22	1	19	1
1.0%	20%	22	1	18	1	16	1	14	1
Producer Risk			**5%**	**5%**		**5%**		**5%**	
Consumer Risk			**5%**	**10%**		**15%**		**20**	
AQL	**UQL**	**Sample Sie (n)**	**Acceptance Number (c)**	**Sample Sie (n)**	**Acceptance Number (c)**	**Sample Sie (n)**	**Acceptance Number (c)**	**Sample Sie (n)**	**Acceptance Number (c)**
0.5%	10%	46	1	38	1	19	0	16	0
0.5%	15%	19	0	15	0	12	0	10	0
0.5%	20%	14	0	11	0	9	0	8	0
1.0%	10%	46	1	38	1	33	1	29	1
1.0%	15%	30	1	25	1	22	1	10	0
1.0%	**20%**	22	1	18	1	9	0	**8**	**0**

The identified beneficiaries based on the above criteria chosen randomly from the beneficiary database is as follows

Table: List of Beneficiaries randomly selected using random generators and Interviewed on 8 Sample

The intended implementation and operation of the project activity, as well as the actions done to report \emission reductions, must be evaluated and decided to conform with the criteria and pertinent instructions issued by the VCS Board. The following three steps make up the validation and verification procedure;

- A documentation review of the Joint PD and MR
- Conduct meeting with and subsequent interviews with project stakeholders.

- The completion of outstanding issues and the issuance of the final report and opinion

Madhya Pradesh		
SUNITA	KUMRA	BETUL
SUMAN	YADAV	BETUL
NARAYAN	IBHALE	BETUL
GEETA BAI	MAHESH	BETUL
TARABAI	RATAN	BETUL
BHISANDHI	BAI	BETUL
SUNITA	GANESH	BETUL
DHARMANTI	SALAME	BETUL

2.2 Document Review

As described in detail in appendix 1 of this document, the verification is largely carried out as a document review of the joint PD and MR and related evidences. Using a Applus+ quality procedures, the verification team conducted the evaluation. Cross-referencing data from the Joint PD and MR with data from additional sources, if available, the team's sectoral or local knowledge, and, if necessary, independent background checks.

2.3 Interviews

The evaluation team has conducted an on-site examination. On 02/03/2023 to 03/03/2023, PP representatives and users were questioned. The table includes information on the interviewees.

S N	Name	Role	Organization
1.	Mr. Deepak Jain	Stove Distributer	Outreach Project Pvt. Ltd.
2.	Mr. Anand Sharma	Project consultant	INFINITE SOLUTIONS Energy Services Ltd
3.	Mr. Pradeep Sharma	Project consultant	INFINITE SOLUTIONS Energy Services Ltd

ICS Users interviewed List is mentioned in the section 2.1 of this document

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, monitoring survey, data recording and archiving procedures, and baseline stove use. The evaluation was created using the interview input together with the paperwork and observations.

2.4 Site Inspections

Total 8 sample were visited as part of the site visit

The verification crew visited the site between 02-February-2023 to 03-February-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 and MR;

- A cross check of the information collected during the above-mentioned processes. /9/

- 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 and 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.

-In order to decrease audit risk to an acceptable low level and to obtain a fair degree of certainty for the current 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 registered 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 registered project activity. Based on the desk review and site evaluation, this was carried out. The verification 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:

If one of the following occurs, a CAR (Corrective Action Request) is raised:

the project participants have not adequately recorded their non-compliance with the project description, the monitoring methodology and its tools are not applicable, the additionality instruments are not sufficient, or the evidence provided to demonstrate conformity is insufficient;

If the project participants have not appropriately recorded any non-conformance with the monitoring plan, methodology, or standard baseline when monitoring and reporting is performed, or if there is insufficient evidence to support conformity;

The project participants have not appropriately documented changes to the implementation, operation, and monitoring of the registered project activities;

The quantity of emission reductions will be impacted by errors in the application of assumptions, data, or computations;

The project participants have not addressed problems identified in a FAR during validation that need to be confirmed during verification or in a prior verification.

If there is inadequate or unclear information to assess if the relevant CDM standards have been satisfied, a clarification request (CR) is made. Prior to submitting a request for registration and issuance, any CAR and CR that the Applus+ Certification raised during validation and verification must be addressed.

04 Corrective Action Requests (CARs) and 02 Clarification Requests (CRs) were raised and successfully closed during the current validation and verification.

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

2.5.1 Forward Action Requests

The project activity is undergoing Joint Validation and Verification under VCS, and no FAR issues have been raised.

3 VALIDATION FINDINGS

3.1 Project Details

Promoting improved cooking stoves (ICS) to residents of socially disadvantaged communities in India is the main focus of this 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, family members—particularly women—will be exposed to less indoor air pollution, saving money on health-related expenses.

Details of the project proponent are :

Organization name	Outreach Projects Pvt. Ltd.
Contact person	Mr. Deepak Jain
Title	Director
Address	214-215, Milinda Manor, 2- R.N.T Marg, Indore, 452001
Telephone	+91-731-4050174
Email	deepak@infisolutions.org

Details of other entities involved in project are :

Organization name	Infinite Solutions
Role in the project	Project developer (Carbon consultant)
Contact person	Mr. Jimmy Sah
Title	COO
Address	214-215, Milinda Manor, 2-R.N.T Marg, Indore, 452001
Telephone	+91-731-4050174
Email	jimmy@infisolutions.org

Same has been cross checked by the assessment team from the VCS project page.

PP has requested to change the name of the project from “Improved Cookstoves for Communities by Infinite Solutions” as per the project webpage to “Improved Cookstoves for Communities”, same was communicated to the VERRA team. As per the email communication of PP with the VERRA team, Assessment team has verified the official letter/21/ from the PP requesting the change in the name and found it to be correct and hence, accepting this deviation.

The project activity started on 20-November-2021, which is also the date that the first beneficiary households sign the end user agreement, marking the beginning of the first batch distribution. Therefore, 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.

Since the project activity is planned to be in multiple states and distribution will be in phases, The Geographical area of project activity is considered as India. For the first instance PP stoves are distributed in the state 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 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.

PP has also submitted the declaration that the emission generated form the 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 project activity. Thus, avoiding double counting. Same has been confirmed by the Assessment team by checking REC registry.

To verify the ownership of the Credits VVB has referred the End user agreements which clearly mentions that the ownership of the stoves resides with the end users and the ownership of the Carbon credits/ VCUs generated from the project activity resides with the Project proponent i.e., Outreach Projects Pvt. Ltd. Same was confirmed during the onsite interviews with the stakeholders.

PP has considered the scale of the project activity as “Large Project” based in the number of estimated emission reductions from the project activity. Assessment team has crosschecked and found that the estimated annual ERs 449,956 is more than 300,000t CO2 hence project is large scale.

A 07-year term is expected to result in annual emission reductions of 449,956 tCO2e. There will be 3,149,689 tCO2e in total emission reductions for the seven-year crediting period, which runs from 20-November-2021 to 19-November-2028 (inclusive of both the dates), 47,426 tCO2e in total GHG emissions were reduced during the first monitoring period, which is from 20 November 2021 to 31 December 2022 (inclusive of both the dates).

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

Situation that existed before the project activity was carried out:

The scenario that existed prior to the implementation of the project activity instances involves the use of conventional biomass fuel and inefficient cook stoves 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.

The project activity, known as a "green field activity," entails installing new ICS systems in homes where, before the project activity's execution, firewood was used for thermal energy demands. The default scenario calls for using firewood for all home thermal energy requirements. As a result, it adheres to the applied methodology.

By replacing the old stove with the proposed ICS, less fossil fuel and non-renewable biomass will be needed to cook the same amount of hot water and daily meals than would have otherwise been generated with the old stove. As a direct result, GHG emissions are decreased. The project has been implemented, in order to generate less GHG emissions from the baseline for later removal, reduction, or destruction.

Since 31/12/1989, non-renewable biomass has been used in India, according to

research/22/that is noted by PP in the joint PD and MR report.

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/.

The project activity is developed as a grouped project under various instances. Eligibility criteria for inclusion of a new project instance in the grouped project :

S. no.	Eligibility Criteria	Project Activity instances eligibility	VVB assessment
1	Applicability Conditions: The project activity instances shall meet applicability conditions for applicable methodology as defined in section **¡Error! No se encuentra el origen de la referencia.** of this document	Details of applicability conditions for initial project activity instances – Instance 1: initial project activity instances meet respective applicability conditions of methodology VMR0006 ver 1.1, In all other instances the eligibility criteria would be fulfilled.	PP has distributed only one type of ICS with an efficiency of 36.42% in this instance. Hence applicable and accepted

		Hence this eligibility criterion is fulfilled.	
2	Geographical Area: Occur within one of the designated geographic areas specified in the project description The project activity instances to be included in the grouped project activity will be located within India	The initial project activity instances – Instance – 1: is being included in the grouped project are located within geographic boundaries of India. In all other instances the eligibility criteria would be fulfilled. Hence this condition is fulfilled.	All the cookstoves are distributed within India. Hence applicable and accepted.
3	Start Date: The start date of each project activity instance under the grouped project should not be prior to the start date of the grouped project i.e. 20-Nov-2021. The start date of each project activity instance will be determined through documentary evidence.	The start date of initial project activity instances - Instance – 1: Start Date 20-Nov-2021, The start date of project instance is in line with the Grouped Project. In all other instances the eligibility criteria would be fulfilled. Hence this condition is fulfilled.	Since the current project activity has only one instance its start date is not prior to the start date of project activity. Hence accepted.
4	Technology type: Use the technologies or measures specified in the project description.	The initial project activity instances – Instance – 1: ICS efficiency @ 36.42%,	PP has distributed only one type of ICS with an efficiency of 36.42%. Hence applicable and accepted

	The project activity instances to be included in the grouped project activity will be energy efficiency measures by introducing improved cookstoves with at least 25% efficiency as per water boiling test or third-party certification	In all other instances the distributed cookstoves would have efficiency more than 25%, hence eligibility criteria would be fulfilled. Hence this condition is fulfilled.	
5	Baseline scenario: Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area. All Project Activity Instances shall meet the baseline definition as defined in respective valid methodology for geographic area and as explained in section 3.4	The initial project activity instances – Instance – 1: Have same baseline as per methodology as detailed in subsequent sections, In all other instances the eligibility criteria would be fulfilled. Hence this eligibility criterion is fulfilled.	Since currently there is only one instance, VVB has verified the baseline scenario for that instance and found it to be consistent with the applied methodology Hence Accepted.
6	Additionality: Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area. The project activity instances to be added as part of the grouped project will meet additionality criteria as set out in respective methodologies (VMR0006) for geographic area and as explained in section 3.5	The initial project activity instances – Instance – 1:, under which Batch 1 of 9,200 cookstove is distributed. And the distribution meets the need of additionality as explained in section **¡Error! No se encuentra el origen de la referencia.** of this document. Hence the condition is fulfilled.	Since currently there is only one instance in this project activity, Its additionality is assessed under section 3.4.5 of this report. Hence accepted.
7	Local Stakeholder Consultation: The Entity responsible for Individual Instances of the	Local stakeholder consultation has been conducted for initial project activity instances –	Details and assessment of Local stake holder consultation is mention under section 3.3.2 of this

	Grouped Project shall engage with local stakeholders during the project development and/or implementation processes.	Instance–1: Details of LSC is mentioned in section **¡Error! No se encuentra el origen de la referencia.** of this document. Details are mentioned in subsequent section of this document. Hence this condition is fulfilled.	report.
8	Apply the technologies or measures in the same manner as specified in the project description.	Only the energy efficient improved cookstoves would be distributed in any instance of the grouped project.	Since there is only one instance and only one type of stoves are distributed under it. Hence accepted.

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):

Sl No	Parameter	Description	Value	Unit	Source
1.	fNRB,y	Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass	91.19% (calculated as per meth tool 30)	percentage	Fraction of non-renewable biomass is calculated as per the fNRB calculation TOOL 30: Calculation of the fraction of non-renewable biomass/15/ in ER sheet tab "fNRB"/2/. Further source used in fNRB in ER sheet that are have been verified from weblinks provided in ER sheet/2/ and found to be correct and made publicly available source/16/.
2.	NCVwood fuel	Net calorific value of the non-renewable woody biomass that is substituted	0.0156	TJ/tonne	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction
3.	EFwf,CO2	CO2 emission factor for the use of wood fuel in	112	tCO2/TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2

		baseline scenario			Energy, Chapter 2 Stationary Combustion
4.	EFwf,non CO2	Non-CO2 emission factor for the use of wood fuel in baseline scenario	26.23	tCO2/TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
5.	ηold	Efficiency of baseline cookstove	0.1	Fraction	Methodology default value
6.	ηp	Efficiency of the project stove at the start of project activity	0.3642	Fraction	Manufacturer's specification, third party verified
7.	DFn	Discount factor to account for efficiency loss of project cookstove per year of operation (fraction).	0.95	Fraction	Methodology default value
8.	B_{old}	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices.	3.81	tonne/year	Calculated according to options stated in 'Determination of quantity of firewood consumed in absence of project activity as per options provided in Section 8.4 above Baseline survey is conducted to see the actual usage of fuelwood in baseline conditions
9.	Life Span	Operating lifetime of project device for projects opting Equation 5 for determining project stove efficiency	7	Years	Manufacturer's specification. Which is verified by the technical specification certificates submitted by the PP and found corrct.

Sr. No.	SDG Target	SDG Indicator	Current Project contribution
1.	3.9	3.9.1 Mortality rate attributed to household and ambient air pollution	Usage of improved cookstove will decrease the household air pollution
2.	5.5	5.5.2 Proportion of women in managerial position	In this monitoring period around 60 women were trained for the distribution of the improved cookstoves
3.	7.1	7.1.2 Proportion of population with primary reliance on clean fuels and technology	In this monitoring period 9,200 improved cookstoves had been distributed amongst rural households.
4.	8.3	8.3.1 Proportion of informal employment in total employment, by sector and sex	150 people were employed in distribution of cookstove
5.	12.0	Tonne of fuelwood consumption for energy purposes	2.70 tonne per year in each household is saved during the monitoring period
6.	13.0	Tonne of greenhouse gas emissions avoided or removed	In this monitoring period, 47,426 tonne of CO_2e is reduced by the usage of improved cookstoves

7.	15.2	15.2.1 Progress towards sustainable forest management	2.70 tonne per year in each household is saved during the monitoring period

Parameter(s) monitored ex-post

Parameter	EPMP 1.1 : $N_{y,i.k}$ (Number of project devices of type i and age a that are operating in year k)
Means of verification	

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	At least once every two years
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 through ICS survey.
Monitoring equipment	Sample survey
Value applied	100,000
How were the values in the monitoring report verified?	Measured directly or based on a 90 representative sample. Sampling standard has been used for determining 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.
	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. Validation 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	**EPMP 1.2**: $\eta_{new,y,i,j}$ 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	Annually
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 Annually through ICS survey.
Monitoring equipment	Annual User survey
Value applied	Year 1 | 0.3423

		Year 2 0.3389 Year 3 0.3355 Year 4 0.3322 Year 5 0.3289 Year 6 0.3256 Year 7 0.3223
	How were the values in the monitoring report verified?	Efficiency test carried out by third party who is authorized by government. Efficiency of the improved cookstoves to be estimated using equation 5 of the applied methodology where loss in efficiency per year is calculated, and therefore this parameter does not need to be monitored"
	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	**EPMP 3.**: $B_{y=1,new,l,j,survey}$ Annual quantity of woody biomass 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
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/2/ and monitoring methodology/6/. This parameter is determined in the first year of project implementation
Monitoring equipment	Weighing Scale
Value applied	1. For Madhya Pradesh – 1.1132 tonnes/device/year.
How were the values in the monitoring report verified?	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. PP has monitored the parameter $B_{y=1,new,i,j,survey}$ according to the sampling/survey requirements of the applied methodology VMR0006 version 1.1. PP had calculated the minimum number of samples for the survey using the CDM Standards for sampling and survey's version 09.0. PP had sampled 400 cookstoves in under the project monitoring. Since, the distribution of the

			cookstoves happened in a batch wise mode, therefore, PP had conducted the survey for parameter $B_{y=1,new,i,j,survey}$ twice i.e. for cookstoves distributed in month of November and December-2021, the monitoring for the parameter was conducted between 07 to 22nd February 2022; and for the cookstove distributed in month of January and February 2022, the monitoring of parameter was conducted between 10-20th April 2022. PP had asked the beneficiaries for bringing the amount of wood required in the cookstove per day and then weighted the amount. As per the user agreements and the interviewing the beneficiaries during the field visits, VVB has cross verified that all the above mentioned details during the onsite assessment further VVB also confirmed during the onsite assessment that only one cookstove has been given per household. During the site visit, the VVB performed the acceptance sampling to verify the survey results. VVB has selected the 8 household randomly from the household already surveyed by the PP and interviewed the end users regarding their daily consumption of the wood and Further the amount of wood

		consumed daily was weighed for all 8 households and the survey results were found to be consistent with the with the obtained data. Hence the survey results are accepted
	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.	

Parameter	**EPMP 4**: 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	Once at the time of installation of the batch of type of stove
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/2/ and monitoring methodology/6/. This parameter is determined in the first year of project implementation
Monitoring equipment	Not applicable
Value applied	7 years

	How were the values in the monitoring report verified?	The data source as per manufacturer specification
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not applicable
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	**EPMP5:** $N_{y,i}$ Number of project devices of type i operating during year y
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/2/ and monitoring methodology/6/. This parameter is determined in the first year of project implementation
Monitoring equipment	Monitoring Survey
Value applied	100,000
How were the values in the monitoring report verified?	Measured directly or based on a representative sample. Sampling standard shall be used for determining the

		sample size to achieve 95/10 confidence precision according to the latest version of Standard for sampling and surveys for project activities and programme of activities Alternately, simplified approach proposed in option (b) under Section 8.4 above may be used for determining the minimum sample size in which case compliance with 95/10 confidence precision is not obligatory.
	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.	

Parameter	**EPMP6:** η_{old} The efficiency of baseline cookstove
Means of verification	

Criteria/Requirements	**Assessment/Observation**
Measuring /Reading /Recording frequency	Fixed for each individual household at the time of project implementation
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/2/ and monitoring methodology/6/. Fixed for each individual household at the time of project implementation

	Monitoring equipment	Use of default value for the baseline cookstove
	Value applied	0.1
	How were the values in the monitoring report verified?	The value of η_{old} i.e. efficiency of baseline stove has been taken as default value as per applied methodology VMR0006 version 1.1, which is 10%, because the beneficiaries were using three stone cookstove without improved combustion air supply or fuel gas ventilation, a grate or a chimney while using firewood as a fuel source. Furthermore, during the field visit conducted by the VVB and interviews with the beneficiaries, it was confirmed that they were indeed using traditional three-stone cookstoves and traditional mud cookstoves.
	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 /2/ formulae for calculating emission reduction, as certified by the used methodology VMR0006 Version 1.1/6/, have been examined and deemed to be accurate. The Joint PD & MR /1/ values and the ER verification sheet /2/ values have been compared. Additionally, the formulas used in the ER spreadsheet /2/were examined and confirmed to be in line with the technique used. The verification team certifies that all calculations are performed in accordance with the formulae specified in the applied methodology VMR0006 Version 1.1/6/and the monitoring plan's 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.

For the monitoring period from 20 November 2021 to 31 December 2022 (inclusive of both the dates) there have been 47,426 tCO2e less emissions overall. The ER sheet was used to verify the emission calculation, which was confirmed to be accurate and accepted.

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO2e)	Net GHG emission reductions or removals (tCO_2e)
Year 1 20-Nov-2021 to 31-Dec-2021	0	2,309	0	2,309
Year 2: 01-Jan-2022 to 31-Dec-2022	0	45,118	0	45,118
Total	**0**	**47,426**	**0**	**47,426**

3.2 Participation under Other GHG Programs

In order to receive carbon benefits during the project activity's crediting period, Infinite Solutions has not registered for, nor is it pursuing registration under, any other GHG emission programme. This was confirmed by looking over the undertaking letter /4/ and by checking other GHG registries like CDM, GS GCC etc. VVB has also checked the REC registry and found that the project is not claiming any other form of environmental form of credit during then current monitoring period. Thereafter approved.

3.3 Safeguards

3.3.1 No Net Harm

The project's proponent has not noted any potential detrimental effects on the environment or society. Because clean technology is installed and used, there are no greenhouse gas emissions that results due to the project activity, which supports socioeconomic and environmental well-being.

The validation team has determined that this complies with the standards of the VCS Standard (version 4.4)/7(b)/ and is therefore acceptable.

3.3.2 Local Stakeholder Consultation

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

The stakeholder consultation meeting details are as follows:

The dates of the Stakeholder Meetings are as follows:

Date of invitation – 01-October-2021

Date of Meeting – 07-October-2021

Location of Meeting – Community Hall, Alamgarh, village Chicholi, district Betul

In the villages" Teachers, vendors, farmers, representatives from neighbourhood 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. 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. A copy of the grievance register/17/ confirms that there were no complaints reported during the current monitoring period.

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 project activity. No negative environmental impacts have been identified from the project.

3.3.4 Public Comments

The project was open for public comments from 15-April-2022 to 15-May-2022[1]. 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 projects

3.4 Application of Methodology

3.4.1 Title and Reference

Title: Energy efficiency measures in thermal applications of non-renewable biomass

Type: Type II – Energy Efficiency Improved Projects
VCS Methodology: VMR0006: Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1 dated 22 July 2021, Sectoral scope 3
https://verra.org/wp-content/uploads/2021/07/VMR0006-Methodology-for-Installation-of-High-Efficiency-Firewood-Cookstoves-v1.1.pdf
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/methodologies/DB/GNFWB3Y6GM4WPXFRR2SXKS9XR908IO
For the calculation of the fraction of non-renewable biomass, the below tool is used "TOOL30 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 project activity uses VMR0006, Version 1.1/6/, of the VCS methodology[2].

The validation team evaluates 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 validation team.

[1] Verra Search Page

[2] https://verra.org/wp-content/uploads/2021/07/VMR0006-Methodology-for-Installation-of-High-Efficiency-Firewood-Cookstoves-v1.1.pdf

S. N.	VMR0006, Version 1.1 Requirements	Project activity applicability	Means of verification
1.	Project activities shall be implemented in domestic premises or in community-based kitchen	The Proposed Grouped project activity will include project instances that will distribute high efficiency improved cookstove, which will replace inefficient traditional cookstove leading to saving of non-renewable biomass/fossil fuels. Distribution of the improved cookstoves would be done in domestic premises. Instance-1 involves deployment of ICS in households	This was verified by the monitoring survey conducted by an independent third party during the annual ICS users' survey/15/
2.	The project stove shall have specified high power thermal efficiency of at least 25% per the manufacturer's specifications and shall exclusively use woody biomass and can be single pot or multi-pot;	The Proposed Grouped project activity will include project instances that will distribute high efficiency improved cookstove which have an efficiency more than 25% as per water boiling test and/or certified by a third party. Instance-1 involves deployment of ICS with energy efficiency of 36.42%	This was verified by the stove test certificate issued by credited laboratory and submitted to the VVB for validation. /5/

S. N.	VMR0006, Version 1.1 Requirements	Project activity applicability	Means of verification
	Both 'Projects' and 'Large Projects' can use the methodology	Estimated average annual emission reductions for the grouped project activity are greater than 300,000 tonnes of CO_2e per year. Therefore, the proposed project qualifies for the "Large Projects" criteria.	Same is verified by the verification team from the emission reduction sheet and Joint PD and MR which is found correct Hence accepted.
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;	Non-renewable biomass has been in use since December 31, 1989, as evidenced through widespread documentation/22/. Fuelwood has remained the principal component of rural domestic energy in India. Most of the firewood(fuelwood) has been reported to be derived from forests with some from trees growing on homesteads, farmlands, and common Lands outside forests. Because of the increasing population, the area under agriculture expanded and forests shrunk. Based on statistics from Forest Survey of India (FSI1987: Page 45)[3] which	VVB has found that The majority of the population in region belongs to the rural community, who are predominantly dependent on the forest for their livelihood. Firewood has been their primary source of daily fuel for cooking purposes. PP has used the published national data and other studies/22/ and also have evaluated the use of firewood during the baseline survey in the region. This was verified using literature references/22/ presented by PP in Joint PD and MR./1/. During the site visit, the beneficiaries were also questioned about on the history of

[3] Forest Survey of India, 1987 report https://fsi.nic.in/documents/sfr_1987_hindi.pdf

S. N.	VMR0006, Version 1.1 Requirements	Project activity applicability	Means of verification
		estimated a gap of 130 million tonnes between the demand and internal production of firewood in the country in 1987. It is clearly evident that the has been used since 1987 which is earlier to 1989 for fuelwood consumption. Instance-1 involves deployment of Improved cookstoves in India	their usage of firewood. Their responses indicated a consistent pattern of using firewood in traditional cookstoves for more than 40 years. Some beneficiaries reported that they had been using firewood since their youth, while others stated that the practice had been ongoing since before their childhood.
4	For the specific case of biomass residues processed as a fuel (e.g. briquettes, wood chips) (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	Not applicable. The ICS is introduced as energy efficiency measure to replace baseline stoves and reduce the use of non-renewable biomass for combustion.	Not applicable.

S. N.	VMR0006, Version 1.1 Requirements	Project activity applicability	Means of verification
	hence disregarded.		
5	Monitoring approaches for $B_{savings,i,j}$and values for parameters f_{NRB} (when Option (a) in paragraph 48(c) is chosen) and the quantity of woody biomass $B_{old,i,j}$ may be determined	Not applicable. The ICS is introduced as energy efficiency measure to replace baseline stoves and reduce the use of non-renewable biomass for combustion.	Not applicable.

S. N.	AMS II G Version 11.1 Requirements	Project activity applicability	Means of verification
1	The VCS PD 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	The project proponent will ensure that every cookstove that will be distributed within the project areas will have unique ID comprising of a combination of alpha numeric. No individual serial number can be	This information verified from distribution records, ICS database and carbon waiver records.

S. N.	AMS II G Version 11.1 Requirements	Project activity applicability	Means of verification
	and end-user locations (e.g.programme logo).	repeated within the project, thus ensuring that each stove is counted only once in the proposed project. Instance-1 involves deployment of ICS with Unique ID to household, which are unique to individual beneficiary.	
2	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.	An undertaking will be taken by all the beneficiaries, i.e., the end-users indicating that the ownership of the current project solely lies with Outreach Projects Pvt. Ltd. or its, Investors or Associates or Partners. The beneficiaries are completely dependent on our experts and field staff who provide capacity building and required training to the community to use the ICS. Instance-1 Was deployed by Outreach Projects Pvt. Ltd. to household and Household has given undertaking or declaration for transfer of carbon credit rights to Outreach Projects Pvt. Ltd.	This information verified from declaration for the carbon waiver.

3.4.3 Project Boundary

The project boundary is specified as "the physical, geographical site of the efficient devices that utilise biomass" in accordance with the applicable methodology VMR0006 version 1.1 and CDM methodology AMS II G version 13.

The Joint PD & MR /01/ accurately stated the information pertaining to the project boundary. The improved cookstove in India is included within the project boundary. As a result, the project boundary for the proposed VCS project activity has taken into account the entirety of India.

The assessment team certifies that there are no sources of gases inside the project boundary for the project instances, 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.

3.4.4 Baseline Scenario

The project activity, known as the green field activity, entails installing new, improved cookstove systems in homes where, before the project activity was implemented, firewood was used for thermal energy requirements. During the on-site visit/9/, this was verified. 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 utilisation of non-renewable biomass serves as the actual baseline. According to Methodology VMR0006, Version 1.1, "The baseline scenario is the continuous use of non-renewable wood fuel by the target community to meet identical thermal energy needs as provided by project cookstoves in the absence of project activity" (firewood/charcoal/kerosene).

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.

As a result, the baseline scenario has been determined in accordance with the demands of the used methodology VMR0006, Version 1.1/6/, and it is accepted to be reasonable and justifiable.

3.4.5 Additionality

The methodology uses the activity method for the demonstration of additionality

1: Regulatory Surplus

There is no mandated government programme or policy in the host country of this project ensuring the distribution of domestic fuel-efficient cookstoves. The project is not mandated by any law, statute, or another regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute, or other regulatory frameworks. Households may only participate voluntarily in this project. It is hereby confirmed that the proposed project is a voluntary coordinated action by Outreach Projects Pvt. Ltd. or its, investor or associate or partners.

Step 2: Positive List

The project participant will distribute the cookstove at a subsidized rate, apart from the sale of GHG credits. Therefore, Project Proponent chose option 3 for demonstration of additionality.

The project is not implemented as part of government schemes or supported by multilateral funds. The project did not apply any methodology deviations.

Step 3: Project Method

Additionality for Instance-1

In line with Methodology VMR0006: Version 1.1, para 7 step 3 "For any project activity where stoves are not provided at zero cost to the end-user or has any other source of revenues other than the sale of GHG credits, then the project activity shall apply investment analysis method set out in the CDM Tool for the Demonstration and Assessment of Additionality included in AMS-II.G to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible"

Hence, in line with AMS-II.G. Version 13.0 section 5.2; additionality is demonstrated using Option 2, by applying the "TOOL21: Demonstration of additionality of small-scale project activities"; section 5, i.e. *Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions*.

PP has identified realistic and credible alternative scenario(s) to the project activity. The alternative identified are

(a) The proposed project activity (i.e. distribution of improved cookstove that are efficient and have lower emissions) undertaken without being registered as a VCS project activity;

(b) Continuation of the current situation (i.e. continuation use of traditional mud stoves which are free of cost but have higher emissions).

Investment Barrier:

Alternative (a) i.e. proposed project activity:

The proposed project intends to distribute the ICS at 64% subsidy to users i.e. households; hence financial return from the programme will be less than cost incurred.

A sum of 200 rupees, (this cost ranges from Nil to 450, depends on the cost for local distribution) is collected from each of the beneficiary for the purpose of a partial contribution towards the cost of cookstove and to ensure effective implementation of project. There is no other revenue generated in the project by the project proponent other than the sale of GHG credits. Moreover, the distribution cost is documented in the agreement between PP and Distribution Agency.

S. No	District	Number of cookstoves	Distribution cost recovered by distribution agency

01	Harda	1000	Rs. 350/-
02	Betul	2000	Rs. 400/-
03	Shajapur	1000	Rs. 400/-
04	Dhar	1000	Nil
05	Niwari	1000	Rs. 220/-
06	Chhindwara	2200	Rs. 350/-
07	Chhatrpur	1000	Rs. 350/-

Moreover, the recovered cost is clearly documented in the user agreement between PP and cookstove beneficiaries:

S. No	State	Cost recovered from individual beneficiaries
01	Madhya Pradesh	Rs. 450/- (Maximum)

Further each ICS has certain costs associated with the production/purchase, distribution, repairs and maintenance, project management, monitoring and verification etc., the programme will not occur in absence of the carbon revenue.

Hence a **simple cost analysis** is chosen by PP.

PP has carried out simple cost analysis for the demonstration of additionality and from above explanation it is very clear that the ICS has been distributed at a 64% subsidised cost to the end-user or beneficiaries. Hence the proposed project activity is not economically or financially feasible without the revenue from sale of GHG credits.

The below table shows the revenue and subsidy for the Improved cookstove

S. No	Particular	Cost (INR)t	Source
01	Cost of Improved Cookstove	1250	Invoice
03	Cost to beneficiary	450	Contract with distribution agency. (This is maximum value)

04	Percentage subsidy to beneficiary	64%	Calculated

The action is not financially viable without the support of revenues from the sale of VCUs. As the end-user does not benefit from a direct financial return and procuring ICSs requires capital, which is a barrier to rural consumers due to difficulties in accessing capital, a wide dissemination of ICSs in the Host Country is unlikely. The actions under the project will alleviate these barriers by promoting distribution of ICSs to end-users at an affordable price.

Alternative (b) i.e. Continuation of the current situation:

Continuation use of traditional mud stoves which are free of cost and financially more viable alternative which leads to higher emissions.

Hence, the project faces investment barrier and is considered to be additional.

Conclusion:

From the above explanation, it is very clear that the end users have a financially more viable alternative to the project activity i.e. continuation use of traditional mud stoves which are free of cost but have higher emissions. Hence it can be concluded that the project faces Investment Barrier. Same has been checked and confirmed by the assessment team.

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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 1.1/6/, are accurately cited. The formulas listed in the applied methodology are used to calculate the project's emission reductions.

The validation 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 requirements supplied 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 spreadsheet /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.

$$ER_y = \sum_i \sum_j ER_{y,i,j}$$ Equation (1)

Where:

i = Indices for the situation where more than one type/model of improved cookstove is introduced to replace there stone fire

j = Indices for the situation where there is more than one batch of improved cookstove of type i

ER_y = Emission reductions during year *y* in tCO_2e

$ER_{y,i,j,}$ = Emission reductions by improved cookstove of type *i and* batch *j* during year *y* in tCO_2e

$$ER_{y,i,j} = B_{y,savings,i,j} * NCV_{woodfuel} * f_{NRB,y} * \left(EF_{wf,CO2} + EF_{wf,nonCO2}\right) * N_{y,i,j,} * 0.95$$ Equation (2)

Where

$B_{y,savings,i,j}$	=	Quantity of woody biomass that is saved in tonnes per improved cookstove of type i and batch j during year y
$f_{NRB,y}$	=	Fraction of woody biomass that can be established as non-renewable biomass (f_{NRB})
$NCV_{wood\ fuel}$	=	Net calorific value of the non-renewable woody biomass that is substituted or reduced(IPCC default for wood fuel, 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried')
$EF_{wf,CO2}$	=	CO2 emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO2/TJ)
$EF_{wf,non\ CO2}$	=	Non-CO2 emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO2/TJ)
$N_{y,i,j}$	=	Number of improved cookstoves of type i and batch j operating during year y
0.95	=	Discount factor to account for leakage

Determination of $B_{y,savings,i,j}$

The quantify of woody biomass saved due to implementation of improved cookstoves to be estimated using equation below:

$$B_{y,savings,i,j} = B_{y=1,new,i,survey} \times \left(\frac{\eta_{new,y,i,j}}{\eta_{old}} - 1\right)$$ Equation (3)

Where

η_{old} = Efficiency of baseline cookstove (10%)

$\eta_{new,y,i,j}$ = Efficiency of the improved cookstove type *i* and batch *j* determined through water boiling test (WBT) during year *y*

Alternatively, efficiency may be determined using Equation 5.

$B_{y=1,new,i,j,survey}$ = Annual quantity of woody biomass used by improved cookstoves 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. (1.113 tonnes/cookstove/year)

$$\eta_{new,y,i,j} = \eta p * (DFn)^{(y-1)} * 0.94 \text{ ----------(4)}$$

Where

η_p	=	Efficiency of project stove (fraction) at the start of project activity.
$(DF_n)^{y-1}$	=	Discount factor to account for efficiency loss of project cookstove per year of operation (fraction). This value may be based on actual monitoring or based on manufacturer's declaration on expected loss in efficiency or through publicly available literature on relevant industry standards. Alternatively default value of 0.95 efficiency loss per year can be considered.
0.94	=	Adjustment factor to account for uncertainty related to project cookstove efficiency test.

For ex-ante calculation purpose, the assumption below is applied:*-

1) Installed 9200 ICSs.
2) The life span of each ICS is 7 years; thus, the operational lifetime of each project activity instance is taken as 7 years.
3) Annual stove loss rate is estimated at 0%. This is assumed for estimation. During actual ER calculation, this value may change. This value are determined during actual verification based on survey results.
4) $B_{y=1,\ new,i,\ survey}$, is Calculated as 1.113 tonnes/device/year.

This value has been determined during the first monitoring period, based on survey results.

Determination of the Share of Non-Renewable Biomass

According to paragraph 49 of the methodology, one of the following two methods can be used to determine the value of f_{NRB}: Using "TOOL30: Calculation of the proportion of non-renewable biomass," (a) local studies can be conducted to determine the local f_{NRB} value (sub national values), or (b) default national values approved by the Board can be used. Which option to choose must be determined in advance.

The PP has chosen option (a) above to calculate the f_{NRB} value, as already required by point 10 of the applicability criteria of the methodology.

So, in order to compute f_{NRB}: according to methodological tool 30: "Calculation of the proportion of non-renewable biomass" version 04.0:

f_{NRB} = NRB / (NRB + RB)

$$NRB = H - RB$$

Where

H = Total consumption of woody biomass in the applicable area in the relevant period. (tonnes)

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

Where;

HW = Average consumption of wood fuel per household, including fuelwood and charcoal, in the applicable area in the relevant period (tonnes//household)

CE = 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)

NE = 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)

N = Number of households consuming wood fuel within the applicable area in the relevant period (number)

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

$MAI_{forest,i}$ = Mean Annual Increment of woody biomass growth per hectare in sub-category i of forest areas in the relevant period (tonnes/ha/yr)

$MAI_{other,i}$ = Mean Annual Increment of woody biomass growth per hectare in sub-category i of other land areas in the relevant period (tonnes/ha/yr)

$F_{forest,i}$ = Extent of forest in sub-category i in the relevant period (ha)

$F_{other,i}$ = Extent of other land in sub-category i in the relevant period (ha)

$P_{forest,i}$ = 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) in the relevant period (ha)

$P_{other,i}$ = 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) in the relevant period (ha

i = Sub-category i of forest areas and other land areas

$$RB = 1.66(77.53 - 44.23) + 1.66(33.30 - 0)$$

$$RB = 110.63 \text{ million tonnes}$$

$$H = 200.52 + 0 + 1054.877$$

$$H = 1255.395$$

H	Calculated	1255.39
RB	Calculated	110.63
NRB	Calculated	1144.76
FNRB		91.19%

NRB is the amount of non-renewable biomass (measured in tonnes per year) as estimated by the tool's paragraphs 11 and 12.

Comparision of the f_{NRB} values calculated that too reported in the literature:

The significant difference between the values of f_{NRB} achieved by the Bailis report "The carbon footprint of traditional woodfuels. Nature Climate Change, 5(3), pp. 266–272." (25.8%) and the values achieved by our project (91.19%) is indeed notable. To address the feasibility of the value calculated based on CDM Tool 30 version 4 and its alignment with the conservative principle in the VCS Standard section 2.2, the following points should be considered:

1. Data Source and Accuracy:

VCS 2922: The project's f_{NRB} calculation relies on the most recent data of forest cover, fuelwood consumption, annual increment from the "Forest Survey of India" report published by Ministry of Environment Forest and Climate Change (MoEFCC). The report is published every two years and the latest report referred in the project is of 2021(FSI)[4]. While the demographic details (family size, household data using fuel wood for cooking) are based on the National Family Health Survey (NHFS) report, NFHS surveys have been conducted under the stewardship of the Ministry of Health and Family Welfare (MoHFW), Government of India. MoHFW has designated the International Institute for Population Sciences (IIPS) which publishes the survey report. The project applies the data from the latest available report of NFHS-5[5] 2021. The fNRB value is calculated based on the above-mentioned reports specifically for the country India, i.e., project boundary.

Bailis report: The report uses global-level data from the Food and Agriculture Organization (FAO), the International Energy Agency (IEA) and the United Nations (UN)[6] for various data along with other published literature for specific countries.

For specific f_{NRB} data for India, Bailis report estimates the NRB values of the region using the WISDOM Model[7] (as referred literature of the paper *"Drigo, R. & Salbitano, F. WISDOM for Cities: Analysis of Wood Energy and Urbanization Using WISDOM Methodology (FAO Forestry Department Report, 2008", Drigo, R. WISDOM Case Studies (2014); http://www.wisdomprojects.net/global/cs.asp", "Masera, O., Ghilardi, A., Drigo, R. & Trossero, M. A. WISDOM: A GIS-based supply demand mapping tool for woodfuel management. Biomass Bioenergy 30, 618–637 (2006)."*). 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

[4] The data of the Forest Survey of India is published regionally as well as at the national level. The latest reports for India and the project boundary could be downloaded from https://fsi.nic.in/fsiwebsite/forest-report-2021

[5] National Family Health Survey is conducted every two years and the latest published data are provided on the link http://rchiips.org/nfhs/NFHS-5_State_Report.shtml . This report was published in the year 2021.

[6] As mentioned in the section 'Methods' of the paper: The carbon footprint of Traditional Woodfuels.

[7] Woodfuel Integrated Supply/Demand Overview Mapping (WISDOM) Model which estimates the value of the fuelwood consumptions in the areas. https://www.sciencedirect.com/science/article/abs/pii/S0961953406000262

same was one of the parameters in the model. Since, there was no survey conducted in the region for the demand of the woodfuel, the Bailis report has referred to the published data of woodfuel consumption for India as per two reference literature;

a) Paper titled "*Comparative study of fuelwood consumption by villagers and seasonal ''Dhaba owners'' in the tourist affected regions of Garhwal Himalaya, India*" [8]. 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.

b) Paper titled "*Firewood consumption along an altitudinal gradient in mountain villages of India*" [9]. This report refers to fuel wood consumption of village households in Uttarakhand state of India. This paper was published in year 2004.

Inference: The data used by Bailis report specifically for India is based on a paper of 2004 and 2010, thus not representing the latest data as published by the national agencies as well as regional data available for the project boundary, i.e., India. There is considerable difference in the values as published by the national agencies. Further Bailis report does not take into account the values for the project boundary, i.e. India.

2. Adherence to Tool 30: The project applies VMR0006 version 1.1 which refers the calculation of f_{NRB} based on latest applicable version of Tool 30[10] as published by CDM EB, i.e version 4.0. The tool provides detailed steps to calculate the f_{NRB} value for a given region.

VCS 2922: The project has detailed step wise calculation for assessment of f_{NRB} values. The value has been calculated for the applicable project boundary i.e., India by using latest regional level data as published by the various government agencies. The f_{NRB} value arrived is 91.19% for the project boundary.

Bailis Report: The report is based on WISDOM Model. The f_{NRB} values published for India is 23-25%. The tool also published a default value of f_{NRB} value that can be used which is 30%.

Inference: the fNRB value as calculated by the VCS 2983 is in adherence to the Tool 30 version 4.0.

3. Limitations of Bailis Report: As published in the Bailis report we would like to highlight the below:

[8] This study is based on the fuelwood consumption for the small restaurants of the Garhwal Region in Uttarakhand, this demand cannot be used for estimating the fuelwood consumption for the country.
https://www.sciencedirect.com/science/article/abs/pii/S0301421509009197

[9]The woodfuel consumption for Uttarakhand state and that too variation in the consumption pattern as per altitude change.
https://www.sciencedirect.com/science/article/abs/pii/S0961953403001909

[10] The https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v4.0.pdf

Section “Discussion and Implementation" on page number 4 mentions *“One limitation of the study is a lack of reliable woodfuel 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 woodfuel users”.*

Inference: The Bailis report is not a correct representative of the f_{NRB} for the given project boundary, i.e. India.

4. Values published in other projects: The f_{NRB} values of various other registered projects having similar project boundary, a summary of the same is mentioned below:

VCS: details about other VCS projects:

VCS ID	fNRB values	Date of Registration
2607	93%	19/01/2023
2533	90.10%	02/07/2022
2473	93.10%	09/06/2022

Gold Standard:

GS ID	fNRB values	Date of Registration
PoA 916 and all VPAs	93.10%	
11358	80.13%	07/04/2022
PoA: 11450 and all its CPAs	87%	18/04/2021

Inference: The f_{NRB} values are comparable to other similar projects in the region, which has been registered by the Verra and Gold Standard Mechanism and verified by VVB. Therefore, the conservative principle does not apply in this context.

Conclusion: There are considerable differences in the approach and value determined by the project as compared to the Bailis report. Since the value of f_{NRB} as calculated in the project is based on latest specific regional area of country thus it represents actual scenario as compared to f_{NRB} as reported by Bailis report which is for the country. The report itself claims data to be from 2004 and 2010 thus it does not represent the actual scenario. The report fails to mention the uncertainty in the results. Further, the value is calculated for a single year and does not take into account the trend in the past decade.

Assessment team thus like to mention that the f_{NRB} value as calculated in the project is appropriate for the given project boundary.

Conservative assessment: The comparison with Bailis report is not applicable since the data and uncertainty for f_{NRB} values in Bailis report are not reliable for the project boundary, i.e. India.

According to the f_{NRB} calculation TOOL30: Calculation of the fraction of non-renewable biomass in ER sheet tab "f_{NRB}" , the non-renewable biomass fraction is determined. Additional data sources utilised in the f_{NRB} calculation in the ER sheet have been checked using weblinks provided in the ER sheet and have been confirmed as accurate source.

Year	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals (tCO_2e)
Year 2022-23	0	251,992	0	251,992
Year 2023-24	0	500,425	0	500,425
Year 2024-25	0	493,341	0	493,341
Year 2025-26	0	486,328	0	486,328
Year 2026-27	0	479,385	0	479,385
Year 2027-28	0	472,512	0	472,512
Year 2028-29	0	4,65,707	0	4,65,707
Total	0	3,149,689	**0**	**3,149,689**
		Total number of crediting years		**7**
		Average annual ERs		**449,956**

The evaluation 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.

3.4.7 Methodology Deviations

Not Applicable

3.4.8 Monitoring Plan

The project uses VCS methodology, specifically VMR0006, Version 1.1, and in accordance with that approach, the following parameters will be monitored ex-post:

Parameters to be monitored are:

Parameter (s)	Units	Description	Source of monitoring data
$N_{y,i,j}$	Number	Number of project devices of type i and age a that are operating in year *y*	Measured directly or based on a representative sample. As per methodology, the minimum sample size will be determined in which case compliance with 90/10 confidence precision is not obligatory
$\eta_{new,y,i,j}$	Fraction	The efficiency of the improved cook stove type i and batch j determined as per equation 5 of methodology during year y	Based on the efficiency test report from a certified laboratory for 1st year than calculated using equation 5 of methodology.
$B_{y=1,new,l,j,survey}$	Fraction	Annual quantity of woody biomass 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	Based on the monitoring survey,
Life span	Years	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	Measured Once at the time of installation of the batch of type of stove. For initial batch this is considered as 7 years
η_{old}	Fraction	The efficiency of baseline cookstove	The value of η_{old} i.e. efficiency of baseline stove has been taken as default value as per applied methodology VMR0006 version 1.1, which is 10%, because the beneficiaries were

			using three stone cookstove without improved combustion air supply or fuel gas ventilation, a grate or a chimney while using firewood as a fuel source. Furthermore, during the field visit conducted by the VVB and interviews with the beneficiaries, it was confirmed that they were indeed using traditional three-stone cookstoves and traditional mud cookstoves. .

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.

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 the duration of the crediting period and an additional two years.

3.5 Non-Permanence Risk Analysis

Since the present 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

Review of ER sheet/02/ reveals that the comparison of actual GHG emission reductions with those in PD estimates:

Since the present project activity combined both validation and verification together, there is no data to compare the present emission reductions with respect to the registered PD. Hence this section is not applicable.

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

The PP's evidence in the form of supporting documents is of a sufficient caliber. The ICS survey report and distribution records are given, and they match the information in the ER verification spreadsheet.

For the management and operation of the project, competent staff are hired. The supporting evidence provided to VVB for verification is of a sufficient caliber and was determined to be verifiable. The assessment team examined the ICS distribution records and ICS survey report to ensure the accuracy of the calculations and the veracity of the documents. Copies of these documents are also obtained for the verification team's records and future use as references. It has been discussed and determined that the detailed information flow with the roles and duties of the persons and the monitoring system is found to be appropriate.

Based on the foregoing, the assessment team affirms that the PP's evidence is sufficient and adequate for determining the GHG reductions, and further determines that it is acceptable.

5 VALIDATION AND VERIFICATION OPINION

Infinite Solutions Energy Services Ltd hired LGAI Technological Center, S.A. (also known as Applus+ Certification), to carry out a collaborative validation and verification of the VCS project activity "IMPROVED COOKSTOVES FOR COMMUNITIES".

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

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

The project activity complies with the requirements of the applied baseline & monitoring methodology, VMR0006, Version1.1/6/, and according to Applus+ Certification, delivers the information in Joint PD & MR as needed by VCS Standard, version 4.4/7(b)/. As previously mentioned, the validation was carried out utilising a risk-based methodology. The project activity is anticipated to reduce emissions by 3,149,689 tCO2e during 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 "IMPROVED COOKSTOVES FOR COMMUNITIES" complies with all applicable VCS requirements, including those outlined in the CDM Project Standard /10/ pertinent 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.

In our opinion, the joint PD and MR/01/ accurately states the GHG emissions reductions reported for the project activities for the time period of 20 November 2021 to 31 December 2022 (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.

Period of verification: from 20 November 2021 to 31 December 2022 (including both days). Verified reduction to and removals from GHG emissions over the aforementioned verification period:

Year	Estimated GHG emission reductions or removals (tCO_2e)
Year 2022-23	251,992
Year 2023-24	500,425
Year 2024-25	493,341
Year 2025-26	486,328
Year 2026-27	479,385
Year 2027-28	472,512
Year 2028-29	465,707
Total estimated ERs	**3,149,689**
Total number of crediting years	7
Average annual ERs	**449,956**

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO2e)	Net GHG emission reductions or removals (tCO_2e)
Year 1 20-Nov- 2021 to 31-Dec-2021	0	2,309	0	2,309
Year 2: 01-Jan-2022 to 31-Dec-2022	0	45,118	0	45,118
Total	**0**	**47,426**	0	**47,426**

Year	Ex-ante emissions reductions/removals	Achieved emissions reductions/removals	Percent difference	Justification for the difference
Year 1 20-Nov- 2021 to 31-Dec-2021	5,081	2,309	54.56%	only 5000 cookstove could be distributed in the period
Year 2: 01-Jan-2022 to 31-Dec-2022	46,367	45,118	2.69%	remaining other were distributed in this year
Total	51,449	47,426	-7.82%	The cookstove are distributed in different months, hence the actual ERs are calculated on the basis of the number of days a cookstove have operated.

APPENDIX 1: DOCUMENT REFERENCES

No.	Author	Title	References to the document	Provider
1.	PP	Joint PD & MR (Final)	Version 1.3 dated 02-November-2023	PP
2.	PP	Emission reduction spreadsheet (Final) Estimated Emission reduction spreadsheet (Final)	Version 02 dated 21-February-2023 Version 02 dated 21-February-2023	PP
3.	NA	ICS Distribution data and carbon waiver records of ICS	-	PP
4.	PP	Declaration(s) from Project proponent on double accounting	01-May-2023	PP
5.	NA	Efficiency certificate of ICS issued by IIT Delhi	09-July-2022	PP
6.	NA	VMR0006 Methodology for Installation of High Efficiency Firewood Cookstoves	https://verra.org/methodologies/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/	VERRA
7.	NA	VCS Requirements: a) Verified Carbon Standard Program Guide, v4.3; b) Verified Carbon Standard, v4.4; c) VCS Program Definitions, Ver. 4.3 d) VCS Registration and Issuance Process, v4.3 e) VCS Joint Project Description & Monitoring Report Template, v4.2 f) VCS Joint Validation & Verification Report Template, v4.2	-	VERRA
8.	NA	Life span certificate		PP
9.	NA	Site assessment –interviews of staff personnel, photographs, physical inspection of monitoring system	-	PP
10.	PP	Employment records	-	PP
11.	PP	Skilled training records	-	PP
12.	PP	Local Stakeholder Meeting records	-	PP
13.	PP	Joint PD & MR (Intermediate version of document)	27-January-2022	PP
14.		Emission reduction spreadsheet(Intermediate version of document)	27-January-2022	PP
15.	PP	ICS Survey Report	-	PP

No.	Author	Title	References to the document	Provider
16.	UNFCCC	Methodological Tool: Calculation of the fraction of non-renewable biomass	https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v4.0.pdf	UNFCCC CDM page
17.	PP	Photo of grievance register	NA	PP
18.	PP	Sample copy of carbon waiver records	NA	PP
19.	-	Technical Specifications of the ICS	NA	PP
20.	UNFCCC	Sampling and surveys for CDM project activities and programmes of activities, version 9.0-	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20210531160756474-Meth_Stan05.pdf/Meth_Stan05.pdf?t=a0h8cmdjY2hufDB3trwzZ7tid7m_L2VQB0SR	UNFCCC CDM page
21.	PP	Official Letter for Name change	18-March-2023	PP
22.	Government of India	Forest Survey of India (FSI1987: Page 45)	Forest Survey of India, 1987 report https://fsi.nic.in/documents/sfr_1987_hindi.pdf	PP

APPENDIX 2: ABBREVIATIONS

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	Clean Development Mechanism Validation and Verification Standard
EB	Executive Board
ER	Emission Reductions
CER	Certified Emission Reduction
CR	Clarification Request
DOE	Designated Operational Entity
DNA	Designated National Authority
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
IPCC	Intergovernmental Panel on Climate Change
MCR	Monthly Credit Reports
MP	Monitoring Plan
MR	Monitoring Report
MWh	Megawatt hour
PD	Project Description
PP	Project Proponent
PS	Project Standard
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

APPENDIX 3: FINDINGS OVERVIEW

CL ID	01	Section no.	4.1	Date: 22-February-2023
Description of CAR				
PP shall describe the procedure/methodology to be adopted for repair and replacement of the cookstove. Kinldy calrify.				
Project participant response				**Date:** 28-Feburary-2023
Project proponent have a team for monitoring of Improved Cookstove. Ground level team visit household once at a frequency of 6 months. A designated team leader is also assigned for the monitoring of the ground level team. Improved cookstoves requiring onsite maintenace are processed at the ground level itself, and other cookstoves which need to be replaced are send backed to the project staff for the replacement. Till the time a spare cookstove is been issued for the daily usage.				
Documentation provided by project participant				
1. PDMR				
VVB assessment				**Date:** 04-March-2023
Duing documents review VVB team found that; PP has demonstrate the details about repair and replacement of the cookstove in join t PDMR. Project proponent has a ground level team for monitoring of Improved Cookstove, who visit each and every distributed cookstove if there is any kind of degradation or if they have received the complaint regarding the non-functioning of the cookstove. They will repair it locally. And if the cookstove is not in a condition to get repair they will replaced it. Same is verifed during site visit and interview with benefeceries. **Thus, CL is closed.**				

CL ID	02	Section no.	4.2	Date: 22-February-2023
Description of CAR				
During onsite visit verification team found that; some baseline stove and LPG connection was found in majority if the household, PP shall clarify how the parellel use of baseline stove and other LPG stove are taken into account for the estimation of emission reduction.				
Project participant response				**Date:** 28-February-2023
The beneficiaries primarily use the Improved cookstove for daily household cooking. The baseline stove appears to be used mainly for heating water and for bathing purposes.				

For the estimation of emission reductions Project Proponent is using equation (4) of methodology VMR0006 ver 1.1, and the wood consumption in the improved cookstove (project device) is monitored. And as mentioned in the monitoring parameter table for data μ i.e. adjustment to account for any continued use of pre Project device during the year y on page nuber 18-19 of methodology VMR0006 ver 1.1, it is stated in the row of Calculation method, that "For project that opt for $B_{y=1,new,i,survey}$ i.e., direct measurement or biomass used in project stoves, then μ is not be reuired to be computed". According to section 8.3 (Pg No: 9) of methodology VMR0006, ver 1.1 the leakage of 0.95 is also considered in the estimation of emission reductions by the distribution of the improved cookstoves. Beneficiaries have access to both a baseline stove with an LPG connection and an improved cookstove (ICS) for daily household cooking. However, they choose not to use the LPG stove regularly for cooking and instead reserve it for fast cooking purposes during guest and family get-togethers. This has been clarified during the monitoring survey.
Documentation provided by project participant
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VVB assessment	**Date: 05-March -2023**
During the onsite visit and interview with benefecries, VVB team found that, Beneficiaries have access to both a baseline stove with an LPG connection and an improved cookstove (ICS) for daily household cooking. During onsite visit interview of beneferies, it was found that, they use LPG for fast cooking during a family geathering and they used to keep it reserve. **Hence, CL is closed.**	

CAR ID	01	**Section no.**	3.1	**Date:** 20-January-2023
Description of CAR				
PP shall submit documents to confirm Average life time of improved cook stove (ICS) and Technical specification of ICS.				
Project participant response				**Date:** 21-February-2023
As mentioned in section 1.11 of PDMR and monitoring parameters in section 6.2 the average life span of cookstove is 7 years, the affidavit for the average life span of the cookstoves provided by the manufacturer is been provided.				
Documentation provided by project participant				
1. Technical specification sheet (PDF) 2. Affidavit from Manufacturer				
VVB assessment				**Date:** 22-February-2023

Verification team found that; the average life time of the cookstove is 7 year, However to verify the same, PP has submitted the Affidavit for life expectancy form the manufacturer & technical specification document. **Thus, CAR is closed.**

CAR ID	02	**Section no.**	3.1	**Date:** 20-January-2023
Description of CAR				
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 is not clear. Corrections sought.				
Project participant response				**Date:** 21-February-2023
As per section 1.15 Participation under other GHG Programs, Project Proponent has submitted a declaration certificate stating about the project activity has not been registered and is not seeking registration under any other GHG emission program to avail carbon benefits during the crediting period of the project activity.				
Documentation provided by project participant				
1. Declaration of no double counting				
VVB assessment				**Date:** 22-February-2023
VVB team verify that; PP has not particiaption in other GHG mechanism moreover to verify the same PP has submitted the declaration regarding no double accouting dated 01-May-2022. **Hence, CAR is closed.**				

CAR ID	03	**Section no.**	4.2.2	**Date:** 24-January-2023
Description of CAR				
Information on ongoing LSC mechanism and comments during monitoring period is missing. PP requested to submit grievance register. Corrections sought.				
Project participant response				**Date:** 21-February-2023
As per the section 2.2 of the PDMR, Project Proponent has carried out the Local Stakeholder Consultation on 7th October 2021 at Betul district. Stakeholders were invited by displaying the notices on the public boards. The comments which were received by the project proponent during the Local Stakeholder Consultation is reported in section 2.2 of the PDMR. The Grievenace register is presented to VVB on the site visits.				

Documentation provided by project participant	
LSC Report	
VVB assessment	**Date:** 22-February-2023
VVB team found that; as per VCS project standards 3.17.3 project proponent has conducted the Local stakeholder consultation meeting on 07-October-2021 at betul district of M.P. Moreover to verify the same PP has submitted the LSC Report to the VVB team, which is found error free. VVB team found that; Grievenace register is maintained with local volunteer at every village, for any complaint which is found consistent during the site visit. **Thus, CAR is closed.**	

CAR ID	04	**Section no.**	4.4	**Date :** 20-January-2023
Description of CAR				
1. PP requested to submit supporting documents for the monitored parameters. 2. PP shall provide supporting documents for SDG indicators achieved during current monitoring period as explained in sec. 1.17 of PDMR.				
Project participant response				**Date :** 21-February-2023
1. As mentioned in section 6.2 of PDMR, Project Proponent is provide the documents for supporting the monitoring parameters a) Baseline survey b) Efficency of cookstove c) Affidavit of Life Span d) Distribution Data e) Technical specification of Improved cookstove f) Monitoring Survey g) ER sheet (estimated and actual) 2. As mentioned in section 1.17, project proponent would provide the different documents for support of SDGs achieved during current monitoring period.				
Documentation provided by project participant				
1. Baseline survey 2. Efficency of cookstove 3. Affidavit of Life Span 4. Distribution Data 5. Technical specification of Improved cookstove 6. Monitoring Survey 7. ER sheet (estimated and actual)				
VVB assessment				**Date:** 22-February 2023

1. Verificatio team found that; PP has submitted the following document.

a) Verification team found that; PP has conducted the baseline survey in project boundry, & baseline survey report has been submitted to the verifcation team.

b) During review it was observed that; Swami Samarth Electronics PVT. Ltd. is the manufacturer of the (Angika Eco Mini model 4 SE cookstove). & VVB team verified that; IIT Delhi has conducted the independent verification to verify the Effeciency of cookstove, dated- 09- July-2022.

c) PP has submitted the Affidavit of life span of cookstove dated-: 15-February-2023 to the VVB team. Which is found error free.

d) During the onsite visit, VVB team found that; PP has submitted the distribution sheet to the VVB and same was found consistent with benefecries copy.

e) PP has submitted the technical specification document of the cookstive to the VVB team.

f) VVB team verified that; Monitoring survey report has been submitted by PP, which is found consistent.

g) PP has submitted the estimated (estimated & actual) ER sheet. VVB team confirmed that the distributed cookstove is working to verify the per stove ER generation.

1)

2. VVB team found that, PP has submitted the records to verify the following SDGs goal achieved during the current monitoring period.

a) SDG 3: Good health and wellbeing- VVB team verified that; PP has submitted the cookstove distribution records then have been distributed.

b) Goal 5: Achieve gender equality and empower all women and girls : Project activity provided the employment to the local women, to verify the same PP has submitted the employment records and same was found at the project location.

c) Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all : provide cleaner, safer, more affordable and more efficient cooking equipment than traditional stoves to poor household. Same was verified during onsite audit.

d) SDG 8: Decent Work and Economic Growth : VVB team verifed that; Project activity has provided the, Employment to the local volunteers and local NGOs for management of the project.

e) Goal 12. Ensure sustainable consumption and production patterns: improved cookstoves consume less fuelwood as compared to the baseline cookstove, firewood storation is also reduced.

f) SDG 13: Climate Action: VVB team verifed that, this project ahs reduced the GHG emission.

g) Goal 15. Sustainably manage forests, combat desertification – Verification during onsite visit found that, the project has reduced the firewood consumtion, it will restore degraded forests and substantially increase afforestation.

Thus, CAR is closed in this section.

APPENDIX 4: Competency 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	Kumar	Pankaj	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	Shen	Simon	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustin	Applus+ Certification

Short CVs of the Team:

1. **Mr. Pankaj Kumar** worked as team leader – Bihar for South Asia Climate Proofing and Growth Development (CPGD) – Climate Change Innovation Programme (CCIP) supported by DFID that seeks to mainstream climate change resilience into planning and budgeting at the national and sub-national level in India, Pakistan, Nepal, and Afghanistan. Pankaj Kumar has worked previously with IL&FS Infrastructure Development Corporation and BUIDCO (Bihar Urban Infrastructure Development Corporation), Govt. of Bihar as Environmental Specialist for WB & ADB funded projects. Prior to this, he worked with Carbon Check (UNFCCC accredited DoE), Johannesburg, RSA as Team Leader for validation, verification of around 100 GHG projects in Asia, Africa, USA, Asia Pacific & Americas. Pankaj is accredited Lead Auditor, Validator, Verifier and Technical Expert for Sectoral Scope/Technical Area – 1.1, 1.2, 3.1 & 13.1 by UNFCCC DoE (Designated Operational Entity), APPLUS, Spain. He is also member of task force on climate change & human health, Health Department, GoB and on roster of UNICEF's WASH experts.He is an experienced, qualified and result oriented Environment Professional having more than 14 yrs. of relevant experience in Climate Change (Mitigation &Adaptation), Environmental Due Diligence, Disaster Risk Reduction, Validation and Verification of GHG project under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He provides technical

support for environmental investigative, consultative and remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and Carbon foot printing.Pankaj Kumar is Masters in Environment Management from Forest Research Institute (University), I.C.F.R.E, Dehradun, which is Centre of Excellence in South East Asia for Forestry education & research and PGDEL from National Law School of India University, Bangalore (India).

2. **Mr. Simon Shen** (Master's Degree in Thermal Energy Engineering, Bachelor's Degree in Environmental Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and review with Applus+, apart from the years of experience working as GHG Auditor and ISO 9001/14001 in TUV SUD for 3.5 years before he joined Applus+. Mr. Simon Shen has extensive experience also as former Applus+ Shanghai CDM Technical Manager. Mr. Simon Shen is based in Shanghai, China. Mr. Simon Shen participate in the project's technical review.