INSTALLATION OF HIGH EFFICIENCY WOOD BURNING COOKSTOVES IN ZAMBIA – PROJECT 2

Document Prepared By

Carbon Check (India) Private Ltd.

Project Title	Installation of high efficiency wood burning cookstoves in Zambia – Project 2
Version	03
Report ID	CCIPL1404/VCS/VER/IHEC/20220613

Report Title	Installation of high efficiency wood burning cookstoves in Zambia – Project 2
Client	C-Quest Capital SGS Stoves Private Ltd.
Pages	52
Date of Issue	11-October-2022

Prepared By	Carbon Check (India) Private Ltd.
Contact	Carbon Check (India) Private Ltd. Unit No.: 1701, Logix Office Tower, Plot No.: BW - 58, Sector - 32, NOIDA (Uttar Pradesh) - 201301, India www.carboncheck.co.in
Approved By	Vikash Kumar Singh, Compliance Officer
Work Carried Out By	Pallavi Ganesh Gedam (Team Leader, Technical Expert) Rishika Sanjay Shirke (Trainee Assessor) Butano Sinyunga (Local Expert) Indumathi C. (Technical Reviewer)

Summary:

- **A brief description of the verification and the project**

  Verification: Carbon Check (India) Private Ltd. (CCIPL) has been contracted by C-Quest Capital SGS Stoves Private Limited, the project proponent, to carry out the verification of voluntary greenhouse gas emission reductions generated by the Project Activity Instances, under the grouped project "Installation of high efficiency wood burning cookstoves in Zambia – Project 2". The verification is based on the desk review of the Monitoring report /01/, registered VCS PD and the corresponding validation report /15/, supporting emission reduction calculation spread sheets /02/ and other relevant supporting documents made available to the verification team by the project proponent accompanied by on-site interviews. This verification involves the period from 16/10/2021 to 28/02/2022 (including both the days).

  Project: The project "Installation of high efficiency wood burning cookstoves in Zambia – Project 2", is a grouped project which employs VCS methodology; VMR0006 version 1.1 /B02/. The project entails the distribution of fuel-efficient stoves throughout the Republic of Zambia. The project results in reducing the amount of non-renewable biomass used for cooking. Through reduction in non-renewable biomass consumption, the programme will decrease greenhouse gas emissions.

- **The purpose and scope of verification**

  Purpose: The purpose of the verification is to review the monitoring results and verify that monitoring methodology was implemented in accordance with the monitoring plan and monitoring data, used to confirm the reductions in anthropogenic emissions by sources are sufficient, definitive and presented in a concise and transparent manner. Monitoring plan, monitoring report and project compliance with relevant VCS, UNFCCC and host party criteria are particularly verified to confirm that the project has been implemented in accordance with previously registered design and conservative assumptions, as documented.

  Scope: The scope of the verification is:

- To verify the project implementation and operation with respect to the registered VCS PD.
- To verify the implemented monitoring plan with the registered VCS PD and applied baseline and monitoring methodology.
- To verify that the 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 verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

- **The method and criteria used for verification**

(a) Desk review, involving:

(i) Review of the data and information presented to verify their completeness;

(ii) Review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;

(iii) Evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions;

(b) On-site assessment involving:

(i) Assessment of the implementation and operation of the proposed VCS grouped project activity as per the registered VCS PD;

(ii) Review of information flows for generating, aggregating and reporting the monitoring parameters;

(iii) Interview with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan in the registered VCS PD;

(iv) A cross-check between information provided in the monitoring report and data from other sources such as inventories, purchase records, or similar data sources;

(v) A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS PD and the selected methodology;

(vi) Review of calculations and assumptions made in determining the GHG data and emission reductions;

(vii) Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

- **The number of findings raised during verification**
  A risk-based approach has been followed to perform this verification. During the course of verification, a total of 07 findings were raised, which includes:

  04 Corrective Action Request (CAR); 03 Clarification Requests (CLs);

  All the raised findings were successfully resolved by the PP.

- **Any uncertainties associated with the verification**
  The VCS Monitoring Report /01/, emissions reduction calculations /02/ along with the supporting documents provided are considered to be in line with all the VCS requirements /B01/. The verification team has detected no further uncertainties or quality restriction.

- **Summary of the verification conclusion**
  In CCIPL's opinion, the emission reductions reported for the "Installation of high efficiency wood burning cookstoves in Zambia – Project 2" in the monitoring report are fairly and correctly stated. CCIPL is therefore able to certify that the emission reductions from the "Installation of high efficiency wood burning cookstoves in Zambia – Project 2" during the period from 16/10/2021 to 28/02/2022, is amount 147,173 tCO_2 equivalent.

CCIPL does not assume any responsibility towards the issuance and utilisation of VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration. The verification of reported emission reductions is based on the information made available to CCIPL and the engagement conditions detailed in this report. Hence, CCIPL cannot be held liable by any party for decisions made or not made based on this report.

CONTENTS

1. Introduction 7
1.1 Objective 7
1.2 Scope and Criteria 7
1.3 Level of Assurance 8
1.4 Summary Description of the Project 9
2. Verification Process 9
2.1 Method and Criteria 9
2.2 Document Review 10
2.3 Interviews 10
2.4 Site Inspections 17
2.5 Resolution of Findings 20
2.5.1 Forward Action Requests 20
2.6 Eligibility for Validation Activities 20
3. Validation Findings 20
3.1 Participation under Other GHG Programs 20
3.2 Methodology Deviations 20
3.3 Project Description Deviations 21
3.4 Grouped Project 21
4. Verification Findings 25
4.1 Project Implementation Status 25
4.2 Safeguards 26
4.2.1 No Net Harm 26
4.2.2 Local Stake
holder Consultation 26
4.3 AFOLU-Specific Safeguards 28
4.4 Accuracy of GHG Emission Reduction and Removal Calculations 28

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals 41
4.6 Non-Permanence Risk Analysis 41

5. Verification conclusion 41

APPENDIX 1.1: Reference documents 43

APPENDIX 1.2: Background documents 43

APPENDIX 2: Abbreviations 45

APPENDIX 3: CERTIFICATES OF COMPETENCE 47

APPENDIX 4: FINDINGS LOG 48

1. INTRODUCTION

1.1 Objective

Carbon Check (India) Private Ltd. (CCIPL) has been contracted by C-Quest Capital SGS Stoves Private Limited, the Project Proponent (PP), to undertake the verification of the project titled "Installation of high efficiency wood burning cookstoves in Zambia – Project 2" for the monitoring period 16/10/2021 to 28/02/2022 (including both days). Through the verification activities, it is to be confirmed that:

- The project is implemented as described in the VCS Project Description document /15/;
- The monitoring system is implemented and fully functional to generate emission reductions without any double counting, and
- The data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reductions calculation.

The verification followed the requirements of the current version of the VCS Standard (Version 4.3) and VCS Program Guide (version 4.2)/B01/ to ensure the quality and consistency of the verification work and the report.

1.2 Scope and Criteria

The verification of this project is based on the Monitoring Report of this 3rd monitoring period /01/, registered VCS PD /15/, Emission reduction calculation spreadsheets /02/, supporting documents made available to the verifier and information collected through performing on-site interviews. Furthermore, publicly available information was considered as far as available and required.

CCIPL has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

The verification is carried out on basis of the following requirements, applicable for this project activity:

- VCS Standard (v4.3) /B01/
- VCS Program Guide (v4.2) /B01/
- VCS Methodology: VMR0006.: Methodology for Installation of High Efficiency Firewood Cookstoves" (Version 1.1)/B02/.
- Other relevant rules, including the host country legislation

The scope of this verification, by independent checking of objective evidence, is as follows:

- To verify that the project is implemented as described in the registered VCS PD.
- To assess the project's compliance with other relevant rules including the host country legislation.
- To confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions without any double counting.
- 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.
- 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 verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The method and criteria used for verification consisted of the following phases:

1. Completeness check and desk review;
2. On-site interviews with stakeholders;
3. Resolution of outstanding issues and issuance of final verification report and applicable VCS Validation and Verification Deeds of Representation.

CCIPL conducts all its work under strict rules to safeguard impartiality and ensure the independence of the verification team. The verification team does not provide any consulting or recommendations for the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

1.3 Level of Assurance

The verification report is based on the Monitoring report /01/, registered VCS PD /15/, supporting documents, made available to the verifier and information collected through performing on-site interviews.

The verification has been planned and organised to achieve a:

☒ Reasonable level of assurance as per VCS Standard (v4.3)

☐ Limited level of assurance

1.4 Summary Description of the Project

The project "Installation of high efficiency wood burning cookstoves in Zambia – Project 2", is a grouped project, which employs the VCS methodology; VMR0006 version 1.1 /B02/. The grouped project involves distribution and installation of fuel-efficient improved cook stoves (ICS) in Zambia. The project will disseminate 500,000 fuel efficient (ICS) TLC-CQC Rocket stove through 4 years and each year consist of 125,000 ICS, total ICS during this monitoring period is 91,480. The TLC-CQC Rocket stove will reduce the amount of non-renewable biomass used for cooking. PP has considered each ICS distributed as a project activity instance. The start date for the grouped project is 14/10/2020 /03/ which is the date of installation/registration of the first stove in the grouped project.

The project proponent for the project activity is C-Quest Capital SGS Stoves Private Limited and C-Quest Capital Stoves Asia Limited, owns the rights to VERs /05//12/.

The total estimated GHG emission reductions achieved from Project activity instances are 147,173 tCO2e for this monitoring period from 16/10/2021 to 28/02/2022.

The project activity has been implemented as described in the registered VCS PD and the emission reductions are calculated conservatively as per the applied methodologies /B02/.

2. VERIFICATION PROCESS

2.1 Method and Criteria

The method and criteria used for verification:

The verification consists of the following three phases:

1. Completeness check and desk review of the registered VCS PD, validation report, monitoring plan, monitoring report, monitoring methodology, applicable tools in particular attention to the frequency of measurements, quality of metering equipment including calibration requirements, QA/QC procedures and other relevant documents;

2. On-site interviews (including follow-up interviews with project stakeholders, when deemed necessary). The on-site interviews include the following:

   - An assessment of implementation and operation of project activity with respect to validated VCS PD

   - Review of information flows for generating, aggregating and reporting the monitoring parameters;

   - Interview with relevant personnel to determine whether the operational and data collection procedures are implemented and in accordance with the monitoring plan of the validated VCS PD,

- Cross check of information and data provided in the monitoring report with purchase records or similar data sources;
- Review of assumptions made in calculating the emission reductions (if any);
- Implementation of QA/QC procedure in-line with the registered VCS PD and methodology requirements.

3. Resolution of outstanding issues and the issuance of the final Verification report and as applicable the VCS Verification Deed of Representation.

2.2 Document Review

During the document review, CCIPL 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 and the supporting documentation. This process included:

- A review of data and information presented by the PP to verify their completeness
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the QA/QC procedures, and
- An evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of ERs.

The monitoring report (version 1, dated 22/06/2022) /01-a/ was initially reviewed and CCIPL requested the PP to present the supporting information and documents /03/-/17/. The documents were reviewed by CCIPL. Through the process of the verification, the revised monitoring report and the supporting documents were evaluated to confirm the actions taken by the PP to resolve the CARs and CLs issued by the verification team.

The list of documents referred during the course of this verification has been provided in Appendix-1.1.

2.3 Interviews

The table below describes the on-site interview process and further identifies personnel, including their roles, who were interviewed and/or provided information additional to that provided in the project description, Monitoring report /01/ and any supporting documents.

	Date	Name	Organisation	Topic	Persons Interviewed

/1/	01/08/2022 to 07/08/2022	Tridip Goswami	C-Quest Capital (CQC)	• Project Design • Project Implementation status • Project start date and Project Location • Baseline Scenario • Baseline Identification and Additionality • Qualification and Training • Monitoring and reporting documentation • Quality Assurance – Management and operating system • Social and Environmental Impacts • Local Stakeholders meeting process • Compliance with relevant laws • Roles and responsibility	Pallavi Gedam and Rishika Shirke
/2/	01/08/2022 to 07/08/2022	Akhilesh Joshi	C-Quest Capital (CQC)	• Project Design • Project Implementation status • Project start date and	Pallavi Gedam and Rishika Shirke

				Project Location • Baseline Scenario • Baseline Identification and Additionality • Qualification and Training • Monitoring and reporting documentation • Quality Assurance – Management and operating system • Social and Environmental Impacts • Local Stakeholders meeting process • Compliance with relevant laws • Roles and responsibility	
/3/	01/08/2022 to 07/08/2022	Neha Oli	C-Quest Capital (CQC)	• Project Design • Project Implementation status • Project start date and Project Location • Baseline Scenario • Baseline Identification	Pallavi Gedam and Rishika Shirke

				and Additionality • Qualification and Training • Monitoring and reporting documentation • Quality Assurance – Management and operating system • Social and Environmental Impacts • Local Stakeholders meeting process • Compliance with relevant laws • Roles and responsibility	
/4/	03/08/2022	Chembe Chiponde (Field Assistance)	COMACO	• Procedure for data collection • Robustness and accuracy of data collection and transfer • Training provided for conducting the survey • Competence of survey team	Pallavi Gedam and Rishika Shirke
/5/	03/08/2022	Moses Mwenda (Field Assistance)	COMACO	• Procedure for data collection • Robustness and accuracy	Pallavi Gedam and Rishika Shirke

				of data collection and transfer • Training provided for conducting the survey • Competence of survey team	
/6/	03/08/2022	Maxwell Kasonkomona (Field Assistance)	C-Quest Capital (CQC), Regional Manager	• Procedure for data collection • Robustness and accuracy of data collection and transfer • Training provided for conducting the survey • Competence of survey team	Pallavi Gedam and Rishika Shirke
/7/	04/08/2022	Lubinda Mwibeli (Field Assistance)	Alliance Ginnerio	• Procedure for data collection • Robustness and accuracy of data collection and transfer • Training provided for conducting the survey • Competence of survey team	Pallavi Gedam and Rishika Shirke
/8/	05/08/2022	Halimu Malumo (Field Assistance)	C-Quest Capital (CQC), Lusaka	• Procedure for data collection • Robustness and accuracy of data	Pallavi Gedam and Rishika Shirke

				collection and transfer • Training provided for conducting the survey • Competence of survey team	
/9/	06/08/2022	Ndonga Gilbert	Village Coordinator	• Monitoring survey • Operation and maintenance, QA/QC procedure	Pallavi Gedam and Rishika Shirke
/10/	01/08/2022	Musaloe Banda	Village Head (Jabesi)	• Monitoring survey and Social and Environmental Impacts • Local Stakeholders meeting process • Cooking practice prior to the project stove installation (i.e. baseline usage)	Pallavi Gedam and Rishika Shirke
/11/	02/08/2022	Abeo Njobvu	Field coordinator	• Monitoring survey • Operation and maintenance, QA/QC procedure	Pallavi Gedam and Rishika Shirke
/12/	05/08/2022	Chama Mwaba	Choose Water	• Monitoring survey • Operation and maintenance, QA/QC procedure	Pallavi Gedam and Rishika Shirke
/13/	01/08/2022	TILIELENJI BANDA (Stove 1 ID CQCVZM0098901,	End user	Onsite interviews (Ex-post parameters)	Pallavi Gedam and Rishika Shirke

		Stove 2 ID CQCVZM0098902)		To check Number of project devices operating during year y (Ny,j,j)	
/14/	01/08/2022	DANIEL PHIRI (Stove 1 ID CQCSSAZT230401)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices operating during year y (Ny,j,j)	Pallavi Gedam and Rishika Shirke
/15/	02/08/2022	TYNESS PHIRI (Stove 1 ID CQCVZM0097663, Stove 2 ID CQCVZM0097664)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices operating during year y (Ny,j,j)	Pallavi Gedam and Rishika Shirke
/16/	02/08/2022	SADAMU ZULU (Stove 1 ID CQCVZM0101242, Stove 2 ID CQCVZM0101243)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices operating during year y (Ny,j,j)	Pallavi Gedam and Rishika Shirke
/17/	02/08/2022	ACKLIN BANDA (Stove 1 ID CQCVZM0100457, Stove 2 ID CQCVZM0100458)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices operating during year y (Ny,j,j)	Pallavi Gedam and Rishika Shirke
/18/	02/08/2022	SOFIA TEMBO (Stove 1 ID CQCVZM0098643, Stove 2 ID CQCVZM0098644)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices operating during year y (Ny,j,j)	Pallavi Gedam and Rishika Shirke
/19/	05/08/2022	REACHEL KILIMA (Stove 1 ID CQCVZM0172066, Stove 2 ID CQCVZM0172067)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices	Pallavi Gedam and Rishika Shirke

				operating during year y (Ny,j,j)	
/20/	05/08/2022	KABINDA ADSON (Stove 1 ID CQCVZM0123733, Stove 2 ID CQCVZM0123734)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices operating during year y (Ny,j,j)	Pallavi Gedam and Rishika Shirke
/21/	02/08/2022	Tikambenji Banda (Stove 1 ID CQCVZM0107973, Stove 2 ID CQCVZM0107339)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices operating during year y (Ny,j,j)	Pallavi Gedam and Rishika Shirke
/22/	05/08/2022	Misheck kamalambo (Stove 1 ID CQCVZM0196517, Stove 2 ID CQCVZM0196518)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices operating during year y (Ny,j,j)	Pallavi Gedam and Rishika Shirke
/23/	05/08/2022	Luti kalepa (Stove 1 ID CQCVZM0195623, Stove 2 ID CQCVZM0195624)	End user	Onsite interviews (Ex-post parameters) To check Number of project devices operating during year y (Ny,j,j)	Pallavi Gedam and Rishika Shirke
/24/	01/08/2022 to 07/08/2022	Chandan Kumar Sah	C-Quest Capital (CQC)	• Project Design • Project Implementation status • Project start date and Project Location • Baseline Scenario • Baseline Identification and Additionality	Pallavi Gedam and Rishika Shirke

				• Qualification and Training • Monitoring and reporting documentation • Quality Assurance – Management and operating system • Social and Environmental Impacts • Local Stakeholders meeting process • Compliance with relevant laws Roles and responsibility	

2.4 Site Inspections

Carbon Check has conducted an on-site inspection from 01/08/2022 to 07/08/2022. In line with paragraph 26 of the Sampling Standard, the verification team has applied acceptance sampling approach during on-site interviews on the sampling survey as part of verification. The project participant had applied sampling approach. A representative Monitoring survey /07/ was conducted by the representatives of Project participant. The verification team has chosen acceptance sampling in accordance with paragraph 28 of the sampling standard /B04/.

Applying paragraph 39 of the sampling standard, version 09 /B04/, a sample size of 11 households was chosen. A sample size of 11 was determined, based on an AQL of 0.5% and UQL of 20%, producer risk 10% and consumer risk 10%. Acceptance number thus determined for the sample is 0. However, VVB interviewed 21 samples (as all 10 Household onsite interviewed have 2 ICS each while 1 Household had single ICS distributed). Most of the household were distributed with two cookstoves, so by default VVB checked and verified both ICS at the premises of each Household interviewed during the onsite visit. from the sampling survey done by project participants.

The information provided in the sampling survey data /07/, has been cross checked during the on-site interviews conducted. As a part of acceptance sampling, the verification team could confirm the sampling survey data with no discrepant records. Thus, PP's set of records has been accepted in line with § 33 of the sampling standard, version 09 /B04/.

The verification team carried out on-site interviews with representatives of PP in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

2.5 Resolution of Findings

CCIPL, during this verification, identified issues related to the monitoring, implementation or operation of the VCS project that could impair the capacity of the proposed VCS project to achieve project emission reductions or influence the reporting of emission reductions. CCIPL has identified, discussed these issues within the Verification report in Appendix 4.

- Clarification requests (CLs): Project reporting lacks transparency and further information is needed to determine if a material discrepancy is present.
- Corrective action requests (CARs): The VVB has identified a material discrepancy or non-conformance that the project proponent must address.

The verification team identified 04 CARs and 03 CLs. All CAR and CLs raised by Carbon Check during this verification have been resolved. If this was not completed, the ERs cannot be certified and recommended for issuance to the VCS Registry.

2.5.1 Forward Action Requests

Forward Action Request (FAR) is to be raised when the monitoring and reporting require attention and/or adjustment for the next verification period. FARs does not relate to VCS requirements for issuance of ERs achieved during subject monitoring.

CCIPL has not raised any FAR during this verification.

2.6 Eligibility for Validation Activities

The project activity falls under sectoral scope 03 and the CCIPL is accredited for validation /verification of project activities under this scope.

3. VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

It has been confirmed through the description in PD /15/ and through interviews that the project activity does not participate in any emission trading program or any other GHG program and has not sought or received any other form of environmental credit. The project has applied only under VCS for registration. The grouped project is not participating under any other GHG programs.

3.2 Methodology Deviations

There is no methodology deviation identified during the current monitoring period.

3.3 Project Description Deviations

There is no project description deviation identified during the current monitoring period.

3.4 Grouped Project

The grouped project (the project) entails the dissemination of energy efficient stoves for cooking purposes. A total of 91,480 ICS was disseminated by the end of this 3rd monitoring period. The number of ICS units distributed during this period is lower than the estimated ex-ante number in the registered document, resulting in higher emission reductions than the anticipated value as all the cookstoves is in operational during this monitoring period. Therefore, as described in the registered project document/15/, for each new instance (installed ICS) the eligibility criteria below confirm the new project activity instances in the assessment below:

The number of new project activity instances added to the project in this verification period, under this grouped project PP has considered each ICS as a project activity instance which is deemed acceptable as per the VCS Program Definitions and VCS Standard/B01/. The eligibility criteria of the Project Activity Instance, was established at the grouped project validation in the VCS PD /15/.

- 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):

Table 1 :- Eligibility Criteria for new project activity instances

Key Element	Requirements /B01-c/	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. Such geographic areas need not be contiguous and may be large or small, noting the grouped project requirements for additionality and	The verification team reviewed the sales record database /09/ and by further conducting interviews with representatives of PP to confirm that all new project activity instances are located within the geographical area identified in the registered VCS PD /15/. All new project activity instances are

	baseline assessments of the geographic area.	located within the host country of Republic of Zambia. This is deemed appropriate to the verification team. Thus, the requirements of this key element is 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 /09/, conducted interviews with representatives of PP and further based on its sectoral expertise confirms that baseline scenario for each project technology and geographic area, as identified in section 3.4 of the VCS PD /15/, 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) • the requirements of additionality are being complied with for the entirety of geographic area (Republic of Zambia) within which they are installed. This is deemed appropriate to the verification team. Thus, the requirements of this key element has 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	PP has provided the applicability of each of the eligibility criteria for all

	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.	the project instances in section 3.3 of the MR /01/ which is in compliance with the VCS PD /15/. 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) 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 is deemed appropriate to the verification team. Thus, the requirements of this key element has 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 sampling plan is able to generate statistically significant results.	The verification team reviewed the VCS MR /01/ and further conducted interviews with representatives of PP to confirm that the monitoring plan and procedures mentioned therein (which includes the sampling plan) is in conformance to the requirements laid out in the VCS PD /15/. 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/B02/, sampling for monitoring the project under methodologies has taken place during the current monitoring period. Based on the review of the applied methodologies and VCS PD this is deemed to be acceptable to the verification team. Refer to section 4.1 below for detailed discussion on monitoring activities. This is deemed appropriate to the verification team. Thus, the requirements of this key element has 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 instances and clusters adhere to such capacity limits; the grouped project as a whole may exceed the capacity limit.	The verification team reviewed the MR /01/, sample electronic sales records (Tally records) for new project activity instances, sales records spreadsheets /09/ and further conducted interviews with representatives of PP to confirm that all new project activity instances comply with the requirements of their respective applied methodologies /B02/. 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. This is deemed appropriate to the verification team. Thus, the requirements of this key element has been met by all the new project activity instances added to the grouped project.

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

4. VERIFICATION FINDINGS

4.1 Project Implementation Status

The grouped project, "Installation of high efficiency wood burning cookstoves in Zambia – Project 2" is registered under VERRA as a VCS project on (VCS Project ID 2371) applying the VCS methodology VMR0006 version 1.1 /B02/ "Methodology for Installation of High Efficiency Firewood Cookstoves".

The project "Installation of high efficiency wood burning cookstoves in Zambia – Project 2", is a grouped project, which employs the VCS methodology; VMR0006 version 1.1 /B02/. The grouped project involves distribution and installation of fuel-efficient improved cook stoves (ICS) in Zambia. The project will disseminate 500,000 fuel efficient (ICS) TLC-CQC Rocket stove through 4 years and each year consist of 125,000 ICS. The total ICS during this monitoring period is 91,480 units. The TLC-CQC Rocket stove will reduce the amount of non-renewable biomass used for cooking. PP has considered each ICS distributed as a project activity instance. The start date for the grouped project is 14/10/2020 /03/ which is the date of installation/registration of the first stove in the grouped project.

The verification team confirms that there is no change of physical features from the registered VCS PD, which may impact the emission reductions of the project activity. This has been confirmed based on the review of sales records /09/, conducting interviews with representatives of PP as well as by carrying out on-site interviews with end users. Thus, the verification team concludes that, all the physical features of the VCS grouped project in the registered VCS PD/15/ are in place.

The verification team confirms that during the current monitoring period (16/10/2021 to 28/02/2022) the VCS grouped project has disseminated 91,480 units of ICS. This was confirmed based on the review of sales records /09/ and further based on interviews with representatives of PP through on-site interviews.

During the on-site interviews for verification, QA/QC procedures were identified which demonstrate that: operational and management system of the grouped project is in place; data were centralized; monitoring data were crosschecked with the sales records stored and confirmation that all operational staff were trained before taking up positions. The verification team thus confirmed that the monitoring of the project activity has been implemented in accordance with the monitoring plan in the registered VCS PD.

The registered VCS PD clearly describes the monitoring and responsibility of monitoring is done by PP. During the on-site interviews, monitoring, data collection and reporting procedures were confirmed with the relevant staff and through document review of samples of all relevant records.

The verification team confirms that the monitoring plan is in accordance with VCS approved methodologies VMR0006 version 1.1 /B02/. All data are collected and archived in accordance with the applied methodologies and included in the monitoring plan. This was confirmed based on the on-site interviews with representatives of PP and upon further review of samples of all relevant records.

All the ex-ante parameters which are used in the calculation of emission reductions are consistent with the VCS PD. It is confirmed that ex-ante parameters mentioned in section 4.1 of the MR /01/ are in line with the parameters mentioned in section 5.1 of the VCS PD. All the ex-post parameters have been monitored as per the monitoring plan and presented in section 4.2 of the MR /01/.

4.2 Safeguards

4.2.1 No Net Harm

Not applicable as the project does not pose any potential negative environmental and socio-economic impact.

- The project does not coerce the population into any practice or habit which they are not willing to take up as the cooking practice or habit on the project stove is similar to what was practiced before implementing this project activity, i.e., on the baseline stove.
- The project activity promotes gender equality as it intends to reduce the burden on women in the most vulnerable communities by reducing the fuel wood consumption. The amount of time spent collecting fuel wood and cooking will be reduced. Women will have more time for other pursuits. The risk of being exposed to gender-based violence will also reduce.
- The project is neither involved in any activity that would bring environmental deterioration nor will lead to any emission of toxic substances. The project stoves will rather reduce emissions due to the increased thermal efficiency compared to the baseline stoves.
- There are no threats anticipated in terms of negative effects on the local economy. Moreover, the locals will also be employed as a result of this project activity. Thereby improving the economic growth in the region where the project activity has been implemented.

4.2.2 Local Stakeholder Consultation

The Local Stakeholder Consultation meetings were held on 26-October-2020 and 25-November-2020 throughout the validation and are detailed in section 2.2 of the monitoring report /01/. The Local Stakeholder consultation was carried out at grouped project level, which was validated by the validation team during the VCS PD /15/ validation.

The key comments made by the local stakeholders were all answered during the local stakeholder consultation meetings and have also been provided in the section of 2.2 the registered PD /15/ and MR /01-c/.

The local implementation partners 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 audit team has checked through onsite audits with the end users, no grievance has been received during the third monitoring period. The Project Proponent has reported its feedback and grievance redressal procedure in Section 2.2 of the MR /01-c/, and the policy is outlined in the document "Project Grievance Redress Mechanism" /18/. In the opinion of assessment team, based onsite interviews 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 /15/ and further confirmed during onsite interviews, in case the end-users has a provision to approach CQC through their village chief. The village chief then reports the concerns to the concerned person, i.e., field staff from CQC 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.

During the onsite interviews and based on document review /01-c/, /18/, it can be confirmed that grievance addressal procedure has been designed and is implemented according to section 2.2 of the MR /01/ 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/06/, this has been checked by the verification team during the onsite interviews. Hence the verification team deemed the local stakeholders ongoing communication as appropriate.

4.3 AFOLU-Specific Safeguards

This is a non-AFOLU project and therefore, this section is not applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The equations and choices provided in the methodology as well as all other methodological tools, are correctly quoted in the Monitoring report /01/. The emission reductions of the project instances of the grouped project and project activity instance are calculated using the formulae mentioned in the applied methodology; VMR0006 version 1.1/B02/. The verification team reviewed the emission reduction spread sheets (ER sheets) and checked all the formulae, concluding that they are correct and in accordance with the monitoring plan of the PD and the applied monitoring methodology.

According to applied methodology VMR0006 (version 1.1) /B02/the emissions are calculated as below:

Baseline Emission

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

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_2e
$ER_{y,i,j}$	=	Emission reductions by improved cookstove of type i and batch j during year y in t CO_2e

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

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)

$EF_{wf,CO2}$	=	CO_2 emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO_2/TJ)
$EF_{wf,non\ CO2}$	=	Non-CO_2 emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO_2/TJ)
$N_{y,i,j}$	=	Number of improved cookstoves of type i and batch j operating during year y
0.95	=	Discount factor to account for leakage

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

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

Where,

η_{old}	=	Efficiency of baseline cookstove
$\eta_{new,y,i,j}$	=	Efficiency of the improved cookstove type *i* and batch *j*, determined using Equation 5 of the methodology.
$B_{y=1,new,i,j,survey}$	=	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.

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

Where,

η_p	=	Efficiency of project stove (fraction) at the start of project activity.
$(DF_n)^{y-1}$	=	Discount factor to account for efficiency loss of project cookstove per year of operation (fraction). This value may be based on actual monitoring or based on manufacturer's declaration on expected loss in efficiency or through publicly available literature on relevant industry standards. Alternatively default value of 0.99 efficiency loss per year can be considered.
0.94	=	Adjustment factor to account for uncertainty related to project cookstove efficiency test.

<u>Leakage Emissions:</u> In accordance with methodology VMR0006 version 1.1, 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 Zambia Project-2 " has being claimed for this monitoring period and the total population of the stoves for this monitoring period (16/10/2021 to 28/02/2022.) is 91,480 ICS.
The sampling plan implemented by the PP is in accordance with the applied approved monitoring methodology /B02/ and the VCS PD /15/. The CME has appropriately performed Simple random Sampling procedure, reliability levels were set at 90% confidence and 10% precision in line with the applied methodology VMR 0006 version 1.1/B02/. As the VCS PD /15/ mentions the option for Simple random Sampling procedure, it is acceptable to the verification team.

The sampling surveys have been carried out by the well-trained personnel /12/. Monitoring parameters $N_{y,j,j}$ and $B_{y=1,new,i,j,survey}$ are monitored through monitoring sample surveys. Monitoring of the parameters ensures compliance with the applied methodology VMR0006, version 1.1 /B02/. Verification team has checked the survey records /7/ and sample size calculation/13/. Parameter $N_{y,j,j}$ monitors the number of stove in operation and the parameters $B_{y=1,new,i,j,survey}$ are used to calculate Quantity of woody biomass used by improved cookstoves.

PP has applied sampling for the current monitoring period. A confidence/precision level of 90/10 has been used by the PP for all the monitoring parameters determined through applying simple random sampling. Survey has been carried out. This is in accordance with the sampling plan provided in the registered VCS PD /15/. The sample size calculations for each of the monitoring parameters monitored through the sampling have been provided in the table below. As the calculated sample size were 48, in accordance with the §14 of the sampling standard version 09 /B04/, a minimum sample size of 48 has been chosen when the parameter of interest is a proportion ($N_{y,j,j}$). PP has chosen 94 responded samples using the sample size calculation as;

$$n \geq \frac{1.645^2 \text{ x } 91480 \text{ x } 0.85\ (1-0.85)}{(91480\text{-}1) \text{ x } 0.1^2 \text{ x } 0.85^2 + 1.645^2 \text{ x } 0.85\ (1-0.85)} = 47.73$$

Under this project activity two stoves were also distributed in one household. Survey team also surveyed the second stove. Therefore, during this survey total 94 stoves were surveyed.

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

Parameters	$N_{y,i,j}$
Sample size	94
Precision achieved	0%

During verification, VVB used sampling to determine the operational status of the households. Given that Zambia is a Least Developed Country, a sample size of 11 stoves was chosen using paragraph 39 (c) of the sampling standard, version 09 /B04/. A sample size of 11 was determined, based on an AQL of 0.5%

and UQL of 20%, producer risk 10% and consumer risk 10%. Acceptance number (c) thus determined for the sample is 0. VVB interviewed 21 samples (as all 11 Household onsite interviewed have 2 and1 ICS each).Most of the household were distributed with two cookstoves, so by default VVB checked and verified both ICS at the premises of each Household interviewed during the onsite visit samples for monitoring survey. It was observed that out of the 21 samples, all the 21 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-c/ and ER sheet /02/ and thus c=0. Thus, CME's set of records has been accepted in line with § 33 of the sampling standard, version 09 /B04/. Verification team has cross verified these sample documents.

The monitoring parameters required to be monitored through the sampling plan are:

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/.
As per paragraph 25 of the Sampling Standard, version 09 /B04/, 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.

Table 2:- Parameter selected during Monitoring

Parameter	How the CME conducted sampling surveys (to obtain the project participants' or the coordinating/managing entities' records)	How the DOE could obtain records for verification	Criteria for deciding what ultimately constitutes a discrepancy
Number of project devices operating during year y ($N_{y,j,J}$)	Sampling based survey (questionnaire survey/interviews) Visual inspection of the premises to see if ICS is operational and in use. Interview with end user if required to	Cross-check of a sample of project participants' samples (questionnaire operation surveys/interviews) including but not limited to following: • Consistency between the information as contained in	DOE results, accounting for duly justified differences.

	verify that ICS is still in use [Yes/No]	Survey sheet and revealed from the on-site interviews • Baseline scenario of the household • Enquire/observe the pre-project/baseline stove/s and its operation during the project scenario.	

The sampling plan implemented by the PP is in accordance with the applied approved monitoring methodology /B02/ and the VCS PD /15/. The CME has appropriately performed Simple random Sampling procedure in line with the applied methodology. As the VCS PD /15/ mentions the option for Simple random Sampling procedure, it is acceptable to the verification team.

The necessary confidence / precision of 90/10 each of the parameters are met. This has been cross verified by the verification team from the supporting documents submitted.

Emission reductions have been calculated in accordance with the applied methodology VMR0006 version 1.1 /B01/, and VCS PD /15/. The PP has used monitored data and ex-ante fixed data including default values as mandated/permitted by the applied methodology. The values used for calculation of GHG emission reductions have been thoroughly checked by the verification team and was found appropriate and correct.

Table 3:- Parameters Determined ex-ante:

The following parameters are determined ex-ante and mentioned in section 5.1 of the VCS PD/15/:

Parameter	Unit	Value	Assessment
$f_{NRB,y}$	Fraction	0.81	-Fixed ex-ante -The value is calculated by third party C4 Ecosolutions in line with the applicable methodological CDM Tool 30, version 3.0.
$NCV_{wood\ fuel}$	TJ/tonne	0.0156	- Fixed ex-ante - Default values from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction have been used.

$EF_{wf,CO2}$	tCO_2/TJ	112	- Fixed ex-ante - Default values from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion have been used.
$EF_{wf,non\ CO2}$	tCO_2/TJ	26.23	- Fixed ex-ante - Default values from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion have been used.
η_{old}	Fraction	0.1	- Fixed ex-ante - Default values from the methodology.
η_p	Fraction	0.345	- Fixed ex-ante -Manufacturers specification.

The spread sheet submitted by the PP clearly and transparently mentions values of the data parameters used for calculation of emission reductions. The input values have been verified from the reliable and authentic sources including monitoring records (distribution records) /07/, Monitoring Report /01/, and applied methodology /B01/. The emission reductions calculated were compared with the emission reduction spread sheet /02/ and found to be correct. No significant reporting risks have been identified for the data reported.

Manufacture of ICS

In year 2013, CQC partnered with the Total Land Care (TLC) to upgrade TLC's mud/brick cookstove design to achieve efficiencies comparable to the best imported portable metal cookstoves. The international NGO that invented "rocket stove" technology", Aprovecho, supported the design process funded by CQC and certified the thermal efficiency of 34.5% through independent tests conducted in their laboratory as per latest WBT protocol in year 2015. CQC and its partners have worked to improve the design of metal parts to improve amenity and durability. The metal parts are now upgraded to higher grade metals built to last a minimum of 10 years. These parts are currently made in Malawi (locally) and purchased in bulk.

PP promotes end user to build the stove themselves (mud and brick structure) and then PP provides all metal parts to end user at the time of registration of the ICS in project database. PP is providing free of cost replacement for the metal parts in case it is damaged or broken throughout the crediting period of the project. All end users have been trained to repair the mud and brick structure in case of any cracks or damage.

Considering the above, it can be confirmed that TLC Rocket stove can easily survive the project lifetime of 10 years due to ease of repair and free replacement of metal parts.

The details of monitoring parameters used for calculation of emission reductions are provided below:

Table 4:- Parameters monitored ex-post

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	Number of project devices of type i and batch j operating during year y ($N_{y,i,j}$)
Measuring frequency/Time Interval:	At least once every two years
Reporting frequency:	At least once every two years
Reported value:	91,480
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from monitoring survey of samples /06/

Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VCS PD /15/
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /06/ and the ER sheet /02/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	Efficiency of the improved cookstove type *i* and batch *j* during year *y* ($\eta_{new,y,i,j}$)
Measuring frequency/Time Interval:	Annually
Reporting frequency:	Annually
Reported value:	Year (y) / $\eta_{new,y,i,j}$ 1 / 32.43% 2 / 32.11%
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value is calculated in the ER spread sheet /02/
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VCS PD /15/
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA

If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with the ER sheet /02/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	Annual quantity of woody biomass used by improved cookstoves in tonnes per device of type i and batch j ($B_{y=1,new,i,j,survey}$)
Measuring frequency/Time Interval:	In the first year of project implementation
Reporting frequency:	In the first year of project implementation
Reported value:	1.2264 (Tonnes per device per year)
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from monitoring survey of samples /06/
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA

Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	Calibration of weighing scales used for measuring the fuel wood was done in house before start using on site. QA/QC procedures stated in MR comply with VCS PD /15/
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with the ER sheet /02/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data from monitoring survey /09/ and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB

Data / Parameter: (as in monitoring plan of VCS PD):	The operating lifetime of the project device. (Life Span)
Measuring frequency/Time Interval:	Once at the time of project stove installation
Reporting frequency:	Once at the time of project stove installation
Reported value:	10
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from Manufacturer specification /04/
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VCS PD /15/
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with the ER sheet /02/.
How were the values in the monitoring report verified?	NA

Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data from monitoring survey /06/ and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the pre-defined formulae from registered VCS PD /15/. The total number of emission reductions for the monitoring period (16/10/2021 to 28/02/2022) is 147,173 tCO2e.

Actual ERs achieved during this monitoring period (tCO_2e)	Amount estimated ex-ante for this monitoring period in the VCS-PD (tCO_2e)	Remarks
1,47,173	1,16,782	Actual emission reductions achieved are higher than the value estimated in ex-ante calculation due to 100% ICS were found operating during the monitoring survey as compared to the 10% annual loss rate assumed in VCS-PD.

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

formula were verified and found to be accurate. The comparison of Ex-ante and Ex-Post has been provided by the PP in the section 5.4 of the MR/01/, and it clearly states the emission reduction is higher than the ex-ante assumed as all the cookstove are in operation and this has been also checked during the on site visit by the verification team, Hence the remark made by PP is deemed appropriate.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

When verifying the report emission reduction, CCIPL 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, CCIPL 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, CCIPL 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 Appendix 1 below.

CCIPL also assessed that the data collection system met the requirements of the monitoring plan as per the applied methodology.

Proper data management inclusive of data acquisition and aggregation, data management system is being followed for the project activity.

The monitoring personnel at site are well trained and follow reproducible routines. Thus, they are competent to carry out the relevant tasks with sufficient accuracy.

4.6 Non-Permanence Risk Analysis

The project activity was operational throughout the monitoring period. Hence there is no further requirement for the non-performance analysis rating during the monitoring period of the project activity.

5. VERIFICATION CONCLUSION

The Project Participant, C-Quest Capital SGS Stoves Private Limited, has commissioned the VVB, Carbon Check (India) Private Ltd. to perform a verification of the VCS Project Activity “Installation of high efficiency wood burning cookstoves in Zambia – Project 2”. This report summarises the findings of the verification of the project, performed on the basis of VCS criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The verification process was performed on the basis of all guidance and criteria as provided in VCS Standard version 4.3 /B01-a/, VCS Program Guide version 4.2/B01-b/, VCS Validation and Verification Manual version 3.2 /B01-c/ and Registration & Issuance Process version 4.2 /B01-d/.

The selected baseline and monitoring methodology (VMR0006, Version 1.1) is applicable to the project and correctly applied.

The verification team confirm that the project has been implemented in accordance with the project description/15/.

Verification period: From 16/10/2021 to 28/02/2022 (both days inclusive)

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2021 (16-October-2021 to 31-December-2021)	79,889	0	0	79,889
2022 (01-January-2022 to 28-February-2022)	67,284	0	0	67,284
Total	**147,173**	**0**	**0**	**147,173**

The verification team is of the opinion that the project has been implemented in accordance with the registered project description, the monitoring plan complies with the approved monitoring methodology. The monitoring was carried out in accordance with the monitoring plan, and that the monitored data and ER calculations were assessed and confirmed to be correct.

Therefore, CCIPL hereby certifies, and requests the issuance of, the reported ERs during the monitoring period of 16/10/2021 to 28/02/2022 amounting to 147,173 tCO_2e to the VCS Registry.

APPENDIX 1.1: REFERENCE DOCUMENTS

Ref	Document
/01/	a) Monitoring report Version 1, dated 22/06/2022 b) Monitoring report Version 2, dated 25/08/2022 c) Monitoring report Version 2.1, dated 20/09/2022
/02/	• ER calculation spread sheet correspond to /01-a/ • ER calculation spread sheet correspond to /01-b/ • ER calculation spread sheet correspond to /01-c/
/03/	Evidence for the start date of the grouped project
/04/	Technical specifications of the TLC-CQC Rocket Stove including the life span.
/05/	Proof of right of VERs.
/06/	Monitoring survey questionnaire template
/07/	Survey records for the monitoring period
/08/	Calibration records for the monitoring equipment used during the monitoring period
/09/	Database for the ICS distributed and sales records for the monitoring period
/10/	Evidence for unique identification of each of the ICS
/11/	Sample size and precision level achieved calculator for the monitoring period
/12/	Training records
/13/	Evidence for the random sample selection for the parameters opted for monitoring survey
/14/	Sample sales records/warranty cards for the stove
/15/	VCS PD for the grouped project "Installation of high efficiency wood burning cookstoves in Zambia- Project 2" version 2.1, dated 11/08/2021 and it corresponding validation report version 3.0, dated 11/08/2021
/16/	CME User Manual and Procedure for Data Quality Check
/17/	Previous MP 2 Monitoring report and verification report
/18/	CQC Grievances Redress policy

APPENDIX 1.2: BACKGROUND DOCUMENTS

Ref	Document
/B01/	VCS Requirements a. VCS Standard (v4.3, dated 22/06/2022) b. VCS Program Guide (v4.2, dated 22/06/2022)

	c. VCS Validation and Verification Manual version (v3.2, dated 19/10/2016) d. Registration & Issuance Process (v4.2, dated 22/06/2022) e. VCS Program Definitions version (v4.2, dated 22/06/2022) f. VCS MR template version 4.1 (dated 20/01/2022)
/B02/	Applied baseline and monitoring methodology a. VMR0006. version 1.1, "Methodology for Installation of High Efficiency Firewood Cookstoves"
/B03/	Methodological Tool • CDM Tool 30 "Calculation of the fraction of non-renewable biomass" Version 03.0
/B04/	a. "Standard for sampling and surveys for CDM project activities and programme of activities" (version 09.0) b. Guidelines for sampling and surveys for CDM project activities and Programme of Activities (version 04)
/B05/	Website and links: 1. IPCC (http://www.ipcc-nggip.iges.or.jp) 2. http://cdm.unfccc.int 3. http://www.v-c-s.org

APPENDIX 2: ABBREVIATIONS

CDM	Clean Development Mechanism
BE	Baseline Emission
CAR	Corrective Action Request
CCIPL	Carbon Check (India) Private Ltd.
CDM	Clean Development Mechanism
CL	Clarification Request
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
DOE	Designated Operational Entity
DPR	Detailed project report
DVR	Draft Validation Report
EB	CDM Executive Board
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
FVR	Final validation Report
GHG	Greenhouse gas(es)
GWh	Giga Watt Hour
IPCC	Intergovernmental Panel on Climate Change
MW	Mega Watt
MWh	Mega Watt Hour
NA	Not Applicable
OSV	On Site Visit
PD	Project Description
PP	Project Proponent
QC/QA	Quality control/Quality assurance
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association

VCU	Verified Carbon Unit
VVB	Validation Verification Body
VVM	Validation and Verificatoin Manual
VVS	Validation and Verification Standard

APPENDIX 3: CERTIFICATES OF COMPETENCE

Carbon CHECK

Carbon Check (India) Private Ltd.

Ms. Pallavi Gedam

has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 07.0):

For following functions:

Validator	☒	**Team Leader**	☒	**Technical reviewer**	☐
Verifier	☒	**Technical Expert**	☒	**Local Assessor**[1]	☒

In the following Technical Areas:

TA 1.1	☐	**TA 4.1**	☐	**TA 9.1**	☐	**TA 13.1**	☐
TA 1.2	☒	**TA 5.1**	☐	**TA 9.2**	☐	**TA 13.2**	☐
TA 3.1	☒	**TA 5.2**	☐	**TA 10.1**	☐	**TA 14.1**	☐

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

Date of Approval
29/11/2021

Valid Till
28/11/2022

Revision History of the Document

01/03/2020[2]	Interim Revision for office address change
01/09/2020	Interim Revision for CCIPL logo change
24/12/2020	Annual Revision
29/11/2021	Revision in response to qualification as Team Leader and Technical Expert

[1] India

[2] Please refer to previous version of competency certificates for the revision history.

CARBON CHECK (INDIA) PRIVATE LIMITED
CIN: U74930DL2012PTC232495
Regd. Off: 2071/38, 2nd Floor, Naiwala, Karol Bagh, New Delhi - 110005
Corporate off: Unit No. 1701, Logix City Centre Office Tower, Plot No. BW-58, Sector-32 Noida, Uttar Pradesh
Tel: +91 120 4373114 | **URL:** www.carboncheck.co.in | **e-mail:** info@carboncheck.co.in

APPENDIX 4: FINDINGS LOG

Table 1. CARs from this verification

Finding	CAR 01		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	PP represent in MP3 is "C-Quest Capital SGS Stoves Private Ltd." whereas is MP2 and the registered PD is "C- Quest capital stoves Asia limited". PP to clarify the same, is it in compliance with the §7.2 of the VCS registration and issuance process V4.2 .		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	There are multiple PP representatives in MP3. A new PP has been added via accession and their details have already been shared in section 1.3 of the MR. VCS accession deed of multiple representatives dated 25th April 2022 is available on the Verra webpage: https://registry.verra.org/app/projectDetail/VCS/2371		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	Verification team has checked the project webpage and the justification provided by the PP is deemed acceptable. Hence CAR 01 is closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CAR 02		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	PP to provide a comparison of ex-ante and ex-post ERR values in Section 5.4 of the monitoring report, as well as justification for any differences.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Section 5.4 of the monitoring report is updated with a comparison table between ex-ante and ex-post ERR values. The updated MR ver 2.0 is being shared to VVB for reference.		

Finding	CAR 02
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has submitted the revised MR , section 5.4 has been updated with the comparison of ex-ante and ex-post ERR values. This has been checked and verified by the verification team. Hence, deemed appropriate CAR 02 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CAR 03		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	PP needs to rectify and make the emission reduction sheet specific to the country of distribution. Kindly check the 'Summary_ER' Tab (Cell C9) of the emission reduction sheet.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	There was typo error in the emission reduction sheet and the same has been revised. The updated ER sheet ver 2.0 is being shared to VVB.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has submitted the revised emission reduction sheet, and the typo errors has been rectified, this has been checked and verified by the verification team. Hence, CAR 03 is closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CAR 04		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	As per the section 4.1 parameter "Life span" comparing the "Description of measurement methods and procedures to be applied". "TLC cookstoves manufactured under the project activity match the fixed design specification. This has achieved by using brick molds 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 has been provided to end users on use, care,		

Finding	CAR 04
	and upkeep of these stoves. PP conducted periodic audits and surveillance of the stoves distributed under the 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" As per the observation during the onsite visit, some stoves were not properly maintained and were about to break. How PP has conducted periodic audits and surveillance of the stoves distributed under the project activity to ensure their proper functioning throughout the project lifetime. PP need to clarify the same.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	To ensure the proper operation of the stoves delivered under the project activity for the entire lifetime of the project, PP conducted spot audits and ensured frequent visit of field staffs to the villages (atleast once every month). This, in addition to the post-installation maintenance services, which ensures that the project stoves continue to operate at the manufacturer-specification and followed the best practices. Spot audit report for the current monitoring period is being submitted to VVB for reference. PP field staff randomly select HHs included in the database and visit or contact the stove owners to cross-check the information from the database with the factual evidence in the field. In case the ICS are found to be no longer in use, they got clearly marked as such and excluded from emission reductions calculations.
VVB Assessment #1 The assessment shall encom-pass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has submitted the spot audit reports, this has been checked and reviewed by the verification team. Thus, the justification provided by the PP is deemed acceptable. Hence CAR 04 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Table 2. CL from this verification

Finding	CL 01		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	In section 4.2 of the monitoring report, under parameter "$\eta_{new,y,i,j}$ Efficiency of the improved cookstove type i and batch j during year y. values considered for two-year only. PP to clarify on the same.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Under parameter $\eta_{new,y,i,j}$ in section 4.2 of the monitoring report, PP has mentioned efficiency values for two-year only as because all the installed project stoves under this monitoring period (MP3) falls in vintage 1 and 2 only.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	Justification provided in regards to parameter $\eta_{new,y,i,j}$ "Efficiency of the improved cookstove type i and batch j during year y by PP is deemed acceptable, hence CL 01 is closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CL 02		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	As per the monitoring plan under section 4.3 of the monitoring report, spot audit report needs to be submitted.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Spot audit report for the current monitoring period is being submitted to VVB for reference.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has submitted the spot audit reports , this has been check and reviewed by the verification team, deemed appropriate. Hence, CL02 is closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CL 03		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	As per the §3.17.18 of the VCS standard V4.3, "The project proponent shall develop a grievance redress procedure to address disputes with local stakeholders that may arise during project planning and implementation, including with regard to benefit sharing. The procedure shall include processes for receiving, hearing, responding and attempting to resolve grievances within a reasonable time period, taking into account culturally-appropriate conflict resolution methods. The procedure and documentation of disputes resolved through the procedure shall be made publicly available. The procedure shall have three stages: 1) The project proponent shall attempt to amicably resolve all grievances and provide a written response to the grievances in a manner that is culturally appropriate. 2) Any grievances that are not resolved by amicable negotiations shall be referred to mediation by a neutral third party. 3) Any grievances that are not resolved through mediation shall be referred either to a) arbitration, to the extent allowed by the laws of the relevant jurisdiction or b) competent courts in the relevant jurisdiction, without prejudice to a party's ability to submit the grievance to a competent supranational adjudicatory body, if any" PP to clarify the same and grievances reported during this monitoring period needs to be submitted.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	PP follows a proper Feedback and Grievance Redress Policy and Procedure, the same is being shared to VVB for reference, which ensures that project-affected communities and individual stakeholders' grievances are properly prioritized and addressed. For issues that fall under the parameters of the grievance process, they are recorded on the grievance form and addressed by the PP depending on the issue observed. No grievance has been reported during this monitoring period.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has reported no grievance observed during this monitoring period, also submitted the grievance redress policy and procedure. Thus, the justification provided by PP is deemed acceptable. Hence, CL 03 is closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		