



DISTRIBUTION OF IMPROVED COOK STOVES IN SUB-SAHARAN AFRICA-ZAMBIA-CPA-007



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Summary:

C-Quest Capital Malaysia Global Stoves Limited (hereinafter referred as CQC) has contracted LGAI Technological Center, S.A. (Applus+ Certification) to conduct the Joint GAP Validation and Verification of the grouped project activity “Distribution of Improved Cook Stoves in Sub-Saharan Africa Zambia-CPA-007”, VCS ID 2713 against VCS Standard version 4.4

The project’s design description, baseline, monitoring plan, and compliance with applicable VCS requirements 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 2713) 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 of the methodology. A site visit was performed to confirm the information provide by PP.

The main purpose of the project is the distribution of fuel-efficient Improved cookstoves (ICS) in the Republic of Zambia. The Improved cookstoves distributed through this project have replaced the low-efficient traditional open fire cookstoves. Through this project, high thermal efficient Improved cook stoves (ICS) has been distributed and installed in households of Republic of Zambia. The ICS burns wood more efficiently thereby improving thermal energy transfer to pots, hence saving fuel wood and emit less 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 estimated annual average emission reductions for the first fixed crediting period of ten years from 01-January-2019 to 31-December-2028 (inclusive of both dates) are 711,325 tCO₂e/year and a total of 7,113,247 tCO₂e will be reduced during the course of ten years of the crediting period. During the 1st monitoring period from 01-January-2021 to 31-December-2022 (inclusive of both dates) 1,598,600 tCO₂e GHG emissions are reduced which is +12.37% higher than the estimated Ex-ante emission reductions.

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.

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), VCS Program Definitions (v4.3) and 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.

This joint validation and verification have been carried out using a risk-based methodology. 04 Corrective Action Requests (CARs) and 02Clarification Requests (CRs) were raised and closed successfully during Joint Validation and Verification. No any Forward Action Request (FAR) was raised for the current period from 01-January-2021 to 31-December-2022 (inclusive of both dates).

The project has been successfully validated, verified, and further certified for emission reductions

under VCS as it meets the criteria outlined by the Joint PD & MR template version 4.2, the VCS Standard version 4.4, and the applied methodology VMR0006, Version 1.1. The project is recommended for registration and issuance after further confirmation of a combined positive validation and verification opinion showing the project complies with the relevant VCS requirements.

Our view refers to the projects' claimed GHG emissions, GHG emission reductions as a result, and to the project's legitimate baseline, monitoring, and supporting papers. Based on the information viewed and assessed, we confirm that the grouped project activity "Distribution of Improved Cook Stoves in Sub-Saharan Africa Zambia-CPA-007" achieved emission reductions by **1,598,600 tCO₂e** during its 1st monitoring period from 01-January-2021 to 31-December-2022 (inclusive of both dates).

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1 INTRODUCTION

1.1 Objective

Applus+ Certification is contracted by M/s C-Quest Capital Malaysia Global Stoves Limited (project proponent), to undertake the Joint GAP Validation and Verification of the grouped project **"Distribution of Improved Cook Stoves in Sub-Saharan Africa Zambia-CPA-007 "**. The assessment team has reviewed the GHG data collected for the current monitoring period from 01-January-2021 to 31-December-2022 (inclusive of both dates) covered in this verification. The objective of this Joint GAP Validation and Verification is to have an independent third-party assessment of the Joint PD & MR and supporting documents 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"**

The project's additionality justification is assessed against **"VMR0006 - Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1" /05/**

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 program guide version 4.3.

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

1.2 Scope and Criteria

For GAP Validation:

The GAP validation scope is given as an independent and subjective 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**) which are included in the VCS joint PD & MR and other relevant supporting documents. The scope of work covered in the validation is described as below:

1. 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.

2. To evaluate whether the baseline and monitoring plan are in conformance with the applied methodology from the VCS approved GHG program.
3. To confirm that the information presented are complete, consistent, transparent and free of omission or material error.
4. Background investigation and follow up interviews.
5. Issuance of draft validation report with CARs, CRs & FARs, if any.
6. Final validation opinion.

The information in the VCS joint PD & MR is reviewed against the criteria of VCS Standard (v4.4) and VCS program guide(v4.3).

Applus+ Certification has performed GAP 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 is the independent, subjective review and ex-post determination of the monitored reductions in GHG emissions from the grouped project activity **"Distribution of Improved Cook Stoves in Sub-Saharan Africa Zambia-CPA-007"**. The verification of this project is 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:

1. VCS Program Guide (v4.3)
2. VCS Standard (v4.4)
3. VCS Program Definitions (v4.3)
4. VCS Registration & Issuance Process (v4.3)
5. VCS approved methodology VMR0006 (v1.1)

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

1.3 Reasonableness of Assumptions and Level of Assurance

For Validation/GAP-Validation: The project validation was performed under an approved GHG program which CDM, there GAP-Validation was conducted based on reasonableness of assumption and reported in this GAP validation report. The objective and criteria of GAP Validation as mentioned in above section 1.1 & 1.2 is in conformance with the VCS Program rules and the methodology applied to the project as per requirement of para 4.1.8 point 2 & 3

of VCS Standard 4.4 respectively. The assessment team verified the assumptions, limitations, and methods used for data required for estimation of total reported GHG emission reductions and/or removals for this project and found to be reasonableness and confirms that the calculated estimated emission reductions are free from any type of material errors. The threshold for materiality with respect to the aggregate of errors, omissions, and mis-representations relative to the total reported GHG emission reductions and/or removals for this large project are 1%. This satisfies the specific requirement of para 4.1.8 point 4 of VCS Standard 4.4.

For Verification: The level of assurance of the verification report falls under **Reasonable Assurance** engagements as selected by the *Client*/PP as per requirement of para 4.1.8 point 1 of VCS Standard 4.4. The objective and criteria of verification as mentioned in above section 1.1 & 1.2 is in conformance with the VCS Program rules and the methodology applied to the project as per requirement of para 4.1.8 point 2 & 3 of VCS Standard 4.4 respectively. The verification team verified the sample based monitoring data for surveyed based parameters of the monitoring plan and confirms that the reported emission reductions are free from any type of material errors. The threshold for materiality with respect to the aggregate of errors, omissions, and mis-representations relative to the total reported GHG emission reductions and/or removals for this large project are 1%. This satisfies the specific requirement of para 4.1.8 point 4 of VCS Standard 4.4.

1.4 Summary Description of the Project

The project involves distribution of 150,000 domestic fuel-efficient improved cookstoves (ICS) in Republic of Zambia. The ICS distributed through this project will replace the prevailing inefficient three-stone fire cookstoves. The ICS combusts wood more efficiently and improves thermal transfer to pots, hence saving fuel and lowering greenhouse gas emissions.

This is the seventh CPA implemented under the CDM Programme of Activities (PoA) titled “Distribution of Improved Cook Stoves in Sub-Saharan Africa”. C-Quest Capital Malaysia Global Stoves Limited (CQC) is the Coordinating / Managing Entity (CME) for the PoA in which this CPA is to be included.

CQC also responsible for implementation of this project including management and coordination activities with local partners, promotion and installation of ICS and provide all necessary marketing and promotion assistance to partners. It is also responsible for monitoring activities of this project. Korea Impact Carbon Corporation (henceforth referred as KICC) provided all implementation cost for all ICS under this CPA. The ICS subsidized by KICC so that affordable clean technology can be made available to the participating households. KICC also made available all operation and maintenance costs along with ICS production and distribution cost.

It is intended that under this project single pot, **TLC-CQC Rocket Stove** will be distributed. In this grouped project, each ICS constitutes a single project activity instance which is in line with its definition stated in VCS Program Definitions version 4.3.

The end user will be informed that carbon finance is being generated by the use of the ICS, and this finance is in turn used to facilitate the access to ICS (e.g., subsidize the price of the ICS) and helps to cover project implementation costs.

Project Location

The project has been implemented in Zambia. The details of the project location are provided in Section 1.12 Of Joint PD&MR.

Explanation of how the project is expected to generate GHG emission reductions

The ICS will substitute the currently common cooking using wood fuel on open three stone fire. The ICS burns wood more efficiently thereby improving thermal transfer to pots, hence saving fuel and lowering greenhouse gas emissions.

Estimate of annual average and total GHG emission reductions

The estimated total GHG emission reductions for the 10-year fixed crediting period of the project are 7,113,247 tCO₂e with an estimated average annual of 711,325 tCO₂e.

Based on an examination of the Joint PD & MR· ER estimation and verification spreadsheet^{/02/}, and ICS database· 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 are conducted using Applus+ Certification's procedures in line with the requirements specified in the VCS standard, 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.
- 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 9.0/17/- 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**, 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)**, 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 10 per cent chance that the DOE will wrongly reject the project participants' or the coordinating/managing entity's records (i.e., reject a set of records of acceptable quality);

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

Based on the above allowance given by the sampling standard, VVB selected 11 randomised households from country for acceptance surveying based on PP's database. The households were chosen within the geographical boundary of Republic of Zambia. The choice of 11 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 this grouped project activity as decided by the VVB.

Producer Risk			5%	5%		5%		5%	
Consumer Risk			5%	10%		15%		20%	
AQL	UQL	Sampl	Acceptance Number (c)	Sampl	Acceptance	Sampl	Acceptance	Sample	Acceptance

		e Sie (n)		e Size (n)	Number (c)	e Sie (n)	e Number (c)	Size (n)	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	Sampl e Sie (n)	Acceptance Number (c)	Sampl e Sie (n)	Accepta nce Number (c)	Sampl e Sie (n)	Acceptanc e Number (c)	Sample Sie (n)	Acceptance Number (c)
0.5%	10%	46	1	38	1	19	0	16	0
0.5%	15%	19	0	15	0	12	0	10	0
0.5%	20%	14	0	11	0	9	0	8	0
1.0%	10%	46	1	38	1	33	1	29	1
1.0%	15%	30	1	25	1	22	1	10	0
1.0%	20%	22	1	18	1	9	0	8	0

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

Table: List of Beneficiaries randomly selected using random generators and interviewed among 11 Samples

Sl. No	Date of site visit	Stakeholder's Name	Device ID
1	19-May- 2023 to	Muyeko Zulu	CQCSSAZT106042
2		Peter Soko	CQCSSAZT139066

3	21-May-2023	Onesfa Phiri	CQCSSAZT132938
4		Matilda Daka	CQCSSAZT112915
5		Crara Zulu	CQCSSAZT120811
6		Adriano Phiri	CQCSSAZT154234
7		Falece Tembo	CQCSSAZT154243
8		Pamela Maampwe	CQCSSAZT087745
9		RaydMapanza	CQCSSAZT039090
10		Early Muchimba	CQCSSAZT070047
11		DoricamSiyauya	CQCSSAZT136366

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

1. General information of households

- Interviewee Name
- ID No.
- Age, Gender
- Household location

2. Old stoves situation

- Are you the main user of the Old stove at home?
- How many people are there in your household?
- What type and number of Stoves did you use? Three-stone fire, Self-built low efficient clay stove, Traditional low efficient stove or Others. If others, the type and number of stoves are
- What kind of fuel did you use for the stove(s)? Charcoal, Firewood, or Others. If others, the kind of fuel is
- Do you think the stove will generate smokes and cause respiratory or itching issues?

3. Project cookstoves using situation

- Are you the main user of the Project Cookstove at home?
- When did you buy the Project Cookstove?
- Do you know you have waived ownership of ERs before used the Cookstove?
- What document do you sign or what information do you provide when you were distributed the Project Cookstove?
- When did you start using the Project Cookstove?
- Does your Project Cookstove have unique serial No.? if yes, the No. is
- After using the Project Cookstove, did the distributor come to your home to check the use of the Project Cookstove?
- Please specify the using frequency and cooking times.
- What kind of fuel do you use for project stove? Charcoal, Firewood, or Others. If others, the kind of fuel is
- What type and number of Project Stove are you using? If others, the type and number is
- Are you still using old/other cookstove(s) after buying the Project Cookstove?
- Do you think the Project Cookstove is cleaner than the old stove? If yes, the reason is Less smoke, less respiratory issues, less itching issues or others. If others, please specify.

- 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. Assessment team uses a standard protocol to assess 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 visited the site between 19-May-2023 to 21-May-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	Chrispwe Mbewe	Country Manager	CQC
2	ChemseChpose	Regional Manager	CQC- CSAT
3	JalijSaxenr	Manager	CQC- CSAT
4	JowansKachaMwara	Manager	CQC-CSAT
5	Emmanuer Pheu	F-Coordinator	CQC
6	Emmfur	ZVVD	CQC

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

Total 11 samples were visited as part of the site visit.

The assessment team visited the site between 19-May-2023 to 21-May-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 grouped project activity's ability to reduce emissions or have an impact on the recording, monitoring, and reporting of those reductions. These problems may be related to the project description, technical specifications, baseline and additionality, monitoring parameters and monitoring plans, implementation status, or operations of the 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:

- a. 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;
- b. 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;

- c. Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- d. Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- e. 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:

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

Forward Action Requests (FARs) is raised if:

- a. 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 closed successfully 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 GAP 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 the Republic of Zambia is the main focus of this grouped project activity. In order to replace the traditional cooking stoves in the kitchen with stoves that are more efficient, the initiative aims to provide households with clean cooking alternatives. By substituting traditional cooking stoves with ICS, the project will reduce deforestation through less consumption of firewood and, family members—particularly women—will be exposed to less indoor air pollution, saving money on health-related expenses.

The ICS deployed under this project is TLC-CQC Rocket Stove which substantially reduces fuel consumption and emissions for conducting cooking and water heating tasks in homes. The ICS improve the efficiency of combustion and thermal transfer to the pot compared with a traditional pot support or three-stone fire by incorporating a number of cutting-edge components, including one or more of; a 'rocket elbow'; a highly insulated combustion chamber which provides a conducive environment for clean and efficient combustion of wood. It substantially reduces fuel wood consumption compared with a three-stone fire or traditional pot



support.

According to independent stove efficiency tests performed by Aprovecho Research Centre on the TLC-CQC Rocket Stove, the WBT results yielded an average thermal efficiency of 34.5% for boiling 5 litres of water.

Technical Specifications	
Stove Size	Depth: 35 cm; Width: 35 cm; Height: 28 cm
Combustion Chamber Size	Depth: 12 cm; Width: 12 cm; Height: 28 cm
Efficiency	34.5%
Average Life	10 years

The life of TLC-CQC Rocket stove is at least 10 years owing to it being a clay and brick stove which can be easily repaired using a mixture of local clay, cow dung/ash, sand and water etc. on a regular basis. The metal parts used in the stoves are under extended warranty from PP/manufacturer side throughout the projected life span and will be replaced in case of request received from the stove owner for replacement. PP has confirmed the life span of 10 years through the above measures.

Further, it was verified during site visit that the PP has covered the following province/districts during current monitoring period.

Province Name	Districts Covered	Total no. of ICS distributed till end of date MP (31-December-2022)
Central Province	Chibombo District,	7,788

	Chisamba District, Chitambo District, Kabwe District, KapiriMposhi District, Mumbwa District.	
Copperbelt Province	Chingola District, Kitwe District, Lufwanyama District	214
Eastern Province	Chadiza District, Chasefu District, Chipangali District, Chipata District, Kasenengwa District, Katete District, Lumezi District, Lundazi District, Mambwe District, Petauke District, Vubwi District	72,938
Luapula Province	Chiengi District, Chifunabuli District, Chipili District, Kawambwa District, Lunga District, Mansa District, Milenge District, Mwense District,	9,530

	Nchelenge District, Samfya District	
Lusaka Province	Chilanga District, Chongwe District, Kaufe District, Shibuyunji District	4,159
Muchinga Province	Chama District, Lavushimanda District, Nakonde District	3,844
Northern Province	Kasama District, Kaputa District, Luwingu District, Lupososhi District, Lunte District, Mbala District, Mungwi District, Mzimba District, Senga Hill District.	6,582
North-Western Province	Ikelenge District, Mwinilunga District	6,328
Southern Province	Chikankata District, Choma District, Gwembe District, Itezhi-Tezhi District, Kalomo District, Kazungula District, Livingstone District,	37,765

	Mazabuka District, Monze District, Namwala District, Pemba District, Sinazongwe District, Zimba District	
Western Province	Kalabo District, Mitete District	852

The project activity started on **01-January-2019**, 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.

Ten years fixed crediting period from **01-January-2019 to 31-December-2028** (inclusive of both dates) is expected to result in annual emission reductions of **711,325 tCO₂e/year** and a total of **7,113,247 tCO₂e** over the ten years period.

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

This grouped project will reduce **1,598,600 tCO₂e** GHG emissions during the first monitoring period, which is from 01-January-2021 to 31-December-2022 (inclusive of both dates).

The project proponent has commissioned **150,000** ICS during current monitoring period 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 – Republic of Zambia, mandating the implementation of ICS. The project complies with all applicable statutes, laws, and regulatory frameworks. No any regulations, ordinances, or other regulatory frameworks of Republic of Zambia are violated by the project.

PP has submitted the declaration that the project is not rejected by any GHG registry. Same declaration mentions that the project is also registered as CPA (i.e. CPA 9007-P1-0007-CP1) under CDM PoA (ref. CDM PoA 9007) other than this project is not registered/seeking registration in any other GHG registry apart from Verra. VVB has verified the declaration and

checked various other registries including GS, GCC etc. and found that the project is not registered in any other registry except CDM CPA of PoA.

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. Furthermore, the Project Proponent has provided a declaration and confirmation about supply chain (scope 3) emissions that the PP has informed to the manufacturer of the TLC-CQC Rocket Stove metal parts as well as the implementing partner in Zambia at the time of signing agreement for the goods and services provided by them, that ICS will be distributed in Zambia under this project for claim of generated carbon credits (i.e. CERs or VCUs) from the project under CDM and VERRA. The PP has submitted a copy of the agreement signed with manufacturer of this ICS and implementing partners and found to be correct and hence accepted as meeting requirement of Section 3.23.9 of the VCS Standard, v4.4.

Thus, avoiding double counting. Same has been confirmed by the Assessment team by checking REC registry also.

This is a non-AFOLU grouped project; hence further requirement on assessment of Leakage management for AFOLU projects is not applicable for this project.

The PP has confirmed that there is no additional commercially sensitive information except the ER calculations and survey result which need to be confidential at project web page.

The PP has discussed about sustainable development contributions section 1.17 of the joint PD & MR; same has been verified by the assessment team and found to be correct and appropriately demonstrated with supporting documents. Further the PP has provided details of details of the project activity's contribution to the Sustainable Development Goals have been provided in the Table 1 in section 1.17.2 of the joint PD & MR; same has been verified by the assessment team confirmed followings:

1. SDG Target 3.9; the assessment team has confirmed that the project activity by replacing 1500,000 traditional cookstoves with energy efficient project cookstoves has contributed to improved health and well-being brought about by reduced levels of fine particulate matter (PM_{2.5}) emissions within households by approximately 47 % below baseline emission level of 3.9 g/kg fuel as per document provided by the PP "PM2.5 emissions from three stone fire. Source: Clean Cooking Catalog" and found to be correct and appropriate, hence accepted.

2. SDG Target 4.3; the assessment team has confirmed that the project is contributed to increasing vocational and relevant skills of 9 local individuals by providing non-formal education and training over project lifetime. This was also checked and confirmed during site visit with interview with local team and confirmed that they received training on time which ensure that increasing vocational and relevant skills; hence accepted.

3. SDG Target 5.4; the assessment team has confirmed that the project is contributed to time savings and reduced drudgery in 1500,000 households translating to benefiting an equal number of women as they are primary cooks and fuel wood collectors in most of the households. This was also checked and confirmed during site visit with interview with households and confirmed about the same, hence accepted.

4. SDG Target 7.1; the assessment team has confirmed that the project is contributed to increasing access to clean cooking technology with 150,000 TLC-CQC Rocket Stoves installations in 150,000 households of Zambia. This was also checked and confirmed during site visit with interview with households and confirmed about the same, hence accepted.

5. SDG Target 8.3; the assessment team has confirmed that the project is contributed to generation of employment in informal sector (total economy, agriculture, and non-agriculture) by contracting 5locals for various project related activities over the project. This was also checked and confirmed during site visit with interview with local team and confirmed that the project activity generates employment; hence accepted.

6. SDG Target 13.0; the assessment team has confirmed that the project is contributed to GHG emission reduction through an estimated reduction of ~7,113,247 tCO₂e due to replacement of baseline stoves with TLC-CQC Rocket Stoves over project lifetime. This was also checked and confirmed during assessment of ER sheet and survey result provided by the PP, hence accepted.

7. SDG Target 15.2; the assessment team has confirmed that the project is contributed to an estimated reduction in removal of woody biomass to the tune of ~3.75 tons per stove (TLC-CQC Rocket Stoves) per annum, over project lifetime. This was also checked and confirmed during assessment of ER sheet and survey result provided by the PP, hence accepted.

PP has considered the scale of the project activity as “Large Project” based on the number of estimated emission reductions from the grouped project activity. Assessment team has crosschecked and found that the estimated annual ERs **711,325** tCO₂e/year is Greater than **300,000** tCO₂ hence project is a large scale.

Project Proponent:

Organization name	C-Quest Capital Malaysia Global Stoves Limited
Contact person	Ken Newcombe
Title	Director
Address	Brumby Centre, Lot 42, Jalan Muhibbah, 87000 Labuan, Malaysia.
Telephone	+6 087 423828

Email	cqc-operations@cquestcapital.com
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VVB team verified the details about the details about the project proponent form the web page of the registry and found consistent.

Other entities involved in the project are as follows:

Organization name	Ecoeye Co., Ltd.
Contact person	Mr. Soobok RHEE
Title	CEO
Address	#11, 61 Youniaru-ro. Yeongdeungpo-gu, Seoul, Republic of Korea
Telephone	+82- 2-6480-7300
Email	operations@ecoeye.com

Organization name	Korea Impact Carbon Cooperation
Role in the project	KICC provided implementation cost for ICS under this CPA. KICC provided stove subsidy to provide ICS for free of charge to household using baseline stove as well as operation & maintenance cost of ICS production and distribution for PP and CPA implementers to operate this CPA in financially sustainable condition.
Contact person	Mr. Sangsun HA
Title	CEO
Address	#11, 61 Yeouniaru-ro. Yeongdeungpo-gu, Seoul, Republic of Korea
Telephone	+82- 2-6480-7346
Email	kicc-operations@korea-kicc.com

VVB team verified that, PP has submitted the Agreement between Project proponent& other entities involved in the ICS.

The relevant implementation dates (e.g., dates of construction, commissioning, and continued operation periods)

Milestone of the project	Timeline
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Milestone of the project	Timeline
The date of the commencement of the project (Registration of first ICS under this project)	01-January-2019
Registration of the project under CDM (CPA inclusion date under CDM)	05-June-2019
CDM CPA Crediting period	From 05-June-2019 till 04-June-2026 (Renewable)
1 st monitoring period successfully verified under CDM (for this CPA)	01-September-2018 to 30-November-2019 (including both days) (Issued)
2 nd monitoring period successfully verified under CDM (for this CPA)	01-December-2019 to 31-July-2020 (including both days) (Issued)
3 rd monitoring period successfully verified under CDM (for this CPA)	01-August-2020 to 31-December-2020 (including both days) (Issued)
1 st monitoring under VCS-Period 1	01-January-2021 to 31-December-2022(including both days)

Installation of ICS -

Date of first ICS installed	01-January-2019
Date of last ICS installed	23-November-2021
Total no. of ICS distributed till end of date MP (31-December-2022)	150,000

First Monitoring Survey under VCS–

Survey dates for parameters $N_{y,i,j}$ and μ_y	25-August-2022 to 25-September-2022
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Condition Prior to Project Initiation:

The condition prior to project initiation is the continued use of non-renewable wood fuel (firewood) by the target population to meet similar thermal energy needs as provided by project cookstoves in absence of project activity. The pre-project devices are inefficient three-stone fires or conventional systems lacking improved combustion air supply mechanism and flue gas ventilation system i.e., traditional stoves.

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	Methodology: Meet the applicability conditions set out in the methodology applied to the project	All project activity instances (TLC-CQC Rocket Stoves) meet the applicability conditions as described and set out in Section 3.2 of Joint PD and MR	All project activity instances (TLC-CQC Rocket Stoves) Meet the applicability conditions set out in the methodology applied to the project verified from 3.2 of joint project description & monitoring report of the project. Hence applicable and accepted.
2	Technology: Use the technologies or measures specified in the project description.	Only TLC-CQC Rocket stoves adopted under this grouped project activity. Thermal efficiency of TLC-CQC Rocket stove is 34.5%.	PP has distributed ICS with an efficiency of 34.5% and since each ICS is treated as a new instance. Hence applicable and accepted.
3	Baseline Scenario: 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 Republic of Zambia only and subject to the same baseline scenario as determined in Section 3.4 of Joint PD and MR	The new project activity instances will be installed within Zambia only and subject to the same baseline scenario determined in Section 3.4 of joint PD & MR. Hence applicable and accepted.
4	Additionality: Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographical 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 Zambia which intends to mandate for distribution of project activity instances (ICS). Step 2: Positive List Copy of Consent Letter/ record of consent signed by end user mentioning that end users were not charged for the ICS.	There is no mandated government programme or policy in Zambia which intends to mandate for distribution of project activity instances (ICS). Hence applicable and accepted. Positive List Verified from Copy of Consent Letter/ record of consent signed by end user mentioning that end users were not charged for the ICS.

			Hence applicable and accepted
5	Occur within one of the designated geographic areas specified in the project description	Project Activity Instance Database containing Geographical Coordinates of each household to which ICS are distributed.	Verified from Project Activity Instance Database containing Geographical Coordinates of each household to which ICS are distributed. Hence accepted and Applicable.
6	Ownership: 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	Copy of Consent Letter/ record of consent given from end user to Project Proponent regarding emission reduction claims.	Verified from Copy of Consent Letter/ record of consent given from end user to Project Proponent regarding emission reduction claims. Hence verified and accepted.
7	Start Date	Project Activity Instance Database containing date of installation of each ICS.	Verified from Project Activity Instance Database containing date of installation of each ICS., Hence accepted.
8	Capacity Limits: Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such	1. Project Activity Instance Spreadsheet containing estimation of annual energy saving from each project activity instance (i.e., each ICS). 2. Project Activity Instance ER Spreadsheet containing estimation of annual energy saving from each project activity instance (i.e., each project ICS).	1. Verified from Project Activity Instance Spreadsheet containing estimation of annual energy saving from each project activity instance (i.e., each ICS). Hence applicable and accepted 2. Verified from Project Activity Instance ER Spreadsheet containing

	limit.	3. The expected annual energy saving for each project activity instance (i.e., each project ICS) comes out to be 16.36 MWh _{th} , which is well below 1% (i.e, 1.8 GWh _{th}) of capacity limit. Therefore, the project activity instances under this grouped project activity shall not be assigned to clusters.	estimation of annual energy saving from each project activity instance (i.e., each project ICS). Hence applicable and accepted 3. Verified from The expected annual energy saving for each project activity instance (i.e., each project ICS) comes out to be 16.36 MWh _{th} , which is well below 1% (i.e, 1.8 GWh _{th}) of capacity limit. Therefore, the project activity instances under this grouped project activity shall not be assigned to clusters. Hence applicable and accepted.
9	Double Counting	Project Activity Instance Database containing unique serial number of each ICS. Each ICS distributed will have corresponding end user details (i.e., name, geographical coordinates, address, unique serial number).	Verified from Project Activity Instance Database containing unique serial number of each ICS. Each ICS distributed will have corresponding end user details (i.e., name, geographical coordinates, address, unique serial number). Hence applicable and accepted
10	Crediting period	The start date of the instance will be the date, the stove began generating GHG emission reductions or removals. The end of the crediting period of instance will be the end date of project crediting period as mentioned in section 1.9 of the Joint PD and MR.	Verified from website Hence applicable and accepted
11	Target Population	End user registration certificate and stove installation database.	Verified from the end user registration certificate and stove installation database Database and found to be consistent, hence accepted

Based on above discussed the assessment able to confirm that the description in the final Joint PD & MR is accurate, complete, and provides an understanding of the nature of the project,

and also during site visit it has been confirmed that the project has been implemented as described in the project description, The project is likely to achieve estimated GHG emission reduction or removals as 711,325 tCO₂e/year and 7,113,247 tCO₂e will be reduced during the course of the ten years of the crediting period.

Further the implementation status of the project has been verified from CDM website and confirmed as below:

<u>Audit Type</u>	<u>Period</u>	<u>Program</u>	<u>VVB Name</u>	<u>Number of years</u>
CDM CPA Inclusion	05-June-2019	CDM	Carbon Check India Pvt. Ltd.	-
CDM Verification	01-September-2018 to 30-November-2019 (including both days) (Issued)	CDM	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+)	1.25
CDM Verification	01-December-2019 to 31-July-2020 (including both days) (Issued)	CDM	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+)	0.67
CDM Verification	01-August-2020 to 31-December-2020 (including both days) (Issued)	CDM	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+)	0.42
VCS Validation (Ongoing)	14-June-2022 (VCS Listing Date)	VCS	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+)	-
VCS Verification (Ongoing)	01-January-2021 to 31-December-2022	VCS	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+)	2
<u>Total</u>	=	=	=	4.34

Based on review of CDM website and it is confirmed that there is no overlapping of monitoring period and it is going continuously for verification since CDM registration.

3.2 Participation under Other GHG Programs

The project has been included under CDM PoA with project reference 9007-P1-0007-CP1.

In order to receive carbon benefits during the project activity's crediting period, the Project has not registered for, nor is it pursuing registration under, any other GHG emission programme except CDM.

This was confirmed by looking over the undertaking letter and by checking other GHG project registries like CDM, GS, GCC etc.

Audit team checked the following 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://projects.globalcarboncouncil.com/>

Rejection by other GHG programs

VVB has crossed check the same through other GHG interfaces and found consistent. A declaration has been submitted by PP to VVB confirming the same. Thus, this was further confirmed through a declaration submitted by the PP and hence accepted by the assessment team.

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/>

VVB has also checked above program website 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.

The assessment team has determined that this complies with the standards of the VCS Standard (version 4.4).

3.3.2 Local Stakeholder Consultation

Local Stakeholder Consultation for this CPA has been undertaken at CDM PoA Level; hence for their Local stakeholder consultation is not required at this stage. This is in line with the requirement of paragraph 3.22.6 (sub-paragraph 3) of the VCS Standard (Version 4.4) as for projects registered under an approved GHG program which are seeking registration with the VCS Program; this section need not be completed. The project was included as a CPA under the PoA on 05-June-2019 with CDM reference 9007-P1-0007-CP1. The CPA-DD can be referred at the following link to confirm the CDM stakeholders' consultation details:

https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/SI6LZ5AGKRO37UPH84WJYTVCDQN1F9/view

The Joint PD & MR section 2.2 confirmed the above details and found to be correct, hence accepted.

The assessment team conducted PP interviews during on-site visit. The VVB team confirmed by the PP's responses that the stakeholder consultation process had been carried out at the time of project registration with CDM. The stakeholder acknowledged that they received an invitation to attend the meeting.

Ongoing communication Mechanism:

Furthermore, assessment team has interview to local team representative to confirm the Ongoing communication Mechanism s and it has been confirmed that the Stove owner can contact the local implementation partner in case any support or replacement of any stove part is required. The contact details of the local implementation partner have been shared with the end users during the stove installation. The local support staffs address the end users' query by providing the necessary support. In case of replacement of stove part is needed, local staff coordinates with the management team to arrange the replacement of the part.

At the time of monitoring survey also, field staff takes feedback from the local stakeholders. All stakeholders' concerns (positive or negative) during implementation of the project activity have been compiled in the survey results spreadsheet. Therefore, assessment team has been confirmed that the procedure is well in place during site visit.

Grievance Redressal Mechanism:

The assessment team further confirmed that the PP has a robust feedback and grievance redress policy and procedure in order to ensure that grievances of project-affected communities and individual stakeholders are properly handled and addressed. These procedures are implemented to enhance PP's accountability and transparency, as well as to promote project activities that can help communities in identifying adverse effects to them or their environment that PP had not previously identified and mitigated. The Grievance Policy and Procedure is accessible as a phone number of the PP/implementing partner office in Zambia which is available on the brochure provided to each household. During the current monitoring

period, PP has received three grievances from the end users and all the grievances which were received have been addressed by the PP. The verification team has verified the grievance register records during site visit and confirm the same has been properly addressed and closed. The details of grievances received during current monitoring period and actions taken by the PP are discussed below:

Grievance(s) Received by the PP	Action Taken by the PP	Means of Verification by VVB assessment team
Improper use of pot skirt while cooking the food were observed during spot check	CQC field coordinator retrained the beneficiary to properly use the pot skirt and also explained about its importance and benefits.	The verification team has discussed this grievance with the PP and confirms that the user has been properly guided about use of proper stick shelf, therefore it is confirmed that the PP has properly addressed the grievance, hence accepted.
Smoke in the kitchen or improper ventilation	The end-users were properly instructed/sensitized on the significance of kitchen ventilation, and they were encouraged to use small dry twigs and allow more air flow to filter any smoke out of the kitchen either by safely adding windows or increasing the spaces between the roof and wall.	The verification team has review the grievances register and the supporting photograph and further discussed with the PP during interview at onsite, the same was closed and confirm that the PP has addressed the grievance appropriately, hence accepted.
Improper maintenance of project stoves & lack of awareness about stove benefits	Households were given training on proper stove maintenance along with information about the numerous health, nutritional, and safety benefits of the project stoves to the intended HHs.	The PP has provided the training records and same was discussed with the PP during on-site visit, therefore the verification team has confirmed that households were received trainings on proper stove maintenance along with information about the numerous health, nutritional, and safety benefits, therefore it is confirmed that the PP has properly addressed the grievance, hence accepted.

This was checked and found to be correct and hence accepted as accordance to para 3.18.3 to 3.18.5 of the VCS Standard version 4.4.

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.

The project was included as a CPA under the PoA on 05-June-2019 with CDM reference 9007-P1-0007-CP1. The CPA-DD can be referred at the following link to confirm the CDM stakeholders' consultation details:

https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/SI6LZ5AGKR037UPH84WJYTVCDQN1F9/view

For projects registered under an approved GHG program which are seeking registration with the VCS Program, according to paragraph 3.22.6 (sub-paragraph 3) of the VCS Standard (Version 4.4), this section need not be completed

3.3.4 Public Comments

PP has uploaded the Project for public comments at VERRA VCS database and the commenting period is over (project was open for public comment from 14/06/2022 to 14/07/2022). There was no public comment has been received for this project. This has been verified from the link. (<https://registry.verra.org/app/projectDetail/VCS/2713>). Therefore, same has been accepted by Validation team

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

Sectoral Scope: 3

Type: Type II – Energy Efficiency Improved Projects

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

Methodology: VMR0006 - Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1¹

This methodology also refers to the latest version of AMS II.G version 4.0 - Energy efficiency measures in thermal applications of non-renewable biomass

<https://cdm.unfccc.int/methodologies/DB/GNFWB3Y6GM4WPXFRR2SXKS9XR908IQ>

3.4.2 Applicability

¹<https://verra.org/methodology/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/>

The project activity uses VCS methodology VMR0006, Version 1.1

The assessment team evaluated the applicability criteria for the baseline methodology through document review and interview. The project activity's compliance with the methodology is mentioned below.

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
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 34.5% is 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. WBT test report conducted by third party (Aprovecho Research Centre) has been provided to the VVB .	Efficiency of cookstoves has been verified using Manufacturer's specifications and. WBT test report conducted by third party (Aprovecho Research Centre) ; it is found to be consistent.

S. N.	VMR0006, Version 1.1 Requirements	Project activity applicability	Means of verification
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 (Zambia) 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
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	Not applicable since the project does not involve biomass residues processed as a fuel. The ICS is introduced as energy efficiency measure to replace baseline stoves and reduce the use of non-renewable biomass for combustion.	Not applicable since the project does not involve biomass residues processed as a fuel and same was confirmed during onsite visit.

S. N.	VMR0006, Version 1.1 Requirements	Project activity applicability	Means of verification
	with the processing of the displaced fossil fuel and hence disregarded.		
6	The project design shall explain the proposed method for distribution of project devices including the method to avoid double counting of emission reductions such as unique identifications of product and end-user locations (e.g., programme logo)	Each ICS in this project can be identified by a unique combination of 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	During onsite visit it was confirmed based on review of ICS project database that each ICS identified by a unique combination of 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

S. N.	VMR0006, Version 1.1 Requirements	Project activity applicability	Means of verification
		other relevant voluntary carbon schemes to ensure that the ICS is not included in any other CDM project activity or voluntary 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.
7	The project design shall also explain how the proposed procedures prevent double counting of emission reductions, for example to avoid that project stove manufacturers, wholesale providers or others claim credit for emission reductions from the project devices	The stove manufacturers/wholesale providers/end users shall sign an undertaking stating clearly that the PP or an entity authorized by it shall be the sole owner of the VCU's arising from the project CO ₂	Verified from signed undertaking from the stove manufacturers/wholesale providers/end users shall sign an undertaking stating clearly that the PP or an entity authorized by it shall be the sole owner of the VCU's arising from the project CO ₂ .

3.4.3 Project Boundary

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

The Joint PD & MR accurately stated the information pertaining to the project boundary. As a result, the project boundary for the proposed VCS project activity has taken into account the entirety of Zambia.

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 is appropriate.

The project boundary is the entire geographical boundary of the Republic of Zambia.

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
	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

3.4.4 Baseline Scenario

As defined in the methodology, the baseline scenario is the continued use of non-renewable wood fuel (firewood) by the target population to meet similar thermal energy needs as provided by the project cookstoves in absence of project activity. The baseline cookstoves are three-stone fires or conventional systems lacking improved combustion air supply mechanism and flue gas ventilation system i.e., traditional stoves.

CDM-CPA-DD:

https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/SI6LZ5AGKR037UPH84WJYTVCDQ1F9/view

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

3.4.5 Additionality

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

Activity Method

Step 1: Regulatory Surplus

There is no mandated government programs or policy in the host country ensuring the distribution of domestic fuel-efficient cookstoves. The project is not mandated by any law, statute or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute or other regulatory framework.

Households may only participate voluntarily in this project. It is hereby confirmed that the proposed project is a voluntary coordinated action by CQC.

Step 2: Positive List

As demonstrated in section 3.2 of the Joint PD and MR, the project meets the applicability conditions of the methodology which represent the positive list. The project installs the ICS at zero cost to the household and has no other source of revenue other than the sale of GHG credits. The project is not implemented as part of government schemes or supported by multilateral funds.

Conclusion: The verification team checked the end-user agreements and also confirmed from the end users during the site audit that the ICS was distributed at free of cost. The team also checked the national government schemes portal to verify that the project is not implemented as a part of any government scheme. Based on the aforementioned data, the VVB Team draws the conclusion that the data in the joint PD and MR complies with methodology requirements. As the project fulfills the conditions above, it is deemed additional.

3.4.6 Quantification of GHG Emission Reductions and Removals

In the Joint PD & MR, the equations and choices specified in the applied methodology VMR0006, Version 1.1, are accurately cited. The formulas listed in the applied methodology are used to calculate the project's emission reductions.

The assessment team certifies that the formulas are accurately stated for the determination of emissions reductions based on their review of the Joint PD & MR. The facts and requirements supplied in the applied methodology have been compared with the parameters and equations presented in the Joint PD & MR and other pertinent papers. In order to establish compatibility between all the formulas contained in the Joint PD & MR, ER validation spreadsheet and the applied methodology, an equation comparison has also been done.

PP has applied a default value of η_{old} which is 0.1. 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 t CO₂e
- $ER_{y,i,j}$ = Emission reductions by improved cookstove of type i and batch j during year y in t CO₂e

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

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})
- $NCV_{woodfuel}$ = Net calorific value of the non-renewable woody biomass that is substituted or reduced (IPCC default for wood fuel, 0.0156 TJ/tonne)²
- $EF_{wf,CO2}$ = CO₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO₂/TJ)³
- $EF_{wf,nonCO2}$ = Non-CO₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO₂/TJ)⁴
- $N_{y,i,j}$ = Number of improved cookstoves of type i and batch j operating during year y
- 0.95 = Discount factor to account for leakage

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

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

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

⁴ 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

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

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

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 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.

$$\eta_{new,y,i,j} = \eta_p \times (DF_n)^{y-1} \times 0.94 \text{ (Equation 5)}$$

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.
- 0.94 = Adjustment factor to account for uncertainty related to project cookstove efficiency test.

Where the project households continue to use baseline cookstoves along with improved cookstoves, B_{old} shall be adjusted ex-post based on the percentage of project households found to continue such practice according to Equation 6. For such cases, the quantity of woody biomass saved due to implementation of improved cook stoves shall be calculated using an adjusted value to account for ex-post use of baseline stoves in addition to improved cookstove -

$$B_{old,adjusted} = B_{old} \times (1 - \mu_y) \text{ (Equation 6)}$$

Where,

- $B_{old,adjusted}$ = Adjusted B_{old} to account the ex-post usage of firewood in baseline cookstove(s) by project households in addition to improved cookstove (in tonnes per device).
- μ_y = Baseline stove usage factor to account for use of baseline cookstoves along with improved cookstoves

In accordance with AMS.II-G version 4.0 paragraph 23, It is assumed that in the absence of the project activity, the baseline scenario would be the projected use of fossil fuels to meet similar thermal energy needs as those provided by the project devices. The actual baseline scenario is the use of NRB. Since NRB has higher carbon intensity than the fossil fuels proposed in AMS II.G, this assumption reduces the emission reductions significantly, making the outcome more conservative.

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

- 1) The project has installed 150,000 ICS.
- 2) ICS installation done within 1st year of project implementation.
- 3) The life span of ICS is 10 years. For conservative estimate of ER, the annual stove loss rate is estimated at 5%
- 4) $B_{old,adjusted}$ is assumed as 5.6950 tonnes / device / year considering μ_y as 0 (0% baseline usage).

Hence, the number of ICS operating during year y is as below –

Year (y)	$N_{y,i,j}$
1	28,194
2	127,326
3	142,224
4	135,113
5	128,357
6	121,939
7	115,842
8	110,050
9	104,548
10	99,320

Thermal Efficiency of Project Cookstove in year y –

Year (y)	$\eta_{new,y,i,j}$
1	32.43%

2	32.11%
3	31.78%
4	31.47%
5	31.15%
6	30.84%
7	30.53%
8	30.23%
9	29.92%
10	29.63%

Determination of quantity of woody biomass that is saved in tonnes per ICS during year y –

Year (y)	$B_{old,adjusted}$	$\eta_{new,y,i,j}$	η_{old}	$B_{y,savings,i,j}$
1	5.6950	32.43%	0.1	3.939
2	5.6950	32.11%	0.1	3.921
3	5.6950	31.78%	0.1	3.903
4	5.6950	31.47%	0.1	3.885
5	5.6950	31.15%	0.1	3.867
6	5.6950	30.84%	0.1	3.848
7	5.6950	30.53%	0.1	3.830
8	5.6950	30.23%	0.1	3.811
9	5.6950	29.92%	0.1	3.792
10	5.6950	29.63%	0.1	3.773

Determination of emission reductions for each year –

Year	$B_{y,savings,i,j}$	$NCV_{wood\ fuel}$	$f_{NRB,y}$	$EF_{wf,CO2}$ + $EF_{wf,non\ CO2}$	$N_{y,i,j}$	$ER_{y,i,j}$
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1	3.939	0.0156	0.81	138.23	28,194	184,106
2	3.921	0.0156	0.81	138.23	1,27,326	827,620
3	3.903	0.0156	0.81	138.23	1,42,224	920,189
4	3.885	0.0156	0.81	138.23	1,35,113	870,126
5	3.867	0.0156	0.81	138.23	1,28,357	822,769
6	3.848	0.0156	0.81	138.23	1,21,939	777,972
7	3.830	0.0156	0.81	138.23	1,15,842	735,598
8	3.811	0.0156	0.81	138.23	1,10,050	695,517
9	3.792	0.0156	0.81	138.23	1,04,548	657,605
10	3.773	0.0156	0.81	138.23	99,320	621,745

The below table mentions the estimated emission reductions generated during the project crediting period. The estimated baseline emissions; project emissions & leakage emission have been reflected as left blank because of the following reasons:

1. The methodology does not quantify baseline & project emissions separately. It directly quantifies net emission reductions achieved by the project as described in sections 5.1 & 5.2 of the joint PD and MR.
2. A default leakage adjustment factor of 0.95 has been considered, in accordance with methodology, in the calculation of net emission reductions as mentioned in section 5.3 of the joint PD and MR.

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 2019	-	-	-	184,106
Year 2020	-	-	-	827,620
Year 2021	-	-	-	920,189
Year 2022	-	-	-	870,126
Year 2023	-	-	-	822,769
Year 2024	-	-	-	777,972

Year 2025	-	-	-	735,598
Year 2026	-	-	-	695,517
Year 2027	-	-	-	657,605
Year 2028	-	-	-	621,745
Total	-	-	-	7,113,247

3.4.7 Methodology Deviations

This project does not deviate from the applied methodology VMR0006 version 1.1. However, during the transition from the CDM to the VCS, the PP has shifted from the old CDM methodology AMS-II.G Version 4.0 to VMR0006 version 1.1.

Under the transition from CDM to VCS, Project Description Deviation has been applied to switch from the previous CDM methodology AMS-II.G. to the new VERRA methodology VMR0006, v1.1. The reasons for switch to the methodology VMR0006, v1.1 have been mentioned below:

- i. **Reduced efforts in monitoring:** The thermal efficiency of the project stoves has been estimated ex-ante using equation 5 in VMR0006, v1.1. The project proponent is not required to conduct Water Boiling Tests to monitor the thermal efficiency of project stoves throughout the crediting period. Efforts in monitoring will reduce with increased savings in resources as compared to monitoring plan requirements under AMS-II.G.
- ii. **Representativeness of fuel type consumption in baseline scenario:** The methodology switch has changed the default value for the emission factor applied, increasing from 81.6 tCO₂/TJ to the CO₂ emission factor of 112 tCO₂/TJ plus the non-CO₂ emission factor of 26.23 tCO₂/TJ, which sums up to 138.23 tCO₂/TJ. The default emission factor applied in the project under CDM considers a mix of present and future fuels used in households. Thus a 50% weight is assigned to coal as the alternative solid fossil fuel (96 tCO₂/TJ) and a 25% weight is assigned to both liquid and gaseous fuels (71.5 tCO₂/TJ for Kerosene and 63.0 tCO₂/TJ for Liquefied Petroleum Gas (LPG) arriving at the 81.6 t CO₂/TJ value. However, this value assumes a hypothetical situation of fuel mix-use and is not representative of the ground situation.

A considerable percentage of the rural population in Zambia depends on wood fuel for meeting their cooking needs. Moreover, the target population selected for the project activity is exclusively wood fuel using rural households, it is therefore only fair to consider the wood emission factor of 112 tCO₂/TJ to be more appropriate than the previously used value of 81.6 t CO₂/TJ for calculating emission reduction as it corroborates with the ground reality. Furthermore, assessment team has verified the this deviation and confirmed that the deviation meets with the criteria and

specifications for permitted methodology deviations and also there is no impacts the on the quantification of GHG emission reductions. Hence accepted.

- iii. **Higher accuracy in avoided GHGs calculations:** The previous CDM methodology AMS-II.G. did not account for non-CO₂ emissions. However, the VMR0006 v1.1. methodology considers CO₂ and Non-CO₂ emissions in calculating emission reductions (using conservative IPCC default factors). This approach leads to more accurate calculations and quantifies the actual avoided emissions by the project stoves.

Based on explanation provided in this section under point (ii), the project proponent deems it fit to use the wood emission factor instead of the hypothetical fuel mix since it represents the actual ground condition and estimates the avoided emissions as a sum of CO₂, N₂O, and CH₄ emissions since a wood fuel stove are known to emit all three GHGs and not just CO₂. Hence, the new VERRA methodology VMR0006 v1.1 has been applied using the default values of the parameters applicable as per the VERRA methodology by the Project Proponent. Furthermore, assessment team has verified the this deviation and confirmed that the deviation meets with the criteria and specifications for permitted methodology deviations and also there is no impacts the on the quantification of GHG emission reductions. Hence accepted.

The assessment team has verified that there is no negative impact on the conservativeness of GHG emission reduction quantification because of the deviation in methodology which is in line with Section 3.19.2 of VCS Standard, v4.4. Further, there is no deviation from the applied VERRA methodology during this project cycle. Hence, the conservativeness and accuracy of emission reduction quantification are exactly as per the newly applied methodology and not to be compared with previous CDM methodology AMS-II.G.

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 batch j operating during year y	Monitoring survey
$\eta_{new,y,i,j}$	fraction	Efficiency of the improved cookstove type i and batch j	Calculated using equation 5 of the VCS methodology

		determined through water boiling test (WBT) during year y	VMR0006, V1.1
μ_y	fraction	Adjustment to account for any continued use of pre-project devices during the year y	Monitoring survey
Life Span	Number of years	The operating lifetime of the project device.	Manufacturer's specification

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 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.

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

3.5 Non-Permanence Risk Analysis

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

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

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 saved by the project activity during year y that can be	0.81	fraction	Approved revised PoA DD; version 17, dated 27/12/2018

		established as non-renewable biomass			
2.	NCV _{wood fuel}	Net calorific value of the non-renewable woody biomass 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.	η_{old}	Efficiency of baseline cookstove	0.1	Fraction	Methodological default value
6.	B _{old}	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices.	5.695	tonnes/year	The baseline survey assessed the average woody biomass usage per household per annum amongst users of 3-stone fires, / pot support according to interviews in Zambia. This data was gathered according to: Standard for Sampling And Surveys CDM Project Activities and Programme of Activities
7.	η_p	The efficiency of the project stove at the start of project activity	0.345	Fraction	Manufacturer's specification

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.	3.9	Project specific indicator: Reduction in PM2.5 emissions	During the present monitoring period, the effort helped the 150,000 families who received single ICS, have reduced their PM 2.5 emissions by 0.0075 ton/HH/stove during the current monitoring period. The same is demonstrated by survey findings, which indicate that 100% of respondents noticed less smoke close to TLC stoves' cooking areas. while 44% of respondents reported experiencing lower levels of eye irritation linked to cooking, 38% of respondents noted a reduction in chronic cough.
2.	4.4	Project specific indicator: Number of individuals who received any informal training	Helped increase the vocational and relevant skills of 9 local people during the current monitoring period 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.
3.	5.4	5.4.1 Time spent on unpaid domestic and care work, by sex, age, and location.	The project has contributed to time savings and reduced drudgery in 150,000 households translating to

			benefiting an equal number of women. The survey results augment the above claim, as 100% of the respondents using TLC-CQC Rocket 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.
4.	7.1	7.1.2 Proportion of population with primary reliance on clean technology	Contributed to increasing access to clean cooking technology with 150,000 TLC-CQC Rocket installations in same number of households of Zambia that have been using traditional three stone fire or other traditional open fire, etc.
5.	8.3	8.3.1 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 5 locals for varying lengths of time over the project lifetime with a focus on hiring females.
6.	13.0	Project Specific Indicator: Reduction in GHG emissions as compared to the baseline scenario (open fire)	Contributed to total GHG emission reduction of 1,598,600 tCO₂e due to replacement of baseline stoves with TLC-CQC Rocket Stoves in the current monitoring period.

7.	15.2	15.2.1 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 ~3.75 tons per stove (TLC-CQC Rocket Stoves) per annum in the current monitoring period, from forests surrounding the communities thereby leading to an increase in above ground biomass in these forests.
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Initial Approach:

The PP has submitted the survey data sheet and same has been verified by assessment team and confirm the following parameter was obtained through sampling during the current monitoring period:

S. No.	Parameter	Description of Parameter
1	$N_{y,i,j}$	Number of project devices of type i and batch j operating during year y
2	μ_y	Adjustment to account for any continued use of pre-project devices during the year y

The assessment team has checked the sampling approach adopted in the section of jt. PD& MR and it was confirmed that the approach adopted by the PP is found to be in-line with the registered CDM PoA PD plan and also “Guidelines for Sampling and surveys for CDM project activities and programmes of activities”, the assessment team has confirmed the following the sample sizes and results –

Monitored Parameter	Sample size	Survey Results	Precision achieved
Number of project devices of type i and batch j operating during year y ($N_{y,i,j}$)	48	100%	0.00%
Adjustment to account for any continued use of pre-project devices during the year y (μ_y)	48	4.18%	1.30%

Updated Approach:

Considering the total population to which the stoves have been disbursed i.e., (150,000 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 611 households and following was concluded:

Status	Responded samples
operating	601
non-operating	10
Total	611
p(operating)	98.36%

Based on this approach and exercise, it was established by the PP that the stoves in operation were 98.36% (*File 1: 44.03.06 Privileged & Confidential - Stove champion data (26 August 2024)/18/* 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 0.86% /20/ 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)/19/* 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 Zambia region of Africa was 98.90%. However, PP has considered the Global Average value (*File 3: 44.03.05 Stoves in Operation - Verified Secondary Data (2024-08-05), CELL:C34)/19/* which lowest value of stoves in operation, i.e. 90%, 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.

Parameter(s) monitored ex-post

Parameter	N _{y,i,j} (Number of project devices of type i and batch j 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 years through ICS survey.
	Monitoring equipment	Monitoring survey
	Value applied	The Number of project devices operating during current monitoring period is calculated based on updated approach = $90\% * 150,000 = 135,000$. The value is checked and confirmed based on Monitoring Survey submitted.
	How were the values in the monitoring report verified?	Measured directly or based on a representative sample. Joint PD and MR has used CDM sampling standard, version 9.0 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 as above in this report.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On-site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable. Assessment team verified operational ICS during the on-site visit from ICS survey report.
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	$\eta_{new,y,i,j}$ Efficiency of the improved cookstove type i and batch j determined through water boiling test (WBT) during year y		
Means of verification	Criteria/Requirements	Assessment/Observation	
	Measuring /Reading /Recording frequency	Annual	
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the Joint PD & MR and monitoring methodology.	
	Monitoring equipment	Not Applicable	
	Value applied	Year	$\eta_{new,y,i,j}$
		1	32.43%
		2	32.11%
		3	31.78%

		4	31.47%
	How were the values in the monitoring report verified?	Efficiency test carried out by third party who is authorized by government.	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On-site assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.	
Findings	No findings were raised.		
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.		

Parameter	μ_y Adjustment to account for any continued use of pre-project devices during the year y	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	PP has decided to 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. It will be monitored at time of each new cookstove installation which is acceptable.
	Monitoring equipment	Not Applicable
	Value applied	0.0418

	How were the values in the monitoring report verified?	Minimum sample size of each type i and batch j should be in line with the latest version of Standard for sampling and surveys for CDM project activities and programme of activities or guidelines provided in methodology Section 8.4 option (b). (a) If the baseline cookstoves are decommissioned and no longer used, as determined by the monitoring survey its value is 0 and Bold, adjusted is equal to Bold. (b) If both the improved cookstove and baseline cookstoves are used together then surveys shall be conducted to record the average continued operation of baseline cookstoves in a sample of households. The surveys should be designed to capture the cooking habits and stove usage of households in the region, including quantification of use of baseline cookstoves, by formulating questions and/or collecting evidence to determine the frequency of usage of both the improved cookstoves and 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
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		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.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	Life Span The operating lifetime of the project device. The life span should be reported if the methodology equation 5 is adopted to determine the project stove efficiency	
Means of verification		
	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Once at the time of project stove installation
	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.
	Monitoring equipment	Not Applicable
	Value applied	10

	How were the values in the monitoring report verified?	As per manufacturer specification. Value was fixed once at the time of project stove installation. It is consistent with the registered VCS Joint PD&MR.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable
The PP has clarified that the life of TLC stove is at least 10 years owing to it being a clay and brick stove which can be easily repaired using a mixture of local clay, cow dung/ash, sand and water etc. on a regular basis. The metal parts used in the stoves are under extended warranty from PP/manufacturer side throughout the projected life span and further the PP has confirmed that parts will be replaced in case of request received from the stove owner for replacement. Further the PP has confirmed the life span of 10 years through the above measures. The same has been verified during site visit and found to be correct, hence accepted.		
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 01-January-2021 to 31-December-2022 (inclusive of both the dates) PP has achieved to reduce **1,598,600 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)
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Year 2021 (1-January-2021 to 31-December-2021)	-	-	-	760,605
Year 2022 (1-January-2022 to 31-December-2022)	-	-	-	837,995
Total	-	-	-	1,598,600

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

The project monitoring has been carried in accordance with the joint PD&MR. The monitoring plan laid in the joint PD&MR is being followed at the site. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the joint PD&MR.

The PP has provided all the sufficient data for current monitoring period. The PP has provided emission reduction calculation in ER sheet with the equations applied and method of using measured data to arrive at the results. VVB team has verified the same by review the calculation in the ER sheet and found to be appropriate and correct. The verification of each monitoring parameter has been discussed in the above section 4.1.

The calculation method and formulae used in calculating baseline emission and project emission is in compliance to the methodology.

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

<u>Ex-ante emissions reductions /removals</u>	<u>Achieved emissions reductions /removals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
1,422,650	1,598,600	+12.37%	There is an increase in emission reduction value compared to estimate in validation. This is because PP has considered a linear loss rate of 5% stoves every year during ER estimation (Ex ante). However, the actual stoves in operation was 90% during this verification.

5 VALIDATION AND VERIFICATION OPINION

LGAI Technological Center, S.A. (also referred to as Applus+ Certification) is contracted by M/s C-Quest Capital Malaysia Global Stoves Limited (project proponent), to undertake the Joint GAP Validation and Verification of the grouped project "**Distribution of Improved Cookstoves in Sub-Saharan Africa-Zambia-CPA-007**". The GHG statement is the responsibility of the project proponent.

The joint validation and verification process were performed on the basis of all guidance and criteria as provided in the VCS Standard (version 4.4), VCS Program Guide (version 4.3), and Registration & Issuance Process (version 4.3).

The grouped project activity complies with the requirements of the applied baseline & monitoring methodology, VMR0006, Version 1.1, and according to Applus+ Certification, delivers the information in Joint PD & MR as needed by VCS Standard, version 4.4. As previously mentioned, the validation was carried out utilising a risk-based methodology. The project activity is anticipated to reduce emissions by **7,113,247 tCO₂e** over the length of its crediting period (ten years).

As stated in the Joint PD & MR, Applus+ Certification concludes the validation with a positive opinion and affirms that the VCS Project Activity "**Distribution of Improved Cookstoves in Sub-Saharan Africa-Zambia-CPA-007**" complies with all applicable VCS requirements, including those outlined in the CDM PoA Standard, version 3.0, methodologies, tools, and guidelines.

The GAP-validation is based on the VCS PD, proof of title, proof of right, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validation team by project proponent/CME. The Applus+ Certification concluded that the project is likely to achieve estimated GHG emission reduction or removals based on a positive conclusion of the reasonableness of assumptions, limitations and methods that support the estimations of the future activities, provided that actual results may vary since the estimates are based on assumptions that are subject to potential changes during the implementation and monitoring of the project.

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 accurately states the GHG emission reductions reported for the project activities for the monitoring period from 01-January-2021 to 31-December-2022 (inclusive of both dates). Based on the approved baseline & monitoring methodology, as well as the VCS standard, the GHG emission reductions were computed accurately.

Estimated Emission reduction over the crediting period is:

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 2019	184,106
Year 2020	827,620
Year 2021	920,189
Year 2022	870,126
Year 2023	822,769
Year 2024	777,972
Year 2025	735,598
Year 2026	695,517
Year 2027	657,605
Year 2028	621,745
Total estimated ERs	7,113,247
Total number of crediting years	10
Average annual ERs	711,325

Period of verification: 01-January-2021 to 31-December-2022 (inclusive of both dates). 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)
Year 2021 (1-January-	-	-	-	760,605

2021 to 31-December-2021)				
Year 2022 (1-January-2022 to 31-December-2022)	-	-	-	837,995
Total	-	-	-	1,598,600

Comparison of Ex-ante emission reductions and achieved emissions reductions –

Year	Ex-ante emissions reductions/removals	Achieved emissions reductions/removals	Percent difference	Justification for the difference
01-January-2021 to 31-December-2022	1,422,650	1,598,600	+12.37%	There is an increase in emission reduction value compared to estimate in validation. This is because PP has considered a linear loss rate of 5% stoves every year during ER estimation (Ex ante). However, the actual stoves in operation was 90% during this verification

APPENDIX 1: DOCUMENT REFERENCES

S.No	Title of Document	Version & Date	Source
1.	Joint PD & MR	Version 01 dated 16- March-2023	PP
	Joint PD & MR (Intermediate version of document)	Version 02 dated 16- June-2023	
		Version 02.1 dated 09- November- 2023	
	Joint PD & MR (Final)	Version 02.2 dated 29- August-2024	
2.	Ex-ante Emission Reduction spreadsheet	Version 01 dated 16- March-2023	PP
	Ex-ante Emission Reduction spreadsheet (Intermediate version of document I)	Version 02 dated 16- June-2023	
	Ex-ante Emission Reduction spreadsheet (Final)	Version 02.1 dated 09- November- 2023	
	Emission Reduction spreadsheet	Version 01 dated 16- March-2023	PP
	Emission Reduction spreadsheet (Intermediate version of document I)	Version 02 dated 16- June-2023	
	Emission Reduction spreadsheet (Final)	Version 02.1 dated 09- November- 2023	
		Version 02.2 dated 29- August-2024	

S.No	Title of Document	Version & Date	Source
3.	ICS Distribution data and carbon waiver records of ICS	-	PP
4.	Declaration(s) from Project proponent on double accounting	-	PP
5	VMR0006; Methodology for Installation of High Efficiency Firewood Cookstoves version 1.1	https://verra.org/methodologies/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/	VERRA
6	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 4.2	-	VERRA
7.	Life span certificate	-	PP
8.	Site assessment –interviews of staff personnel, photographs, physical inspection of monitoring system	-	VVB
9.	Employment records	-	PP
10.	Skilled training records	-	PP
11.	Local Stakeholder Meeting records	-	PP
12.	ICS Survey Report	-	PP
14.	Photos of grievance register	-	PP
15.	Sample copy of carbon waiver records	-	PP
16.	Technical Specifications of the ICS	-	PP
17.	Sampling and surveys for CDM project activities and programmes of activities, version 9.	https://cdm.unfccc.int/suns/etcms/storag	CDM

S.No	Title of Document	Version & Date	Source
		e/contents/stored-file-20210531160756223/Meth Stan05.pdf	
18	44.03.06 Privileged & Confidential - Stove champion data (26 August 2024)	26/08/2024	PP
19	44.03.05 Stoves in Operation - Verified Secondary Data (2024-08-05)	05/08/2024	PP
20	2713 MP01 Nyij Precision_29082024	29/08/2024	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
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. CL from this Gap Validation and verification

CL ID	01	Section no.	Jt PD & MR	Date :13/06/2023
Description of CL				
1. PP is requested to submit the cookstove distribution data base for the current monitoring period. 2. PP is requested to submit the implantation agreement between CQC and local entity. 3. PP is requested to submit the finance agreement.				
Project participant response				Date : 16/6/2023
1. Project Database has been shared with VVB for reference. 2. Implementation Agreement between CQC and local parties has been shared with VVB for reference. 3. Finance agreement between CQC and ECOEYE has been shared with VVB for review.				
Documentation provided by project participant				
1. Project Database Spreadsheet. 2. copy of Implementation Agreement between CQC and local parties 3. Finance Agreement between CQC and ECOEYE				
DOE assessment				Date: 23/06/2023
The PP has submitted the requested supporting documents; same was verified and found to be correct, hence accepted. CL#01 closed.				

CL ID	02	Section no.	Jt PD & MR	Date :13/06/2023
Description of CL				
The PP need to submit following supporting documents: 1. PP is requested to submit the end user agreement copies (samples). 2. PP is requested to submit the declaration for the current monitoring period that the project is not participating in any other GHG program or taking any other kind of benefits 3. PP is requested to submit the declaration stating they are not claiming any other form of GHG related environmental credits and other form of emission trading and other binding limit.				
Project participant response				Date : 16/6/2023

1. End user agreement copies has been provided for the requested samples for VVB reference. 2. Declaration from PP has been provided to VVB for reference. 3. Declaration from PP has been provided to VVB for reference	
Documentation provided by project participant	
1. End user agreement copies for requested samples 2. Declaration from PP for non-participation in any other GHG program and avoidance of double counting.	
DOE assessment	Date: 23/06/2023
The PP has submitted the corrected jt. PD and MR and same was checked and found to be correct, hence accepted. CL#02 closed.	

Table 2. CAR from this Gap Validation and verification

CAR ID	01	Section no.	Jt PD & MR	Date : 13/06/2023
Description of CAR				
1. Title Page - PP is requested to update the font colour, size and style throughout the report. 2. Section 1.3 - The current version of VCS standard version is 4.4 how this version 4.2 is eligible. 3. Section 1.4 -PP is requested to mention the para/section from CDM CPA-DD for better traceability throughout the report. 4. Section 2.1 - The current version of VCS standard version is 4.4 how this version 4.1 is eligible. 5. Section 3.1- PP is requested to insert the hyperlink for methodology.				
Project participant response				Date : 16/6/2023
1. Corrected revised Joint PD & MR has been submitted to VVB for reference. 2. Corrected revised Joint PD & MR has been submitted to VVB for reference. 3. Corrected revised Joint PD & MR has been submitted to VVB for reference. 4. Corrected revised Joint PD & MR has been submitted to VVB for reference. 5. Corrected revised Joint PD & MR has been submitted to VVB for reference.				
Documentation provided by project participant				
Supporting Documents and revised PD & MR				
DOE assessment				Date:23/06/2023
The PP has submitted the corrected jt. PD and MR and same was checked and found to be correct, hence accepted. CAR#01 closed.				

CAR ID	02	Section no.	1 (Jt PD & MR)	Date : 13/06/2023
Description of CAR				
1. In section 1.1: - PP is requested to be incorporated implementation dates (From which date the project is implemented) In this section, also incorporate the dates of the current monitoring period as it is crucial information that should be in the project description. - PP is requested to provide a reference or working link of CDM CPA. - PP is requested to mention or specify that it is the current validation - PP is requested to mention or specify that it is the current verification 2. In section 1.2:PP is requested to incorporate that it is a AFOLU project or not. 3. In section 1.4:PP is requested to don't write sentence in the futuristic format as it is an implemented project. Throughout the report 4. In section 1.11:As per the Joint project description & Monitoring report VCS template 4.2, The" description of the project activity "includes information on providing a list of facilities systems, and equipment in operation under the existing scenario prior to the implementation of the project. 5. In section 1.12:PP is requested to provide detailed information about the project location where it is implemented (like specify the province and district). 6. In section 1.17.1: PP is requested to provide a working web link. 7. In section 1.17.2: table 1: PP is requested to maintain font colour as per the VCS template throughout the report.				
Project participant response				Date : 16/6/2023
1. Section 1.1 of the Joint PD & MR updated/ corrected with the requested changes. 2. Section 1.2 of the Joint PD & MR updated/ corrected with the requested changes. 3. Section 1.4 of the Joint PD & MR updated/ corrected with the requested changes. 4. Section 1.11 of the Joint PD & MR updated/ corrected with the requested changes. 5. Section 1.12 of the Joint PD & MR updated/ corrected with the requested changes. 6. Section 1.17.1 of the Joint PD & MR updated/ corrected with the requested changes 7. Section 1.17.2 of the Joint PD & MR updated/ corrected with the requested changes				
Documentation provided by project participant				
Revised Joint PD &MR , version 02				
DOE assessment				Date:23/06/2023
The PP has submitted the corrected jt. PD and MR and same was checked and found to be correct, hence accepted. CAR#02 closed.				

CAR ID	03	Section no.	3 (Jt PD & MR)	Date :13/06/2023
Description of CAR				

In section 3.3: - PP is requested to Identify the relevant GHG sources, sinks and reservoirs for the project and baseline scenarios, leakage if applicable. - PP is requested to don't delete any section or table from the template, if any section is not relevant to the project just write not applicable but don't delete any section. - In the table PP is requested to write the name of the gas in subscripts.	
Project participant response	Date : 16/6/2023
Section 3 of the Joint PD & MR updated/ corrected with the requested changes.	
Documentation provided by project participant	
Revised Joint PD &MR , version 02	
DOE assessment	Date:23/06/2023
The PP has submitted the corrected jt. PD and MR and same was checked and found to be correct, hence accepted. CAR#03 closed.	

CAR ID	04	Section no.	6 (Jt PD & MR)	Date:13/06/2023
Description of CAR				
1. In section 6.3 : - PP is requested to don't provide unnecessary space. - PP is requested to provide monitoring equipment if any used to measure this parameter. - PP is requested to justify what this frequency means throughout the report. - PP is requested to maintain consistency in writing or indicating the monitoring Parameter. - PP is requested to specify the dates of the first monitoring period. - PP is requested to maintain gaps between two words. - PP is requested to incorporate information about how the replacement of old stoves is done and also how they determine the damaged cookstove - PP is requested to mention the version.				
Project participant response				Date : 16/6/2023
All the requested changes/ corrections have been made in the revised Joint PD & MR.				
Documentation provided by project participant				
Revised Joint PD &MR , version 02				
DOE assessment				Date:23/06/2023
The PP has submitted the corrected jt. PD and MR and same was checked and found to be correct, hence accepted. CAR#04 closed.				

Table 3. FAR from this Gap Validation and verification

FAR ID	XX	Section No.	XX	Date :
Description of FAR				
NA				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

APPENDIX 4: COMPETENCY 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 On-Site Assessment
Vivek Kumar Ahirwar	Lead Auditor (LA) & 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 curriculum vitae of the DOE'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 Master 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+ LGAI 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+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Verifier and ISO 9001/14001 Lead Auditor for 3.5 years.