DISTRIBUTION OF IMPROVED COOK STOVES IN SUB-SAHARAN AFRICA– MALAWI-CPA-006

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Summary:

C-Quest Capital Malaysia Global Stoves Limited has contracted LGAI Technological Center, S.A. (Applus+ Certification) to perform (hereafter referred as CQC) to verify the greenhouse gas emission reductions reported for the grouped project activity "Distribution of Improved Cook Stoves in Sub-Saharan Africa–Malawi-CPA-006 ", covering monitoring period from 01-January-2021 to 31-October-2022 (both dates included) under fixed crediting period from 04-June-2019 to 03-June-2029(both dates included) with regard to the relevant requirements for VCS activities.

The purpose of the verification is to review the MR for the monitoring results and verify that monitoring methodology was implemented according to monitoring plan and monitoring data, further based on review of ER sheet confirm that the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner. In particular, MR and ER sheet and the project's compliance with relevant VCS and host party criteria are verified in order to confirm that the project has been implemented in accordance with design and conservative assumptions, as documented.

The scope of the verification included as verification of project implementation and operation with respect to the PD, implemented monitoring plan with the PD and applied baseline and monitoring methodology, the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan, Evaluation of the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement, confirmation of reported GHG emission data is sufficiently supported by evidence.
A risk-based approach has been followed to perform this verification. In the course of validation and verification, 02 Corrective Action request (CARs) and 01 Clarification request (CRs) were raised and successfully closed. There is no FAR raised.
Applus+ Certification confirms that the project is meeting the criteria specified by MR template version 4.2, VCS Standard version 4.4 and applied methodology VMR0006, Version 1.1, hence be successfully validated, verified and further certified for emission reductions under VCS. Further confirms a combined positive validation and verification opinion confirming the project complies with the applicable VCS requirements, thus recommending the project for registration and issuance.

Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the emission reductions from the project activity "Distribution of Improved Cook Stoves in Sub-Saharan Africa–Malawi-CPA-006" during the period 01-January-2021 to 31-October-2022 (both dates included) amount to 1,685,599 tonnes of CO_2e.

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1 INTRODUCTION

1.1 Objective

Applus+ Certification has been contracted by C-Quest Capital Malaysia Global Stoves Limited, (project proponent), to undertake the verification of the energy efficiency improved project titled "Distribution of Improved Cook Stoves in Sub-Saharan Africa–Malawi-CPA-006". The verifiers have reviewed the GHG data collected to date for the monitoring period from 01-January-2021 to 31-October-2022 (both days included) covered in this verification. The objective of the verification is to have an independent third-party assessment of the 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"/06/
- The project's monitoring plan is assessed against "VMR0006 Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1"/06/
- The project's additionality justification is assessed against "VMR0006 Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1" /06/
- 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
- VCS standard v4.4
- VCS guideline v4.3

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified carbon units (VCUs). This report contains the findings and resolutions from the validation and verification of the project activity.

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1.2 Scope and Criteria

The scope of the verification was the independent and objective review and ex-post determination of the monitored reductions in GHG emissions from "Distribution of Improved Cook Stoves in Sub-Saharan Africa–Malawi-CPA-006". The verification of this project was based on the validated VCS project description 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, dated 17/01/2023)/07/
- VCS Standard (v4.4, dated 17/01/2023)/07/
- VCS Program Definitions (v4.3, dated 21/12/2022)/07/
- VCS Registration & Issuance Process (v4.3, dated 17/01/2023)/07/
- VCS approved methodology VMR0006 (version 1.1, dated 22/07/2021)/06/

Project view page: https://registry.verra.org/app/projectDetail/VCS/2712

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

1.3 Level of Assurance

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

1.4 Summary Description of the Project

The group project has implemented distribution of 250,000 improved cook stoves (ICS) in Malawi until current monitoring period replacing conventional open fire cookstoves (three stone fire). The baseline stoves are conventional system with no improved combustion air supply or flue gas ventilation system as verified from on-site review and interview. The project stoves are having better efficiency compared to baseline cooking system i.e., open fire and therefore results in saving firewood compared to baseline scenario. Each project ICS included in the groupedproject activity with an end user agreement executed between end user and PP/20/. The CQC has agreement for communication to VCS and CQC is acting as entity responsible for communication with VERRA. The project proponent for the groupedproject activity which is C-Quest Capital Malaysia Global Stoves Limited, owns the rights to VCUs.

The ICS distributed in the group project activity is a TLC-CQC Rocket stove, designed by Total Land Care (TLC), an international NGO, the design is supported and certified by Aprovecho research centre /8/. Under this project one improved cookstoves distributed in each household as per the requirement of the stove users in Malawi with per-stove efficiency of 34.5% which is 32.11% for vintage 2, now for 31.78% for vintage 3 and 31.47% for vintage 4 of current

monitoring period which is calculated as per the equation 5 of the approved methodology/6/. The project technology was witnessed by the audit team during on-site audit and found to be operating as per the specifications and description. Each ICS has a life span of 10 years as confirmed from stove manufacturer specification/8/.

TLC cookstoves manufactured under the groupedproject activity match the fixed design specification with the TLC Brochure/9/. This was achieved by using brick moulds of specified dimensions to make bricks used for stove construction locally.

This ensured, that each stove that is built at individual end user household measures exactly same as the dimensions specified by the manufacturer. Post construction, training was provided to end users on use, care, and upkeep of these stoves. PP conducted spot audits on monthly basis and surveillance of the stoves distributed under the group project activity to ensure their proper functioning throughout the project lifetime. This along with spot audits and post installation maintenance services, ensure that the project stoves continue to work at efficiencies as specified by the manufacturer/9/.

The project's fixed crediting period is from 04-June-2019 to 03-June-2029 (both dates included). For the current monitoring period from 01-January-2021 to 31-October-2022 (both dates included) 217,750 ICSs results in overall reduction of 1,685,599 tCO_2e emission reductions/2/.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification was conducted using Applus+ Certification's procedures in line with the requirements specified in the VCS standard Requirements and applying standard auditing techniques.

In case of the current verification, being in Malawi , the validation team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities' version 07.0: Considering Acceptable Quality Level (AQL): 0.5% Unacceptable Quality Level (UQL): 20% and producer risk of 5% and consumer risk of 20% a sample size of 11 was required as per Table 1 in the referred Standard. Acceptance number (c) thus determined for the sample size is 0. Team verified 11 samples on conservative side to validate and verify the project activity. The verification team selected random samples from the list of cookstoves installation database. Team has assessed (by on-site verification, & desk review of contract document between PO & user) a total of 11 samples (randomly selected) selected from different district. The presence of project stoves was checked during the physical site visit/9/. The stoves details (unique serial number, date of installation, type of ICS, name of user and address) were also checked and found to be consistent with that reported in the installation database. No inconsistency was observed for any of the 11 samples with respect to the observations in the field.

It is to be assessed and determined whether the proposed implementation and operation of the project activity, and the steps taken to report emission reductions comply with the criteria and relevant guidance provided by the VCS Board. The validation and verification process consist of the following three phases;

- A desk review of the MR
- Onsite assessment and follow up interviews with project stakeholders/9//11/
- The resolution of outstanding issues and issuance of final report and opinion

The following sections outline each step in more detail.

2.2 Document Review

The verification is performed primarily as a document review of the Gap Validation PD and MR/1/ and associated documents as stated in detail in appendix 1 of this document. The assessment is performed by a verification team using a protocol. The cross checks between information provided in the Gap Validation PD and MR/1/and information from sources other than those used, if available, the team's sectoral or local expertise and, if necessary, independent background investigations.

2.3 Interviews

On-site inspection has been performed by the assessment team/9/. The representatives of the PP and users were interviewed on 02-Dec-2022 to 03-Dec-2022. The details of the people interviewed are mentioned in the table:

S N	NAME	ROLE	ORGANIZATION
1	OnyxMsachiwa	Managing Director	CQC MALAWI
2	Maxwell Chafuka	Operations Manager	CQC MALAWI
3	Enock Mphande	CSAT Regional Manager	CQC MALAWI
4	Matias Njikho	CQC CSAT-Officer	CQC MALAWI
5	Kenneth Chikwense	CQC Field Coordinator	CQC MALAWI
6	Beck Scott	CQC Field Coordinator	CQC MALAWI
7	ChinserHopeson	Stove Champion	CQC MALAWI
8	YamikamLuyonda	Stove Champion Manager	CQC MALAWI
9	EletinaChiloz	Women Health Specialist	CQC MALAWI
10	Akhilesh Joshi	Sr. Manager CSAT	CQC MALAWI
11	Jalaj Saxena	CQC CSAT- Associate	CQC MALAWI
12	FanuelKalhmira	EGA	CQC MALAWI

ICS Users survey in site visit:

SR. NO.	STOVE SERIAL NUMBER	DISTRICT	VILLAGE	NAME OF RESPONDENT
1	CQCSSAMT174853	Lilongwe	MATENGO	JENIPA LAPA
2	CQCSSAMT239192	Lilongwe	MAKHAZA	ENELESI JOSEPH
3	CQCSSAMT186006	Lilongwe	CHASAWA	LUFINA PAMBUKENI
4	CQCSSAMT186474	Lilongwe	MUMBA WISCORT	AGNESS KAZULA
5	CQCSSAMT186773	Lilongwe	YERANI	TSOGOZO SEKERAN
6	CQCSSAMT215009	Salima	NACHIDZE	STELA JUJU
7	CQCSSAMT215768	Salima	MKAKA	KAFE HAVE
8	CQCSSAMT240079	Kasungu	KAPALA	MERE JOHN
9	CQCSSAMT241937	Kasungu	SILIYA	CHRISTINA CHISSLE
10	CQCSSAMT253080	Kasungu	ZOTERE	ESINTHA KELVIN
11	CQCSSAMT260846	Salima	NACHIDZE	ESTHER MILLION

The topics covered during interview ranges from general features and implementation of project-to-project technical details of the project like design & technical specification, project implementation status, project start date, location, baseline identification, monitoring survey, data recording and archiving procedures, baseline stove use/13/. The assessment was drawn based on the feedback received during interview coupled with the documentation and observations.

2.4 Site Visits

Site Location visited: Various Region of Malawi

A site visit was undertaken by the verification team on 02-Dec-2022 to 03-Dec-2022to carry out the following/9/;

- An assessment of the project design and technical specification, project location, implementation status and operation of the project activity as per the PD and MR;
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the Joint PD and MR;
- A cross check between information provided in the monitoring report and data from other sources such as ICS database, survey records/13/ or similar data sources;/14/
- A check of the ICS working and observations of monitoring practices against the requirements of the Joint PD, the applied methodology including applicable tool(s)/15/, and, where applicable, the applied standardized baseline;
- A check thermal efficiency test conducted by an independent third party /5/
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The assessment team has verified sufficient appropriate audit evidences, to reduce audit risk to an acceptably low level as requisite to achieve reasonable level of assurance for the current verification.

2.5 Resolution of Findings

The objective of this step is to identify, discuss and conclude on the issues related to the project description, technical specification, baseline and additionality, monitoring parameter and monitoring plan, implementation status and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk review and site assessment/9/. The verification team prepares and/or updates a validation and verification protocol (internal document) that records the conformities and non-conformities, which may be of following types;

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

Non-compliance with the project description, applicability of monitoring methodology and its tools/15/, 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 (CR) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CRs raised by the Applus+ Certification during validation and verification shall be resolved prior to submitting a request for registration and issuance.

During the current validation and verification, 02 Corrective Action request (CARs) and 01 Clarification request (CRs) were raised and successfully closed.

All the findings that are raised and communicated to project participant during the validation and verification are included under Appendix 3. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise.

2.5.1 Forward Action Requests

Based on the review of the validation report, no FAR was found to be raised which needs to be closed during this verification. No FARs were raised in current monitoring period.

2.6 Eligibility for Validation Activities

The grouped project activity is registered under VCS registration reference Number 2712 under sectoral scope 3, hence this section is not applicable.

3 VALIDATION FINDINGS

The project is already registered under VCS with reference number 2712. The fixed crediting period is from 04-June-2019 to 03-June-2029(both dates included). This verification assessment is for the1stmonitoring period from 01-January-2021 to 31-October-2022 (both dates included).

3.1 Participation under Other GHG Programs

The project is registered with CDM as CPA06and VCS as project ID 2712 apart from this project is not registered in any other GHG program. This was confirmed based on both independent assessment and declaration submitted by PP, the assessment team accepted the claim that there will not be double counting/4/ from this groupedproject activity. Thus, ensuring emission reduction generated from thegrouped project activity will not be double counted hence accepted by the assessment team/4/. Also, assessment team checked the following registries to confirm the same. The details of the registries checked are as follows:

1.http://www.goldstandard.org/

2.https://registry.verra.org/app/search/VCS/All%20Projects

3.https://projects.globalcarboncouncil.com/pages/approved_projects

Rejection by other GHG programs

The Project is not rejected by other GHG programs. The assessment team as part of double counting diligence explained above/4/, also checked for rejection by any other registries to confirm the same. The details of the registries checked are as follows:

1. http://cdm.unfccc.int/

2. http://www.goldstandard.org/

3. https://verra.org/verra-standards-and-programs/

4.https://projects.globalcarboncouncil.com/pages/approved_projects

3.2 Methodology Deviations

No methodology deviation has been applied during the current monitoring period. Also, there were no deviations identified during the Validation.

3.3 Project Description Deviations

No Project Description deviation has been applied during the current monitoring period. Also, there were no deviations identified during the Validation.

3.4 Grouped Project

The grouped project (the project) is the dissemination of energy efficient stoves for cooking purposes. A total of 250,000ICS was disseminated by the end of this monitoring period.

The volume of ICS distributed in this period is smaller than ex-ante anticipated in the registered document, but during monitoring survey/13/ conducted by PP, it was found that 100% stoves were operational. During onsite visit, verification team found all stoves were operational and found non-use of the baseline stoves. Hence,100% stoves were considered to be operational during the current monitoring period resulting in higher emission reductions than anticipated.
Under this grouped project PP has considered each ICS as a project activity instance (PAI) which is deemed acceptable as per the VCS Program Definitions version 4.3 and Section 3.6 of the VCS Standard version 4.4. The eligibility criteria of the Project Activity Instance was established at the group project validation in the VCS PD/14/.

Quality and completeness of evidence, data and documentation relating to the new project activity instances:

- The assessment team has reviewed the evidences collected by the PP for each of the PAI included in this verification and confirmed the following;
- Implementation and operational status of the PAI
- Monitoring and data collection

- Flow of information; generating, aggregating and reporting of the monitoring parameters
- Conformance of the new project activity instances with the eligibility criteria set out in the project description:

The verification team assessed the appropriateness of new project activity instances (added to the grouped project) against the requirements of the following key elements defined in section 3.2.11 of the Validation and Verification Manual (version 3.2)/7/:

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

As verified from on-site assessment and monitoring results of PP/9/, the audit team confirms the project implementation and operation complies with the PD/14/. The purpose of the project is to disseminate efficient, improved cooking stoves (ICS) in rural households of Malawi. The improvement in thermal efficiency is achieved by properly designing the dimensions of the combustion chamber and ensuring effective air flow during cooking. The baseline cooking practice in Malawi is the use of the three-stone fire cooking, popularly known as conventional method using firewood. The project thus reduces greenhouse gas (GHG) emissions by replacing traditional wood-fuel by wood-fuel ICS. The replacement of conventional method by ICS improves heat transfer to the cooking utensil thereby reducing the amount of fuel (non-renewable biomass) required for cooking.

A reduction in consumption of non-renewable biomass contributes towards reduction in GHG emissions into the atmosphere. Thus, ICS reduce GHG emissions through their improved thermal efficiency as compared to traditional/baseline stoves. This project is implemented by Practical Action (PA)/18//19//20/. Users transfer the ownership of carbon credit via end user agreement /20/. The operational and management structure is verified from document review and on-site interview/9/. The verification team confirms that during the current monitoring period i.e.,01-January-2021 to 31-October-2022 (both dates included) the VCS grouped project has disseminated 250,000ICS implemented in Malawi. The first stove was installed on 04-June-2019 and is also verified from project installation database and validation report and end user agreement/20/ and found to be accurate. The ICS promoted under the project have 10 years technical life /8/ and initial tested efficiency of ICS was 34.5 %. This was further confirmed by the verification team by the TLC Brochure/9/ submitted by the PP. During this monitoring period operational status of total 250,000ICS were taken into consideration and monitoring survey confirmed a 100% operational rate between 01-January-2021 to 31-October-2022(both dates included) /2/. The operational rate was further confirmed by the section 9.2 of applied methodology, “Number of project devices of type i and batch j operating during year y ($N_{y,i,j}$)can be measured directly or based on representative sample.”

PP had conducted monitoring survey during the period of 24-May-2022 to 10-August-2022(both dates included) in Malawi. During the survey it was found that 100% project devices are in operation, and this was further confirmed by the Verification team from the submitted sampling spreadsheet by PP.

So, to measure Ny,i,j, PP multiplied the achieved proportion with commissioned stoves that is 100% x 250,000= 250,000

During the interviews/11/ verification, QA/QC procedures were identified which demonstrate that:

Operational and management system of the grouped project is in place; data were centralized; monitoring data were crosschecked with the sales records stored and confirmation that all operational staff were trained before taking up positions. The verification team thus confirmed that the monitoring of the grouped project activity has been implemented in accordance with the monitoring plan in the registered VCS PD. The registered VCS PD/14/ clearly describes the monitoring and responsibility of monitoring is done by PP.

Verification team verified 11 sample(in total 11ICSs as each householdhave1 ICS)which is required number of samples. VVB confirms the project cook-stoves are operating in all samples interviewed/11/, each cook-stove has unique identification number (ID) which has been provided in the end user agreement/20/ and are consistent as per project database. Along with the serial number, the stove model, end user name, address, installation date, location etc. had also been noted which were found to be consistent on ground during the site visit/09/.

During the interviews/11/, it was found that if the stove owners are unsuccessful in stove repairing, stove owner can contact the ground staff of PP/implementor over phone (phone number is provided to the stove owner upon stove registration) in the TLC brochure and the field staff notify the implementer to provide the necessary assistance.

It is noted that no changes have been observed or identified during the onsite visit which may impact the additionality, no addition of component nor extension of technology, no addition nor removal of project sites, no change of values of the actual operational parameter relevant to determination of emission reductions which are within the control of the PP; no change has been observed or identified that may impact the scale of thegroupedproject activity or applicability of baseline and monitoring methodology VMR0006 “Methodology for Installation of High Efficiency Firewood Cookstoves” version 1.1/6/.

Verification team confirms that all the emission sources within the project boundary have been considered appropriately. Monitoring of all parameters during the monitoring period is followed as per registered monitoring plan. The table below describes the data/parameters relevant to the monitoring plan.

Data parameters fixed ex-ante and available at validation are given below:

S.No.	Data/parameter	Unit	Value applied	Assessment
1	Fraction of woody biomass saved by the project activity	Fraction	0.94	The fNRB value has been considered as fixed ex-ante default value from PoA-DD

	during year y that can be established as non-renewable biomass ($fNRB_y$)			CDM-PoA-DD-FORM (unfccc.int)) (page 42), where in fNRB has been determined in accordance with Tool 30: calculation of the fraction of non-renewable biomass and will be sourced from Independent third party reports or inhouse calculation. In CPA-DD the value of fNRB is 0.94 based on Independent Report (local study) by C4 EcoSolutions which is also fixed ex-ante (page 9) and same was verified and confirmed by validating DOE (Carbon Check (India) Private Ltd.) in FVR Version 01 dated 28/05/2019 (Page 08). The value has been validated, confirmed and accepted by CDM in year 2019. Then, the most recent data available at the time of CPA-inclusion and validation of PoA has been considered during year 2019.The value is fixed as per registered PD/14/ for the entire crediting period.
2	Net calorific value of the non-renewable woody biomass that is substituted or reduced ($NCV_{wood\ fuel}$)	TJ/tonne	0.0156	It is IPCC default value verified from 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction. Further, this is a default value as stated in the VMR0006 Methodology, version 1.1/6/.
3	CO_2 emission factor for the use of wood fuel in baseline scenario ($EF_{wf,CO2}$)	tCO_2/TJ	112	It is IPCC default value verified from 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion.
4	Non-CO_2 emission factor for the use of	tCO_2/TJ	26.23	It is IPCC default value verified from 2006 IPCC Guidelines

	wood fuel in baseline scenario ($EF_{wf,non\ CO2}$)			for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion.
5	Efficiency of project stove at the start of project activity.(n_p)	Fraction	0.345	This parameter was determined ex-ante at the time of CDM CPA inclusion.
6	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices.(B_{old})	tonnes/year	3.2558	This parameter was determined ex-ante at the time of CDM CPA inclusion.
7	Efficiency of baseline cookstove(η_{old})	Fraction	0.1	A default value of 0.1 shall be used if baseline device is a three-stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney. Further, this is a default value as stated in the VMR0006 Methodology, version 1.1/6/.

Data and parameters monitored

Parameter	Value	Description/Assessment
Number of project devices of type i and age a that are operating in year y Ny,i,i	250,000	From the total commissioned ICS, PP has conducted the sample survey/13/ in line with monitoring plan and sampling and survey guidelines covering 48 HH and in total 48 ICS samples(as each household has 1 ICS) which were found 100% operational by the PP. The sample size estimations by PP follow Appendix 2

		of Guideline for Sampling and surveys for CDM project activities and programmes of activities, version 04.0 According to the section 9.2 of applied methodology, "Number of project devices of type i and batch j operating during year y (Ny,i,j)can be measured directly or based on representative sample." PP had conducted first monitoring survey during the period of 24-May-2022 to 10-August-2022 in Malawi. During the survey it was found that 100% project devices are in operation, and this was further confirmed by the Verification team from the submitted sampling survey spreadsheet by PP. So, to measure Ny,i,j PP multiplied the achieved proportion with commissioned stoves that is 100% x 250,000= 250,000 During the site visit/9/, Applus+ Certification confirmed with the household/end user whether or not the PP has performed monitoring/measurement campaign, survey on stove operation (for the parameter N,y,i,j).The verification team also interviewed HH on baseline scenario of the household and enquired/observed the pre-project/baseline stoves and its operation during the project scenario. The verification team also assessed Competence of personnel involved in conducting monitoring. Hence, Applus verification team verified taking 11 samples and verified 11 ICS samples in total (as each household has1 ICS) and all samples were found operational. Hence reported results are accepted.
Efficiency of the improved cookstove	For Vintage 1: 32.43%	This parameter has been calculated using equation 5 of the applied

type i and batch j during year y ($\eta_{new,I,j}$)	For Vintage 2: 32.11 % For Vintage 3: 31.78% For Vintage 4: 31.47%	methodology/6/. The applied efficiency is correct as per the methodology requirement and registered VCS PD /14/ and hence accepted.
Adjustment to account for any continued use of pre-project devices during the year y.μ_y	1.9%	The version of the Standard for sampling and surveys for CDM project activities and programme of activities, or the guidelines provided in methodology Section 8.4 option (b), should serve as the minimum sample size for each type i and batch j. (a) According to the monitoring survey, if the baseline cookstoves are retired and no longer used, their value is 0 and the adjusted value is Bold. (b) If the improved and baseline cookstoves are used together, surveys were done to find out how often baseline cookstoves were used in a sample of households. By formulating questions and/or collecting evidence to determine the frequency of usage of both the improved cookstoves and baseline cookstoves, the surveys were intended to capture the cooking habits and stove usage of households in the region, including the quantification of use of baseline cookstoves. The end user will be asked for the average number of meals prepared in a week's time on all available stoves (project and baseline stove) and then asked for number of meals prepared on project stove and baseline stove separately. For arriving at the continued usage rate of pre-project devices (baseline stove), total number of meals prepared on baseline stove per week will be divided by the total number of meals prepared on all available stoves (project and baseline stove) in the

		Household.
Life Span	10 years	As per manufacturer specification/8/. Value was fixed once at the time of project stove installation. It is consistent with the registered VCS PD /14/.

Assessment team concludes the following:

- There are no material discrepancies between project implementation and the project description found in current monitoring period.
- The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters) is appropriate.
- There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/6/.
- The project has not received or sought any other form of environmental credit, or has become eligible to do so since validation.
- The GHG emission reductions or removals generated by the project have not been included in any emissions trading program or any other mechanism that includes GHG allowance trading.
- The grouped project activity complies with seven indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India as discussed under section 1.11 of MR /1/. Assessment team has verified the same during on site visit/9/ and found all the indictors to be effective and applicable for the grouped project activity. SDG Indicators taken by PP are-

  - ✓ **3.9 i.e. (Project specific indicator: Reduction in PM2.5 emissions)**During the present monitoring period, the effort helped the 250,000families who received single stoves reduce their PM 2.5 emissions by 500.65 tonnes. The same is demonstrated by survey findings, which indicate that 100% of respondents noticed less smoke close to TLC stoves' cooking areas. while 73% of respondents reported experiencing lower levels of eye irritation linked to cooking, 27% of respondents noted a reduction in chronic cough.
  - ✓ **4.3 i.e. (Project specific indicator: Number of individuals who received any informal training)** Helped increase the vocational and relevant skills of 10 local people during the current monitoring period/18/ by providing non-formal education and training on issues related to climate change, with specific skill building in operations and surveying activities related to stove distribution and its monitoring under VCS.
  - ✓ **5.4.1 i.e. (Time spent on unpaid domestic and care work, by sex, age, and location)** The project has contributed to time savings and reduced drudgery in 250,000households translating to benefiting an equal number of women.

    The survey results augment the above claim, as 100% of the respondents using TLCRS cookstoves reported having experienced fewer trips for wood collection as well as reduced cooking time, freeing up their time for other more productive activities or personal care.

- ✓ **7.1.2 i.e. (Proportion of population with primary reliance on clean technology)**Contributed to increasing access to clean cooking technology with 250,000TLCRS installations in same number of households of Malawi that have been using traditional three stone fire or other traditional open fire, etc.
- ✓ **8.3.2 i.e. (Proportion of informal employment in non-agriculture employment, by sex.)** Contributed to generation of employment in informal sector (total economy, agriculture, and non-agriculture) by contracting 10 locals for varying lengths of time over the project lifetime with a focus on hiring females/19/.
- ✓ **13.0 i.e. (Reduction in GHG emissions as compared to the baseline scenario (open fire))** Contributed to total GHG emission reduction of 1,685,599tCO_2e due to replacement of baseline stoves with TLCRS in the current monitoring period.
- ✓ **15.2.1 i.e. (Progress towards sustainable forest management by increasing above ground biomass in forests**) Contributed an estimated reduction in removal of non-renewable woody biomass to the tune of ~2.19 tons per stove (TLCRS) in the current monitoring period, from forests surrounding the communities thereby leading to an increase in above ground biomass in these forests.

In view of the information as verified above the assessment team is able to conclude that the grouped project has been implemented as described in the registered VCS PD/14/, All the above stated information was verified by VVB during onsite visit and site personnel interviews /9//11/.

4.2 Safeguards

4.2.1 No Net Harm

The project involves use of improved cooking stove in households replacing conventional cooking stoves. Therefore, the project results in avoidance of CO_2 emissions due to improvement in efficiency as verified from the manufacturer's specification/9/. Therefore, there is no negative environmental impact from the grouped project activity. In addition, due to the grouped project activity, jobs are created on local level as verified during on-site interview/11/ which has improved socio-economic impacts in the project area. The project is neither involved in any activity that would bring environmental deterioration nor will lead to any emission of toxic substances. The project stoves will rather reduce emissions due to the increased thermal efficiency compared to the baseline stoves. Any leakage is accounted in the VMR0006 V1.1 Methodology/6/. Leakage is considered as default 0.95 in accordance with methodology/6/.

Therefore, there is no net harm from the grouped project activity.

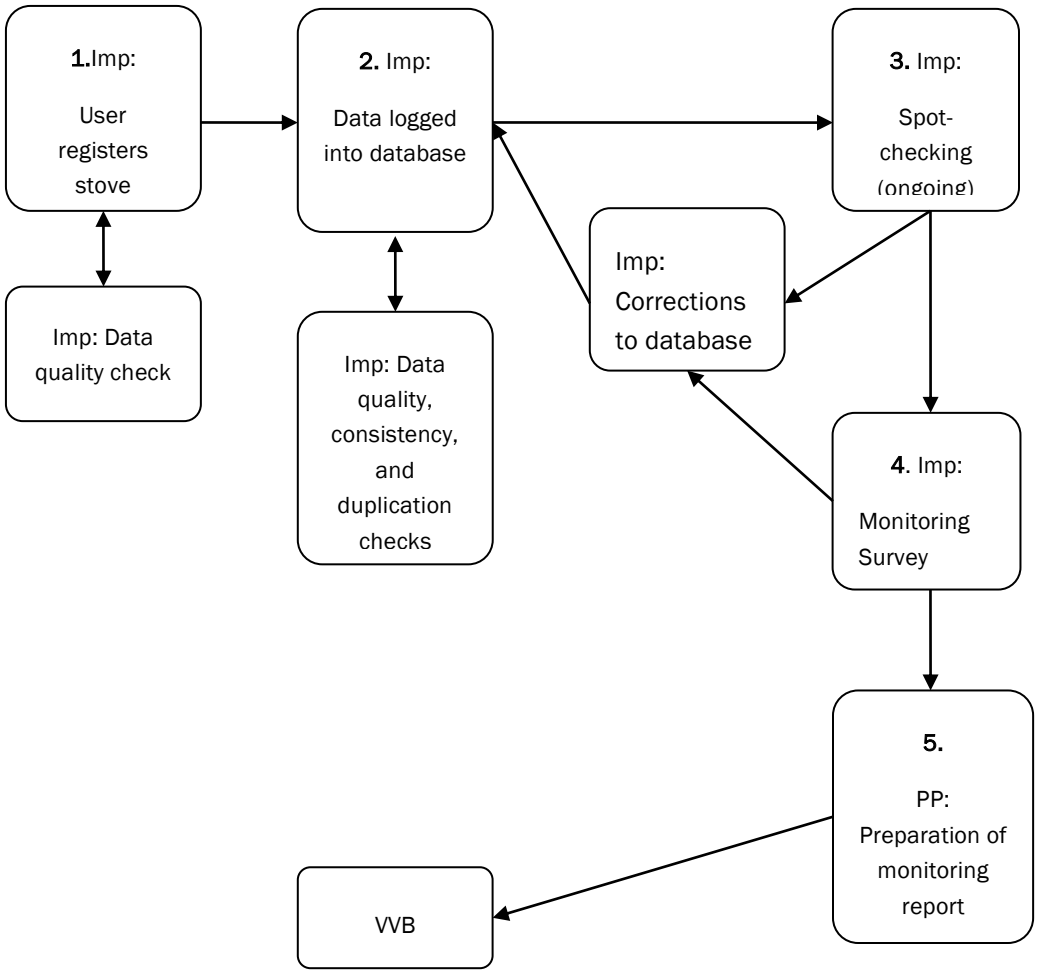
4.2.2 Local Stakeholder Consultation

Local stakeholder consultation is not applicable for the project proponent during verification. PP organized stakeholder consultation during validation of the grouped project activity which was validated by LGAI Technological Center, S.A.(Applus+ Certification) The verification team has interacted with local stakeholders during on-site assessment/9//11/ and details are summarized in section 2.3 of this report. There was no negative comment or feedback from local stakeholders as recorded by the verification team.

The local implementation partners as well as PP have the responsibility to take grievances regarding the grouped project activity and same will be conveyed to PP during operation of grouped project activity. Thus, ongoing communication of stakeholders is followed through grievance mechanism.

The Project Proponent has reported its feedback and grievance redressal procedure in Section 2.2 of the MR /1/, and the policy is outlined in the document "Grievance Redressal Mechanism"/17/. In the opinion of assessment team, based on interviews/11/ and observations, the grievance redressal procedure will address issues that may arise during project planning and implementation. The grievance redressal process has been designed where beneficiaries and stakeholders have PP contact information and the understanding that they should contact the organization with any problems, questions, or grievances.

As per VCS PD /14/ and further confirmed during interviews/11/, the end-users have a provision to approach PP through their village chief. The village chief then reports the concerns to the concerned person, i.e., field staff from PP who takes it further and resolves the issue. In the opinion of VVB, this would protect the traditional sentiments and value system of the villages and help them express their issues without any hesitation and deemed appropriate to the VVB. The typical diagram of this flow-chart illustrates the roles and responsibilities of the parties during the implementation of the monitoring system for the grouped project is mentioned in the section 4.3 of the MR /17/.



During the interviews/11/ and based on document review, it can be confirmed that grievance addressal procedure has been mentioned and is implemented according to section 2.2 of the MR /1/ and that it is effective in its aim. The grievances recorded during the current monitoring period are mentioned in the MR/1/.

The verification team confirms on the procedure and method for engagement, method for documenting the outcomes of local stakeholders' consultation and account of all inputs received. The verification team confirms that the project proponent has taken due account of all input/ feedback received during the monitoring process (positive or negative) have been compiled in the sampling survey sheet and in Section 2.2 of MR, this has been checked by the verification team during the onsite interviews/9/. Hence the verification team found the local stakeholders ongoing communication as appropriate.

4.3 AFOLU-Specific Safeguards

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

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The equations and choices provided in the methodology/6/ and all other methodological tools are correctly quoted in the MR/1/. The emission reductions of the project instances of the grouped project and project activity instance are calculated using the formulae mentioned in the applied methodologies; VMR0006 version 1.1/6/. The verification team has reviewed the emission reduction spread sheets (ER sheets) /2/ and checked all the formulae and found they are correct and are in accordance with the monitoring plan of the PD/14/ and the applied monitoring methodology/6/.
According to applied methodology VMR0006 (version 1.1) /6/the emissions are calculated as below:

Baseline Emission:

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

Where:

I	=	Indices for the situation where more than one type/model of improved cookstove is introduced to replace 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 t CO_2e
$ER_{y,i,j}$	=	Emission reductions by improved cookstove of type i and batch j during year y in t CO_2e

$$ER_{y,i,j} = B_{y,savings,i,j} \times NCV_{wood\ fuel} \times f_{NRB,y} \times \left(EF_{wf,CO2} + EF_{wf,non\ CO2}\right) \times N_{y,i,j} \times 0.95$$ Equation (2)

Where:

$B_{y,savings,i,j}$	=	Quantity of woody biomass that is saved in tonnes per improved cookstove of type i and batch j during year y
$f_{NRB,y}$	=	Fraction of woody biomass that can be established as non-renewable biomass (f_{NRB})

$NCV_{wood\ fuel}$	=	Net calorific value of the non-renewable woody biomass that is substituted or reduced (IPCC default for wood fuel, 0.0156 TJ/tonne)[1]
$EF_{wf,CO2}$	=	CO_2 emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO_2/TJ)[2]
$EF_{wf,non\ CO2}$	=	Non-CO_2 emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO_2/TJ)[3]
$N_{y,i,j}$	=	Number of improved cookstoves of type i and batch j operating during year y
0.95	=	Discount factor to account for leakage

To calculate $B_{y,savingsi,j}$, PP use equation 4 of the applied methodology[4]

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

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*/21/. Alternatively, efficiency may be determined using Equation 5

B_{old} = Annual quantity of woody biomass that would have been used in the absence of the project activity (in tonnes per device) to generate useful thermal energy equivalent to that provided by the improved cook stove. The value of Bold can be sourced from historical data or baseline surveys. Alternatively, a default value of 0.5t/capita/year may be used.

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

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). default value of 0.99 efficiency loss per year has considered for the project activity
0.94	Adjustment factor to account for uncertainty related to project cookstove efficiency test

[1]2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction

[2]2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

[3]2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

[4]Equation 4 of methodology VMR0006, version 1.1

Leakage Emissions: In accordance with methodology VMR0006 version 1.1/6/, leakage is considered as default 0.95.

Sampling approach: -

As assessed in this section, emission reductions for the project "Distribution of Improved Cook Stoves in Sub-Saharan Africa–Malawi-CPA-006 " are being claimed for this monitoring period and the total population of the stoves for the current monitoring period i.e.,01-January-2021 to 31-October-2022 (both dates included) is 250,000 ICS.

The sampling plan implemented by the PP is in accordance with the applied approved monitoring methodology /6/ and the VCS PD /14/. The PP has appropriately performed Simple random Sampling procedure, reliability levels were set at 90% confidence and 10% precision in line with the applied methodology VMR0006 version 1.1/6/. Survey has been carried out. As the VCS PD /14/ mentions the option for Simple random Sampling, so it was found appropriate to the verification team.

The sampling surveys/13/ have been carried out by the well-trained personnel Further, preparedness for conducting survey was adequate and survey plan was robust. Monitoring parameters $N_{y,I,j}$ was monitored through monitoring sample surveys. Monitoring of the parameters ensures compliance with the applied methodology VMR0006, version 1.1 /6/. Verification team has checked the survey records /13/and sample size calculation. Parameter $N_{y,j,j}$ monitors the number of stove in operation.
PP has provided the detailed sample size calculation under section 4.3 of the MR/1/.

Definition	Value	Justification
The population size N is	250,000	Number of stoves registered in database
The expected proportion p for ny,i is	0.85	A conservative assumption of 85% is applied for sample size calculation.
Sample size	250,000	Calculated
Sample size (Rounded up)	48	Calculated
Total Sample selected short listed	48	Including 30% non-response

The above table mentions the sample size calculated applying the formula;

$$n \geq \frac{1.645^2 N \times p \times (1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.645^2 p \times (1-p)}$$

However, as per the sampling Guideline: Sampling and surveys for CDM project activities and programmes of activities version 04 , Appendix 2, § 3.1

Retention rate of improved cookstove (proportion parameter) –

"The required sample size for this parameter is dependent on:

(a) The expected value of the proportion parameter;

(b) The level of precision and confidence in that precision (90/10 reliability criterion).

Based on similar studies done in the region, it is thought that this proportion is 0.85 (85%) during this monitoring period. Since the PAIs are assumed to be homogeneous with respect to the retention rate of improved cookstove.

In the registered VCS-PD /14/, section 5.3, the expected proportion value was assumed to be 0.8 expecting that the 80% of the ICS still in operation (was just an example to show how PP will calculate the sample size using the formula mentioned in VCS-PD). During this MP verification, 0.85 has been chosen as proportional parameter by PP, considering 85% of ICS will be operational. The confidence /precision level is 90/10 but PP has taken the assumption of 85% as a more conservative approach as PP is assuming only 85% ICS to be operational, although as found from the actual sampling survey conducted by the PP/13/,100% ICS were operational. Hence, the rejection level is under 10% and within the limits. Sample size, thus arrived, meets the relative precision error i.e., under 10%. However, actual proportion of ICS in operation is observed as 100% during the Validation, which shows that considering 0.85 as expected proportion is conservative on PP's side. According to the section 9.2 of applied methodology, "Number of project devices of type i and batch j operating during year y ($N_{y,i,j}$)can be measured directly or based on representative sample."

Initial Approach:

PP had conducted 1st monitoring survey during the period of 24-May-2022 to 10-August-2022 (both dates included) in Malawi. During the survey it was found that 100% project devices are in operational, and this was further confirmed by the Verification team from the submitted sampling survey sheet and photographs from the survey/13/. Assessment team conducted acceptance sampling based on the sampling survey sheet/13/ submitted by the PP.

So, to measure $N_{y,i,j}$ PP multiplied the achieved proportion with commissioned stoves that is

100% x 250,000= 250,000

Hence, the verification team found it is in line with the sampling guideline and PD /14/ found the sampling approach conservative and appropriate, based on the provisions of the sampling guideline and the same has been updated in section 4.4 of the FVR. The resultant applied sample size by the PP is summarized below:

Parameters	$N_{,y,i,j}$
Sample size-ICS	48
Actual Samples Surveyed (each household has 1 ICS)	48
ICS found operating	100%
Precision achieved	0.00%

VVB used acceptance sampling during verification for checking the operational status in the households. The sampling done by Verification team represents the population of the grouped project activity. Applying paragraph 39 (c) of the sampling standard, version 09, a sample size of 11 ICS was chosen (with no discrepant records). A sample size of 11 was determined, based on an AQL of 0.5% and UQL of 20%, producer risk 5% and consumer risk 15%. Acceptance number (c) thus determined for the sample is 0 in line with para 30 of "Sampling and Surveys for CDM project activities and programme of activities" version 09.0. It is also in line with Applus+ Certification Internal Procedures. Verification team inspected 11 samples and in total-11 ICS samples (since each household has 1 ICS, from monitoring survey). It was observed that out of the 11ICS samples, all the 11ICS were found to be operational and this matched with the PP's records and hence no discrepant records were observed with the MR /1/ and ER spreadsheet /2/ and thus c=0. Thus, PP's set of records has been accepted in line with para 33 of the sampling standard, version 09. Verification team has cross verified these sample documents.

Updated Approach:

Considering the total population to which the stoves have been disbursed i.e., (250,000 ICS) given the minimal probability of 100% stoves operation without breakages and abandonment over their lifetime would be highly unrealistic. To further understand the cooking practices and usage rate of the beneficiaries, the PP has implemented "Stove Champion Program" to ensure maximum stove usage rate & operation status of the cookstoves distributed. Under this Stove Champion Program, the PP randomly visited 45,882 households and following was concluded:

Status	Responded samples
operating	45,194
non-operating	688
Total	45,882
p(operating)	**98.50%**

Based on this approach and exercise, it was established by the PP that the stoves in operation were 98.50% *(File 1: 44.03.06 Privileged & Confidential - Stove champion data (26 August*

2024)/24/ which is further considered by PP in concluding the actual ER achieved for the current monitoring period. The value for the parameter N_{yij} as concluded through the stove champion data was independently assessed by the VVB. VVB has cross checked the supporting documents i.e., real time photographic evidences and screenshots of the digital application through which the survey was concluded. The value undertaken by the PP for the parameter N_{yij} was cross-checked for the precision (reliability calculations) and it was concluded that achieved precision is 0.09% /26/ which is deemed acceptable to the VVB. An assessment was also concluded to cross-check the value of parameter N_{yij} achieved. PP has submitted *(File 2: 44.03.05 Stoves in Operation - Verified Secondary Data (2024-08-05)/25/* which was cross-checked for the value of the operational cookstoves in this region and as per the secondary data of other projects including projects registered in VCS and other GHG programs, percentage of stoves in operation in Malawi region of Africa was 87.10%. PP has considered the lowest value of stoves in operation, i.e. 87.10%, on a conservative basis for claiming emission reductions. Revised ER calculation sheet is updated based on the revised values and cross-checked by the VVB that found it acceptable.

The VVB thus concludes that the updated approach considered by the PP for this monitoring period is deemed reliable and conservative, hence accepted.

The monitoring parameters to be monitored through the sampling plan followed by the updated approach is:

1. Number of project devices operating during year y ($N_{y,j,j}$)

The Number of project devices operating during current monitoring period is calculated based on updated approach = 87.10% * 250,000 = 217,750.

Simple random sampling was applied by the PP for selection of the monitoring samples with 90/10 confidence/precision for determining the sampling for all the parameters which is deemed acceptable as per the VCS PD/14/. 90/10 is a methodological choice/6/.

Furthermore, the database and sample sales invoice /33/ was also checked/cross verified to confirm the number cookstove for the parameter N,y,i,j.

Furthermore, the PP has confirmed that the project database, for where the samples were shortlisted has contact details (phone numbers) of limited households, which was collected at the time of registration of the HH. However, other addresses and geo coordinates are properly captured at the time of registration of end users. PP used the same to locate the each household during the monitoring survey. This was checked and found to be corrected during on-site interview and hence accepted by assessment team.

As per paragraph 25 of the Sampling Standard, version 09, the verification team has to verify whether the project participants entity have implemented the sampling and surveys according to the sampling plan in the registered monitoring plan. The verification includes determining:

(a) Whether the required confidence/precision has been met;

(b) Whether the selected sample was representative of the population.
As per the applied methodology VMR0006 version 1.1 section 9.2 /6/, and registered VCS PD /14/ the necessary confidence / precision of 90/10 for the parameters have been met.90/10 is a methodological choice/6/ and has been cross verified by the verification team from the supporting documents submitted/2/.
Emission reductions have been calculated in accordance with the applied methodology VMR0006 version 1.1 /6/, and VCS PD /14/. The PP has used monitored data and ex-ante fixed data including default values as mandated/permitted by the applied methodology. The values used for calculation of GHG emission reductions have been thoroughly checked by the verification team and was found appropriate and correct.

The full set of emission reductions calculation are provided in emission reduction spread sheet/2/. ER_y realized during the monitoring period is 1,685,599 tCO_2e which are 11.67% higher than the estimated emission reduction i.e., 1,509,489 tCO_2e for the current monitoring period due to 87.10% ICS were found operational during the monitoring Survey as compared to the 5% linear annual stove loss rate assumed during validation and it can be verified from the MR/1/, ER spreadsheet/2/ and Monitoring Survey Report provided by PP and completely assessed by the verification team as stated above.

The verification team has checked and confirmed the emission reduction calculations in the spreadsheet and found to be accurate. The monitoring report/1/ is supported by emission reduction spreadsheet/2/. The consistency and formula were verified and found to be accurate.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

When verifying the reported emission reduction, Applus+ Certification ensured that there was a clear audit trail that contained the evidence and records that validate the stated figures. All source documents that form the basis for assumptions and other information underlying the GHG data are shown above.

When assessing the audit trails, Applus also examined:

1. whether sufficient evidence was available, both in terms of frequency and in covering the full monitoring period

2. the source and nature of the evidence

3. if comparable information was available from sources other than that used in the monitoring report/1/, Applus+ Certification cross-checked the monitoring report against the other sources to confirm that the stated figures were correct. The sources and the data referenced are shown in Section 2.2 above.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant, lack of evidence and missing data were detected during verification. Hence, the verification team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures.
The operational status of project ICS is monitored through sample survey following UNFCCC sampling and survey guideline follows 90/10 confidence precision. 90/10 is a methodological choice/6/. The survey forms/13/ and photographs were checked to ascertain the monitoring results reported in survey/13/. For enhancing the survey reliability and QA/QC, training has been provided to the data collector during survey /13/ which was further verified from the training details provided by the PP. It is also noted the achieved precision is less than 10% and hence meets the desired confidence precision. The monitored results are found consistent with on-site audits/9/.
Also, PP has set up grievance/repair/maintenance mechanisms/17/ and rectifies any issues for the operation of the project device. So, Applus+ Certification is of the opinion that this

method of calculation of emission reductions is accurate and results in conservative estimation of emission reduction and is line with the applicable VCS requirements.

4.6 Non-Permanence Risk Analysis

There is no non-permanence risk rating determined by the project proponent.

5 VERIFICATION OPINION

Applus+ Certification has performed 1st verification of the emission reductions reported for the project activity "Distribution of Improved Cook Stoves in Sub-Saharan Africa–Malawi-CPA-006", VCS Registry Project ID 2712, for the monitoring period 01-January-2021 to 31-October-2022(both dates included), with regard to the relevant requirements for VCS activities. The project proponents of the "Distribution of Improved Cook Stoves in Sub-Saharan Africa–Malawi-CPA-006" project is responsible for:

- the preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered project design document version 02 of 22-April-2022/14/. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project.

It is the responsibility of Applus+ Certification to express an independent verification opinion about the project's conformity with the requirements of VCS Standard version 4.4 and GHG program applied, on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and confirmed by an on-site assessment, Applus+ Certification can confirm that:

- the project has been implemented and operated as per the registered VCS-PD/14/;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Standard version 4.4 requirements;
- the monitoring is in place as per the applied baseline and monitoring methodology/06/;
- the monitoring plan in the registered VCS-PD/14/ is as per the applied baseline and monitoring methodology.

It is Applus+ Certification's opinion that the GHG emission reduction stated in the monitoring report version 02.2 of 27-August-2024/1/ for the "Distribution of Improved Cook Stoves in Sub-Saharan Africa–Malawi-CPA-006" for the monitoring period 01-January-2021 to 31-October-2022 (both dates included) are fairly stated.

The GHG emission reductions are calculated on the basis of approved methodology VMR0006 version 1.1/06/ and the monitoring plan included in the registered Project Description Document, version 02 of 22-April-2022/14/.

Hence Applus+ Certification is able to certify that the emission reduction from the project during the monitoring period 01-January-2021 to 31-October-2022(both dates included) amounts to 1,685,599 tCO_2e.

Verification period: From 01-January-2021 to 31-October-2022 (both dates included):

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)[5]	Net GHG emission reductions or removals (tCO_2e)
2021 (01-January-2021 to 31-December-2021)	0	0	0	921,284
2022 (1-January-2022 to 31-October-2022)	0	0	0	764,315
Total	0	0	0	**1,685,599**

[5]The leakage is considered using the factor 0.95 while calculating baseline emission in-line with the registered PD and hence leakage amount is taken as zero in the table.

APPENDIXA: DOCUMENT REFERENCES

S. No	Title of Document	Version	Date
1.	MR (Final)	02.2	27/08/2024
2.	Emission reduction spreadsheet (Final)	02.2	27/08/2024
3.	ICS Distribution data and carbon waiver records of ICS	-	01/012021 to 31/102022
4.	Declaration(s) from Project proponent on double accounting	-	-
5.	Efficiency certificate of ICS issued by Pollution free Environment Consultants	-	-
6.	VMR0006 Methodology for Installation of High Efficiency Firewood Cookstoves	1.1	22/07/2021
7.	VCS Requirements: - Verified Carbon Standard Program Guide, v4.2; - Verified Carbon Standard, v4.3; - VCS Program Definitions, Ver. 4.2 - VCS Registration and Issuance Process, v4.2 - VCS Joint Project Description & Monitoring Report Template, v4.1 - VCS Joint Validation & Verification Report Template, v4.1	-	-
8.	Life span certificate	-	20/09/2020
9.	Site assessment –interviews of staff personnel, photographs, physical inspection of monitoring system	-	02/12/2022 to 03/12/2022
10.	Clean cooking Alliance (https://cleancooking.org/news/10-key-co-benefits-of-clean-cooking-for-climate-nature-and-communities/)	-	-
11.	Local Stakeholder Meeting records	-	-
12.	Emission reduction spreadsheet (Intermediate version of document)	01	-
13.	ICS Survey Report by Hitech Services	01	-
14.	VCS PD	02	22/042022
15.	Methodological Tool: Calculation of the fraction of non-renewable biomass	03	14/12/2020
16.	fNRB calculation data source used in ER sheet: Fixed Ex-Ante as per registered CPA-DD 9007-0006	-	-
17.	Photo of grievance register	-	-
18.	Sample copy of carbon waiver records	-	-
19.	Skilled training records	-	-
20.	Employment records	-	-
21	Copy of registration record cum consent deeds signed by Stove end user as proof of project start date	-	18/07/2018
22	Thermal Efficiency test report (WBT) for TLC-CQC Rocket Stove by Aprovecho Research Centre	-	October 2015
23	Emission Reduction Development Agreement between CQC and ECOEYE Co., Ltd.	-	26/10/2017
24	44.03.06 Privileged & Confidential - Stove champion data (26	-	26/08/2024

	August 2024		
25	44.03.05 Stoves in Operation - Verified Secondary Data (2024-08-05)	-	05/08/2024
26	2712 MP01 Nyij Precision_26082024	-	26/08/2024

APPENDIX B: ABBREVIATIONS

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

APPENDIX C: AUDIT FINDINGS

Table 1. CR from this verification

CR ID	01	Section no.	Joint PD and MR	Date: 27/06/2022
Description of CR				
The PP need to submit following supporting documents: 1. Monitoring survey report 2. Declaration from PP on double accounting 3. Life span of ICS certificate 4. Thermal efficiency certificate of ICS 5. 250,000ICS database 6. Sample carbon waiver certificate				
Project participant response				Date :16/07/2022
- PP has submitted required supporting documents.				
Documentation provided by project participant				
- Monitoring survey report - Declaration from PP on double accounting - Life span of ICS certificate - Thermal efficiency certificate of ICS - 250,000ICS database (in ER sheet) - Sample carbon waiver certificate				
VVB assessment				Date: 18/07/2022
The PP has provided required documents. Therefore, CL#1 satisfactorily closed				

Table 2. CAR from this verification

CAR ID	01	Section no.	Section 1.3	Date: 27/04/2023
Description of CAR				
PP is requested to update MR based on latest VCS standard version 4.4				
Project participant response				Date : 27/04/2023
PP has updated to MR based on latest VCS standard version 4.4.				
Documentation provided by project participant				
Revised MR				
VVB assessment				Date: 27/04/2023
Assessment team confirm that PP has updated MR as per VCS standard version 4.4. Hence accepted. CAR#1 Closed				

CAR ID	02	Section no.	Section 2.2	Date : 27/04/2023
Description of CAR				
PP is requested to update monitoring data for current monitoring period in this section 6.1				
Project participant response				Date:27/04/2023
PP has updated monitoring data in section 6.1 of revised MR.				
Documentation provided by project participant				
Revised MR				
VVB assessment				Date: 27/04/2023

Assessment team confirm that PP has updated monitoring data in section 6.1 of revised MR. Hence accepted **CAR#2 Closed**

Table3. FAR from this verification

FAR ID	N/A	**Section No.**	N/A	**Date :** N/A
Description of FAR				
No FAR raised				
Project participant response				**Date :** N/A
N/A				
Documentation provided by project participant				
N/A				
VVB assessment				**Date:** N/A
N/A				

APPENDIX D: COMPETENCE STATEMENTS

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Host country Experience	Attendance to the Assessment (on-site)
Vivek Kumar Ahirwar	Lead Auditor (LA)	Yes (3)	Yes (3.1)	N/A	Yes	Yes
Vivek Kumar Ahirwar	Technical Expert (TE)	Yes (3)	Yes (3.1)	N/A	Yes	Yes
Simon Shen	Technical Reviewer (TR)	Yes (3)	Yes (3.1)	N/A	N/A	N/A

The curricula vitae of the VVB's team members are provided below:

Vivek Kumar Ahirwar is a BEE-Certified Energy Auditor by Govt of India with over eight years of relevant experience in energy efficiency, energy audit, thermal and electrical energy generation technology from renewable source and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the India. He has done Mater in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering college, Rewa, RGPV, India.

Simon Shen (master degree in thermal energy engineering, bachelor degree in environmental engineering) is a lead auditor appointed by Applus+ certification for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ certification, he had been worked for TÜV SÜD as a GHG validator/verifier and ISO 9001/14001 lead auditor for 3.5years.