



**Verified Carbon
Standard**

INSTALLATION OF HIGH EFFICIENCY WOOD BURNING COOKSTOVES IN ZIMBABWE

Document Prepared By



Certification Pvt. Ltd.

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Summary:

VKU Certification Pvt. Ltd. (hereafter VKU) was commissioned by C-Quest Capital Stoves Asia Limited (hereafter CQC) to verify the greenhouse gas emission reductions reported for the project activity “Installation of high efficiency wood burning cookstoves in Zimbabwe (VCS 2341)”, covering monitoring period from 01-September-2021 to 28-February-2022(both dates included) with regard to the relevant requirements for VCS activities.

The objective of the verification is to have an independent review ex-post determination of the monitored reductions in GHG emissions. Verification was conducted using VKU’s procedures in line with the requirements specified in the VCS program guide version 4.2/3/, VCS standard Version 4.3/4/, VCS validation and verification manual version 3.2/22/, CDM M&P, the latest version of the CDM Validation and Verification Standard/25/, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques. The verification consisted of desk review, on-site assessment and the resolution of outstanding issues and the issuance of the final verification report and certification.

The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS/CDM requirements in order to be certified.

The GHG emission reductions were calculated on the basis of the approved methodology VMR0006

'Methodology for Installation of High Efficiency Firewood Cookstoves' (version 1.1)/6/ and the monitoring plan included in the project description, version 2.1 of 22-February-2022/14/.

During this verification, 03 Corrective Action Request (CAR) and 05 Clarification Requests (CLs) were identified related to operation, monitoring and GHG emission reduction calculation of the VCS project activity in relation to all relevant VCS requirements for the project activity and the applied baseline and monitoring methodology, and these CARs and CLs are successfully closed after necessary corrections/clarifications by the client. The same has been discussed in Appendix B of this verification report.

- In conclusion, it is VKU's opinion that the project activity "Installation of high efficiency wood burning cookstoves in Zimbabwe" VCS project ID 2341, meets all relevant requirements for VCS standard and guidelines and correctly applies the baseline and monitoring methodology VMR0006 "Methodology for Installation of High Efficiency Firewood Cookstoves" version 1.1/6/. The monitoring system is in place and the emission reductions are calculated without material misstatement. Hence, VKU is able to certify that the emission reductions from the project during the 2nd monitoring period from 01-September-2021 to 28-February-2022 (both dates included) under fixed crediting period from 29-November-2020 to 28-November-2030 (inclusive of both the dates) amounts to 191,271 tCO_{2e}.

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1 INTRODUCTION

1.1 Objective

C-Quest Capital Stoves Asia Limited (hereafter CQC) commissioned VKU Certification (hereafter VKU) to carry out verification of the project “Installation of high efficiency wood burning cookstoves in Zimbabwe (VCS 2341)” for the period from 01-September-2021 to 28-February-2022(both dates included).

This report summarizes the findings of the verification of the project, performed on the basis of VCS Requirements and UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The objective of the verification is to have an independent evaluation of a project activity by an accredited validation and verification body against the requirements of the VCS Program Guide Version 4.2/3/, VCS standard version 4.3/4/ and GHG program applied, on the basis of the registered project design document/14/.

The verification is for the 2nd monitoring period from 01-September-2021 to 28-February-2022(both dates included). The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The project activity has been implemented on 29-November-2020 (date of commissioning of 1st ICS under this grouped project activity) and operating as per the project description /14/(PD) and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Monitoring report/1/ and other supporting documents are complete;
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.

To confirm that the monitoring system is implemented and fully functional to generate Verified Carbon Units (VCUs) without any double counting, and to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- to verify that reported GHG emission data is sufficiently supported by evidence.

The project is assessed against the requirements of VCS standard version 4.3/4/, VCS program guide version 4.2/3/, validation and verification manual version 3.2/22/ and related rules and guidance. VKU has, based on the recommendations in the latest version of CDM Validation and Verification Standard version 9.0/25/, VCS validation and verification manual version 3.2/22/ and employed a rule-based approach (as criteria) in the verification, focusing on the identification of significant reporting rules and the reliability of project monitoring.

Verification is not meant to provide any consultancy towards the project proponents. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

All the revisions of the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent VKU's procedure, with a **reasonable level of assurance**. The verification report is based on the Monitoring report /01/, registered VCS PD /14/, supporting documents /7//8//9//15//18//19//20//21/ made available to the verifier and information collected through performing interviews on-site.

The technical review was performed by a technical reviewer(s) qualified in accordance with VKU's qualification procedure. The verification team and the technical reviewers consist of the following personnel:

Role/Qualification	Last Name	First Name
VCS Team Leader & Technical Expert TA 3.1	Ahirwar	Vivek Kumar
Validator/Verifier - Trainee	Sharma	Deepali
Technical Reviewer & Technical Expert TA 3.1	Srivastava	Abhishek Kumar

The threshold for quantitative materiality with respect to the aggregate of errors, omissions and misrepresentations, relative to the total reported GHG emission reductions and/or removals was limited to five percent, as required by section 4.1.8 of the VCS Standard version 4.3/4/. As the project is a SSC project, the threshold shall be five percent as per Section 4.1.8 of VCS Standard 4.3/4/. The same was verified from PPs sampling survey and VVBs acceptance sampling, it was found that 100% samples were appropriate and rejection was 0% which is less than 5%. Hence, accepted.

1.4 Summary Description of the Project

The group project has implemented distribution of 191,958 improved cook stoves (ICS) in Zimbabwe replacing conventional open fire. The proportion of operational stoves is 172,762 which was arrived by multiplying the percentage of operational stoves with the total number of stoves. The baseline stoves are conventional system with no improved combustion air supply or flue gas ventilation system as verified from on-site review and interview. The project stoves are having better efficiency compared to baseline cooking system i.e. open fire and therefore results in saving firewood compared to baseline scenario. Each project ICS included in the project activity with an end user agreement executed between end user and PP (Practical Action) /7/. The CQC has agreement for communication to VCS and CQC is acting as entity responsible for communication with VERRA. The project proponent for the project activity which is C-Quest Capital Stoves Asia Limited, owns the rights to VCUs, which is confirmed from the end user agreement cum consent deed signed by end user by accepting the transfer of rights to all carbon credits generated from the project to PP /7/.

The ICS distributed in the group project activity is a TLC-Rocket stove, invented by Total Land Care (TLC), an international NGO, the design is supported and certified by Aprovecho research centre/9/. Under this project two stoves were installed per household in Zimbabwe with per-stove efficiency of 34.5%/9/. The project technology was witnessed by the audit team during on-site audit and found to be operating as per the specifications and description. Each ICS has a life span of 10 years as confirmed from stove manufacturer specification/9/. TLC cookstoves manufactured under the project activity match the fixed design specification. This was achieved by using brick moulds of specified dimensions to make bricks used for stove construction locally. This ensured, that each stove that is built at individual end user household measures exactly same as the dimensions specified by the manufacturer. Post construction, training was provided to end users on use, care, and upkeep of these stoves. PP conducted periodic audits and surveillance of the stoves distributed under the group project activity to ensure their proper functioning throughout the project lifetime. This along with spot audits and after installation maintenance services, ensure that the project stoves continue to work at efficiencies as specified by the manufacturer/9/.

The project's fixed crediting period is from 29-November-2020 to 28-November-2030 (inclusive of both the dates). Emission reductions from 29-November-2020 to 31-August-2021 (both

dates included) have already been verified and issued as a part of the first monitoring period/13/. For the current monitoring period from 01-September-2021 to 28-February-2022(both dates included) 191,958 ICSs distributed and 172,762 ICSs operational, results in overall reduction of 191,271 tCO₂e emission reductions/2/.

2 VERIFICATIONPROCESS

2.1 Method and Criteria

Verification was conducted using VKU's internal procedures in line with the requirements specified in the VCS Requirements, i.e. VCS Program Guide Version 4.2/3/, VCS standard document version 4.3/4/. The GHG emission reductions are on the basis of the approved Baseline and monitoring methodologyVMR0006, version 1.1/6/.

The verification consisted of the following three phases -

- Completeness check & Document review of the validation report, monitoring plan, monitoring report, monitoring methodology, VCS PD, applicable tools in particular attention to the frequency of measurements, quality of metering equipment including calibration requirements, QA/QC procedures and other relevant documents;
- On-site assessment including Interviews/30/ and actual project scenario;
- Resolution of any Material Discrepancy and the issuance of the final verification report and certification.

The following sections outline each step in more detail.

2.2 Document Review

During the document review, VKU has applied standard auditing techniques to assess the quality of information provided. The verification was performed primarily based on the review of the monitoring report (MR) version 01 of 28-July-2022, Version 01.1 of 23-September-2022, version 01.2 of 15-December -2022 and version 01.3 of 24-August-2024/1/, the emission reduction calculations spreadsheets with version 01 dated 28-July-2022, version 1.1 dated 18-July-2023 and version 1.2 of 24-August-2024 received from the PP /2/ were assessed as part of the verification. In addition, the registered Project Description Documents (VCS-PDs) /14/ in particular the baseline estimations and the monitoring plan for the project was reviewed. The following table lists the documentation that was reviewed during the verification:

/1/	C-Quest Capital: VCS monitoring report for "Installation of high efficiency wood burning cookstoves in Zimbabwe", version 01 of 28-July-2022 version 01.1 of 23-September-2022 version 01.2 of 15-December-2022 version 01.3 of 24-August-2024
/2/	C-Quest Capital: Emission Reduction Calculation Spreadsheet for "Installation of high efficiency wood burning cookstoves in Zimbabwe",

	version 01 dated 28-July-2022, version 1.1 dated 18-July-2023 and version 1.2 of 24-August-2024
/3/	<u>VCS Program Guide, version 4.2 of 22-June-2022</u>
/4/	<u>VCS Standard, version 4.3 of 22-June-2022</u>
/5/	VCS: Monitoring report Template VCS Version 4.1
/6/	VCS: <u>Link</u> -VMR0006-Methodology for Installation of High Efficiency Firewood Cookstoves v1.1
/7/	Practical Action: Sample copies of end user agreement between PP and end user, which is signed by the end user accepting carbon right waiver to PP
/8/	Result of performance test of ICS, Test report from November 2015
/9/	Manufacturer's specification: TLC Brochure - Declaration of ICS life and Efficiency
/10/	UNFCCC: Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities, Ver. 4.0
/11/	UNFCCC: Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 09.0
/12/	<u>Carbon Check: Validation report "Installation of high efficiency wood burning cookstoves in Zimbabwe" version 02.1 of 23-February-2022</u>
/13/	<u>Carbon Check: Verification report "Installation of high efficiency wood burning cookstoves in Zimbabwe" version 03.1 of 12-October-2022</u>
/14/	C-Quest Capital: Registered PD for the project 'Installation of high efficiency wood burning cookstoves in Zimbabwe' version 02.1 of 22-February-2022
/15/	Practical Action: User survey - Sample User Survey Form - Sample User survey photo taken during survey - Sampling survey spreadsheet Attendance sheet and presentation for data collection training during survey
/16/	VERRA: https://registry.VERRA.org/app/projectDetail/VCS/2341
/17/	Document – Project Grievance Redress Mechanism
/18/	Practical Action: Grievance/Repair/Maintenance

	Training records
/19/	Practical Action: Declaration to avoid double counting, non-inclusion of projects in other standards
/20/	Practical Action: Sales Record Database /Sample sales invoice -Monitoring Survey Report
/21/	Site visit Photographs and attendance sheet from 04-August-2022 to 06-August-2022
/22/	<u>Validation and verification manual version 3.2 dated 19-October-2016</u>
/23/	UNFCCC: Project search: https://cdm.unfccc.int/Projects/projsearch.html
/24/	Gold Standard Foundation: https://registry.goldstandard.org/projects?q=&page=1
/25/	<u>CDM Validation & Verification Standard version 09.0 dated 20-February-2015</u>
/26/	VCS Program Definitions version 4.2 dated 22-June-2022
/27/	<u>2006 IPCC Guidelines for National Greenhouse Gas Inventories</u>
/28/	<u>Tool 30 v3.0 - Calculation of the fraction of non-renewable biomass</u>
/29/	GPS map camera version 1.2.8
/30/	Interviews conducted onsite from 04-August-2022 to 06-August-2022
/31/	Sampling and calculation sheet of Monitoring Period 1
/32/	KML File showing location of project -Zimbabwe
/33/	Online Project Database for the ICS distributed and sales records for the monitoring period
/34/	Verra s6.1 OPERATIONS 2341 Zimbabwe-MP1- Data
/35/	VCS 2341 MP02 N _{yij} Precision_Data
/37/	Privileged and Confidential – Stove Champion Data
/38/	2341 MP01 B _{ynew} & N _{yij} Precision_24082024

2.3 Interviews

The key personnel interviewed, and the main topics of the interviews are summarized in the table below:

	Date	Name and Role	Organization	Topic
/a/	04-August-2022 to 06-August-2022	Akhilesh Joshi-CQC-CSAT -Senior Manager	CQC-CSAT	2.3.1 2.3.2 Description of the project activity, ownership, avoidance of double counting, Emission reductions calculations Monitoring plan and monitoring arrangements Monitoring, recording, QA/QC procedures. ICS operational status, commissioning details, project investment etc.
/b/	04-August-2022 to 06-August-2022	Tridip Kumar Goswami-CQC-CSAT-Chief	CQC-CSAT	
/c/	04-August-2022 to 06-August-2022	SanjithKakkat, CQC-CSAT-Associate	CQC-CSAT	
/d/	04-August-2022 to 06-August-2022	WimbisoSimbi, Compliance Officer	C-Quest Capital	
/e/	04-August-2022 to 06-August-2022	Maureen Tsodo, Country Manager-Operation	C-Quest Capital-Operation	
/f/	04-August-2022 to 06-August-2022	Cithnyawdura Admire, Program Support Officer	C-Quest Capital-Operation	
/g/	04-August-2022 to 06-August-2022	Samson Kawarenge, Program Support Officer	C-Quest Capital-Operation	
/h/	04-August-2022 to 06-August-2022	Maxwell Ndoro, District Coordinator	Taonabiz - Implementation Partner	Implementation Status, Training to maintain cookstove, Spot-checking mechanism, Documentation, Benefits of the project
/i/	04-August-2022 to 06-August-2022	Nimarambire, District Coordinator	Taonabiz-Implementation Partner	
/j/	04-August-2022 to 06-August-2022	Midred Kaguda, District Coordinator	Taonabiz-Implementation Partner	
/k/	04-August-2022 to 06-August-2022	Local Stakeholders	N/A	Project implementation, socio-economic impact,quantity of wood used by ICS, other benefits etc.

The end users interviewed are mentioned in the table below –

S.No.	Date	Name & Stove ID	Topic
1.	04-August-2022 to 06-August-2022	SpiweChakutumba (Stove 1 ID CQCVZW0160615, Stove 2 ID CQCVZW0160662) End User	On-site Interview on the number of project devices operating during the year y ($N_{y,i,j}$), unique serial number, date of installation, type of ICS, name of user and address
2.	04-August-2022 to 06-August-2022	ShallyMukudu (Stove 1 ID CQCVZW0146512, Stove 2 ID CQC0146513)	On-site Interview on the number of project devices operating during the year y ($N_{y,i,j}$), unique serial number, date of installation, type of ICS, name of user and address
3.	04-August-2022 to 06-August-2022	Rebecca Chitsiga (Stove 1 ID CQCVZW0170260, Stove 2 ID CQCVZW0170259)	On-site Interview on the number of project devices operating during the year y ($N_{y,i,j}$), unique serial number, date of installation, type of ICS, name of user and address
4.	04-August-2022 to 06-August-2022	Alice Mushonga (Stove 1 ID CQCVZW0146064, Stove 2 ID CQCVZW0146069)	On-site Interview on the number of project devices operating during the year y ($N_{y,i,j}$), unique serial number, date of installation, type of ICS, name of user and address
5.	04-August-2022 to 06-August-2022	Kudakwashe Chakaza (Stove 1 ID CQCVZW0212679, Stove 2 ID CQCVZW0212725)	On-site Interview on the number of project devices operating during the year y ($N_{y,i,j}$), unique serial number, date of installation, type of ICS, name of user and address

6.	04-August-2022 to 06-August-2022	ChiratidzoMuchemwa (Stove 1 ID CQCVZW0267406, Stove 2 ID CQVZW0267462)	On-site Interview on the number of project devices operating during the year y ($N_{y,i,j}$), unique serial number, date of installation, type of ICS, name of user and address
7.	04-August-2022 to 06-August-2022	AlbetinaChagweda (Stove 1 ID CQCVZW0267318, Stove 2 ID CQCVZW0267319)	On-site Interview on the number of project devices operating during the year y ($N_{y,i,j}$), unique serial number, date of installation, type of ICS, name of user and address
8.	04-August-2022 to 06-August-2022	Ever Mutot (Stove 1 ID CQCVZW0003972, Stove 2 ID CQC0003971)	On-site Interview on the number of project devices operating during the year y ($N_{y,i,j}$), unique serial number, date of installation, type of ICS, name of user and address
9.	04-August-2022 to 06-August-2022	Violet Kaseke (Stove 1 ID CQCVZW0268478 Stove 2 ID CQCVXW0268474)	On-site Interview on the number of project devices operating during the year y ($N_{y,i,j}$), unique serial number, date of installation, type of ICS, name of user and address

2.4 Site Inspections

VKU audit team from 04-August-2022 to 06-August-2022 conducted on-site inspection following sampling approach as explained in below:

PP's sampling approach:

PP has proposed simple random sampling plan using 90/10 as confidence/precision. This is in line with the Section 8.4 of the applied methodology /14/. The sample size for each parameter is determined following guidelines-Appendix 1 Section 2.1.1 for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0 (EB86, Annex 4) /10/. The monitoring parameter(s) monitored through the sampling plan were:

- Number of operating unit (ICS) under the project activity

Development of the Verification/Sampling Plan:

The audit team has formally documented its verification/ sampling plan as well as determine the evidence-sampling plan. The verification plan is developed based on key elements of the verification process as per the criteria of engagement. The plan identifies and addresses the following:

- 1.Level of Assurance
- 2.Materiality
- 3.Standards of evaluation & reporting for the verification including the assessment criteria
- 4.Scope and objectives
- 5.Assessment team and the roles of team members
- 6.Schedule of verification activities

Verification Approaches

- 1.ASP: Acceptance Sampling
- 2.SPL: Sampling Approach (all data available)
- 3.CDC: Complete data check of data including all data aggregation steps
- 4.COM: Full data check at higher data aggregation levels and sampling at original data levels

Sampling/Verification Plan-

In order to ensure a complete, transparent and timely execution of the assessment task, the team leader has planned the complete sequence of events necessary to arrive at a substantiated final opinion. Various tools have been established in order to ensure an effective assessment planning.

Step 1- Identification of Materiality threshold

Check the relevant box against applicable threshold level	Threshold	Related to
☒	5 %	Quantitative materiality demands that the threshold for materiality with respect to the aggregate of errors, omissions and misrepresentations, individually or in the aggregate, for any

		reported relative to the total reported GHG emission reductions and/or removals assets shall be limited to five percent. The same was verified from PPs sampling survey/15/ and VVBs acceptance sampling, it was found that 100% samples were appropriate and rejection was 0% which is less than 5%. Hence, accepted.
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Step 2- Identification of risks, their level and assessment

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the potential risk		Assessment of the records/information/interview with personnel to check controls/ mitigation measures
		Risk level	Justification	
1.	Monitoring parameter	High	Monitoring not done as per the registered PD	The risk will be mitigated by reviewing the claims in the VCS PD, Monitoring Plan and its assessment based on VCS requirements. The plausibility of the related monitoring parameter can be further cross-checked with the project specific evidence, related to the host country/region and interviews with the related stakeholders (end users/beneficiaries).
2.	Project design: Information on project design without adequate controls related to data, evidences (project/sector related)	High	Project design incorrectly described thus leading to incorrect delineation of the baseline scenario, causal change, threats to the project	The risk will be mitigated by reviewing the claims in the VCS PD/14/ and its assessment based on VCS requirements. The background documents including monitoring survey/report/15/ (such as those related country specific f _{NRB} study) shall be cross-checked with the project specific evidence, related to the host country/region and interviews/30/ with the related stakeholders.
4.	Accuracy of the	Medium	Inadequately	The risk due to accuracy of the

	monitoring survey		delineated monitoring plan may lead non-compliance of the VCS principle	monitoring plan will be ensured by reviewing the VCS PD/14/, VCS requirements, sampling tool applied and ensuring feasibility/appropriateness of the monitoring plan by means of onsite interviews with the PP, their associates and the end users.
5.	Competence of personnel involved in conducting monitoring like surveys	Medium	Interview of the personnel involved and check the training records conducting such monitoring.	The risk will be mitigated by reviewing the training records/18/ of the personnel involved in the conducting such surveys and by following the monitoring responsibilities. The training records will be reviewed which will also be confirmed during the interviews/30/.

Sampling Plan:

Where, due to the number of project activity instances, it is unreasonable to undertake an individual assessment of each initial or new instance, the validation/verification body shall document and explain the sampling methods employed for the validation of such instances. Such sampling methods shall be statistically sound. The number of instances included in the project, eligible for monitoring and generation of VCUs shall be proportional to the percentage of sampled instances found to be in compliance by the validation/verification body.

☐	No sampling approach has been used by the VVB to verify the project's compliance with SD Vista requirements.
☒	A sampling approach has been applied by the VVB to verify the project's compliance with VCS requirements for the aspects derived in step 2 above. The statistical approach of sample size (i.e. 18) calculation is provided below.

AS: Acceptance Sampling

VVB has applied a sampling approach for the onsite interviews as part of assessment in accordance with the paragraph 26 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 09.0/25/. In accordance with the paragraph 39 c of the sampling standard, acceptance sampling has been chosen by the verification team. Verification team has opted for AQL of 0.5 % and UQL of 20%; producer risk of 5% and consumer risk of 15 % as per VVBs professional judgement according to para 30 of Sampling and surveys for CDM project activities and programme of activities v09.0/11/ in determining the VVB's sample size of 9 ICS with acceptance number (c) as 0.

Sample size and acceptance number based on AQL, UQL, and producer and consumer risks as per Sampling and Survey Standard v09.0

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

Verification team based on its professional judgement and observation during acceptance sampling, derived its assessment including conclusions as discussed later in the following section of this report. The verification team selected random samples from PP's sample list. The stoves details (unique serial number, date of installation, type of ICS, name of user and address) were checked and found to be consistent with that reported in the installation database. No inconsistency was observed for any of the 18 samples with respect to on-site inspection & document review. This assessment of the selected samples was done to ascertain the implementation status of the project activity w.r.t. the stove types, serial number, location etc. of ICS.

2.5 Resolution of Findings

The objective of this phase of the verification is to resolve any outstanding issues which need to be clarified for VKU's positive conclusion on the project description. To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria. The verification protocol consists of three tables; the different columns in these tables are described below.

A corrective action request (CAR) is raised if one of the following occurs:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emissions reductions that will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project proponents.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

In summary, 05 CLs and 03 CARs were raised during this verification which were closed successfully and details are given under Appendix B of this report.

2.5.1 Forward Action Requests

Based on the review of the verification report for the 1st Monitoring Period /13/, no FAR found raised which needs to be closed during this verification. No FARs were raised in current monitoring period.

2.6 Eligibility for Validation Activities

The project activity is registered under VCS registration reference Number 2341/16/ under sectoral scope 3, hence this section is not applicable.

3 VALIDATION FINDINGS

The project is already registered under VCS with reference number 2341/16/. The validation of the project was done by Carbon Check (India) Pvt. Ltd/12/ and it was registered under the VCS registration reference no. 2341. The fixed crediting period is from 29-November-2020 to 28-November-2030(inclusive of both the dates). This verification assessment is for the 2nd monitoring period 01-September-2021 to 28-February-2022 (Both dates included).

3.1 Participation under Other GHG Programs

The project is registered only under VCS and not registered in any other GHG program. This was confirmed based on both independent assessment and declaration submitted by PP/19/, the assessment team accepted the claim that there will not be double counting from this project activity. Thus, ensuring emission reduction generated from the project activity will not be double counted hence accepted by the assessment team. Also, assessment team checked the following registries to confirm the same. The details of the registries checked are as follows:

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

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

3. <https://registry.verra.org/app/search/VCS/All%20Projects>

Rejection by other GHG programs

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

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

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

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

3.2 Methodology Deviations

No methodology deviation has been applied during the current monitoring period. Also, there were no deviations identified during the previous verification which were confirmed from the previous verification report issued by CCIPL /13/.

3.3 Project Description Deviations

No project deviation has been applied during the current monitoring period. Also, there were no deviations identified during the previous verification which were confirmed from the previous verification report issued by CCIPL/13/.

3.4 Grouped Project

The grouped project (the project) is the dissemination of energy efficient stoves for cooking purposes. A total of 191,958 ICS was disseminated by the end of this monitoring period. The volume of ICS distributed in this period is smaller than ex-ante anticipated in the registered document, resulting in lower emission reductions than anticipated. Total operational stoves are 172,762.

Under this grouped project PP has considered each ICS as a project activity instance (PAI) which is deemed acceptable as per the VCS Program Definitions version 4.2/26/ and VCS Standard version 4.3/04/. The eligibility criteria of the Project Activity Instance, was established at the group project validation in the VCS PD /12//14/.

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

The assessment team has reviewed the evidences collected by the PP for each of the PAI included in this verification and confirmed the following;

- Implementation and operational status of the PAI
- Monitoring and data collection
- Flow of information; generating, aggregating and reporting of the monitoring parameters
- Conformance of the new project activity instances with the eligibility criteria set out in the project description:

The verification team assessed the appropriateness of new project activity instances (added to the grouped project) against the requirements of the following key elements defined in section 3.2.11 of the Validation and Verification Manual (version 3.2)/22/:

Table 1 :- Eligibility Criteria for new project activity instances

Key Element 3.4.1	Requirements /22/	VVB Assessment
Geographic Areas	VVBs must ensure that the project description clearly identifies the geographic areas within which new instances may be added. Geographic areas must be defined using geodetic polygons and provided in a KML file/32/. Such geographic areas need not be contiguous and may be large	The verification team reviewed the sales record database /20/ and by further conducting interviews/30/ with representatives of PP to confirm that all new project activity instances are located within the geographical area identified in the registered VCS PD /14/. All new

	or small, noting the grouped project requirements for additionality and baseline assessments of the geographic area.	project activity instances are located within the host country of Republic of Zimbabwe. /17/ This was found to be appropriate to the verification team and in line with the registered VCS PD/14/. Thus, the requirements of this key element are met.
Identification of baseline scenario and demonstration of additionality:	The assessment of baseline scenario and additionality is based upon the initial instances included within each geographic area. VVBs must ensure that, for each project activity, a single baseline scenario exists for each geographic area. VVBs must also ensure for each project activity that additionality is demonstrated across the entirety of each geographic area. Failing this, VVBs must require that the geographic areas are redefined such that the requirements are met. As with projects with multiple instances, project activity instances within a grouped project should be part of the same investment decision if they are to be included in a single project.	The verification team reviewed the sales record database /20/, conducted interviews/30/ with representatives of PP and further based on its sectoral expertise confirms that baseline scenario is the continued use of non-renewable wood fuel (firewood) by the target population to meet similar thermal energy needs as provided by project cookstoves in absence of project activity for each project technology and geographic area, as identified in section 3.4 of the VCS PD /14/, is applicable to the corresponding new project activity instances under the specific technology. In addition, the verification team further confirms that each new project activity instance included within the grouped project follows the additionality. Thus, it has been demonstrated that for each project activity instance included in grouped project • Baseline scenario exists (corresponding to the project technology) for the entire geographical area • the requirements of additionality are being complied with for the entirety of geographic area (Republic of Zimbabwe) within

		which they are installed. This was found to be appropriate to the verification team, based on the evidences and fulfilment of eligibility criteria. Thus, the requirements of this key element have been met by all the new project activity instances added to the grouped project.
Eligibility criteria	VVBs must ensure that an appropriate set of eligibility criteria are established for each combination of project activity and geographic area. The criteria are used to validate new project activity instances, essentially serving as a checklist to determine whether the instances share the same attributes as the initial set of validated project activities instances. For example, eligibility criteria for grouped projects implementing CFLs may state that new instances must be installed in grid-connected households and the CFLs must be at least 30 percent more expensive compared to conventional incandescent bulbs. In general, VVBs must ensure that the eligibility criteria are developed sufficiently that such determinations could be made when validating new instances. Eligibility criteria must also conform to any restrictions set out in the methodologies applied.	PP has provided the applicability of each of the eligibility criteria for all the project instances in section 3.3 of the MR /01/ which is in compliance with the VCS PD /14/. Based on the assessment provided, the verification team concludes that each new project activity instance meets the appropriate set of eligibility criteria (as defined in VCS PD/14/) and thus shares the same attributes as the initial set of validated project activity instances. Thus, the verification team deems them to be appropriate for inclusion in the grouped project. This was found appropriate to the verification team. Thus, the requirements of this key element have been met by all the new project activity instances added to the grouped project.
Monitoring and GHG information system	VVBs must ensure that the project has an appropriate monitoring plan that includes a sampling plan to collect data from all project activity instances and information systems, allowing for centralized data collection. VVBs must ensure the	The verification team reviewed the VCS MR /1/ and further conducted interviews/30/ with representatives of PP to confirm that the monitoring plan and procedures mentioned therein (which includes the sampling plan) is in conformance to

	sampling plan is able to generate statistically significant results.	the requirements laid out in the VCS PD /14/, Moreover, according to the monitoring plan the PP is responsible for collecting and storing data. The verification team further confirms that new project activity instances will conform to the monitoring plan requirements and procedures stated therein. However, as per specific requirements of the applied methodologies VMR0006 version 1.1/6/, sampling for monitoring the project under methodologies has taken place during the current monitoring period as verified from the Sampling and survey sheet provided by the PP/15/. Based on the review of the applied methodologies/6/ and VCS PD/14/ this is deemed to be acceptable to the verification team. Refer to section 4.1 below for detailed discussion on monitoring activities. This was found to be appropriate to the verification team. Thus, the requirements of this key element have been met by all the new project activity instances added to the grouped project.
Methodology	Grouped projects can apply methodologies other than those designed specifically for grouped projects. When reviewing the methodology and the project's application of it, VVBs must be mindful of any capacity limits applicable to the methodology. VVBs need only ensure that project activity	The verification team reviewed the MR /1/, sample end user agreements/7/ for new project activity instances, and further conducted interviews/30/ with representatives of PP to confirm that all new project activity instances comply with the requirements of their respective

	instances and clusters adhere to such capacity limits; the grouped project as a whole may exceed the capacity limit.	applied methodologies /6/. Furthermore, it is confirmed that no methodologies other than those designed specifically for grouped projects have been applied. Moreover, all new project activity instances comply with the respective capacity limits as per the applied methodologies. <table><tr><th>Capacity Limit of each ICS</th><th>Capacity Limit of Project</th></tr><tr><td>180 GW_{hth/y}</td><td>180GW_{hth/y}*191,958=34,552,440 GW_{hth/y}</td></tr></table> The expected annual energy saving for each project activity instance is approximately 0.0072 GW_{hth/y} or 0.01% of the limit. As the annual energy saving is below 1% of the limit, therefore no project activity instance is identified and divided into clusters. Hence, it is concluded that no PAI has crossed or is expected to cross the limit This was found to be appropriate to the verification team. Thus, the requirements of this key element have been met by all the new project activity instances added to the grouped project.	Capacity Limit of each ICS	Capacity Limit of Project	180 GW _{hth/y}	180GW _{hth/y} *191,958=34,552,440 GW _{hth/y}
Capacity Limit of each ICS	Capacity Limit of Project					
180 GW _{hth/y}	180GW _{hth/y} *191,958=34,552,440 GW _{hth/y}					

Based on the above assessment the verification team confirms that inclusion of project activity instances in the grouped project are valid.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

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

A reduction in consumption of non-renewable biomass contributes towards reduction in GHG emissions into the atmosphere. Thus, ICS reduce GHG emissions through their improved thermal efficiency as compared to traditional/baseline stoves. This project is implemented by Practical Action (PA)/15//18//19//20/. Users transfer the ownership of carbon credit via end user agreement /07/. The operational and management structure is verified from document review and on-site interview/30/.

The verification team confirms that during the current monitoring period i.e.,01-September-2021 to 28-February-2022 (inclusive of both the dates) the VCS grouped project has disseminated 191,958 ICS implemented in Zimbabwe/33/ and same is verified from the online project database provided by the PP/33/.The ICS registration happens through the mobile application (ICT) on-site and directly saved in the centralised database, which is maintained from US with minimum human interference. Chances of human error and duplicate entries are eliminated through the above measures. The first stove was installed on 29-November-2020 and is also verified from project database/33/and validation report/12/ and found to be accurate. The ICS promoted under the project have 10 years technical life /09/ and initial tested efficiency of ICS was 34.5 %. This was further confirmed by the verification team by the TLC Brochure/9/ submitted by the PP. During this 2nd monitoring period operational status of total 191,958 ICS were taken into consideration and monitoring survey confirmed a 100% operational rate between 01-September-2021 to 28-February-2022(both dates included) /02//20/. The operational rate was further confirmed by the section 9.2 of applied methodology, “Number of project devices of type i and batch j operating during year y ($N_{y,i,j}$) can be measured directly or based on representative sample.”

However, as per VERRA findings, PP has revised the operational rate, hence the number of operational cookstoves has been modified from 191,958 to 172,762. It is found to be more conservative by VVB since the operational cookstove were found to be 100% based on the monitoring survey by PP for this monitoring period. The latest survey depicts 95.63% stoves are in operation. The secondary data of other projects registered in the same project region suggests the operation percentage is 91.70% which is less than 100%. PP has considered the more conservative value of 90% which is found as per the stove champion follow up survey conducted in latest MP which is very conservative value and more details are provided in Appendix-B attached to this report /43/.

PP had conducted second monitoring survey during the period of 30-March-2022 to 30-April-2022(inclusive of both the dates) in Zimbabwe. During the survey it was found that 100%

project devices are in operation, and this was further confirmed by the VVB from the submitted sampling spreadsheet /15/by PP, stove champion data/44/, secondary data of other projects in the region/43/. However, as per latest data, 90% stoves are taken under operation.

So, to measure $N_{y,i,j}$, PP multiplied the achieved proportion with commissioned stoves that is $90\% \times 191,958 = 172,762$

During the interviews/30/ verification, QA/QC procedures were identified which demonstrate that:

Operational and management system of the grouped project is in place; data were centralized; monitoring data were crosschecked with the sales records stored and confirmation that all operational staff were trained before taking up positions/18/. The verification team thus confirmed that the monitoring of the project activity has been implemented in accordance with the monitoring plan in the registered VCS PD. The registered VCS PD/14/ clearly describes the monitoring and responsibility of monitoring is done by PP.

VKU verification team verified 18 ICS more than the required number of samples as explained in section 2.4 above to ascertain accuracy of information. VKU confirms the project cook-stoves are operating in all samples interviewed/30/, each cook-stove has unique identification number (ID) which has been provided in the end user agreement/7/ and are correct as per project database/17/. Along with the serial number, the stove model, end user name, address, installation date etc. had also been noted which were found to be consistent on ground during the site visit.

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

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

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

	Data/parameter	Unit	Value applied	Assessment
1	Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass (f_{NRBy})	Fraction	0.88	The value has been calculated in accordance with Tool 30 version 3/21/; using latest available versions of Food and Agriculture Organization (FAO) report, UN Data and other publicly available data that have been published by reliable sources. The value is fixed as per registered

				PD/14/ for the entire crediting period.
2	Net calorific value of the non-renewable woody biomass that is substituted or reduced ($NCV_{wood\ fuel}$)	TJ/tonne	0.0156	It is IPCC default value verified from 2006 IPCC Guidelines for National Greenhouse Gas Inventories/27/; Volume 2 Energy, Chapter 1 Introduction. Further, this is a default value as stated in the VMR0006 Methodology, version 1.1/06/.
3	CO2 emission factor for the use of wood fuel in baseline scenario ($EF_{wf,CO2}$)	tCO2/TJ	112	It is an IPCC default value verified from 2006 IPCC Guidelines for National Greenhouse Gas Inventories/27/; Volume 2 Energy, Chapter 2 Stationary combustion. The value is fixed as per registered PD/14/ for the entire crediting period.
4	Non-CO2 emission factor for the use of wood fuel in baseline scenario ($EF_{wf,non\ CO2}$)	tCO2/TJ	26.23	It is IPCC default value from 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion. This value is fixed ex-ante during validation /12/
5	Efficiency of baseline cookstove(n_{old})	Fraction	0.1	A default value of 0.1 shall be used if baseline device is a three-stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney. Further, this is a default value as stated in the VMR0006 Methodology, version 1.1/06/.
6	Efficiency of project stove at the start of project activity(n_p)	Fraction	0.345	As per manufacturer specification/09/. Consistent with the registered PD /14/. This has been validated during registration as well /12/.

Data and parameters monitored:

Parameter	Value	Description/Assessment
Number of project devices of type i and age	172,762	From the total commissioned ICS, PP has conducted the sample survey/15/

a that are operating in year y $N_{y,i}$		in line with monitoring plan and sampling and survey guidelines/10/ covering 96 samples which were found 100% operational by the PP./1//2/. According to the section 9.2 of applied methodology, “Number of project devices of type i and batch j operating during year y ($N_{y,i,j}$) can be measured directly or based on representative sample.” PP had conducted second monitoring survey during the period of 30-March-2022 to 30-April-2022 in Zimbabwe. During the survey it was found that 100% project devices are in operation, and this was further confirmed by the VVB from the submitted sampling spreadsheet /15/by PP. As per the Monitoring Period sample survey, 100% of stoves were found to be operational. However, due to VERRA findings raised because of inconsistencies. Data has been updated. As per the stove champion follow up survey conducted in latest Monitoring period, stoves in operation were 95.63%, and as per the secondary data of other projects/43/, stoves in operation percentage was 91.70%. PP has considered minimum number of stoves in operation as 90%. Hence, PP has considered the lowest value of stoves in operation 90% on a conservative basis. So, to measure $N_{y,i,j}$ PP multiplied the achieved proportion with commissioned stoves that is $90\% \times 191,958 = 172,762$ During the site visit/21/, VKU confirmed with the household/end user whether or not the PP has performed monitoring/measurement
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		campaign/20/, survey on stove operation (for the parameter $N_{y,i,j}$). The verification team also assessed Competence of personnel involved in conducting/12/. Hence, VKU verification team verified taking 18 samples and all samples were found operational. Hence reported results are accepted.
Efficiency of the improved cookstove type i and batch j during year y ($\eta_{new,i,j}$)	For Vintage 1: 32.43% For Vintage 2: 32.11 %	This parameter has been calculated using equation 5 of the applied methodology/06/. The applied efficiency is correct as per the methodology requirement and registered PD /14/ and hence accepted.
Annual quantity of woody biomass used by improved cookstoves in tonnes per device of type i and batch j, determined in the first year of the implementation of the project through a sample survey. $B_{y=1,new,i,j,survey}$	0.7439	In accordance with the applied methodology and validated registered PD, the parameters is determined during the first verification and fixed for the remaining crediting period. The determination and calculation of this parameter is not under the scope of current verification. However, the assessment team; - Has verified sampling and calculation sheet of Monitoring Period 1/31/ for determination of wood consumption for checking the consistency of values used - Confirms it was demonstrated that the consumption of biomass for individual project stoves can be measured exclusive of one another (for two pot stoves) --As per the VERRA findings the wood consumption value for parameter $B_{y=1,new,i,j,survey}$ has been changed by PP for MP-1 and consecutively in this MP also which is cross checked with the raw data sent by PP /40/ for all samples surveyed according to the requirement of methodology.
Life Span	10 years	As per manufacturer specification/09/. Value was fixed once at the time of project stove installation. It is consistent with the registered PD /14/.

4.2 Safeguards

4.2.1 No Net Harm

The project involves use of improved cooking stove in households replacing conventional cooking stoves. Therefore, the project results in avoidance of CO₂ emissions due to improvement in efficiency as verified from the manufacturer's specification/9/. Therefore, there is no negative environmental impact from the project activity. In addition, due to the project activity, jobs are created on local level as verified during on-site interview/30/ which has improved socio-economic impacts in the project area. Therefore, there is no net harm from the project activity.

4.2.2 Local Stakeholder Consultation

Local stakeholder consultation is not applicable for the project proponent during verification. PP organized stakeholder consultation during validation/12/ of the project activity which was validated by the validation agency. The verification team has interacted local stakeholders during on-site assessment/21/ and details are summarized in section 2.3 of this report. There was no negative comment or feedback from local stakeholders as recorded by the verification team.

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

The Project Proponent has reported its feedback and grievance redressal procedure in Section 2.2 of the MR /1/, and the policy is outlined in the document "Project Grievance Redress Mechanism" /17/. In the opinion of assessment team, based on interviews/30/ and observations, the grievance redressal procedure will address issues that may arise during project planning and implementation. The grievance redressal process has been designed where beneficiaries and stakeholders have PP contact information and the understanding that they should contact the organization with any problems, questions, or grievances.

As per VCS PD /14/ and further confirmed during interviews/30/, the end-users have a provision to approach PP through their village chief. The village chief then reports the concerns to the concerned person, i.e., field staff from PP who takes it further and resolves the issue. In the opinion of VVB, this would protect the traditional sentiments and value system of the villages and help them express their issues without any hesitation and deemed appropriate to the VVB. The typical diagram of this grievance addressal mechanism is mentioned in the section 2.2 of the MR /1/. During the interviews/30/ and based on document review /15/, it can be confirmed that grievance addressal procedure has been designed and is implemented according to section 2.2 of the MR /1/ and that it is effective in its aim.

The verification team confirms on the procedure and method for engagement, method for documenting the outcomes of local stakeholders' consultation and account of all inputs received. The verification team confirms that the project proponent has taken due account of all input/ feedback received during the monitoring process (positive or negative) have been compiled in the survey results spreadsheet/15/, this has been checked by the verification team during the onsite interviews/30/. Hence the verification team found the local stakeholders ongoing communication as appropriate.

4.3 AFOLU-Specific Safeguards

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

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

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

According to applied methodology VMR0006 (version 1.1) /6/the emissions are calculated as below:

Baseline Emission:

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

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 CO ₂ e |
| ER _{y,i,j} | = | Emission reductions by improved cookstove of type i and batch j during year y in t CO ₂ e |

$$ER_{y,i,j} = B_{y,savings,i,j} \times NCV_{wood\ fuel} \times f_{NRB,y} \times (EF_{wf,CO_2} + EF_{wf,non\ CO_2}) \times N_{y,i,j} \times 0.95 \quad \text{Equation (2)}$$

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

To calculate $B_{y,savings,i,j}$, PP use equation 4 of the applied methodology⁴

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

Where:

$B_{y=1,new,i,survey}$	Annual quantity of woody biomass used by improved cook stoves in tonnes, determined in the first year of the implementation of the project through a sample survey
η_{old}	Efficiency of baseline cookstove. A default value of 0.10 has been used as the

¹2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction

²2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

³2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

⁴Equation 3 of methodology VMR0006, version 1.1

replaced system is a three stone fire, or a conventional system with no improved combustion air supply or flue gas ventilation system, i.e., without a grate or a chimney.

$\eta_{new,i,j}$ Efficiency of the improved cook stove determined using Equation 5 of the methodology.

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

Where:

η_p Efficiency of project stove (fraction) at the start of project activity

$(DF_n)^{y-1}$ Discount factor to account for efficiency loss of project cookstove per year of operation (fraction). default value of 0.99 efficiency loss per year has considered for the project activity

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

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

Sampling approach:-

As assessed in this section, emission reductions for the project “Installation of high efficiency wood burning cookstoves in Zimbabwe” has being claimed for this monitoring period and the total population of the stoves for the current monitoring period i.e.01-September-2021 to 28-February-2022 (inclusive of both the dates) is 191,958 ICS. Operational ICS in this monitoring period: 172,762.

The sampling plan implemented by the PP is in accordance with the applied approved monitoring methodology /6/ and the VCS PD /14/. The PP has appropriately performed Simple random Sampling procedure, reliability levels were set at 90% confidence and 10% precision in line with the applied methodology VMR0006 version 1.1/06/. Survey has been carried out.As the VCS PD /14/ mentions the option for Simple random Sampling as one of the procedure, so it was found appropriate to the verification team.

The sampling surveys/15/ have been carried out by the well-trained personnel/18/ Further, preparedness for conducting survey was adequate and survey plan was robust. Monitoring parameters $N_{y,i,j}$ was monitored through monitoring sample surveys. Monitoring of the parameters ensures compliance with the applied methodology VMRO006, version 1.1 /6/. Verification team has checked the survey records /15//18/ and sample size calculation/10/. Parameter $N_{y,j,j}$ monitors the number of stove in operation.

PP has provided the detailed sample size calculation under section 4.3 of the MR/1/.

Definition	Value	Justification
The population size N is	191,958	Number of stoves registered in database
The expected proportion p for $n_{y,i}$ is	0.85	A conservative assumption of 85% is applied for sample size calculation.
Sample size	47.723	Calculated
Sample size (Rounded up)	48	Calculated

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

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

However, as per the sampling Guideline: Sampling and surveys for CDM project activities and programmes of activities version 04 /10/, Appendix 2, § 3.1

Retention rate of improved cookstove (proportion parameter) –

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

- (a) The expected value of the proportion parameter;
- (b) The level of precision and confidence in that precision (90/10 reliability criterion).

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

In the registered VCS-PD /14/, section 5.3, the expected proportion value was assumed to be 0.8 expecting that the 80% of the ICS still in operation (was just an example to show how PP will calculate the sample size using the formula mentioned in VCS-PD). During this MP verification, 0.85 has been chosen as proportional parameter by PP, considering 85% of ICS will be operational. The confidence /precision level is 90/10 but PP has taken the assumption of 85% as a more conservative approach as PP is assuming only 85% ICS to be operational, although as

found from the actual sampling survey conducted by the PP, 100% ICS were operational. Hence, the rejection level is under 10%. Sample size, thus arrived, meets the relative precision error under 10%. However, actual proportion of ICS in operation is observed as 100% during the 1st MP verification and the 2nd MP verification, it was observed as 100% as well, which shows that considering 0.85 as expected proportion is conservative. Although, now PP has considered operational percentage of stoves as 90% based on Secondary data like other projects set up in the same region/43/.

According to the section 9.2 of applied methodology, “Number of project devices of type i and batch j operating during year y ($N_{y,i,j}$) can be measured directly or based on representative sample.”

PP had conducted second monitoring survey during the period of 30-March-2022 to 30-April-2022 (both dates inclusive) in Zimbabwe. During the survey it was found that 100% project devices are operational, and this was further confirmed by the VVB from the submitted survey spreadsheet/15/. As per the stove champion follow up survey conducted in latest Monitoring Period, stoves in operation were 95.63%, and as per the secondary data of other projects, stoves in operation percentage was observed as 91.70%. PP has considered as minimum number of stoves in operation as 90%. Hence, PP has considered the lowest value of stoves in operation 90% on a conservative basis. Assessment team conducted acceptance sampling by taking samples from the samples taken by the PP, mentioned in the sampling and survey sheet/15/ submitted by the PP.

So, to measure $N_{y,i,j}$ PP multiplied the achieved proportion with commissioned stoves that is $90\% \times 191,958 = 172,762$.

Hence, the verification team in line with the sampling guideline /10/ and PD /14/ found the sampling approach conservative and appropriate, based on the provisions of the sampling guideline and the same has been updated in section 4.4 of the FVR.

The resultant applied sample size by the PP are summarized below :

Parameters	$N_{y,i,j}$
Sample size	48
Actual Samples surveyed	96
ICS found operating	90%
Precision achieved	0.28%

VVB used acceptance sampling during verification for checking the operational status in the households. The sampling done by VVB reflects the population of the project activity. Applying paragraph 39 (c) of the sampling standard, version 09 /11/, a sample size of 9 ICS were chosen (with no discrepant records). A sample size of 9 was determined, based on an AQL of 0.5% and UQL of 20%, producer risk 5% and consumer risk 15%. The Producer risk and consumer risk were chosen at 10% as the confidence/precision level was set at 90/10. Acceptance number (c) thus determined for the sample is 0 in line with para 30 and 31 of “Sampling and Surveys for CDM project activities and programme of activities” version 09.0. However, VVB inspected 18 samples (since each household has 2 ICS, for monitoring survey). It was observed that out of the 18 samples, all the 18 stoves were found to be operational and this matched with the PP’s records and hence no discrepant records were observed with the MR /01/ and ER sheet /02/ and thus $c=0$. Thus, PP’s set of records has been accepted in line with para 33 of the sampling standard, version 09 /11/. Verification team has cross verified these sample documents.

The monitoring parameters to be monitored through the sampling plan is:

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

Simple random sampling was applied by the PP for selection of the monitoring samples with 90/10 confidence/precision for determining the sampling for all the parameters which is deemed acceptable as per the VCS PD /15/.

Furthermore, the database /19/ and sample sales invoice /20/ was also checked/cross verified to confirm the number cookstove for the parameter $N_{y,i,j}$.

As per paragraph 25 of the Sampling Standard, version 09 /11/, the verification team has to verify whether the project participants entity have implemented the sampling and surveys according to the

sampling plan in the registered monitoring plan. The verification includes determining:

- (a) Whether the required confidence/precision has been met;
- (b) Whether the selected sample was representative of the population.

As per the applied methodology VMR0006 version 01.1 section 9.2 /06/, and registered VCS PD /14/ the necessary confidence / precision of 90/10 for the parameters have been met. This has been cross verified by the verification team from the supporting documents submitted/15/.

Emission reductions have been calculated in accordance with the applied methodology VMR0006 version 01.1 /06/, and VCS PD /14/. The PP has used monitored data and ex-ante fixed data including default values as mandated/permited by the applied methodology. The values used for calculation of GHG emission reductions have been thoroughly checked by the verification team and was found appropriate and correct.

The full set of emission reductions calculation are provided in Excel spread sheets/02/. ER_y realized during the monitoring period is 191,271 tCO_{2e}.

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

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

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

When assessing the audit trails, VKU also examined:

1. whether sufficient evidence was available, both in terms of frequency and in covering the full monitoring period
2. the source and nature of the evidence
3. if comparable information was available from sources other than that used in the monitoring report/1/, VKU cross-checked the monitoring report against the other sources to confirm that the stated figures were correct. The sources and the data referenced are shown in Section 2.2 above.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant, lack of evidence and missing data were detected during verification. Hence, the verification team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures.

The operational status of project ICS is monitored through sample survey following UNFCCC sampling and survey guideline/10/ follows 90/10 confidence precision. The survey forms/15/ and photographs were checked to ascertain the monitoring results reported in survey/15/. For enhancing the survey reliability and QA/QC, training has been provided to the data collector during survey /15/ which was further verified from the training details provided by the PP/18/. It is also noted the achieved precision is less than 10% and hence meets the desired confidence precision /10/. The monitored results are found consistent with on-site audits.

Also, project developer has set up grievance/repair/maintenance mechanisms/18/ and rectifies any issues for the operation of the project device. So, VKU is of the opinion that this method of calculation of emission reductions is accurate and results in conservative estimation of emission reduction and is line with the applicable VCS requirements.

4.6 Non-Permanence Risk Analysis

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

5 VERIFICATION CONCLUSION

VKU Certification Pvt. Ltd. has performed second verification of the emission reductions reported for the project activity “Installation of high efficiency wood burning cookstoves in Zimbabwe”, VCS Registry Project ID 2341, for the monitoring period 01-September-2021 to 28-February-2022(both dates included), with regard to the relevant requirements for VCS activities. The project proponents of the “Installation of high efficiency wood burning cookstoves in Zimbabwe” project is responsible for:

- the preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered project design document version 02.1 of 22-February-2022/14/. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project.

It is the responsibility of VKU to express an independent verification opinion about the project’s conformity with the requirements of VCS Standard version 4.3/04/ and GHG program applied, on the reported greenhouse gas emission reductions from the project.

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

- the project has been implemented and operated as per the registered VCS-PD/14/;
- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Standard version 4.3 requirements/04/;
- the monitoring is in place as per the applied baseline and monitoring methodology/06/;
- the monitoring plan in the registered VCS-PD/14/ is as per the applied baseline and monitoring methodology.

It is VKU's opinion that the GHG emission reduction stated in the monitoring report version 01.3 of 24-August-2024/01/ for the "Installation of high efficiency wood burning cookstoves in Zimbabwe" for the monitoring period 01-September-2021 to 28-February-2022(both dates included) are fairly stated. The GHG emission reductions are calculated on the basis of approved methodology VMR0006 version 1.1/06/ and the monitoring plan included in the registered Project Description Document, version 02.1 of 22-February-2022/14/.

Hence VKU is able to certify that the emission reduction from the project during the monitoring period 01-September-2021 to 28-February-2022(inclusive of both the dates) amounts to 191,271 tCO₂.

Verification period: From 01-September-2021 to 28-February-2022(both dates included):

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e) ⁵	Net GHG emission reductions or removals (tCO ₂ e)
2021	112,103	0	0	112,103
2022	79,168	0	0	79,168
Total	191,271	0	0	191,271

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

APPENDIX A: ABBREVIATIONS

Abbreviations	Full texts
BE	Baseline Emissions
BEF	Baseline Emission Factor
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CQC	C-Quest Capital
DNA	Designated National Authority
EB	Executive Board
EF	Emission Factor
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of Verification
MR	Monitoring Report
NA	Not Applicable
OSV	On Site Visit
PAI	Project Activity Instances
PDD	Project Design Document
PP(s)	Project Proponent(s)
QA/QC	Quality Assurance /Quality Check
Ref.	Document Reference
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VCU	Verified Carbon Unit
VCS	Verified Carbon Standard
VKU	VKU Certification Ltd.
VVS	Validation and Verification Standard
VVB	Validation and verification body

APPENDIX B: AUDIT FINDINGS

Type	Date	18/08/2022
CL#01	Reference	Section of Ver protocol:1.9,1.10,1.11,4.1
Description of the Non Conformance		
1. PP is requested to substantiate by official commitment or official declaration in-line with the information given in section 1.9 & 1.10 of MR. 2. As VCS Standard v4.3, Paragraph 3.16.2 and 3.17.1 mentions the completion of verification required in order to not state the SDGs claimed. PP is requested to submit the documents as they are yet pursuing for SD VISTA Program. 3. PP is requested to provide supporting documents including the IPCC 2019 refinement, UN Data & FAO reports verifying the f_{NRB} value in Section 4.1 of MR.		
1 st Response from PP	Date	28/09/2022
1. PP is being submitted the declaration that the project has not claimed or will not claim carbon credits under any other scheme after registration of the project under VCS. 2. In accordance with Paragraph 3.17.1 of VCS Standard, version 4.3, "Where project complete a validation or verification to the SD VISTA Program at the same time as a VCS Program validation or verification, they are not required to conduct a separate demonstration of compliance with the requirements set out in this Section 3.17" The project is listed under SD VISTA and is under public comment period. Therefore, details of SDGs claimed is not required to be mentioned in VCS MR. Same has been mentioned in section 1.11 of the MR. PP would like to submit the SD VISTA PD for the reference of the VVB. 3. The calculation of the fraction of non-renewable biomass (f_{NRB}) Report for Zimbabwe prepared by C4 EcoSolutions (Pty) Ltd is being submitted to the VVB. PP has also updated IPCC 2019 refinement⁶, UN Data⁷ & FAO⁸ reports as a foot note in the section 4.1 of MR v1.1		
1 st Assessment by Audit	Status	Closed
Date	03/10/2022	

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

⁷[Rural population - Zimbabwe | Data \(worldbank.org\)](#)

⁸[Country reports | Global Forest Resources Assessments | Food and Agriculture Organization of the United Nations \(fao.org\)](#).

Team				
1. PP has submitted the declaration that project has not claimed or will not claim carbon credits under any other scheme after registration of the project under VCS. Hence, accepted. 2. As per VCS Standard version 4.3, Appendix 3 Document History, Comment 4 under v4.2, project registered before 20-01-2023, the project shall demonstrate contributions to atleast 3 SDGs by 20-01-2025. Hence, accepted by VVB. 3. The calculation of the fraction of non-renewable biomass (fNRB) Report for Zimbabwe prepared by C4 EcoSolutions (Pty) Ltd has been submitted to the VVB and found acceptable. PP has also updated IPCC 2019 refinement, UN Data & FAO reports as a foot note in the section 4.1 of MR v1.1 which is appropriate and working. Hence, accepted. CL#01 Closed				

Type	Date	18/08/2022
CL#02	Reference	Section of Ver protocol: 4.2
Description of the Non Conformance		
- The operational percentage of the ICS for this monitoring are taken as 100% and indicated that the source for this is Monitoring Survey. PP is requested to clarify how 100% operational was observed with the measurement methods and procedures applied, any standards or protocols followed, and the person/entity responsible for the measurement in section 4.2 of the MR under the first table. - PP is requested to substantiate the result of the survey by providing Monitoring Survey Report that comply with para 64 of the "Guideline: Sampling and surveys for CDM project activities and programmes of activities Version 04.0", any evidence of data collection (filled in survey forms), photographs during the survey. - During onsite visit, it was observed 1 beneficiary was using baseline stove. PP is requested to clarify how "Adjustment to account for any continued use of pre-project devices during the year y" is monitored and calculated with the measurement methods and procedures applied, any standards or protocols followed, and the person/entity responsible for the measurement in section 4.2 of the MR under corresponding table. - PP is requested to provide supporting documents verifying the Life Span of the cookstoves in Section 4.2 of the MR. - PP is requested to share the calibration certificate of the weigh scale for Section 4.2 of the MR. - PP is requested to share survey form samples for all of the samples as VVB received only 6 survey forms. - PP is requested to provide records of training happened during the monitoring period 01-09-2021-28-02-2022.		
1 st Response from PP	Date	28/09/2022

1. According to the section 9.2 of applied methodology, “Number of project devices of type i and batch j operating during year y ($N_{y,i,j}$) can be measured directly or based on representative sample.”

PP had conducted second monitoring survey during the period of 30-March-2022 to 30-April-2022 in Zimbabwe. During the survey it was found that 100% project devices are in operational, and this can be confirmed from the submitted spreadsheet file named "Sampling_Survey sheet_2341_Zimbabwe MP2".

So, to measure $N_{y,i,j}$, PP multiplied the achieved proportion with commissioned stoves that is $100\% \times 191,958 = 191,958$.

2. Monitoring report and photographs being shared to VVB.
3. During the site visit, one household was using baseline stove which is not used for cooking, this is because in winter season they depend on open stove for heat as thermal emission is less in project stove.

As per VMR0006, section 9.2 “For Projects that opt for $B_{y=1,new,i,j,survey}$, i.e., direct measurement of biomass used in project stoves, then μ_y is not required to be computed.” PP has used the following equation (4) from the applied methodology for the calculation of B_y savings, so any baseline stove usage factor (μ_y) is not accountable.

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

Where

- | | | |
|--------------------------|---|--|
| η_{old} | = | Efficiency of baseline cookstove |
| $\eta_{new,y,i,j}$ | = | Efficiency of the improved cookstove type i and batch j determined through water boiling test (WBT) during year y
Alternatively, efficiency may be determined using Equation 4. |
| $B_{y=1,new,i,j,survey}$ | = | Annual quantity of woody biomass used by improved cookstoves in tonnes per device of type i and batch j , determined in the first year of the implementation of the project through a sample survey. |

4. PP is being submitted the manufacturer’s specification document to verify the lifespan of the TLC.

Furthermore, PP would like to state that the life of TLC stove is at least 10 years owing to it being a clay and brick stove which can be repaired using a mixture of clay and water on a regular basis. The metal parts used in the stoves can be easily replaced in case of rusting or breakage. Hence it can be safely assumed that these stoves can be used for extended periods of time with little maintenance.

5. PP has pointed out calibration details in the section 4.2 of the MR which was done during first verification process to measure the $B_{y=1,new,i,survey}$. This parameter was validated and verified by VVB during the first verification as per the methodology requirement. For the current monitoring period this parameter is not required to be monitored as per the applied methodology.
6. Survey sheets for all the monitoring survey households has now been submitted to the verification team

7. PP is being submitted the training records.				
1 st Assessment by Audit Team	Status	Closed	Date	03/10/2022
1.The operational percentage of the ICS for this monitoring period was determined from the monitoring survey during the period of 30-March-2022 to 30-April-2022.As 100% project devices were found operational, hence accepted. 2.PP has shared monitoring report and photographs to the VVB. The same have been found to be appropriate. Hence, accepted. 3.PP has demonstrated the use of equation (4) of VMR0006 Methodology, where μ_y is not required to be computed. Hence, accepted. 4.PP has submitted the manufacturer's specification document to verify the lifespan of the TLC. Lifespan of the cookstove is mentioned as 10 years. Hence, accepted. 5.As the monitoring methodology requirement suggests the parameter to be monitored in the first year of verification, VVB has accepted the calibration mentioned in the MR as it need not be monitored in the upcoming verifications. Hence, accepted 6.Survey sheets have been submitted to the VVB. Hence, accepted. 7.PP has submitted the training records. Hence, accepted. CL#02 Closed				

Type	Date	18/08/2022
CL#03	Reference	Section of Ver protocol:3.3,4.3,5.4
Description of the Non Conformance		
1. PP is requested to provide Efficiency Report to the VVB in Section 3.3 of the MR 2. PP has provided the section for spot-checking(ongoing) in section 4.3 of MR. PP is requested to clarify if any spot-checking activities were undertaken during the monitoring period and provide the evidence for the same. 3. PP is requested to clarify and provide details whether monitoring frequency has been maintained in line with the registered PD for parameter $N_{y,i,j}$ in Section 4.2 of MR.		

4. PP is requested to clarify if the parameters of interest are subject to seasonal fluctuations or not and demonstrate the suitability in line with para 35 of the “Guideline: Sampling and surveys for CDM project activities and programmes of activities Version 04.0”. 5. PP is requested to explain the cause of any increase in the actual GHG emission reductions achieved during this monitoring period in Section 5.4 of MR.	
1stResponse from PP	Date 28/09/2022
1. PP is being submitted the stove efficiency certificate from Aprovecho Research Center. 2. PP has a procedure for internal auditing called spot-checking, where field staff randomly selects households to ensure proper functioning of the project stoves throughout the project lifetime and to ensure that the project stoves continue to work as efficient as specified by the manufacturer. Field staff of project proponent randomly select units included in the database and visit or contact the stove owners to cross-check the information on the database with the factual evidence in the field. Any inconsistencies found (e.g., change in the address of a user) gets updated on the database, and in case, ICS are found to be no longer in use, they get clearly marked as such and is excluded from emission reductions calculations. Spot check report for the current monitoring period being submitted to VVB. 3. As per the applied methodology, Project Proponent needs to conduct the monitoring survey at least once every 2 years (biennial). However, the PP is conducting monitoring survey annually (at least once every year), same is mentioned in registered PD of VCS 2341 under section 5.2. PP further clarify that first monitoring survey was conducted during 20-November-2021 to 13-December-2021 and second monitoring survey was conducted during 30-March-2022 to 30-April-2022. 4. According to para 35 of Guideline: Sampling and surveys for CDM project activities and programmes of activities Version 04.0 “Field measurements identify all the variables to be measured and determine appropriate timing and frequency of the measurements. When the measurements are conducted only during limited time periods and are to be scaled up to the whole year, demonstrate that the parameter of interest is not subject to seasonal fluctuations or the time period selected is conservative or the necessary corrections are applied. Methods of measurement shall be described as appropriate”. PP would like to state that during the current monitoring period parameter of interest is number of stoves that continue to be in use ($N_{y,i,j}$). The parameter is not subjected to any seasonal fluctuations as the households uses the stove for cooking throughout the year. 5. PP would like to clarify that there is no increase in actual ER compared to ex-ante ER. This is due to the following factors. a. $B_{y=1,new,i,survey}$ value considered during the validation was 1.83 tonnes/device/year whereas the actual value during 1st MP verification was found to be 1.0758 tonnes//device/year. These details has been incorporated in MR v1.1 section 5.4.	

1stAssessment by Audit Team	Status	Closed	Date	03/10/2022
1. PP has submitted the Efficiency Report to the VVB and the efficiency reported has found to be appropriate. Hence, accepted. 2. PP has submitted the spot-checking mechanism report to the VVB and found appropriate. Hence, accepted 3. PP has conducted monitoring survey during 20-11-2021 to 13-12-2021 and 30-03-2022 to 30-04-2022. Hence, PP has met the requirement of conducting monitoring survey at least once every 2 years(biennial) as mentioned in the registered PD. Hence, accepted. 4. PP has clarified that parameter of interest is not subjected to any seasonal fluctuations. Hence, accepted. 5. PP has thoroughly explained there is no increase in the ER compared to ex-ante ER. Hence, accepted. CL#03 Closed				

Type	Date	08-August-2024
CL#04	Reference	Section of Ver protocol: MR & ER
Description of the Non Conformance		
1. According to the registered project description (PD) and monitoring report (MR), the parameter 'B_{y=1,new,i,j,survey}', is determined ex-post after one year of stove operation and fixed for the rest of the crediting period. However, the monitoring reports does not transparently outline the process and methods used to determine this value. 2. The MR does not provide information about whether the survey conducted meets the statistical requirements of 90/10 or 95/10 confidence and precision, and whether it is representative of different types of cookstoves distributed/strata, as per the Standard for Sampling and surveys for CDM project activities and programme of activities. 3. Section 4.3 of the MR states that this parameter was determined through measurement campaigns at representative households. However, assessed it is not stated as to how the monitoring procedures applied align with VMR0006, v1.1 and how the conditions specified under 'B_{y=1,new,i,j,survey}' parameter table (refer page 17-18 of VMR0006, v1.1) were satisfied. 4. Sections 4.2 and 5.3 of the MR report have updated values of B_{y=1,new,i,j,survey} parameter in each monitoring period without sufficient description and justification of relevant sampling and calculations methods.		
1stResponse from PP	Date	06-September-2024
1. During the monitoring survey, field staff asked the user to make a pile for the total firewood required for cooking in a day for all the stoves available in his/her house and weighted the same with the weigh		

scales. Further user was asked to extract and make the piles for the wood required for the project stove 1 and project stove 2 separately from that pile and weigh both the piles. Same been recorded and data transferred to excel spreadsheet. Therefore, firewood consumed for each project stove can be distinguished clearly. Proper training has been provided to the monitoring personnel before conducting the onsite monitoring survey.

For the subsequent MPs after first monitoring period, the parameter $B_{y=1,new,i,j,survey}$ was already established and was not separately verified during these monitoring periods. Considering the applied methodology VMR0006 V1.1 according to which this parameter is "Determined in the first year of project implementation", the assessment would not change.

2. Due to the large number of ICS envisioned to be distributed in the project activity, it is not economically feasible to monitor each individual ICS unit distributed. Therefore, representative sampling was undertaken that is designed in line with the requirements of the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities version 09.0.

Simple random sampling was used for all monitoring parameters in accordance with the Sampling Plan of section 5.3 of the VCS-PD. The objective was to obtain reliable and unbiased estimates of the monitoring parameters. Reliability levels were set at 90% confidence and 10% precision as per VMR 0006 version 1.1. (Sec 4.3 of monitoring plan in MR)

Under the project activity, only one type of ICS being deployed with in the geographical boundary of Republic of Zimbabwe (host country), there by a single homogeneous population (Primary Sampling Unit, as per VCS-PD) was considered for both parameters (number of stoves in operation & quantity of woody biomass used by improved cookstoves).

3. $B_{y=1,new,i,j,survey}$, determined in the first year of the introduction of the devices (e.g., during the first year of the crediting period, $y=1$) through measurement campaigns at representative households. Calibration of weighing scales used for measuring the fuelwood was done in house before start of monitoring survey. In order to ensure completeness and accuracy of monitoring information, electronic database is operated and maintained for the project activity.

As the parameter is determined through measurement campaigns and not based on sample surveys to estimate this parameter, that are solely based on questionnaires or interviews, hence the conditions specified under ' $B_{y=1,new,i,j,survey}$ ' parameter table (refer page 17-18 of VMR0006, v1.1) were not applicable.

4. As per the VERRA 6.1 review findings received for the project activity MP01, the $B_{y=1,new,i,j,survey}$ has been updated and same has been applied for all subsequent MPs as per PP response at item 1 of this

CL. (Calculations w.r.t the ex-post determined $B_{y=1,new,i,j,survey}$ value provided to the verifying VVB.				
1stAssessment by Audit Team	Status	Closed	Date	05-October-2024
1. PP has provided the procedure for the measurement of parameter '$B_{y=1,new,i,j,survey}$', in the response and clarified it clearly as per the procedure followed during the first year of implementation and MP-1 reports. The current MP-MR states the source of value of the parameter clearly and it is as per the registered VCS PD and applied methodology VMR0006 V1.1 according to which this parameter is "Determined in the first year of project implementation". PP has also revised the value of parameter '$B_{y=1,new,i,j,survey}$' in revised MR according to the "Verra s6.1Operations MP1 2351" sheet submitted where raw ground data of all selected samples is provided with reliability check for parameter '$B_{y=1,new,i,j,survey}$' which is assessed and found consistent hence the value of '$B_{y=1,new,i,j,survey}$' is updated in revised FVR with assessment. 2. VVB has verified the MR submitted by PP and section 4.3 of MR states the MR is representative of the requirements as per the Standard for Sampling and surveys for CDM project activities and programme of activities. VVB assessed the same and found it to be in line with the standard requirements. 3. As verified from the applied methodology by VVB that the value of $B_{y=1,new,i,j,survey}$, was determined in the first year of the introduction of the devices (e.g., during the first year of the crediting period, $y=1$) through measurement campaigns at representative households. PP has used the measurement campaigns at representative households for determination of this parameter which is as per the methodology version 1.1 applicable and registered VCS PD. Hence VVB confirms that the parameter is appropriately calculated and the conditions specified under '$B_{y=1,new,i,j,survey}$' parameter table (refer page 17-18 of VMR0006, v1.1) were not applicable. 4. The values have been updated for all Monitoring periods in all project documents. Required supporting documentation has been submitted and found appropriate for the updated value to be used.				
CL#04 Closed				

Type	Date	08-August-2024
CL#05	Reference	Section of Ver protocol: MR & ER
Description of the Non Conformance		
1. The proportion of operational cookstoves within the monitoring period(s) is reported to be 100% This is likely unrealistic, given the minimal probability of 100% stove operation without breakages and abandonment over their lifetime. The project documentation does not transparently provide the measures put in place for on-time stove maintenance support for repairs and replacement. 2. The monitoring report(s) does not provide sufficient information on how the samples for determining stoves in operation were selected and the sampling process used and whether the minimum sample size was met for each respective monitoring period.		

1 st Response from PP		Date	06-September-2024	
1. TLC-CQC rocket cookstoves are built on-site at the end user premises as per the design specification. This will be achieved using brick moulds of specified dimensions to make bricks locally that are suitable for the stove construction. PP has provided the metal parts to implementing partner /end user for the installation and registration of ICS. End User households were also explained the significance of non usage in terms of loss of emission reductions. Furthermore, TLC stove being a clay and brick stove which can be repaired using a mixture of clay and water on a regular basis by end user. PP ensures the Implementation Partner/ households and village members are aware & appropriately trained to construct, maintain and repair the project stoves. End users are provided with information/details to communicate with IP/PP in case of further assistance/support required in repairing & maintenance of project stoves. The proportion of operational cookstoves within the monitoring period(s) is reported to be 100%.However, as per the stove champion follow up survey conducted in MP3 , stoves in operation was 95.91% and as per the stove champion follow up survey conducted in MP4, stoves in operation was 95.63%. PP has used the lower stove operation rate (95.63%) as per stove champion data has achieved 0.28% precision and is within the required precision (90/10). As per the secondary data of other projects registered under carbon credit mechanism the average stoves in operation percentage was 91.70%. PP has considered as minimum number of stoves in operation as 90.0% on a conserve basis in ER estimations (for all MPs). 2. Sampling standard “sampling and surveys for CDM project activities and programme of activities” version 9 was used for determining the sample size to achieve 90/10 confidence precision. The actual sample size for the parameter stove in operation (stove champion follow up survey) was higher than the minimum sample size required as per the sampling plan defined in the registered VCS PD.				
1 st Assessment by Audit Team	Status	Closed	Date	05-October-2024
1. As per revised MR and ER sheet submitted to VVB proportion of operational cookstoves within the monitoring period(s) is reported as 90%. PP has provided the background evidences such as - The stove champion follow up survey conducted in MP3 & MP4, found stoves in operation as 95.91% and 95.63% for MP3 & MP4. - The secondary data of other projects registered under different carbon credit mechanism in the project region, stoves in operation was found as 91.70%. All these sources of data were assessed and found to be correct. However, PP has considered the minimum number of ICS in operation as 90% on a conserve basis in ER estimations (for all MPs) which is more conservative and found acceptable by VVB.				

2. MRs section 4.3 states the process in brief that is followed for sampling and sampling survey sheets clearly shows the calculation of the applied approach and 90/10 confidence precision is used which is found to be correct by VVB in the documents submitted. However, additional stove champion survey in MP3 and MP4 conducted also confirms the stove in operation.

CL#05 Closed

Type	Date	18/08/2022		
CAR#01	Reference	Sectionof Ver protocol:1.11,3.2 and 4.1		
Description of the Non Conformance				
1. PP is requested to follow Monitoring Report Template v4.1 and add Table 1: Sustainable Development Contributions. 2. PP is requested to follow the MR Template v4.1 in numbering of the section 3.2 of the MR. 3. PP is requested to update the information according to the VCS PD Version 02.1 giving description of the sources from where the value was determined in section 4.1 of the MR.				
1 st Response from PP	Date	28/09/2022		
1. As per the Monitoring Report Template v4.1 PP has to provide the Sustainable Development Contributions.In accordance with Paragraph 3.17.1 of VCS Standard, version 4.3, “Where project complete a validation or verification to the SD VISta Program at the same time as a VCS Program validation or verification, they are not required to conduct a separate demonstration of compliance with the requirements set out in this Section 3.17” The project is listed under SD VISta and is under public comment period. Therefore, details of SDGs claimed is not required to be mentioned in VCS MR. Same has been mentioned in section 1.11 of the MR. PP would like to submit the SD VISta PD for the reference of the VVB. 5.1.1 2. There was a typo error in the numbering of the section 3.2 of the MR v1.0, it is now has been corrected. 3. PP updated the section 4.1 of MR according to the VCS PD Version 02.1				
1 st Assessment by Audit Team	Status	Closed	Date	03/10/2022
1.PP has submitted the SD VISta PD for VVB reference.Hence,accepted.				

2.PP has corrected the typo error in section 3.2 of the MR .Hence,accepted

3.PP has updated Section 4.1 of MR according to the VCS PD Version 02.1.Hence,accepted

CAR#01 Closed.

Type	Date	18/08/2022
CAR#02	Reference	Sectionof Ver protocol: 2.2,3.1,4.3
Description of the Non Conformance		
1. The MR indicates that the ICS are implemented in 4 project areas according to the provinces of Zimbabwe. PP is requested to add the implementation detail (project-area wise) in section 3.1 of the MR. 5.1.2 2. As per the section 1.7 of the MR, the ICS are distributed in 4 project areas. The section 4.3 of the MR does not specify in detail on how the randomness and representativeness has been met during the sample selection and implementation of survey. PP is requested to tabulate the location of samples site based on districts/batches. 5.1.3 3. PP is requested to incorporate the survey results, precision assumed and the precision of the survey data in section 4.3 of the MR. PP is also requested to supplement the evidence of random sample selection by availing the random number generated for the sample selection and screenshot for the same. 5.1.4 4. PP is also requested to list out any continuous complaints/grievances received during monitoring period and how those grievances are addressed. Also provide the evidence of the same for Section 2.2 of the MR.		
1 st Response from PP	Date	28/09/2022
1. PP would like to clarify that Zimbabwe was divided into four provinces for a more organized implementation of the project. The implementation details of the four provinces of Zimbabwe is readily available in the database. 2. Zimbabwe was divided into four provinces. The ICS for the survey were selected randomly from all the stoves distributed in Zimbabwe till 28-feb-2022. Sample selection is not done according to the district/province also sampling procedure for this monitoring period have been included in section 4.3 of MR v1.1. 3. To ensure a random selection of ICS, PP used “random number generator web application” so that each ICS in the target population is uniquely identifiable by its unique ID number. Further PP is being submitted the data sheet generated from the web application for VVB review. PP incorporated the sample size calculation, precision assumed in section 4.3 of the MR v1.1 5.1.5 4. PP follows a proper complaints/Grievances Redressal Policy and Procedure, which ensures that individual stakeholders’ complaints/grievances are properly prioritized and addressed. PP incorporated the grievances received in the MR v1.1 5.1.6		

1stAssessment by Audit Team	Status	Closed	Date	03/10/2022
1. PP has added implementation details of the project in the database. Hence, accepted. 2. PP has included sampling procedure in Section 4.3 of MR. Hence, accepted. 3. PP has submitted the random sample number generator sheet and incorporated the sample size calculation, precision assumed in Section 4.3 of MR. Hence, accepted. 4. PP has thoroughly incorporated the grievances in the MR. Hence, accepted. CAR#02 Closed				

Type	Date	18/08/2022		
CAR#03	Reference	Section of Ver protocol:4.2,4.3		
Description of the Non Conformance				
1. PP is requested to show calculations for Vintage 2 in Parameter $n_{new,y,i,j}$ in Section 4.2 of MR. 2. The registered PD indicates that oversampling is encouraged to anticipate any low response and answers bias but how this has been complied is not included in the MR. PP is requested to substantiate this with detail sample calculation in section 4.3 of MR. 3. Section 4.3 of MR does not specify the date of data collection and how the quality of the data is ensured from the perspective of the qualifications and experience of personnel involved in monitoring and any instruments used to collect and analyse the data in-line with section 6 of the “Guideline: Sampling and surveys for CDM project activities and programmes of activities Version 04.0”. PP is also requested to include the approach followed in avoiding any potential biasness of the data collection during the survey as data was collected by project developer not by third party.				
1 st Response from PP	Date	03/10/2022		
1. PP is used the equation 5 of the applied methodology for the calculation of Efficiency of the improved cookstove type i and batch j during year y $\eta_{new,y,i,j}$. Calculation method for vintage 1 cookstoves has showed in the MR v1.0, PP further incorporated the calculations for vintage 2 in section 4.2 of MR v1.1 5.1.7 2. PP is now have been incorporated the sample size calculation in section 4.3 of the MR v1.1. 3. PP uses an application called “ODK app” for the collection of survey data. Project proponent provides training to monitoring personnel on how to operate the app and monitoring procedures, including provisions for maximizing response rates, documenting out-of-population cases, refusals and other sources of non-response. These details are included in MR v1.1 of section 4.3.				
1 st Assessment by Audit Team	Status	Closed	Date	03/10/2022
1.PP has shown calculations for Vintage 2 in Section 4.2 of MR. Hence, accepted. 2.PP has incorporated the sample size calculation in Section 4.3 of MR. Hence, accepted.				

3.PP has incorporated details about collection of survey data. Hence, accepted.

CAR#03 Closed

Type		Date	DD/MM/YYYY	
FAR		Reference	Section of VAL/VER	
Description of the Non-Conformance				
N/A				
1st Response from PP		Date	DD/MM/YYYY	
N/A				
1st Assessment by Audit Team	Status	Open/Closed	Date	DD/MM/YYYY
N/A				

APPENDIX C: COMPETENCE STATEMENTS

Verification Team:



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Vivek Kumar Ahirwar
Nationality	Indian
Countries of Experience	India, Madagascar, Thailand, Indonesia, Bangladesh, Nepal, Ghana, Uganda, Kenya etc
Education Qualification	B.E. (Mechanical Engineering) M. Tech (Energy Management)
Year of Experience	10 Years +
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	TA 1.1 - Thermal energy generation and Renewables TA 1.2 - Renewables TA 2.1 - Process GHG Emission Expert TA 3.1 - Energy Demand TA 13.1 - Solid waste and wastewater

Roles

Team Leader	YES
Validator	YES
Verifier	YES
Financial Expert	YES
Technical Reviewer	YES
TA Expert (1.1, 1.2, 2.1, 3.1, 13.1)	YES

Reviewed by	Vikas Kumar Aharwal (Director)	Date	05/09/2020
Approved by	Vikas Kumar Aharwal (Director)	Date	09/09/2020



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Deepali Sharma
Nationality	Indian
Countries of Experience	India
Education Qualification	B.Sc. (Environmental Science) M.Sc. (Environmental Science)
Year of Experience	2 years as Intern
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	NA

Roles

Team Leader	NO
Validator	NO
Verifier - Trainee	YES
Financial Expert	NO
Technical Reviewer	NO
TA Expert	NO

Reviewed by	Ayushi Garg (Quality Manager)	Date	11/07/2022
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	12/07/2022

Technical Reviewer Team:



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Abhishek Kumar Srivastava
Nationality	India
Countries of Experience	India, Uganda
Education Qualification	M. Tech- Energy Management M. Sc. -Physics
Year of Experience	14 Years
Area of Expertise	Climate Change & Environment / Industry
Eligible Sectoral Scope	1. GHG emission reductions from fuel combustion

Roles

Team Leader	YES
Validator	YES
Verifier	YES
Financial Expert	YES
Technical Reviewer	YES
TA Expert (TA1.1, TA1.2 and TA3.1)	YES

Reviewed by	Ayushi Garg (Quality Manager)	Date	25/04/2022
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	26/04/2022