



**Verified Carbon
Standard**

CLEAN COOKSTOVES FOR RURAL INDIA



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Summary:

LGAI Technological Center (hereinafter referred to as Applus+ Certification) is contracted by M/s EKI Energy Services Limited to conduct the joint validation and verification of the project “Clean Cookstoves for Rural India”, VCS ID 2944¹ 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 joint validation and verification process. The monitoring plan of the Joint PD and MR (Project ID 2944) 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, & Assam state of India. The Improved cookstove stoves distributed through this project have replaced the low-efficient traditional cookstoves. Through this project, the distribution, and installation of high thermal efficient improved cook stoves (ICS) has been undertaken for households. The ICS burns wood more efficiently thereby improving thermal energy transfer to pots, hence saving fuel wood and greenhouse gases. This will not only lead to reduce deforestation but will also reduce health hazards from indoor air (smoke) pollution, decrease in time spent by women and children for collecting the firewood.

The first crediting period’s expected annual average emission reductions over a seven-year period are 714,973 tCO₂e/year and 5,004,811 tCO₂e will be reduced during the course of the seven years of the crediting period. During the 1st monitoring period from 11-May-2022– 31-December-2022 (inclusive of both the dates), 164,300 tCO₂e GHG emissions were reduced.

Applus+ certification now has enough proof to confirm that the stated criteria, as per VCS requirements and applied methodology, have been met after reviewing the joint Project Description and Monitoring report (Joint PD & MR) and additional documents pertaining to baseline and monitoring methodology, as well as after conducting background research, conducting 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 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 joint validation and verification has been carried out using a risk-based methodology. 05 Corrective Action Requests (CARs) and 02 Clarification Requests (CLs) were raised during joint validation and verification and successfully closed. FAR was not raised for the current 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 VMRO006, 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 "Clean Cookstoves for Rural India" reduced emissions by 164,300 tCO₂e from 11-May-2022– 31-December-2022, including both the days.

CONTENTS

1	INTRODUCTION	6
1.1	Objective	6
1.2	Scope and Criteria	7
1.3	Reasonableness of Assumptions and Level of Assurance	8
1.4	Summary Description of the Project	8
2	VALIDATION AND VERIFICATION PROCESS	10
2.1	Method and Criteria	10
2.2	Document Review	14
2.3	Interviews	14
2.4	Site Visits	14
2.5	Resolution of Findings.....	15
3	VALIDATION FINDINGS	16
3.1	Project Details	16
3.2	Participation under Other GHG Programs	25
3.3	Safeguards	25
3.4	Application of Methodology	27
3.5	Non-Permanence Risk Analysis	50
4	VERIFICATION FINDINGS	50
4.1	Accuracy of GHG Emission Reduction and Removal Calculations	50
4.2	Quality of Evidence to Determine GHG Emission Reductions and Removals	60
5	VALIDATION AND VERIFICATION OPINION.....	61
	APPENDIX 1: DOCUMENT REFERENCES.....	64
	APPENDIX 2: ABBREVIATIONS	66
	APPENDIX 3: FINDINGS OVERVIEW	67
	APPENDIX 4: COMPETENCY STATEMENTS.....	71

1 INTRODUCTION

1.1 Objective

Applus+ Certification has been contracted by M/s EKI Energy Services Limited (project proponent), to undertake the joint validation and verification of the project titled “Clean Cookstoves for Rural India”. The assessment team have reviewed the GHG data collected for the monitoring period from 11-May-2022– 31-December-2022(both days included) covered in this verification. The objective of the joint validation and verification is to have an independent third-party assessment of the Joint PD & MR/^{1/} and supporting documentation to ensure compliance with the rules, regulations and guidelines by VCS requirements. In particular;

- The project's baseline is assessed against “VMR0006 - 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 version 4.4 /^{7(b)/}
- VCS program guide version 4.3 /^{7(c)/}

Validation and verification are a requirement for all VCS projects and are 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 "Clean Cookstoves for Rural India". 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 requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Reasonableness of Assumptions and Level of Assurance

The level of assurance of the joint validation and verification report falls under reasonable assurance engagements as selected by the PP. The joint validation and verification team validated/verified the 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 project presently implemented in Madhya Pradesh, & Assam states of India. As the target populations are unable to afford these stoves (ICS), project promoters have distributed ICS free of cost.

The end-user has been informed in advance that the use of ICS generates carbon finance which in turn is used to cover the price of ICS and for recovering project implementation costs. EKI 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. EKI 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, and Assam states of India and may expand further to other parts of India. EKI has distributed 126,158 ICS in Madhya Pradesh and 24,996 ICS in Assam as confirmed based on the submitted monitoring database.

PP has considered one cookstove as one project activity instance for this grouped project activity. The first project activity instance was implemented on 11-May-2022 under this grouped project activity. 151,154 project activity instances (ICS) have been implemented as a part of this project activity.

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 SS 202/201 2B grade
		Insulating Material	Ceramic Thermal Wool
		Insulating Material Thickness	6 to 8mm
		Top Plate	Stainless Steel SS 202/201 Mat/ Mirror grade
		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)	Weight 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	7 Years	
J)	Guarantee /Warranty Period	1 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 ²	

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

Above mentioned technical details are checked with the Manufacturer's Technical specification, and found correct. Same is confirmed during the onsite assessment.

The first crediting period's expected annual average emission reductions over a seven-year period are 714,973 tCO₂e per year and 5,004,811 tCO₂e over the course of the seven-year crediting period.

For current first monitoring period from 11-May-2022–31-December-2022, the project has reduced 164,300 tCO₂e of GHG emissions.

Based on an examination of the Joint PD & MR^{/01/}, ER estimation and verification spreadsheet^{/02/}, and ICS database^{/03/}, the estimated emission reductions were validated and actual emission reductions were verified.

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

Joint validation and verification was conducted using Applus+ Certification's procedures in line with the requirements specified in the VCS standard Requirements, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The proposed implementation and operation of the project activity, as well as the measures employed to report emission reductions, must be evaluated and decided to meet with the criteria and pertinent recommendations provided by the VCS. The validation and verification process consists of the following three phases;

- A desk review of the Joint PD and MR.

² refer to Appendix 4

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

Since the project requires sampling, based on the provisions of CDM Standard: Sampling and surveys for CDM project activities and programmes of activities, version 9.0/23/, VVB has undertaken the following sampling plan with respect to the project validation and verification.

Para 30 and 31 of the CDM standard states:

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. 1 per cent);
- (b) **Unacceptable quality level (UQL) that** is the proportion of unacceptable discrepancies between the project participants' or the coordinating/managing entity's sample records and the DOE sample records, e.g. 20 per cent.

Para 31 says, the maximum errors associated with the determination indicated in paragraph 30 above should remain at levels indicated below:

- (a) A 01 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 20 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 sampling standard, VVB selected 8 randomised households from each state for acceptance surveying based on PP's database. The households were chosen from the 122 (Madhya Pradesh), 101 (Assam) households already surveyed by the CME/PD. The choice of 8 households is the minimum allowed number of samples as per the sampling 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 Size (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)	Sample Size (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 Size (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)	Sample Size (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

Name	Village	Tehsil
Madhya Pradesh		
Lakshmi Bai	Manawar (Dhar M.P.)	Dhar
Ratani Bai	Manawar	Dhar
ManBhar	Sada Ka Pada	Sheopur
Kirti	Bichiya	Dindori
Assam		
Fulmuni Hemram	Barnagoan	Udalguri (Assam)
Shamala Khatun	Barnagoan	Udalguri
Gopal Basumatary	Golmakha	Udalguri
Maherjam Behi	Barnagoan	Udalguri

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

1. General information of households
 - a. Interviewee Name
 - b. ID No.
 - c. Age, Gender
 - d. Household location
2. Old cookstoves situation
 - a. Are you the main user of the Old Cookstove at home?
 - a. How many people are there in your household?
 - b. What type and number of Stoves did you use? Three-stone fire, Self-built low efficient clay stove, Traditional low efficient stove or Others. If others, the type and number of stoves are
 - c. What kind of fuel did you use for the stove(s)? Charcoal, Firewood, or Others. If others, the kind of fuel is
 - d. Do you think the Cookstove will generate smokes and cause respiratory or itching issues?
3. Project cookstoves using situation
 - a. Are you the main user of the Project Cookstove at home?
 - b. When did you buy the Project Cookstove?
 - c. Do you know you have waived ownership of ERs before used the Cookstove?
 - d. What document do you sign or what information do you provide when you were distributed the Project Cookstove?
 - e. When did you start using the Project Cookstove?
 - f. Does your Project Cookstove have unique serial No.? if yes, the No. is
 - g. After using the Project Cookstove, did the distributor come to your home to check the use of the Project Cookstove?
 - h. Please specify the using frequency and cooking times.
 - i. What kind of fuel do you use for project stove? Charcoal, Firewood, or Others. If others, the kind of fuel is

- j. What type and number of Project Stove are you using? If others, the type and number is
- k. Are you still using old/other cookstove(s) after buying the Project Cookstove?
- l. Do you think the Project Cookstove is cleaner than the old stove? If yes, the reason is Less smoke, less respiratory issues, less itching issues or others. If others, please specify.
- m. Do you think using a Project Cookstove saves money or time compared to using the old stove?
- n. Are there any difference in usage of project cookstove between dry and wet seasons?.

2.2 Document Review

The joint PD & MR and other related documents were reviewed as a part of the joint validation and verification process, which is described in detail in Appendix 1 of this document. The assessment team uses a standard protocol to do the assessment of both validation and verification. The comparison of data from Joint PD & MR with data from additional sources, if available, the team's sectoral or local experience, and, if necessary, independent background investigations.

2.3 Interviews

The assessment team (As mentioned in Appendix 04 below) visited the site between 10-April-2023 to 14-April-2023 & 28-April-2023 PP representatives and end users were questioned. The table includes information on the interviewees from PP side. ICS Users interviewed List is mentioned in the section 2.1 of this document.

Sr. No.	Name	Role	Organization
1	Pavan Patel	Stove Distributer	Aransh Agro
2	Yogesh Sharma	Stove Distributer	JPS Enterprise
1	Samir Bagchi	Stove Distributer	Enviro Queen PVT LTD
2	Bibek Bora	Stove Distributer	Bibisikha LLP
4	Mr. Soumitra Kulkarni	Manufacturing	GHG Reduction Technologies Pvt LTD
5	Monil Shrivastava	Project consultant	EKI Energy Services Limited
6	Vineet Garg	Project consultant	EKI Energy Services Limited

The topics discussed during the interview range from the project's general characteristics and implementation to its technical details, including design and technical specifications, project implementation status, project start date, location, baseline identification, 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 Visits

A total 8 sample were visited as part of the site visit.

The assessment team visited the site between 10-April-2023 to 14-April-2023 & 28-April-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
- 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 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 project activity. Based on the desk review and site evaluation, this was carried out. The assessment team creates and/or maintains a validation and verification procedures (internal document) that documents conformities and non-conformities, which may include the following kinds of issues:

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

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

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

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

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

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

Clarification request (CL) is raised if:

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

Forward Action Requests (FARs) is raised if:

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

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

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

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, the project will reduce deforestation through less consumption of firewood. And, family members—particularly women—will be exposed to less indoor air pollution, saving money on health-related expenses.

The project activity started on 11-May-2022, 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.

A 07 year crediting period is expected to result in annual emission reductions of 714,973 tCO₂e and 5,004,811 tCO₂e over the seven-year crediting period, which runs from 11-May-2022 to 10-May-2029 (inclusive of both dates).

Details of the PP

Organization name	EKI Energy Services Limited
Contact person	Manish Dabkara
Title	Managing Director & Chief Executive Officer
Address	Office No 201, Plot No 48, Scheme 78, Vijay Nagar Part- II, Indore 452010, India
Telephone	+91 99075 34900
Email	manish@enkingint.org and registry@enkingint.org

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

Other entities involved in the project is as follows:

Organization name	Bibsikha LLP
Role in the project	Distributor
Contact person	Bibek Bora
Title	Director – Owner
Address	Khongia Goon near Borkhongia High School Dist- Jorhat – 785616 Assam
Telephone	+91 7002513935
Email	Bibek@bibsikha.in

Organization name	Envro Queen PVT LTD
Role in the project	Distributor
Contact person	Sameer Bagchi
Title	Owner/ Partner
Address	130 MG Road Dhar MP – 454001
Telephone	8871965144
Email	Sg65410@gmail.com

Organization name	JPS Enterprise
Role in the project	Distributor
Contact person	Yogesh Sharma
Title	Owner/ Partner
Address	S-2, G8 Prem Nagar, Jaipur – 302019
Telephone	9057244624
Email	jpsenterprises111@gmail.com

Organization name	Aransh Agro
Role in the project	Distributor
Contact person	Pavan Patel
Title	Owner/ Partner
Address	Plot No. 392, Tripuri Ward garh, Jabalpur, MP
Telephone	8821930305
Email	aranshgroup@gmail.com

Organization name	GHG Reduction Technologies Pvt LTD
Role in the project	Manufacturing

Contact person	Mr. Soumitra Kulkarni
Title	Director
Address	A-11/2/3, Nagargoje Industries PVT LTD, SUMmet Compound Ambad, Nashik Maharashtra – 422010
Telephone	+91 982287213
Email	Soumitra.kulkarni@enkingint.org

VVB team verified the details of the other entities with the help of the Agreement between Project proponent & other entities involved in the distribution of the ICS which was submitted by the PP and found to be error free and Hence, accepted by VVB team.

Assessment team has verified the ownership of the cookstoves with the help of the End user agreement and found that it lies with the end-users. Moreover, Ownerships of carbon rights is with the PP (EKI energy Services Ltd.), which was also confirmed with the help of end-user agreements. This was also crosschecked during the onsite assessment interviews with the end users and PP. Same is mentioned in the joint PD and MR, Hence, accepted.

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

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

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

The project will reduce 164,300 tCO₂e GHG emissions during the first monitoring period, which is from 11-May-2022– 31-December-2022 (inclusive of both the dates).

Each ICS will reduce emissions by approximately 4.76tCO₂e in Madhya Pradesh, 4.58 tCO₂e in Assam, (based on total emissions projected by the total number of cookstoves), according to the computation in the section (net of leakage and continued use of the baseline stoves). The project proponent has commissioned 151,154 ICS during current monitoring period (11-May-2022 to 31-December-2022) a total of 151,154 improved cookstoves (ICS) were deployed as part of this collective project, with 24,996 ICS in Assam and 126,158 ICS in Madhya Pradesh as confirmed based on ICS database.

The current initiative is a voluntary endeavour by the project proponent because there is no mandatory rule or regulation in the host country – India mandating the implementation of ICS.

The project complies with all applicable statutes, laws, and regulatory frameworks. No Indian regulations, ordinances, or other regulatory frameworks are violated by the project.

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 and Assam. 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 from 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.

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 714,973 is more than 300,000 tCO₂ hence project is large scale.

Baseline scenario:

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

The baseline for this project is located in the same area where a similar project has already been implemented. Accordingly, the baseline for this project is the ongoing use of non-renewable wood fuel in traditional cookstoves or three-stone fire stove within a specific region. Additionally, a baseline survey is carried out at the project site to ensure the baseline situation. Based on the survey it is confirmed that a traditional cookstoves or three-stone fire stove is being used in project location.

As per applied methodology, The baseline scenario is the continued use of non-renewable wood fuel (firewood/charcoal) or fossil fuel (coal/kerosene) by the target population to meet similar thermal energy needs as provided by project cookstoves in absence of project activity.

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

Assessment team further confirmed that;

Project activities are implemented in domestic premises;

The project stoves have high-power thermal efficiency of 36.42% as confirmed based on the manufacturer's specifications provided ICS exclusively use woody biomass (fuel wood) and are single pot;

Since 31-December-1989, non-renewable biomass has been used in India, according to secondary research that is noted by PP in the joint PD and MR;

The project has been implemented, in order to generate less GHG emissions from the baseline for later removal, reduction, or destruction.

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

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

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

No.	Criterion	How the new project activity instances comply	VVB assessment
1	Meet the applicability conditions set out in the methodology applied to the project	New project activity instances (Energy Efficient Cook Stoves) will meet the applicability conditions set out in Section 3.2 below, where the target of the end-user is household and the ICS deployed is at least 25% of thermal efficiency.	PP has distributed ICS with an efficiency of 36.42% and since each ICS is treated as a new instance. Hence applicable and accepted
2	Use the technologies or measures specified in the project description.	The technology used for the project activity is energy-efficient cookstoves. Only energy efficient cook stoves are to be adopted in the project by replacing traditional cookstoves in households.	PP has distributed only one model of ICS which is energy efficient (verified from 3 rd party testing report) Hence applicable and accepted.
3	Apply the technologies or measures in the same manner as specified in the project description.	Only energy efficient cook stoves are to be adopted in the project by replacing traditional cook stoves in households. and same will be provided at free of cost.	PP has distributed only one model of ICS which is energy efficient (verified from 3 rd party testing report) Hence applicable and accepted.

4	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The new project activity instances will be installed within India subject to the same baseline scenario determined in Section 3.4 below.	All the cookstoves are distributed within India. Hence applicable and accepted.
5	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	All new project activity instances will use the activity method for demonstration of additionality. Step 1: Regulatory Surplus There is no mandated government programme or policy in the host country of this project ensuring the distribution of new energy efficient cook stoves for each project activity instance. Step 2: Positive List The inclusion of new project activity instances will comply with the positive list as it satisfies criterion 1 where it meets all the applicability conditions of the methodology.	Since each instance is within India and there is no mandated government programme in host country for distribution of cookstove. Hence accepted and Applicable. The inclusion of new project activity instances complies with the positive list as it satisfies criterion 1 where it meets all the applicability conditions of the methodology.
6	Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit. Further, no single cluster of project activity instances shall exceed the capacity limit, determined as follows: Each project activity instance that exceeds one percent of the capacity limit shall be identified.	No project activity instance shall exceed the applicable limit, which is 180 GWh_{th}/y. Since the project activity instances installed to date and proposed to be installed have/will have the same model, hence expected annual energy saving for each instance is less than 0.018 GWh_{th}/y which is less than 0.01% of the threshold limit. As the annual energy saving is below 1% of the limit, therefore no project activity instance is identified and divided into clusters.	Since the project activity instances I have the same model and expected annual energy saving for each instance is less than 0.018 GWh_{th}/y which is less than 0.01% of the threshold limit. As the annual energy saving is below 1% of the limit, therefore no project activity instance is identified and divided into clusters hence verified and accepted.

Such instances shall be divided into clusters, whereby each cluster is comprised of any system of instances such that each instance is within one kilometer of at least one other instance in the cluster. Instances that are not within one kilometer of any other instance shall not be assigned to clusters. None of the clusters shall exceed the capacity limit and no further project activity instances shall be added to the project that would cause any of the clusters to exceed the capacity limit, (Section 3.6.9 of the VCS standard v4.4).		
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Along with the above points, the Inclusion of New Project Activity Instances follows the below criteria. Grouped projects provide for the inclusion of new project activity instances subsequent to the initial validation of the project. New Project activity Instances will:

No.	Criterion	How the new project activity instances comply
1	Occur within one of the designated geographic areas specified in the project description	New project activity instances (Energy Efficient Cook Stoves) will occur in the designated geographic areas specified in the project description.
2	Conform with at least one complete set of eligibility criteria for the inclusion of new project activity	New project activity instances will comply with a complete set of eligibility criteria as mentioned

No.	Criterion	How the new project activity instances comply
	instances. Partial conformance with multiple sets of eligibility criteria is insufficient.	above for the inclusion of new project activity instances.
3	Be included in the monitoring report with sufficient technical, financial, geographic, and other relevant information to demonstrate compliance with the applicable set of eligibility criteria and enable sampling by the validation/verification body.	New project activity instances information to be included in the monitoring report with sufficient technical, financial, geographic, and other relevant information to demonstrate compliance with the applicable set of eligibility criteria and enable sampling by the validation/verification body
4	Be included in an updated project description, with updated project location information (as set out in Section 3.11), which shall be validated at the time of verification against the applicable set of eligibility criteria.	New project activity instances should be included by validating eligibility criteria as mentioned in this document
5	Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance (i.e., the date upon which the project activity instance began reducing or removing GHG emissions).	New project activity instances ownership needs to be evidenced from the start date of the respective project activity instance.
6	Have a start date that is the same as or later than the grouped project start date.	New project activity instances' start date should be after the start date of grouped project activity.
7	Be eligible for crediting from the start date of the project activity instance through to the end of the project crediting period (only).	New project activity instances are eligible to claim credits from the start date of the project activity instance through to the end of the project crediting period.
8	Only eligible for crediting from the start of the verification period in	New project activity instances will adhere to this criteria by being eligible for crediting only from the

No.	Criterion	How the new project activity instances comply
	which they were added to the grouped project.	beginning of the verification period in which they are included in the grouped project
9	Not be or have been enrolled in another VCS project.	New project activity instances will not be previously registered or currently enrolled in any other VCS project.
10	Adhere to the clustering and capacity limit requirements for multiple project activity instances set out in 3.6.8 - 3.6.9.	Section 3.6.8 of the VCS standard v4.4 is not applicable for the project those have been listed on or before 21 December 2022 and validation is completed by 30 June 2023. The current project was listed on 13 May 2022 and validation was completed on 19 May 2023. Therefore, the revised condition mentioned in section 3.6.8 of VCS standard v4.4 is not applicable to the current project³. Applicability for Section 3.6.9, already provided in the above table.

3.2 Participation under Other GHG Programs

In order to receive carbon benefits during the project activity's crediting period, EKI Energy Services Limited has not registered for, nor is it pursuing registration under, any other GHG emission programme. This was confirmed from the undertaking letter/^{4/} and by checking other GHG project registries like 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 proposed project activity has not noted any potential detrimental effects on the environment or society. Because clean technology of cook stoves is installed and used, there are no greenhouse gas emissions that result due to the project activity, which supports socio-economic and environmental well-being.

³ Please refer the "DECEMBER 2022 VCS PROGRAM UPDATE: OVERVIEW OF SUBSTANTIVE UPDATES TO PROGRAM RULES AND REQUIREMENTS AND EFFECTIVE DATES, Release Date: 21 December 2022

The assessment 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 & MR⁰¹'s section 2.2 contains a detailed explanation of the local stakeholder consultation process conducted. 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-May-2022

Date of Meeting – 10-May-2022

Location of Meeting – Sikaridamga, Udalguri, Assam

Date of Invitation – 20-June-2022

Date of Meeting – 04-July-2022

Location of Meeting – Community Hall, Jetpura, Dhar, Madhya Pradesh

Date of Invitation – 21-August-2022

Date of Meeting – 19-September-2022

Location of Meeting – Community Hall, Dhengda, Sheopur, Madhya Pradesh

Date of Invitation – 20-August-2022

Date of Meeting – 19-September-2022

Location of Meeting – Community Hall, Gondari, Shivpuri, Madhya Pradesh

Date of Invitation – 07-September-2022

Date of Meeting – 09-October-2022

Location of Meeting – Panchayat house kohla, Jabalpur, Madhya Pradesh

School 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-site⁹. The validation team confirmed by the stakeholder's responses that the stakeholder consultation process had been carried out in accordance with the joint PD & MR⁰¹. The stakeholder acknowledged that they received an invitation to attend the meeting. The invitation procedure specified in the joint PD & MR⁰¹ 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 registry¹⁵ confirms that there were no complaints reported during the current monitoring period.

In section 2.2 of joint PD and MR, PP has provided details related question asked by local stakeholders during the local stakeholder consultation and also provided responses made by PP. VVB team verified the same through supporting evidence i.e., Questionnaire summary sheet. Further also confirmed during interview with local stakeholder, VVB team confirmed that PP has taken all due accounts of all inputs made by local stakeholders and no negative comments/issues received during the monitoring period.

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

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. Project activity supports various positive environmental impacts such as -

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

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

3.3.4 Public Comments

The project was open for public comments from 13-May-2022 to 12-June-2022. During the time for public comment, no comments were received.

3.3.5 AFOLU-Specific Safeguards

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

3.4 Application of Methodology

3.4.1 Title and Reference

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

Type: Type II – Energy Efficiency Improved Projects

VCS Methodology: VMR0006: Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1

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 12 - Energy efficiency measures in thermal applications of non-renewable biomass

<https://cdm.unfccc.int/UserManagement/FileStorage/3BX1V2NC87TAWLOEKYHJQ5DRZ6UF94>

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 methodology⁴.

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

S. N.	VMR0006, Version 1.1 Requirements	Project activity applicability	Means of verification
1.	Project activities shall be implemented in domestic premises or in community-based kitchen	The proposed project involves deployment of ICS only in households.	This was verified by the monitoring survey conducted by an independent third party during the annual ICS users' survey ^{13/}
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 (fuel wood) and can be single pot or multi-pot;	Energy Efficient stoves planned to be installed under this project are single-pot portable cook stoves that have an efficiency of more than 25%. For all project activity instances, ICS with an efficiency of 36.42% is	This was verified by the stove test certificate issued by credited laboratory (IIT Delhi) and submitted to the VVB for validation ^{5/}

⁴<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
		planned to be installed. For future project activity instances, the manufacturer may change, and the cook stove efficiency that should be more than 25% as mentioned in the methodology based on manufacturer specification.	
3.	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 ₂ e per year. Therefore, the proposed project qualifies for the "Large Projects" criteria.	Same is verified by the assessment team from the emission reduction sheet and Joint PD and MR which is found correct Hence accepted.
4	Non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics;	The non-renewable biomass has been used in the country since 31 st Dec 1989. The information was derived from the literature survey	This was verified using literature references presented by PP in Joint PD and MR

S. N.	VMR0006, Version 1.1 Requirements	Project activity applicability	Means of verification
5	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 hence disregarded.	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.
6	Monitoring approaches for $B_{\text{savings},i,j}$ and values for parameters f_{NRB} (when Option (a) in paragraph 48(c) is chosen) and the quantity of woody biomass (fuel wood) $B_{\text{old},i,j}$ 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 12 Requirements	Project activity applicability	Means of verification
1	The VCS PD shall explain the proposed method for	Each ICS in this project can be identified by a unique combination of	This information verified from

S. N.	AMS II G Version 12 Requirements	Project activity applicability	Means of verification
	distribution of project devices including the method to avoid double counting of emission reductions such as unique identifications of product and end-user locations (e.g. programme logo).	customer name and geographical location, as well as a serial number. The serial number is a unique number which allows for a clear distinction between the stoves. No individual serial number can be repeated within the project, thus ensuring that each stove is counted only once in the proposed project. In addition, the project has been cross-checked against other CDM project activity operating in the country using the UNFCCC, the Gold Standard, and other relevant voluntary carbon schemes to ensure that the ICS is not included in any other CDM project activity or voluntary project activity	distribution records, ICS database and carbon waiver records.
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.	Manufacturers/ cook stove distributors undertaking is provided that EKI is the owner of that carbon credits and Manufacturers/ cook stove distributors will not claim any credits for such cook stoves	This information verified from declaration for the carbon waiver.

Applicability of Tool 30 :

Applicability criterion	Means of verification
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This tool may be used by: (a) DNAs to submit region- or country-specific default f_{NRB} values, following the procedures for development, revision, clarification and update of standardized baselines (SB procedures); or (b) project participants to calculate project- or PoA-specific f_{NRB} values	The project participant has used this Tool to calculate project-specific f_{NRB} values.
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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 12

The Joint PD & MR ^{/01/} accurately stated the information pertaining to the project boundary. PP has distributed cook stove in various parts of India. 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 sources of gases inside the project boundary for the project instances, which is based on the applied methodology^{/6/}.

Source		Gas	Included?	Justification/Explanation
Baseline	Emission from use of non-renewable biomass/Fossil fuel	CO2	YES	Major Source
		CH4	YES	Major Source
		N2O	YES	Major Source
		Other	No	No other source identified
Project	Emission from use of non-renewable biomass	CO2	YES	Major Source
		CH4	YES	Major Source
		N2O	YES	Major Source
		Other	No	No other source identified

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.

The baseline for this project is located in the same area where a similar project has already been implemented. Accordingly, the baseline for this project is the ongoing use of non-renewable wood fuel in traditional cookstoves or three-stone fire stove within a specific region. Additionally, a baseline survey is carried out at the project site to ensure the baseline situation. Based on the survey it is confirmed by the PP and verified by the VVB during the onsite assessment interviews with the end users that the traditional cookstoves or three-stone fire stove were being used in project location.

3.4.5 Additionality

The project's additionality is shown by how well it adheres to the standards established in VMR0006, Version 1.1/^{6/}.

Activity Approach

Step 01: Regulatory excess

The distribution of residential fuel-efficient cookstoves is not mandated by any government programme or policy in the country where this project is being implemented. The project is not required by any legislation, statute, regulatory framework, or for UNFCCC non-Annex I nations, any law, statute, or other regulatory structure that is consistently applied.

Only voluntary participation is allowed from households in this study. EKI Energy Services Limited declaration of the voluntary participation of the planned project was verified and found to be appropriate^{/19/}.

Step 02: Positive List

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

1. The project distributes or installs stoves at no cost to the end user and derives all of its funding from the sale of GHG credits.
2. Neither the initiative nor its activities are funded by multilateral agencies or government programmes. Therefore, the project is additional and voluntary.

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

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 (06) 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.

PP has applied a value of η_{old} which is 0.1 for this project based on the usage of old traditional cookstoves in the baseline scenario as observed in similar projects of the pp. Also based on the survey it is confirmed that a traditional cookstoves or three-stone fire stove is being used in project location. This value corresponds with the guidelines stated in VMR0006 Version 1.1, which stipulates that a default value of 0.1 should be used for baseline devices that are either three-stone fires utilizing firewood (not charcoal), or conventional devices lacking an improved combustion air supply or flue gas ventilation and without a grate or chimney. Same has been assessed and found correct and conservative by the assessment team.

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.

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

Where:

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

$$ER_{y,i,j} = B_{y,savings,i,j} * NCV_{woodfuel} * f_{NRB,y} * (EF_{wf,CO_2} + EF_{wf,nonCO_2}) * N_{y,i,j} * 0.95 \quad \text{Equation (2)}$$

Where

$B_{y,savings,i,j}$	=	Quantity of woody biomass (fuel wood) that is saved in tonnes per improved cookstove of type i and batch j during year y
$f_{NRB,y}$	=	Fraction of woody biomass (fuel wood) that can be established as non-renewable biomass (f_{NRB})
$NCV_{woodfuel}$	=	Net calorific value of the non-renewable woody biomass (fuel wood) 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,CO_2}	=	CO_2 emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO_2/TJ)
$EF_{wf,non CO_2}$	=	Non- CO_2 emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO_2/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 (fuel wood) saved due to implementation of improved cookstoves to be estimated using equation below:

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

Where

- η_{old} = Efficiency of baseline cookstove
- $\eta_{new,y,i,j}$ = 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 4.
- $B_{y=1,new,i,j,survey}$ = Annual quantity of woody biomass (fuel wood) 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.

$$\eta_{new,y,i,j} = \eta_p \times (DF_n)^{y-1} \times 0.94 \quad \text{Equation (4)}$$

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

- 1) Installed 151,154 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 5%. This is assumed for estimation. During actual ER calculation, this value may change. This value is determined during actual verification based on survey results.
- 4) $B_{y=1, new,i, survey}$ is assumed as
 - For Assam – 3.78 kg/device/day or equal to 1.3797 tonnes/device/year.
 - For Madhya Pradesh – 3.60 kg/device/day or equal to 1.314 tonnes/device/year.

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

Determination of F_{nr} value:

The fraction of woody biomass (fuel wood) that can be established as non-renewable is given by:

$$f_{NRB} = \frac{NRB}{NRB + RB}$$

Where:

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

Commercial use of woody biomass (fuel wood) for non-energy purposes (such as building or furniture) that is derived from forests or other land areas in the relevant area (tonnes)

$$NRB = H - RB$$

Where:

H	=	Total consumption of woody biomass (fuel wood) in the applicable area in the relevant period (tonnes)
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The following equation accounts for all consumption within the relevant area to determine the overall consumption of woody biomass (fuel wood) (H).

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

Where:

HW	=	Average consumption of wood fuel per household, including fuelwood and charcoal, in the applicable area in the relevant period (tonnes//household)
N	=	Number of households consuming wood fuel within the applicable area in the relevant period (number)
CE	=	Commercial woody biomass (fuel wood) consumption for energy applications (e.g. commercial, industrial or institutional uses of woody biomass (fuel wood) 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 (fuel wood) 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)

As the parameters HW and N, disaggregated value is not provided, hence we will be using an aggregated value of (H × N) in the calculations.

	HW × N ⁵ (million tonnes)	CE (Million tonnes)	NE (Million tonnes)	H (Million tonnes)
Assam	11.421	0	06.235	17.656
Madhya Pradesh	13.665	0	20.449	34.114

Procedure to estimate the quantity of renewable biomass available (RB):

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

Where:

$MAI_{forest,i}$ = Mean Annual Increment of woody biomass (fuel wood) 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 (fuel wood) 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 forest areas (in sub-category i) in the relevant period (ha)

$$MAI_{forest,i} = 1.66 \text{ tonnes/hectare/year}^6$$

⁵ Socio-Economic Contribution of Forests: Production and consumption of Forests Resource in India, Page 76

⁶ https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch04_Forest%20Land.pdf

$MAI_{other,i} = 1.66$ tonnes/hectare/year⁷

	$MAI_{forest,i}$	$MAI_{other,i}$	$F_{forest,i}$ (Million Ha)	$P_{forest,i}$ (Million Ha)	$F_{other,i}$ (Million Ha)	RB (million tonne)
Assam	1.66	1.66	2.83	1.88	0.99	3.22
Madhya Pradesh	1.66	1.66	7.75	7.61	2.08	3.68

The fraction of woody biomass (fuel wood) that can be established as non-renewable for all locations:

	H	RB	NRB	F_{nrb}
Assam	17.656	3.22	14.43	81.75%
Madhya Pradesh	34.114	3.68	30.43	89.20%

VVB team verified that, PP has undertaken a state-wise calculation of fNRB, recognizing India's variations in biomass regrowth. This substantiates the rational for not depend relying on national-level to accurately account for the regional variation in area of the project activity." This underscores that all the values used in the report pertain to data preceding that year (2009). Moreover, it does not explicitly outline the calculation methodology employed to derive the fNRB values, introducing an element of uncertainty regarding its conformity with Tool 30 version 4". The literature provided in paragraph 6. (b) (i) of Tool 30 version 4, received on 25 July 2014, accepted on 4 December 2014, and finally published on 19 January 2015. VVB team further confirm that, values selected are from the most recent available data and appropriate for the project, in accordance with the Tool's Tool 30 version 4, guidance. VVB team reviewed the comparative analysis of the estimated fNRB with the literature referred by TOOL 30.

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

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 0.99 efficiency loss per year can be considered.

⁷ https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch04_Forest%20Land.pdf

0.94	=	Adjustment factor to account for uncertainty related to project cookstove efficiency test.
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For ex-ante calculation purpose, the below assumptions were applied:

- 5) Installed 151,154 ICSs.
- 6) The life span of each ICS is 7 years; thus, the operational lifetime of each project activity instance is taken as 7 years.
- 7) Annual stove loss rate is estimated at 5%. This is assumed for estimation. During actual ER calculation, this value may change. This values are determined during actual verification based on survey results.
- 8) $B_{y=1, \text{new}, i, \text{survey}}$ is assumed as
 - For Assam – 3.78 kg/device/day or equal to 1.3797 tonnes/device/year.
 - For Madhya Pradesh – 3.6 kg/device/day or equal to 1.314 tonnes/device/year.

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

Determination of efficiency of ICS during year y

$$\eta_{\text{new}, y, i, j} = \eta_p \times (DF_n)^{y-1} \times 0.94$$

Where

$$\eta_p = 36.42\%$$

$$DF_n = 0.99$$

Example of calculation:

If y= 1

$$\begin{aligned} \eta_{\text{new}, y, i, j} &= 36.42\% \times (0.99)^{1-1} \times 0.94 \\ &= 34.23\% \end{aligned}$$

Hence the efficiency of ICS during year y is as below:

Year (y)	$\eta_{\text{new}, y, i, j}$
1	34.23%
2	33.89%
3	33.55%
4	33.22%
5	32.89%
6	32.56%
7	32.23%

Determination of the quantity of woody biomass (fuel wood) that is saved in tonnes per ICS during year y

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

Example of calculation for Assam:

If y= 1,

$$B_{y,savings,i,j} = 1.3797 \times [(0.3423/0.1) - 1]$$

= 3.34 tonnes

Year (y)	$B_{y=1,new,i,survey}$	$\eta_{new,y,i,j}$	η_{old}	$B_{y,savings,i,j}$
1	1.3797	34.23%	0.1	3.34
2	1.3797	33.89%	0.1	3.30
3	1.3797	33.55%	0.1	3.25
4	1.3797	33.22%	0.1	3.20
5	1.3797	32.89%	0.1	3.16
6	1.3797	32.56%	0.1	3.11
7	1.3797	32.23%	0.1	3.07

Determination of emission reductions by ICS of year1 during year y

$$ER_{y,i,j} = B_{y,savings,i,j} \times NCV_{wood\ fuel} \times f_{NRB,y} \times (EF_{wf,CO_2} + EF_{wf,non\ CO_2}) \times N_{y,i,j} \times 0.95$$

Where

$$NCV_{wood\ fuel} = 0.0156 \text{ TJ/tonne}$$

$$f_{NRB,y} = 81.75\% \text{ (for Assam) \& } 89.2\% \text{ (for MP)}$$

$$EF_{wf,CO_2} + EF_{wf,non\ CO_2} = 112 + 26.23 = 138.23 \text{ tCO}_2/\text{TJ}$$

Example of calculation for **Assam**:

If y=1, (11-May-2022 to 31-December-2022),

Number of Days during Year Y = 235

$$ER_{y,i,j} = 3.34 \times 0.0156 \times 0.8175 \times 138.23 \times 24,996 \times 0.95 \times (235/365)$$

= 90,117 tCO₂

Year	$B_{y,savings,i,j}$	$NCV_{wood\ fuel}$	$f_{NRB,y}$	$EF_{wf,CO_2} + EF_{wf,non\ CO_2}$	$N_{y,i,j}$
1	3.34	0.0156	0.8175	138.23	24,996
2	3.30	0.0156	0.8175	138.23	23,746

3	3.25	0.0156	0.8175	138.23	22,496
4	3.20	0.0156	0.8175	138.23	21,247
5	3.16	0.0156	0.8175	138.23	19,997
6	3.11	0.0156	0.8175	138.23	18,747
7	3.07	0.0156	0.8175	138.23	17,497

Year	Emission reductions
11-May-2022 to 31-December-2022	90,117
01-January-2023 to 31-December-2023	134,254
01-January-2024 to 31-December-2024	125,875
01-January-2025 to 31-December-2025	116,991
01-January-2026 to 31-December-2026	108,677
01-January-2027 to 31-December-2027	100,570
01-January-2028 to 31-December-2028	92,935

Example of calculation for **Madhya Pradesh**:

If $y=1$ (11-May-2022 to 31-December-2022),

Number of Days during Year Y = 235

$$ER_{y,i,j} = 3.18 \times 0.0156 \times 0.892 \times 138.23 \times 126,158 \times 0.95 \times (235/365)$$

$$= 472,650 \text{ tCO}_2$$

Year	$B_{y,savings,i,j}$	$NCV_{wood\ fuel}$	$f_{NRB,y}$	$EF_{wf,CO2} + EF_{wf,non\ CO2}$	$N_{y,i,j}$
1	3.18	0.0156	0.892	138.23	126,158
2	3.14	0.0156	0.892	138.23	119,850
3	3.09	0.0156	0.892	138.23	113,542
4	3.05	0.0156	0.892	138.23	107,234
5	3.01	0.0156	0.892	138.23	100,926
6	2.96	0.0156	0.892	138.23	94,619
7	2.92	0.0156	0.892	138.23	88,311

Year	Emission reductions
11-May-2022 to 31-December-2022	472,650
01-January-2023 to 31-December-2023	704,140
01-January-2024 to 31-December-2024	660,194
01-January-2025 to 31-December-2025	613,601
01-January-2026 to 31-December-2026	569,994

01-January-2027 to 31-December-2027	527,475
01-January-2028 to 31-December-2028	487,431

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

The notable contrast between the f_{NRB} values reported in the Bailis study, "The carbon footprint of traditional woodfuels. Nature Climate Change, 5(3), pp. 266–272." (25.8%), and those derived from this project (81.75% (for Assam) & 89.2% (for MP)) warrants careful consideration. To assess the validity of the value computed using CDM Tool 30 version 4 and its alignment with the conservative principle in VCS Standard section 2.2, the following factors should be taken into account:

Data Source and Accuracy:

VCS 2944: 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)⁸. While the demographic details (family size, household data using fuel wood for cooking) are based on the National Family Health Survey (NFHS) 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-5⁹ 2021. The f_{NRB} 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)¹⁰ 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 Model¹¹ (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

⁸ 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>

⁹ 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.

¹⁰ As mentioned in the section 'Methods' of the paper: The carbon footprint of Traditional Woodfuels.

¹¹ 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>

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 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”¹². 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”¹³. 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’s 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 30¹⁴ 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 2944: 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 (81.75% (for Assam) & 89.2% (for MP)) 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 f_{NRB} value as calculated by the VCS 2944 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:

¹² 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>

¹³ 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>

¹⁴ 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	f_{NRB} values	Date of Registration
2664	85.2%	23/11/2022
2533	90.10%	02/07/2022
2473	93.10%	09/06/2022
2939	85.2%	01/02/2023

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.

Hence VVB is of the opinion 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.

The parameters and calculations of emission reductions with reference to above parameters is given below as

Assumption: Value for the wood used by the ICS have been assumed as For Assam - 3.78 kg/device/day or equal to 1.3797 tonnes/device/year, & for Madhya Pradesh – 3.6 kg/device/day or equal to 1.314 tonnes/device/year. Based on the survey results for the similar project by the same PP. Actual value will be calculated during the verification of the project activity after the first year of the implementation of the projects.

Parameters	Value	Unit	Source
Wood Used by ICS	3.78 (Assam) 3.6 (M.P.)	kg/day	Sample Survey (this will be determined in monitoring survey)
$B_{Y=I \text{ new, I, J, survey}}$	1.3797 (Assam) 1.314 (M.P.)	tonne/ICS/Y ear	Calculated
Total Days in a year	365	days	
η_{old}	10%	(For 3 Stone)	Default Value as per Methodology VMR0006 V1.1 - Page no. 19
η_p	36.42%	%	Manufacturer's Specification
$B_{Ysavings \text{ I, J}}$	2.70	tonne/ICS	Calculated
f_{NRB}	91.19	%	f_{NRB} calculation sheet as per the Tool 30 (Madhya Pradesh)
$NCV_{wood \text{ fuel}}$	0.0156	TJ/tonne	Default Value as per Methodology VMR0006 V1.1 - Page no. 23
EF_{wf, CO_2}	112	tCO ₂ /TJ	Default Value as per Methodology VMR0006 V1.1 - Page no. 10
$EF_{wf, nonCO_2}$	26.23	tCO ₂ /TJ	Default Value as per Methodology VMR0006 V1.1 - Page no. 10
$N_{y, \text{ I, J}}$	100,000	Number	Number of cookstoves
Discount Factor	0.95	fraction	To account for leakage, Default Value as per Methodology VMR0006 V1.1 -Page no. 09

$(DF_n)^{y-1}$	0.99	fraction	Default Value as per Methodology VMR0006 V1.1 - Page no. 11
Adjustment Factor	0.94	fraction	Adjustment factor to account for uncertainty related to project cookstove efficiency test

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
Year 2022 (<u>11-May-2022 to 10-may-2023</u>)	562,767	0	0	562,767
Year 2023 (<u>11-May-2023–10-may-2024</u>)	838,394	0	0	838,394
Year 2024 (<u>11-May-2024 to 10-may-2025</u>)	786,069	0	0	786,069
Year 2025 (<u>11-May-2025 to 10-may-2026</u>)	730,592	0	0	730,592
Year 2026 (<u>11-May-2026 to 10-may-2027</u>)	678,671	0	0	678,671
Year 2027 (<u>11-May-2027 to 10-may-2028</u>)	628,045	0	0	628,045
Year 2028 (<u>11-May-2028 to 10-may-2029</u>)	580,366	0	0	580,366

Total	5,004,811	0	0	5,004,811
Total number of crediting years				7 Year
Average annual ERs				714,973

The assessment team certifies that the relevant tools and the applied methodology were used correctly to determine baseline emissions and net GHG emission reductions during the project crediting period.

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 1 st year than calculated using equation 5 of methodology.
$B_{y=1,new,l,j,survey}$	Fraction	Annual quantity of woody biomass (fuel wood) used by improved cook stoves in tonnes per device of type i and batch j , determined in the first year of the implementation of the project through a sample survey	Based on the monitoring survey,

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.

1. **Baseline Surveys:** - VVB team verified that, sample size calculation is an important step for evaluating the baseline surveys, as it helps ensure that the data collected is statistically reliable and representative of the population of interest. Baseline survey depends on many factors, they are as follows: -

- a. Population Variability:

- The greater the variability in the population, the larger the sample size needed. If the population is diverse, you may need a larger sample to capture this diversity accurately.
- Baseline Survey of Local Usage. Project proponent carried out a survey of usage prior to implementation of the project activity. The project participant follows the simple random sampling approach and the minimum sample size should be determined as per the following guidelines:
- Project target population < 300: Minimum sample size 30
- Project target population 300 – 1000: Minimum sample size 10% of group size
- Project target population > 1000: Minimum sample size 100
- 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/

- b. Confidence Level: The confidence level (90/10 confidence) indicates the likelihood that the true parameter falls within the calculated confidence interval.
- c. Margin of Error: The margin of error is the acceptable range around your estimate. Decide on an acceptable margin of error based on the precision needed for your study.
- d. Expected Proportion or Percentage: If you are estimating a proportion or percentage, you need an estimate of the expected proportion. This is often based on pilot studies, prior research, or informed assumptions.

2. **Assessment on the sample size calculation for monitoring surveys:** - VVB team verified that, when determining the sample size for a monitoring survey, the process often involves considerations of both the overall sample size and the stratification of the sample.

VVB team would like to conform that, project boundary is entire state of Madhya Pradesh and assam state of India, Random sample has been selected form both the state separately for monitoring survey, random sample has been selected from Assam and Madhya Pradesh, through software/formulas used to stratified sampling to determine stratum-specific sample size, out of which VVB team has selected the 8 random sample from each state. Consider the ethical implications of the sample size, ensuring that it is sufficient to draw meaningful conclusions without unnecessarily exposing individuals to research risks.

All data will be electronically archived and maintained for the duration of the crediting period and an additional two years.

In the current monitoring period (i.e., 11-May-2022 to 31-December-2022), a total of 151,154 improved cookstoves (ICS) were deployed as part of this collective project, with 24,996 ICS in Assam and 126,158 ICS in Madhya Pradesh.

VVB team verified that, PP use the weighing scale during baseline/monitoring surveys to measure the firewood consumption, the details regarding the weighing scale is provided below, The scale is pre-calibrated according to the equipment's guaranteed standard, Moreover to verify the same project proponent has submitted the evidence to the VVB team, and it is found consistent and error free.

Weighing scale calibration details:-

Sr. No. of the equipment	Type	Accuracy class/ Sensitivity	Date of calibration
EKI-01679	Digital	±5gm (0 - 5kg) ±10gm (10 - 50kg)	27/12/2022
EKI-01681			
EKI-01683			
EKI-01685			

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

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

Ex-ante parameters (parameters having default values):

SI No	Parameter	Description	Value	Unit	Source
1.	$f_{NRB,y}$	Fraction of woody biomass (fuel wood) saved by the project activity during year y that can be established as non-renewable biomass	For Assam – 81.75% (0.8175) (calculated as per meth tool)	%	Fraction of non-renewable biomass is calculated as per the f_{NRB} calculation TOOL30: Calculation of the fraction of non-renewable biomass ^{14/} in ER sheet tab “fNRB” ^{2/} . Further sources

			For Madhya Pradesh – 89.2% (0.892) (calculated as per meth tool)		used to calculate fNRB in ER sheet have been verified from weblinks provided in the sheet and the evidences submitted. PP has referred State of Forest report (Forest Survey of India Ministry of Environment, Forest & Climate Change, GoI, 2019). Assessment team found that the report is publicly available and the reference have been checked and found correct. Hence accepted.
2.	NCV _{wood fuel}	Net calorific value of the non-renewable woody biomass (fuel wood) that is substituted or reduced	0.0156	TJ/tonne	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction
3.	EF _{wf,CO2}	CO ₂ emission factor for the use of wood fuel in baseline scenario	112	tCO ₂ /TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
4.	EF _{wf,non CO2}	Non-CO ₂ emission factor for the use of wood fuel in baseline scenario	26.23	tCO ₂ /TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
5.	$\eta_{old,i,j}$	The efficiency of baseline cookstove	0.1	Fraction	Methodology default value
6.	η_p	The efficiency of the project stove at the start of project activity	0.3642	Fraction	Manufacturer's specification, third party verified
7.	DF _n	Discount factor to account for efficiency loss of project cookstove per year of operation (fraction).	0.99	Fraction	Methodology default value
8.	Leakage factor	Discount factor to account for leakage	0.95	Fraction	In-line with the applied methodology VMR0006, ver. 1.1 Section 8.3.
9.	Life Span	Operating lifetime of project device for projects opting Equation 5 for	7	Years	Manufacturer's specification. Which is verified by the technical specification certificates

		determining project stove efficiency			submitted by the PP and found correct.
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As a part of monitoring plan, the assessment team found, checked and confirmed that following sustainable development goals are considered which are appropriate and are measurable.

Sr. No.	SDG Target	SDG Indicator	Current Project contribution
1.	1.1	1.1.1 Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural)	The project has increased the 589 individuals (employed for manufacturing, distribution and monitoring of the project activity) total daily income to INR 12000 – 25000 per month, bringing them above the international poverty line.
2.	3.9	Project-specific indicator: Number of households experiencing reduction in particulate matter.	151,154 households experiencing reduction in particulate matter emitted during cooking thereby improving overall health outcomes and reducing burdens of disease.
3.	7.1	7.1.2 Proportion of population with primary reliance on clean fuels and technology	Increase access to clean cooking technology with ICS installations in 151,154 households under the project activity
4.	8.3	Project specific indicator: Total Number of jobs created.	Project activity created a total of 633 New job positions in different roles for manufacturing and distribution of ICS and post-implementation monitoring activity.
5.	13.0	Tonnes of greenhouse gas emissions avoided or removed	Contribute to greenhouse gas emission reduction of 164,300 tCO _{2e}

6.	15.2	15.3.1 Proportion of land that is degraded over total land area	Contribute to the reduction of deforestation of 92,922 tonnes of fuel wood from forests surrounding the communities and reducing pressure on forest reserves
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Parameter(s) monitored ex-post

Parameter	N _{y,ij} (Number of project devices of type i and batch j are operating in year y)	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	At least once every two years. For current monitoring period it is measured through survey which is checked and confirmed.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the Joint PD & MR and monitoring methodology. This parameter is monitored once every two through ICS survey.
	Monitoring equipment	Sample survey
	Value applied	151,154 The value is checked and confirmed based on sample survey submitted.
	How were the values in the monitoring report verified?	Measured directly or based on a 90-representative sample. PD has used sampling standard, version 09.0 to determine the sample size to achieve 90/10 confidence precision. From each state, PP has randomly selected the ICS applying random sampling function in excel and

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

Parameter	$\eta_{new,y,i,j}$ The efficiency of the improved cook stove type i and batch j determined as per equation 5 of methodology during year y	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	PP has decided to measure the efficiency once at the time of project cookstove installation which is appropriate.
	Is measuring and reporting frequency in accordance with the	Yes. The reporting frequency is in line with the monitoring plan as outlined in the Joint PD & MR and monitoring methodology. It

	monitoring plan and monitoring methodology? (Yes / No)	will be monitored at time of each new cookstove installation which is acceptable.		
	Monitoring equipment	PP has selected option V as per the applied methodology due to which it was possible to measure the efficiency ex-ante. However, the grouped project may add a different type of cook stove during its operational life time and hence PD has decided to measure this parameter ex-post which is acceptable.		
	Value applied	Year 1	34.23%	
		Year 2	33.89%	
		Year 3	33.55%	
		Year 4	33.22%	
		Year 5	32.89%	
		Year 6	32.56%	
Year 7		32.23%		
How were the values in the monitoring report verified?	Efficiency test carried out by third party who is authorized by government. PD has submitted efficiency test report by IIT Delhi, Government of India which was checked for the value and was found correct. Further, in line with equation 5, PD has decided to apply efficiency loss per year which is correct.			
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On-site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.			
b.				
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.
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Parameter	By=1,new,I,j,survey Annual quantity of woody biomass (fuel wood) used by improved cook stoves in tonnes per device of type i and batch j, determined in the first year of the implementation of the project through a sample survey	
Means of verification		
	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Determined in the first year of project implementation through monitoring survey which is submitted, checked and confirmed.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the Joint PD & MR and monitoring methodology. This parameter is determined in the first year of project implementation.
	Monitoring equipment	Weighing Scale. PD had carried out calibration of weighing scale prior to fuel measurement which is acceptable. Weighing scale/ ^{19/} details are provided in section 3.4.8 of the Joint VR-VR, moreover to verify the same calibration certificate is submitted by the PP, and it is found consistent.
	Value applied	1. For Assam – 3.40 kg/device/day or equal to

		1.2417 tonnes/device/year.¹⁵ 2. For Madhya Pradesh – 3.24 kg/device/day or equal to 1.1826 tonnes/device/year¹⁶.
	How were the values in the monitoring report verified?	PD has decided to conduct monitoring survey and the sample size was selected in line with the guidelines provided in methodology Section 8.4 option (b). Determined in the first year of the introduction of the devices (e.g., during the first year of the crediting period, y=1) through measurement campaigns at representative households and/or sample surveys. The conducted surveys were submitted and checked by the assessment team and found correct. Necessary condition for or the use of sample surveys based solely on questionnaires or interviews (without measurement campaigns). a. VVB team found that, Baseline cookstoves have been completely decommissioned, and only improved cookstoves

¹⁵As per survey result the actual consumption is 3.78 kg/device/day for Assam location However PP has applied 10% Voluntary reduction in fuelwood consumption for each location there for the current value is 3.40 kg/device/day or equal to 1.2417 tonnes/device/year .

¹⁶ As per survey result the actual consumption is 3.60 kg/device/day for M.P. location However PP has applied 10% Voluntary reduction in fuelwood consumption for each location there for the current value is 3.24 kg/device/day or equal to 1.1826 tonnes/device/year

		are exclusively used in the project households. b. VVB team during the site visit observed that, there was no multiple devices found, to be in use in the project households, only a single project device that consumes firewood is in use. Thus, there is no need to differentiate the quantity of firewood ^{/19/} used by device.
	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.
	c.	
Findings	No findings were raised	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

The Joint PD & MR formulae for calculating emission reductions, as certified by the used methodology VMR0006 Version 1.1 have been examined and deemed to be accurate. The Joint PD & MR values and the ER verification sheet values have been compared. Additionally, the formulas used in the ER spreadsheet were examined and confirmed to be in line. The assessment team certifies that all calculations are performed in accordance with the formulae specified in the applied methodology VMR0006 Version 1.1 and the monitoring plan requirements, that all parameters are used correctly, that all results are transparent and verifiable, and that all assumptions are described and supported by verifiable evidence.

For the monitoring period from 11-May-2022 to 31-December-2022 (inclusive of both the dates) PD has achieved to reduce 164,300 tCO₂e GHG emissions. The ER sheet was used to verify the emission calculation, which was confirmed to be accurate and accepted.

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
11-May-2022 to 31-December-2022	164,300	-	-	164,300
Total	164,300	-	-	164,300

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

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

Ex-ante emissions reductions/removals	Achieved emissions reductions/removals	Percent difference	Justification for the difference
459,965	164,300	- 64.28%	All the project ICS were not installed on the first date of monitoring

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

VVB team verified that, all the necessary documentations are collected, referenced and aggregated, which is easily accessible in hard-copy, Measurements are performed by calibrated equipment, and the key data can also be cross-checked via other sources, such as records, receipts. No assumptions are used that have any material influence on reported emission reductions. VVB team concludes that during this monitoring period, the evidences for determination of emission reductions are sufficient and reasonable, and the calculation of emission reductions is reliable.

5 VALIDATION AND VERIFICATION OPINION

EKI Energy Services Limited hired LGAI Technological Center, S.A. (also known as Applus+ Certification), to carry out a joint validation and verification of the VCS project activity "Clean Cookstoves for Rural India."

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 joint validation and verification process can each be summed up as follows:

The project activity complies with the requirements of the applied baseline & monitoring methodology, VMR0006, Version 1.1^{/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 5,004,811 tCO₂e over the length of its crediting period (seven years).

As stated in the Joint PD & MR ^{/1/}, Applus+ Certification concludes the validation with a positive opinion and affirms that the VCS Project Activity "Clean Cookstoves for Rural India" complies with all applicable VCS requirements, including those outlined in the CDM Project Standard, version 3.0, 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 11-May-2022 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.

Estimated Emission reduction over the crediting period are:

year	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 2022 (<u>11-May-2022–10-may-2023</u>)	874,085
Year 2023 (<u>11-May-2023–10-may-2024</u>)	818,650
Year 2024 (<u>11-May-2024–10-may-2025</u>)	764,562
Year 2025 (<u>11-May-2025–10-may-2026</u>)	711,800
Year 2026 (<u>11-May-2026–10-may-2027</u>)	660,344
Year 2027 (<u>11-May-2027–10-may-2028</u>)	610,177
Year 2028 (<u>11-May-2028–10-may-2029</u>)	561,278
Total estimated ERs	5,004,811
Total number of crediting years	7
Average annual ERs	714,973

Period of verification: from 11-May-2022 to 31-December-2022 (including both days). Verified reduction to and removals from GHG emissions over the aforementioned verification period:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
11-May-2022 - 31-December-2022	164,300	-	-	164,300
Total	164,300	-	-	164,300

Year	Ex-ante emissions reductions/removals	Achieved emissions reductions/removals	Percent difference	Justification for the difference
11-May-2022 - 31-December-2022	459,965	164,300	-64.28%	All the project ICS were not installed on the first date of monitoring

APPENDIX 1: DOCUMENT REFERENCES

No.	Author	Title	References to the document	Provider
1.	PP	Joint PD & MR (Initial) Joint PD & MR Joint PD&MR Final Joint PD&MR	Version 01 dated 13-April-2022 Version 02 dated 14-March-2023 Version 03 dated 13-October-2023 Version 04 dated 06-December-2023	PP
2.	PP	Emission reduction spreadsheet (Final) Estimated Emission reduction spreadsheet (Final)	Version 01 dated 13-April-2022 Version 02 dated 14-March-2023	PP
3.	NA	ICS Distribution data and carbon waiver records of ICS	-	PP
4.	PP	Declaration(s) from Project proponent on double accounting	23-February-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, version 4.3; b) Verified Carbon Standard, version 4.4; c) VCS Program Definitions, version 4.3 d) VCS Registration and Issuance Process, version 4.3 e) VCS Joint Project Description & Monitoring Report Template, version 4.2 f) VCS Joint Validation & Verification Report Template, version 4.1	-	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	ICS Survey Report	-	PP

No.	Author	Title	References to the document	Provider
14.	UNFCCC	Methodological Tool: Calculation of the fraction of non-renewable biomass, version 4.0	https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v4.0.pdf	UNFCCC CDM page
15.	PP	Photos of grievance register		PP
16.	PP	Sample copy of carbon waiver records		PP
17.	-	Technical Specifications of the ICS		PP
18.	UNFCCC	Sampling and surveys for CDM project activities and programmes of activities, version 9.	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20210531160756474-Meth_Stan05.pdf/Meth_Stan05.pdf?t=a0h8cm_djY2hufDB3trwzZ7tid7m_L2VQBOSR	UNFCCC CDM page
19.	PP	Weighing meter calibration	Calibration Certificate	PP

APPENDIX 2: ABBREVIATIONS

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

APPENDIX 3: FINDINGS OVERVIEW

Table 1. Remaining FAR from validation and/or previous verification

FAR ID	01	Section no.	NA	Date : DD/MM/YYYY
Description of FAR				
NA				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
VVB assessment				Date: DD/MM/YYYY
NA				

Table 2. CL from this validation / verification

CL ID	01	Section no.	4.1	Date: 29-April-2023
Description of CL				
PP shall clarify the procedure/methodology to be adopted for repair and replacement of the cookstove. Kindly clarify.				
Project participant response				Date: 10-May-2023
a) EKIESL/its representative will establish a service centre at the project locations where end users can repair the cookstoves and can use them further. The repair and maintenance will be done following a well laid procedure in line with the manufacturer's recommendation.				
Documentation provided by project participant				
Maintenance & Repair procedure b)				
VVB assessment				Date: 12-May-2023
VVB team verified that, PP has established a service centre at the project location where end users can repair the cookstoves and can use them further, moreover for any kind of query beneficiary can contact the ground level team, which the given contact details and also register their complaint if any arise related to repairing, replacing and Maintenance. CL is closed in this section.				

CL ID	02	Section no.	4.1	Date: 29-April-2023
Description of CL				
PP requested to submit the following documents 1. Submit documents to confirm Average life time of improved cook stove (ICS) and technical specification of ICS. 2. Project Ownership document. 3. Agreement between PP & other entities to verify role claimed. 4. Survey results for the value of values considered ex-ante and ex-post as the meth requirement. 5. PP needs to submit the agreement between PP and other entities involved in project activity. To verify the information provided in the given PD & MR.				
Project participant response				Date: 10-May-2023
c) To verify the information provided in the given PD & MR the following documents are being submitted 1. Technical details provided by the Manufacturer GHG Reduction Technologies Private Limited which mentions the Average life time of improved cook stove (ICS) and technical specification of ICS 2. Project Ownership document is being provided. 3. Agreement between PP & other entities to verify role claimed are being provided. 4. Survey results for the value of values considered ex-ante and ex-post as the meth requirement are now being provide. 5. The agreement between PP and other entities involved in project activity are the same as mentioned against the point no. 3 given above.				
Documentation provided by project participant				
1. Technical_Details_Agneeekaa_Ecomini_Model_No._4SE.pdf 2. Double counting 2944.pdf 3. Agreement between PP & other entities a. Undertakingmanufacturer_2944.pdf b. Credit Ownership Agreement - Bibsikha LLPShell 25.02.2023.pdf c. Credit Ownership Agreement - Enviro Queen Pvt Ltd(Shell) (1).pdf d. Credit Ownership Agreement-Aaransh AgroShelljabapur.pdf e. Credit Ownership AgreementShell - JPS Enterprises.pdf 4. Actual ER Sheet 2944_MP 1.xlsx 5. Same as mentioned against the point no. 3. d)				
VVB assessment				Date: 12-May-2023
VVB team verified that, Project Proponent has submitted the following document. 1. Technical details provided by the Manufacturer & Average life time of improved cook stove (ICS). 2. No double account declaration dated 03-May-2023. Which is accepted by VVB team. 3. PP has submitted the agreement signed between PP and other entities involved in project activity. 4. Survey results for the value of values considered ex-ante and ex-post, and ER sheet to the VVB team. 5. PP has submitted the agreement between PP and other entities involved in project activity, same verified with the agreement. Thus, CLis closed in this section.				

Table 3. CAR from this validation / verification

CAR ID	01	Section no.	3.1	Date: 29-April-2023
Description of CAR				
1. Section 1.1 & other sections of the Joint VCS PD & MR found not inline with the guidelines to complete template. PP requested to review same in VVB commented Joint PD & MR and corrective actions sought for the same.				
Project participant response				Date: 10-May-2023
e) Section 1.1 & other sections of the Joint VCS PD & MR are now made inline with the guidelines to complete template. We have reviewed the VVB commented Joint PD & MR and corrective actions sought for the same have now been addressed.				
Documentation provided by project participant				
Joint PD MR_Shell VCS 2944_V2.0.docx				
VVB assessment				Date: 12-May-2023
VVB team found that, Section 1.1 of the joint PD & MR has been corrected by the project proponent, and thus now it is found consistent with VCS Joint PD & MR Template guideline. Thus, accepted by VVB team. CAR is closed.				

CAR ID	02	Section no.	3.2	Date: 29-April-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: 10-May-2023
a) Declaration in effect of avoiding double counting with regard to Participation under other GHG Programs/Other forms credits as well as in REC mechanism of India for the current monitoring period is being provided.				
Documentation provided by project participant				
b) Double counting 2944.pdf				
VVB assessment				Date: 12-May-2023
VVB team found that, Project proponent has submitted the no double accounting declaration dated 03-May-2023 to the VVB team, VVB team verified that, PP is not claiming the credit from the other registry for the same project. CAR is closed in this section.				

CAR ID	03	Section no.	3.2.2	Date: 29-April-2023
Description of CAR				

VVB team found that, PP has not submitted the Local Stakeholder Consultation report. Moreover, evidence to verify the same is found missing too.	
Project participant response	Date: 10-May-2023
a) Local Stakeholder Consultation documents (Public notice, Q&A) & evidence (attendance, pictures) are now being submitted	
Documentation provided by project participant	
b) VCS 2944 LSC.ZIP	
VVB assessment	Date: 12-May-2023
VVB team observed that, Local stakeholder meeting consultation, moreover to verify the same PP has submitted the PP has submitted the meeting attendance sheet, pictures, which is found consistent. Hence CAR is closed in this section.	

CAR ID	04	Section no.	4.1	Date: 29-April-2023
Description of CAR				
1. VVB team observed that, PP is not clear about the type of fuel. Since the wood and woody biomass are two different things. 2. Version no of the PD&MR is inconsistent. 3. F_{NRB} Value shall be in 2 decimal digit for more conservativeness. 4. Details about the indoor pollution is not clear in section 2.3 of Joint PD&MR. 5. The geographical location of the project activity is not clear in joint PD&MR. Correction sought for the same. 6. Title of the Appendix is not clear. 7. VVB team found that, PP has not submitted the F_{NRB} sheet for Assam and M.P. to the VVB team. 8. Survey report is found missing to crosscheck the annual woody biomass consumption determine by PP. Thus, Correction sought. 9. VVB team observed that, details about the no. of ICS distributed during the current monitoring period is not clear as per there location in Joint PD&MR.				
Project participant response				Date: 10-May-2023

1. It was a typo graphical error and VCS Joint PD & MR has now been revised by replacing wood to fuelwood. 2. Version no of the VCS Joint PD & MR is now made consistent 3. Neither the applicable methodology nor the applicable tool mandates to consider the F_{NRB} Value in 2 decimal digits, we also have registered projects as well as projects with issued VER considering F_{NRB} Value in 4 decimal digits. 4. The point no. 2 under section 2.3 of the Joint PD & MR is related to the health benefits which is resulting from reduced indoor air pollution in the end-user household after the installation of the less emitting (PM 2.5) ICSs, and thus relevant for this section. In line with this VCS Joint PD & MR has now been revised for better understanding. 5. The geographical location of the project activity has now been clearly explained in the revised joint PD&MR. 6. Title of the Appendix is now revised to – Appendix 1: LOCAL STAKEHOLDER MEETING EVIDENCE and Appendix 2: OTHER SUPPORTING EVIDENCE 7. The F_{NRB} sheet for Assam and M.P. is now being submitted. 8. The Monitoring Survey report is now being provided for crosschecking the annual woody biomass consumption determine by PP. 9. The details about the no. of ICS distributed during the current monitoring period is now clearly mentioned as per there location in Joint PD&MR.	
Documentation provided by project participant	
1. Joint PD MR_Shell VCS 2944_V2.0.docx 2. fNRB.zip	
VVB assessment	Date: 12-May-2023
1. VVB team verified that, PP has updated the Joint PD & MR and type of fuel has been corrected as the fuelwood in revised document. 2. Version no is now found consistent. 3. F_{NRB} value is found in 4 digits. 4. VVB team found that, Joint PD & MR is related to the health benefits which is resulting from reduced indoor air pollution in the end-user household after the installation of ICSs is now clearer in revised Joint PD & MR. 5. PP has now updated the geographical location of project activity in revised Joint PD&MR. which is found consistent. 6. PP has revised the appendix section in revised Joint PD&MR. 7. PP has submitted the F_{NRB} calculation sheet for the Assam and M.P. F_{NRB} calculation. 8. VVB team found that, to verify the annual wood mass consumption. PP has submitted the monitoring survey report to the VVB team. 9. VVB team found that, PP has updated the details of no. of ICS distributed during the current monitoring period in updated Joint PD&MR, moreover to verify the same, PP has submitted the supporting documents to the VVB team.	
CAR is closed in this section.	

APPENDIX 4: COMPETENCY STATEMENTS

No.	Role	 Last name	First name	Affiliation	Involvement in
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					(e.g. name of central or other office of DOE or outsourced entity)	Desk review	On-site inspection	Interviews	Verification findings
1.	Technical Expert	OR	Kumar	Pankaj	TQC-Outsourced entity	Yes	Yes	Yes	Yes
2.	Lead Auditor	OR	Takarkhede	Atul	TQC-Outsourced entity	Yes	No	Yes	Yes
3.	Technical Expert in Training	EI	Agarwal	Nikunj	EI	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. **Dr. Atul Takarkhede** is Ph.D. (Environmental Sciences) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical papers related to environmental sciences. He counts with more than 11 years of experience in field of Environmental Auditing, consulting and accreditation. He is an expert in ISO 9001-14001, CO2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management reporting for organizations' environmental performance. His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; conducting environmental/water audits; NABET requirements appliance, functional area expert in Water Pollution & Solid & Hazardous Waste management among others. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. Currently he is associated with True Quality Certifications Private Limited and empanelled with Applus+ Certification to carry out GHG audits in the aforementioned schemes.
3. **Mr. Nikunj Agarwal** has very extensive experience (17 years) in the field of carbon market. He had been working with the different Europeans DoE's (Verification Bodies) accredited by UNFCCC for the Carbon Credits Certification. He had also worked as consultant for Energy Efficiency projects. Apparently, he had worked as Monitoring and Verification Experts in Energy Efficiency Projects. He had worked more than 300 Carbon projects under CDM/VCS/GS) in South Asia and others Region such as: India, Philippines, Malaysia, Fiji, Indonesia, China, Israel, Pakistan, Chile, Peru, Columbia, South Africa, Singapore, Nepal & Thailand. He is the Certified Energy Manager by the Bureau of Energy Efficiency, Government of India. He is in the Pool of Methodology Expert by the UNFCCC. He was part of the Gold Standard Advisory Panel for the CLIMATE SMART AGRICULTURE (CSA). Mr. Nikunj Agarwal is based in Kronberg, Germany.
4. **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 working 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 year before he joined Applus+. Mr. Simon Shen has extensive experience also former Applus+ Shanghai CDM Technical Manager. Mr. Simon Shen is based in Shanghai, China. Mr. Simon Shen participates in the project technical review team