GOLD STANDARD VERIFICATION REPORT

–5TH PERIODIC VERIFICATION OF CP1–

BIOLITE IMPROVED COOK STOVES PROGRAMME

GOLD STANDARD REF. NO.: GS 11191

Monitoring Period: 01/01/2022 to 31/12/2022
(incl. both days)

Report No: 8003061559 - 23/082

Date: 15/11/2023

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Verification Report:	***Report No.***		***Rev. No.***	***Date of 1st issue:***	***Date of this rev.***
	8003061559 - 23/082		2.0	30/10/2023	15/11/2023
Project:	***PoA Title:***			***Registration date:***	***Gold Standard No.:***
	BioLite Improved Cook stoves Programme PoA ID: GS 11191			03/03/2022	PoA GS 11191
				Verification No.:	
				5th Periodic verification of CP1	
	VPA title			***Inclusion Date***	***GS Ref No.***
	CPA 003 – BioLite HomeStove in Kenya			18/01/2018	GS 11192
	CPA 008 – Charcoal Stoves in Kenya			17/04/2018	GS 11193
	CPA 009 – Charcoal Stoves in Kenya			17/04/2018	GS 11194
	CPA 041 – BioLite HomeStove in Kenya			15/12/2021	GS 11195
	CPA 051 – Charcoal Stoves in Kenya			15/12/2021	GS 11196
	CPA 052 – Charcoal Stoves in Kenya			15/12/2021	GS 11197
	CPA 053 – Charcoal Stoves in Kenya			15/12/2021	GS 11198
	CPA 054 – Charcoal Stoves in Kenya			15/12/2021	GS 11199
	CPA 055 – Charcoal Stoves in Kenya			15/12/2021	GS 11200
	CPA 056 - Charcoal Stoves in Kenya			15/12/2021	GS 11879
	CPA 057 - Charcoal Stoves in Kenya			15/12/2021	GS 11880
	CPA 058 - Charcoal Stoves in Kenya			15/12/2021	GS 11881
	CPA 059 - Charcoal Stoves in Kenya			15/12/2021	GS 11882
Project Participant(s):	***Non-Annex 1 country:***			***Annex 1 country:***	
	Kenya			N/A	
	PP from non- Annex 1 country:			***PP from Annex 1 country:***	
	BioLite India Private Limited (BioLite)			BioLite India Private Limited (BioLite)	
Applied methodology/ies:	***Title:***			***No.:***	***Scope(s) / TA(s)***
	AMS II. G. "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass"			Version 03.0	3 Energy Demand / 3.1
Monitoring period and monitoring report	***Monitoring period (MP):***			***Monitoring Report:***	
	From:	***To:***	***No. of days:***	***Draft version:***	***Final version:***
	01/01/2022	31/12/2022	365	1.0 (08/06/2023)	4.0 (09/11/2023)
Verification team / Technical Review and Final Approval:	***Verification Team:***			***Technical review:***	***Final approval:***
	Prakash Kumar Mishra: TL / TE			30/10/2023	30/10/2023
Key dates of verification:	***Publication of the workplan:***			***Onsite audit***	
				From	***To***
	21/07/2023			24/07/2023	26/07/2023
Summary of Verification opinion	BioLite India Private Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 5th periodic verification (of CP1) of the project: **"BioLite Improved Cook Stoves Programme; PoA ID: GS 11191"**, with regard to the relevant GS4GG Requirements. As a result of this verification, the verifier confirms that: ☒ all operations of the project are implemented and installed as planned and described in the validated project design document, ☒ the monitoring plan is in accordance with the applied approved CDM methodology, ☒ the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately,				

	☒ the monitoring system is in place and functional. The project has generated GHG emission reductions, and ☒ the project contributes to sustainability development ☒ the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above-mentioned reporting period as follows:
Emission reductions: [t CO_{2e}]	***Verified amount*** / ***As per PDD:***

GS ID	tCO_2e (eq)
GS 11192	24,113
GS 11193	36,194
GS 11194	46,139
GS 11195	904
GS 11196	29,680
GS 11197	23,236
GS 11198	50,090
GS 11199	50,321
GS 11200	47,187
GS 11879	38,658
GS 11880	29,973
GS 11881	12,197
GS 11882	26
Total	**388,718**

631,898

Document information:	*Filename:*	*No. of pages:*
	GS 11191_Biolite_FVR_Rev 02_15_11_2023	98

Abbreviations:

CA	**Corrective Action / Clarification Action**
CAR	**Corrective Action Request**
CDM	**Clean Development Mechanism**
CER	**Certified Emission Reduction**
CIRCODU	**Centre for Integrated Research and Community Development**
CL	**Clarification Request**
CME	**Coordinating/Managing Entity**
CO_2	**Carbon dioxide**
CO_2eq	**Carbon dioxide equivalent**
CP	**Crediting Period**
CRF	**Customer Registration Form**
ER	**Emission Reduction**
ERC	**Emission Reduction Calculation Spread Sheet**
FAR	**Forward Action Request**
GHG	**Greenhouse gas(es)**
GS	**Gold Standard**
GS4GG	**Gold Standard for Global Goals**
GSP	**Gold Standard Passport**
GST	**GS4GG Toolkit**
MP	**Monitoring Plan**
MR	**Monitoring Report**
PA	**Project Activity**
PDD	**Project Design Document**
PP	**Project Participant**
QA/QC	**Quality Assurance / Quality Control**
UNFCCC	**United Nations Framework Convention on Climate Change**
VVS	**Validation and Verification Standard**

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1. INTRODUCTION

BioLite India Private Limited has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 5th periodic verification of first crediting period for the project

"BioLite Improved Cook stoves Programme"

with regard to the relevant requirements for Gold Standard project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) as described in the registered PoA-DD and VPA-DD and transition forms.

GHG data for this monitoring period was verified in detailed manner applying the set of requirements, audit practices and principles, as required under the GS4GG requirements/GS/ and additional Validation and Verification Standard /VVS/ of the UNFCCC.

Sustainable Development Indicators for this monitoring period were verified in detailed manner as required under the GS requirements/GSR/, GS Validation and Verification Manual/GS-VVM/ and GS4GG Requirements/GS4GG TA/.

This report summarizes the findings and conclusions of this 5th periodic verification of first crediting period of the above-mentioned UNFCCC registered project activity (validation was conducted for the transition of CDM PoA "BioLite Improved Cook Stoves Programme" in Kenya and Uganda (hereafter referred to as "PoA") to GS4GG/VAL/).

1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions and the contribution to sustainable development. It includes the verification of the:

- implementation and operation of the project activity as given in the most recent version of PDD,
- compliance of the actual monitoring system and procedures with the provisions of the monitoring plan as a part of registered PDD and the applied approved monitoring methodology,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

1.2. Scope

The verification of project is based on the validated Programme of Activities design document/GSPoA-DD/, the validated Component Project Activity Design Document (VPA-DD), the monitoring report(s)/MR/, emission reduction calculation spreadsheet/ER/, GS4GG Requirements/GS4GG TA/, supporting documents made available to the verifier and information collected through performing interviews and during the onsite

assessments. Furthermore, publicly available information was considered as far as available and required.

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

- Article 12 of the Kyoto Protocol /KP/,
- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1/MA/, and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Standard /VVS/,
- monitoring plan as given in the registered PoA-DD, TRANSITION REQUEST FORM(s) and latest version of VPA-DD /GSPoA-DD/VPA/
- Approved methodology/GSM/
- Gold Standard for Global Goals (GS4GG)
- GS4GG Transition Annex AA/GS4GG TA/

2. GHG PROJECT DESCRIPTION

2.1. Technical Project Description of the Programme of Activities

The proposed programme of activities "**BioLite Improved Cook Stoves Programme**" involves the substitution of traditional and inefficient cook stoves with efficient biomass cook stove (wood, charcoal) in rural and/or urban household in Kenya and Uganda, in biomass deficient regions.

The VPAs under consideration reduce GHG by replacement of inefficient traditional cook stoves with improved stoves (ICS) in Kenya. The VPAs involve the distribution of domestic fuel-efficient cook stoves, specifically the BioLite HomeStove, BioLite Jiko Malkia, EcoZoom Jiko Bora Mama Yao, EcoZoom Jiko Bora and EcoZoom Jiko Fresh. Currently most people in Kenya are using the traditional cook stove for cooking i.e., 3 stone stove or other rudimentary technology. This method is inefficient and leads to unsustainable non-renewable biomass use. The ICSs provide clean energy for cooking. Thus, the project activity reduces consumption of non-renewable biomass fuel consumption and the equivalent GHG emissions.

BioLite India Private Limited (BioLite), the coordinating/managing entity (CME) coordinates the SSC-PoA.

2.2 Technical Description of the Component Project Activities

The Programme of Activities consists VPAs as below:

Title	GS Ref ID
CPA 003 – BioLite HomeStove in Kenya	GS 11192
CPA 008 – Charcoal Stoves in Kenya	GS 11193
CPA 009 – Charcoal Stoves in Kenya	GS 11194
CPA 041 – BioLite HomeStove in Kenya	GS 11195
CPA 051 – Charcoal Stoves in Kenya	GS 11196
CPA 052 – Charcoal Stoves in Kenya	GS 11197
CPA 053 – Charcoal Stoves in Kenya	GS 11198
CPA 054 – Charcoal Stoves in Kenya	GS 11199
CPA 055 – Charcoal Stoves in Kenya	GS 11200
CPA 056 - Charcoal Stoves in Kenya	GS 11879
CPA 057 - Charcoal Stoves in Kenya	GS 11880
CPA 058 - Charcoal Stoves in Kenya	GS 11881
CPA 059 - Charcoal Stoves in Kenya	GS 11882

Typical key parameters of the ICS are given in Table 2-1:

Table 2-1: Typical Technical data of the stoves/TECH/

Stove Type	Parameter	Unit	Value
HomeStove	Rated Thermal Efficiency	%	45.30
	Material	-	Stainless Steel body, cast iron top
	Dimensions	cm	(Ø 33.5)
	Life span	year	5
	Manufacturer	-	BioLite

Stove Type	Parameter	Unit	Value
Jiko Malkia	Rated Thermal Efficiency	%	50.07
	Material	-	Stainless Steel body, cast iron top
	Dimensions	cm	(Ø 30)
	Life span	year	5
	Manufacturer	-	BioLite

Stove Type	Parameter	Unit	Value
Jiko Bora Mama Yao	Rated Thermal Efficiency	%	40.4
	Material	-	Painted sheet metal with reinforced door, Refractory metal combustion chamber body, cast iron top
	Dimensions	cm	(Ø 28)
	Life span	year	5
	Manufacturer	-	Biolite

Stove Type	Parameter	Unit	Value
Jiko Bora	Rated Thermal Efficiency	%	37.74
	Material	-	Painted sheet metal with reinforced door, Refractory metal combustion chamber body, cast iron top
	Dimensions	cm	(Ø 28)
	Life span	year	5
	Manufacturer	-	Biolite

Stove Type	Parameter	Unit	Value
Jiko Fresh	Rated Thermal Efficiency	%	36.21
	Material	-	Painted sheet metal with reinforced door, Refractory metal combustion chamber body, cast iron top
	Dimensions	cm	(Ø 26)
	Life span	year	5
	Manufacturer	-	Biolite

2.3. Project Location

The details of the project location are given in Table 2-2:

Table 2-2: Project Location/PDD/

Description	Project Location
Host Country	Kenya

Region:	All regions of Kenya
Latitude/longitude of program provinces:	Applicable for entire host country. latitudes 5°N and 5°S, and longitudes 34° and 42°E Nairobi is the national capital of Kenya and is located at 01.17°S and 36.48°E.

2.4. Project Verification History

Essential events since registration are presented in the following Table 2-3.

Table 2-3: Status of previous Monitoring Periods

#	Monitoring Period	Dates	Status
1	PoA-DD registration	30/12/2012	Registered
2	GS 11192 - CPA 003 – BioLite HomeStove in Kenya	18/01/2018	Inclusion
	GS 11193 - CPA 008 – Charcoal Stoves in Kenya	17/04/2018	
	GS 11194 - CPA 009 – Charcoal Stoves in Kenya	17/04/2018	
	GS 11195 - CPA 041 – BioLite HomeStove in Kenya	15/12/2021	
	GS 11196 - CPA 051 – Charcoal Stoves in Kenya	15/12/2021	
	GS 11197 - CPA 052 – Charcoal Stoves in Kenya	15/12/2021	
	GS 11198 - CPA 053 – Charcoal Stoves in Kenya	15/12/2021	
	GS 11199 - CPA 054 – Charcoal Stoves in Kenya	15/12/2021	
	GS 11200 - CPA 055 – Charcoal Stoves in Kenya	15/12/2021	
	GS 11879 - CPA 056 - Charcoal Stoves in Kenya	15/12/2021	
	GS 11880 - CPA 057 - Charcoal Stoves in Kenya	15/12/2021	
	GS 11881 - CPA 058 - Charcoal Stoves in Kenya	15/12/2021	
	GS 11882 - CPA 059 - Charcoal Stoves in Kenya	15/12/2021	
3	Issuance of first, second, third and fourth verification (of CP1)	-	Issued
4	MP 5 (CP1) under GS	01/01/2022 to 31/12/2022	Issuance requested

3. METHODOLOGY AND VERIFICATION SEQUENCE

3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report / workplan
- A desk review of the Monitoring Report/MR/ submitted by the client and additional supporting documents with the use of verification protocol /CPM/ according to the Validation and Verification Standard /VVS/ and additional GS4GG requirements/GS/,
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting,
- Resolution of corrective actions (if any),
- Final verification reporting,
- Technical review,
- Final approval of the verification.

3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM and GS accreditation requirements
- a contract review was carried out before the contract was signed.

3.3. Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consisting of one team leader was appointed.

The list of involved personnel, the tasks assigned, and the qualification status are summarized in the Table 3-1 below.

Table 3-1: Involved Personnel

	Name	Company	Function [1)]	Qualification Status [2)]	Scheme competence [3)]	Technical competence [4)]	Verification competence [5)]	Host country Competence	On-site visit
☒ Mr. ☐ Ms.	Prakash Kumar Mishra[2]	EI	TL	SA	☒	3.1	☒	☒	☐
☒ Mr. ☐ Ms.	Bonface Mapesa Wesonga	EI	TE	TE	☒	3.1	☒	☒	☒
☒ Mr. ☐ Ms.	Victor Abarca[2]	EI	TR[B)]	SA	☒	3.1	☒	☐	☐
☐ Mr. ☒ Ms.	Stefan Winter[2]	TN CERT GmbH	FA[B)]	SA	☒	3.1	☒	☐	☐

[1)] TL: Team Leader; TM: Team Member[A)], TR: Technical review[B)]; OT: Observer-Team[B)], OR: Observer-TR[B)]; FA: Final approval[B)]

[2)] GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

[3)] GHG auditor status (at least Assessor)

[4)] Technical Area / TR Subcategory as per S01-VA000-F02 or S01-VA070-F01 (such as 1.1, 1.2, …)

[5)] In case of verification projects

[A)] Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

[B)] No team member: OT, TR, OR, FA

All the team member contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Technical experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

Statements of competence for the above-mentioned team member are enclosed in annex 2 of this report.

All above stated auditors are Gold Standard approved auditors as per https://www.goldstandard.org/resources/approved-auditors.

3.4. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

[2] Approved GS Auditor: https://www.goldstandard.org/resources/approved-auditors

Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in Table 3-2 below.

Table 3-2: Table A-1; Identification of verification risk areas

Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing				
Identification of potential reporting risk	**Identification, assessment and testing of management controls**	**Areas of residual risks**	**Additional verification testing performed**	**Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)**
The following potential risks were identified and divided and structured according to the possible areas of occurrence.	*The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following measures were taken in order to minimize the corresponding risks.* *The following measures are implemented:*	*Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.*	*The additional verification testing performed is described. Testing may include:* - *Sample cross checking of manual transfers of data* - *Recalculation* - *Spreadsheet 'walk throughs' to check links and equations* - *Inspection of calibration and maintenance records for key equipment* - *Check sampling analysis results* *Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.*	*Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.*

The completed table A-1 is enclosed in Annex 1 (table A-1) to this report.

Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific GS verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a GS project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in Table 3-3.

Table 3-3: Table A-2; Structure of the project specific periodic verification checklist

Table A-2: Periodic verification checklist				
Checklist Item	***Reference***	***Verification Team Comments***	***Draft Conclusion***	***Final Conclusion***
The checklist items in Table A-2 are linked to the various require-ments the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.	*Gives reference to the information source on which the assessment is based on.*	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVS shall be covered in this section.*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verifi-cation stage.*	*In case of a corrective action or a clarification the final assessment at the final verification stage is given.*

The GS periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in Annex 1(table A-2) to this report.

3.5. Desk review

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the registered version of the PDD, additional Annexes and further attached documents, including the monitoring plan /PDD/,
- the registered GS validation report /VAL/,
- the Monitoring/Usage Survey and Report/SUR/
- the last revision of the carbon and sustainability monitoring report/MR/, including the claimed emission reductions for the project
- documentation of previous verifications/VER/
- the emission reduction calculation spreadsheet/ER/.
- Usage Survey report and result/SUR/
- GS4GG Transition Annex AA/GS4GG TA/

Other supporting documents, such as publicly available information on the Gold standard website, on the UNFCCC website and background information were also reviewed.

3.6. On-site assessment:

As most essential part of the verification exercise, it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria and applied methodology and registered PDD. Furthermore, the on-site assessment is necessary to check the monitoring data with respect to accuracy of the calculation of emission reductions. Changes to the key SDG Impact indicators/SDGIT/ and the achievement and implementation of mitigation / compensation measures are other integral parts of the on-site assessment. The main tasks covered during the onsite assessment include, but are not limited to:

- an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data and monitoring/usage survey data were checked.
- The data aggregation trails were checked via spot sample down to the level of the data generation.
- Competency check of the ground personnel who conducts the Usage / Kitchen survey.
- Appropriateness of the data collection, sampling and reliability test for the monitored sampling parameter.
- Possibility of leakage emissions were also checked.

During the onsite assessment the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review. The applied MP is utilizing the results derived from sampling survey records for surveys (for parameters U_y and CU) conducted in 02/01/2023 – 13/03/2023/SUR/,/USAGE/ and the value of η_{new}, i.e. efficiencies of system being deployed is compared to the WBT test Records/report /WBT/, /WBTD/ (January to February 2022). The results are valid for one year.

Representatives of the BioLite India Private Limited including the operational staff of the project, Monitoring entity, Stove Manufacturers and end users were interviewed. The main topics of the interviews are summarized in Table 3-4.

Table 3-4: Interviewed persons and interview topics

Interviewed Persons / Entities[3]	Interview topics

[3] Refer table 7.4 for the list of interviewed personnel and end users

1. Project Participant & Operations Personnel: BioLite India Private Limited	• General aspects of the project • Technical equipment and operation • Changes since validation / previous verification • Remaining issues from previous verification • Quality management system • Involved personnel and responsibilities • Training and practice of the operational personnel/TRG/ • Implementation of the monitoring plan • Monitoring data management • Data uncertainty and residual risks • GHG emission reduction calculation • Procedural aspects of the verification • Maintenance • Environmental aspects • GS4GG Requirements • GS monitoring parameters
2. Monitoring Team: BioLite India Private Limited	• Implementation of the monitoring plan • Monitoring data management • Data uncertainty and residual risks • GS monitoring parameters • GS Cookstove Usage rate Guidelines • Monitoring team competency and skills • Training records of monitoring team • SDG parameters inline with the "SGD Impact Tool"/SDGIT/
3. Stove Manufacturers	• Stoves sales • Sales receipts • Transfer of ownership of VERs to PP • Incentive Mechanisms / Warranty extensions • Quantitative Employment and Income Generation • Stove lifetime
4. Stove users	• Warranty extensions • Transfer of ownership of credits VERs to PP • Technical equipment and operation • Stoves sales • Transfer of ownership of VERs to PP • Incentive Mechanisms / Warranty extensions • GS monitoring parameters • Usage survey • SDG parameters inline with the "SGD Impact Tool"/SDGIT/

The list of interviewees is included in chapter 7.4.

3.7. Draft verification reporting

On the basis of the desk review, onsite audit, follow-up interviews and further background investigation, the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

3.8. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

- 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 emission reductions which will impair the estimate of emission reductions;
- Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is be issued if:

- information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

- the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification, refer chapter 4.

3.9. Final reporting

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion is issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

3.10. Technical review

Before submission of the final verification report a technical review of the whole verification procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision-making process up to the technical review.

As a result of the technical review process, the verification opinion and the topic specific assessments, as prepared by the verification team leader, may be confirmed or revised. Furthermore, reporting improvements might be achieved.

3.11. Final approval

After successful technical review an overall (esp. procedural) assessment of the complete verification is carried out by a senior assessor located in the accredited premises of TÜV NORD.

After this step the verification team submits the verification report including the verification opinion to the client via e-mail and to Gold Standard via the GS registry.

4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report[/MR/], the calculation spreadsheet[/ER/], PDD[/PDD/], the Validation Report[/VAL/] and other supporting documents, as well as from the on-site assessment and the interviews are summarized.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

Table 4-1: Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Description of project activity	0	0	0
B – Implementation of project activity	0	0	0
C – Description of Monitoring System	1	0	0
D – Carbon Data and Parameters	1	1	0
E - Calculation of Emission Reductions	0	1	0
F – Sustainability Monitoring Parameters	0	1	0
SUM	**02**	**03**	**00**

The findings of the verification process are summarized in the tables below.

Table 4.2: Remaining FAR from validation and/or previous verification

Finding	**1** FAR#1 from GS4GG performance review report for GS 11195 to GS 11199 and GS 11200		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	As per Covid-19 Interim Measures, physical site visit shall be resumed by VVB when pandemic situation eases.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new*	Physical site visit was conducted by VVB from 24/07/2023 to 26/07/2023 for concerned monitoring period.		

version No.	
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non- closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Actual site visit has been performed; thus, the stipulated requirements are met. The, FAR is deemed addressed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	**3** (Applicable to GS 11192, GS 11193, GS 11194) FAR from 1st periodic verification of First Crediting Period under GS4GG		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	As soon as the CPAs (CPA 004, CPA 005, CPA 006, CPA 010) claim CER's, the following issue occurs: The parameter urban/rural mix is not defined as monitoring parameter or an ex-ante parameter, (considering it was neither included in the monitoring plan nor listed as an ex-ante parameter). Besides, the household size for rural and urban households to determine Bold is not defined as ex-ante fixed or monitoring parameter. The CME shall revise the monitoring plan to accurately reflect the information related to the parameter urban/rural mix, rural/urban household size for the next subsequent verification. The Verifying VVB shall check compliance during subsequent Verification(s).		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	CPAs (CPA 004, CPA 005, CPA 006, CPA 010) are not the part of the issuance in this MP. Further, as per appendix 6 of registered CDM CPA-DDs for GS11192 - GS11194 VPAs, the B_{old} value for the concerned VPAs was already fixed ex-ante vide PRC as reported in the CDM approved CPA-DDs for the concerned VPAs, available at the following links:		

VPA ID	CDM Ref CPA ID	Link
VPA 11192	7997-P1-0003-CP1	https://cdm.unfccc.int/UserManagement/FileStorage/2PK3TJUQFIY85W1RD6LHBXZVCN09MS
VPA 11193	7997-P1-0008-CP1	https://cdm.unfccc.int/UserManagement/FileStorage/U9OFV26W1ERIAZMLH5Q3KB8D47NCYP
VPA 11194	7997-P1-0009-CP1	https://cdm.unfccc.int/UserManagement/FileStorage/WG5DN4KJOMA70YIEQZ2SH6B9FPL3R1

Appendix 6 of the CPA-DDs clearly state that the CME revised the monitoring plan to accurately reflect the information related to the parameter urban/rural mix, urban/rural household size in a conservative manner and fixed the B_{old} value for the CPA ex-ante for the entire crediting period. Given the registered TRF is based on registered CDM CPA-DD, hence this FAR is deemed already addressed.

Finding	**3** **(Applicable to GS 11192, GS 11193, GS 11194) FAR from 1st periodic verification of First Crediting Period under GS4GG**
	As explained above in response to CL1 above, the CME has conservatively determined B_{old} value as lower of the following two options, for the three VPAs on which FAR was raised in the previous verification: 1. considering corresponding urban / rural mix of each VPA. The ICS distribution database presents the location of each ICS, allowing the CME to determine weighted average B_{old} value for each VPA. 2. Value specified in appendix 6 of the VPA. The CME shall continue to follow the same approach for all VPAs alike, henceforth. No change is deemed required in the VPA-DDs.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The VVB has assessed the CME's response and confirms that ✓ **Assessment for VPA 11192, VPA 11193 and VPA 11194** 1. Since the parameter B_{old} is fixed and duly documented, there is no more requirement of monitoring of the parameter "urban/rural mix". 2. Considering the principle of transparency and conservativeness, the PD is recalculating the parameter B_{old} and in case the value turns out lower than the fixed value, the lower value is applied. This approach is voluntary, conservative and hence acceptable. 3. The VVB is reconfirming the appropriateness by tabulating the below comparison.

Parameter	Symbol	VPA 11192	VPA 11193	VPA 11194
Quantity of woody biomass used in the absence of the project activity in tonnes per household (Bold)	B_{old} in Registered PDDs	4.85	4.55	4.55
Quantity of woody biomass used in the absence of the project activity in tonnes per household (Bold)	Bold (appllied im ER calcuation for applied MP)	4.72	4.55	4.55
Is the applied value for ER conservative	Conclusion	Yes	Yes	Yes

Note: *The Urban Rural mix is variable as it depends on the number of stoves dissiminated between the urban and rural households. Under the applied verification, the conservative value between the ex-ante value of urban rural mix and the value determined based on monitored urban rural mix has been applied.Thus, it is always ensured that a conservative B_{old} value will be applied.* Finding is CLOSED.

✓ **Assessment for VPA 11195, VPA 11196, VPA 11197, VPA 11198, VPA 11199, VPA 11200, VPA 11879, VPA 11880, VPA 11881, VPA 11882**

Since the parameter "Share of Population" is utilized to determine the parameter "Quantity of woody biomass used in the absence of the project activity in tonnes per household (B_{old})", it is clear that an accurate value will be determined. A statement is included which will ensure monitoring of the share of population while Bold is determined. Finding is CLOSED.

Thus, the FAR is CLOSED.

Finding	**3** (Applicable to GS 11192, GS 11193, GS 11194) FAR from 1st periodic verification of First Crediting Period under GS4GG
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	**4** (Applicable to GS 11192, GS 11193, GS 11194) FAR from 1st periodic verification of First Crediting Period under GS4GG		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Since the existing results of the monitoring surveys are applied for the MP. The PP need to compare the results of next monitoring surveys. If there is variation of more than 5 %, the ERs shall be adjusted in the next issuance.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	A comparative analysis of the monitoring parameter results between the current MP and last MP is given below:		

Parameter	**Last MP**	**Current MP**	**% variation**
Usage Rate	VPA 11192 to 11194 – 89% VPA 11195 to 11200- 91.39%	88.61%	- 0.44%
ICS Efficiency n_{new}	VPA 11192 to 11194 – 37.36% VPA 11195 to 11200 - 40.24%	39.24%	+ 5.03%
CU	VPA 11192 to 11194 – 0.50 t/yr VPA 11195 to 11200 - 0.34 t/yr	0.4	- 20%

As per the table above, more than 5% variation can be seen in two parameters i.e., ICS efficiency and CU which are discussed as follows:

- **ICS efficiency:**

As per applied methodology, in case of more than one ICS being distributed, the project shall apply weighted average efficiency values. The values compared in the finding raised by VVB actually compares the weighted average value from last MP (pertaining to 3 VPAs i.e. GS 11192 - GS 11194) with weighted average value of current MP (pertaining to 13 VPAs i.e. GS 11192 – GS11200, GS11879 – GS11882). In the previous MP, the ICS population was approximately 40k, while in the current MP, the total population for all 13 VPAs is around 160k.

However, specifically for the three VPAs to which FAR is applicable – i.e., GS11192 - GS11194 - the weighted average thermal value obtained for current MP is 35.7%. this is deemed natural on account of ageing effect of the ICS over time.

Finding	**4** (Applicable to GS 11192, GS 11193, GS 11194) FAR from 1st periodic verification of First Crediting Period under GS4GG
	The inclusion of ~120k new ICS within the population, shifts the weighted average value higher from 37.36% to 39.24% and the crediting population has become younger than last MP owing to many new ICS additions. • **CU:** The value considered in previous MP (0.50) is more conservative than that achieved in the current MP (0.40). Thus, no adjustment for over-estimation in previous MP is to be made in the current MP for any parameter.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	• **ICS efficiency:** The ICS efficiency is a weighted average value and depends on the efficiency of the ICS and the corresponding population. Since the present population is hiving higher weightage of ICS which are having higher efficiency, the increase in the weighted average efficiency is deemed as practical and acceptable. The issue is CLOSED. • **CU:** Since the CU values during the last verification were conservative compared to applied verification, the finding has lost its relevance. The issue is CLOSED. FAR has been CLOSED.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	**2** (Applicable to GS GS11879 to GS11890) FAR from Design Review under Gold Standard for the Global Goals (combined preliminary review + validation + design review for transition)		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The VVB that performs the first verification for such VPAs shall confirm that they comply with the requirements defined for the inclusion of VPAs in the registered PoA and corresponding VPAs.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	The transition of CPAs 56-59 from CDM to GS, it's important to note that these CPAs (CPA 56-59) are identical to CPAs 51-55, which were previously transitioned. Therefore, instead of creating a separate validation for CPAs 56-59, these VPAs were directly submitted to Sustain-Cert for transition by sharing the validation report of the previous transitioned VPAs (CPA 51-55). Therefore, for reference, please find attached the final design review feedback form for CPAs 56-59 and as well as the FVR for VPAs (CPA 51-55), based on which transition of CPAs 56-59 was approved by GS.		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure,*	The VVB has verified and confirms that the CPAs (CPA 56-59) are identical to CPAs 51-55 (refer https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/YNXCPIJ5ZO7DTRGMV0F2AKEU486LQS/viewCPAs?s=20). The Design review was studied and the TRF forms were also verified. The TRFs (11879-11882) TRF also capture the		

Finding	**2** (Applicable to GS GS11879 to GS11890) FAR from Design Review under Gold Standard for the Global Goals (combined preliminary review + validation + design review for transition)
additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	parameters $HHS_{Project}$ and $HHB_{Project}$ that were added under the VPA-DDs (11192-11200).
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	**5** (Applicable to GS GS11879 to GS11890) FAR from Design Review under Gold Standard for the Global Goals (combined preliminary review + validation + design review for transition)		
Classification	☐ CAR	☐ CL	☒ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The projects undergoing this review have a monitoring period that ends on 31/12/2022. Verification VVB shall verify the comprehensive sales database to avoid any double counting.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	-		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The end date of the applied MP is till date 31/12/2022 and thus within the applicable cutoff date. The VVB has verified the submitted database and has evaluated the number of ICS credited under each VPA. Please refer CAR 01 and its closure. Thus, it is safely concluded that all the ICS are appropriately reported.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Table 4.3: CL from this verification

Finding	1		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	As per the review of the 1st periodic verification of First Crediting Period under GS4GG (Applicable to GS 11192, GS 11193, GS 11194) and 4th periodic verification for GS 11195, GS 11196, GS 11197, GS 11198, GS 11199 and GS 11200, there is variation in the calculation methodology of the parameter B_{old}. The parameter urban/rural mix (Share of Population) is not defined as monitoring parameter or an ex-ante parameter, (considering it was neither included in the monitoring plan nor listed as an ex-ante parameter). Besides, the household size for rural and urban households to determine B_{old} is not defined as ex-ante fixed or monitoring parameter. Clarification is requested as to how the CME has revised the ER calculation and how the calculation approach is considered to be accurately reflecting the arrived GHG reduction.		
Corrective Action #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	In Appendix 6 (post registration changes) of the registered CDM CPA-DDs for VPAs (GS 11192, GS 11193, GS 11194), a conservative ex-ante value of B_{old} was fixed (as used in previous MP) as follows: **Description** | **GS 11192** | **GS 11193** | **GS 11194** B_{old} value fixed Ex-ante | 4.85 | 4.55 | 4.55 The registered CDM CPA-DDs for VPAs (GS 11192, GS 11193, GS 11194) are available at the following links: **VPA ID** | **CDM Ref CPA ID** | **Link** VPA 11192 | 7997-P1-0003-CP1 | https://cdm.unfccc.int/UserManagement/FileStora/2PK3TJUQFIY85W1RD6LHBXZVCN09MS VPA 11193 | 7997-P1-0008-CP1 | https://cdm.unfccc.int/UserManagement/FileStora/U9OFV26W1ERIAZMLH5Q3KB8D47NCYP VPA 11194 | 7997-P1-0009-CP1 | https://cdm.unfccc.int/UserManagement/FileStora/WG5DN4KJOMA70YIEQZ2SH6B9FPL3R1 In the current MP, the CME has determined weighted average B_{old} value for these 3 VPAs, considering the location (urban / rural) of the ICS included and corresponding households' $B_{old, urban}$ (3.98 t/hh/yr) / $B_{old, rural}$ (5.17 t/hh/yr) values fixed ex-ante in the registered VPA-DDs, as follows: **Description** | **GS 11192** | **GS 11193** | **GS 11194** B_{old} value determined ex-post | 4.72 | 4.58 | 4.55		

As an additional conservative measure, the CME has now applied the lower of the ex-ante vs ex-post values for calculating ERs of these three VPAs as follows:

Description	GS 11192	GS 11193	GS 1119
B_{old} value applied for ER calculations	4.72	4.55	4.55

The aforesaid conservative approach has resulted in revision of claimed ERs from 399,280 tCO_2e to 399,014 tCO_2e.

The other VPAs (GS 11195 – GS 11200) also follow a similar approach to determine the B_{old} value based on location (urban / rural) of the ICS included in the VPA and corresponding household $B_{old, urban}$ (3.98 t/hh/yr) / $B_{old, rural}$ (5.17 t/hh/yr) values fixed ex-ante in the registered VPA-DD. In their registered TRF document, the B_{old} parameter table clearly specifies the ex-ante fixed values for $B_{old, urban}$ (=3.98 t/hh/yr) and $B_{old, rural}$ (=5.17 t/hh/yr) on per household basis, exempting the need to monitor household size for each ICS included in these VPAs. Further, the parameter table for B_{old}, clearly mentions the following:

> *"For each ICS distributed, the **urban / rural category will be recorded at the time of sale** based on the address of the ICS beneficiary, and **fixed for the entire crediting period for the corresponding ICS**. If for any ICS the Urban / Rural category information is not recorded/available, a B_{old} value of 3.98 tonnes/hh/year shall be applied for that ICS, as a conservative measure."*

Thus, with the aforesaid already being stated in the registered TRF, for each ICS distributed, the urban / rural category has been determined for the corresponding ICSs. Please refer, column I, tab: 'ICS Database' of the ICS Distribution database and column D, tab: 'Sales Data Summary' of ER calculator, confirming the same. Thus, for each of these VPAs (GS 11195 – GS 11200), a weighted average B_{old} value corresponding to the urban / rural mix has been applied for ER calculations.

Thus, the CME has determined B_{old} value for VPAs considering corresponding urban / rural mix of each VPA. The ICS distribution database presents the location of each ICS, allowing the CME to determine weighted average B_{old} value for each VPA. The CME followed this approach in current MP and shall continue to follow the same approach for all VPAs alike, henceforth. No change is deemed required in the VPA-DDs.

DOE Assessment #1

The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added

The VVB has assessed the CME's response and confirms that

✓ **Assessment for VPA 11192, VPA 11193 and VPA 11194**

1. Since the parameter B_{old} is fixed and duly documented, there is no more requirement of monitoring of the parameter "urban/rural mix".
2. Considering the principle of transparency and conservativeness, the PD is recalculating the parameter B_{old} and in case the value turns out lower than the fixed value, the lower value is applied. This approach is voluntary, conservative and hence acceptable.
3. The VVB is reconfirming the appropriateness by tabulating the below comparison.

Parameter	Symbol	VPA 11192	VPA 11193	VPA 11194
Quantity of woody biomass used in the absence of the project activity in tonnes per household (Bold)	B_{old} in Registered PDDs	4.85	4.55	4.55

Quantity of woody biomass used in the absence of the project activity in tonnes per household (Bold)	Bold (appllied im ER calcuation for applied MP)	4.72	4.55	4.55
Is the applied value for ER conservative	Conclusion	Yes	Yes	Yes

Note: *The Urban Rural mix is variable as it depends on the number of stoves dissiminated between the urban and rural households. Under the applied verification, the conservative value between the ex-ante value of urban rural mix and the value determined based on monitored urban rural mix has been applied.Thus, it is always ensured that a conservative B_{old} value will be applied.* Finding is CLOSED.

✓ **Assessment for VPA 11195, VPA 11196, VPA 11197, VPA 11198, VPA 11199, VPA 11200, VPA 11879, VPA 11880, VPA 11881, VPA 11882**

Since the parameter "Share of Population" is utilized to determine the parameter "Quantity of woody biomass used in the absence of the project activity in tonnes per household (B_{old})", it is clear that an accurate value will be determined. A statement is included which will ensure monitoring of the share of population while Bold is determined. Finding is CLOSED.

Thus, the finding is CLOSED.

Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	**2**		
Classification	☐ CAR	☒ CL	☐ FAR

Description of finding

Describe the finding in unambiguous style; address the context (e.g. section)

As per the review of the project database and other records, following are the list of end users where clarification is needed to avoid any double counting:

S.No.	Product Serial number	Customer Name	Customer Mobile Number
1	12523197	Abraham Ashibande Mwembi	726590449
2	12563499	Abraham Ashibande Mwembi	724912112
3	13355085	Aisha	705698364
4	CCA01025905	Aisha	700802531
5	12705042	Caroline Cherotich Korir	727106450
6	13186848	Caroline Cherotich Korir	711651616
7	13562441	Charles Cheruiyot Langat	722226361
8	CCA02021681	Charles Cheruiyot Langat	724474433
9	HSAA015102	Humphrey	710776725
10	CCA01024566	Humphrey	725841996
11	CCA02005866	Jackline	700544520
12	CCA01023239	Jackline	722880060
13	CCA01010154	Maua	720388506
14	CCA01026859	Maua	722349092

Finding	2
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is Requested to indicate the revised sections as well as the new version No.*	The ICS Sales Database, in this verification, enlists 160,043 spreads across Kenya. Thus, there is a very high probability to have names repeated in the database in case of common local names. However, in each of the cited cases above, the ICS serial number, the corresponding users' phone number and address are clearly different. Therefore, these users are distinct from one another and are not double counted.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The VVB agrees to the analogy and request the forms of all the 14 customers to confirms that the there is no double accounting of end users. Finding is kept open.
Corrective Action #2	Customer registration form for all the 14 customers is being submitted.
DOE Assessment #2	The VVB has verified the forms of all the 14 customers as part of its desk review and confirms that the there is no double accounting of end users. Thus, the VVB confirms that the above entries are exclusive and not a repetition of the same end users. The CL has been CLOSED.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Finding	3		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The VVB compared the CU values between last verification and the applied verification. Clarification is requested for below issues: 1. Why there is variation beyond 5 % for GS 11192 – GS 11194 2. Why there is a considerable variation in the CU value for GS 11192 – GS 11194		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective*	The finding raised does not present the correct value of CU determined in previous and current monitoring periods. The actual achieved values are compared in the table below:		

Parameter	Current MP*	Previous MP	% Variation

Finding	3
action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.	<table><tr><td>**"CU"**</td><td></td><td></td><td></td></tr><tr><td>**GS 11192 – GS 11194**</td><td>0.40</td><td>0.50</td><td>- 20%</td></tr><tr><td>**GS 11879 – GS 11882**</td><td>0.40</td><td>- -</td><td>First MP</td></tr><tr><td>**Reference**</td><td>2. GS 11192 – GS 11200: MR version 2.0, Section D.3, page 27.</td><td>1. GS 11195 – GS 11200: Performance Certified MR, Section D.3, page 22. 2. GS 11192 – GS 11194: Performance Certified MR, Section D.3, page 30.</td><td>- -</td></tr></table> The observed variation in CU between current and previous MPs is therefore deemed rational, owing to the ICS users' choice / preference, which remains outside the control of CME.
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The value considered in previous MP (0.50) is more conservative than that achieved in the current MP (0.40). Justification is accepted.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Table 4.3: CAR from this verification

Finding	1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The inconsistency is identified in the reporting of the stove distribution for below mentioned GS 11193, GS 11194, GS 11196, 11197, 11198, 11199, 11200:		

Year	**GS 11193**		**GS 11194**	
	Applied	Previous	Applied	Previous
2017	8,594	9,249	0	0
2018	7,176	7,159	4,412	4,428
2019	0	0	11,382	11,384
2020	0		0	
2021	0		2	
2022	0		0	

Year	**GS 11196**	**GS 11197**

Finding	1

	Applied	Previous	Applied	Previous
2019	169	168	3	3
2020	9,815	9816	7,799	7798
2021	0	0	0	0

Year	**GS 11198**		**GS 11199**	
	Applied	Previous	Applied	Previous
2019	4	3	3	3
2020	4	3	6	4
2021	16,992	16994	16,991	16993

Year	**GS 11200**	
	Applied	Previous
2019	3	3
2020	1	3
2021	9,876	9875

Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	There was a linking error in the database and same has been rectified and now the stove count is consistent with previous MP for all vintages and VPAs. However, for 2017 vintage, the ICS model JF distribution number is very small. Hence, the CME decided not to claim emission reductions for this stove model during this monitoring period for cost optimizations. Thus, for 2017 vintage, the current MP has 654 lesser ICS than previous MP as a conservative measure.		
	☐ Changes in MR	Section(s):	New version No.:
	☐ Changes in XLS	Worksheet(s):	New version No.:
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The linkage error is corrected, the number of ICS is now consistent with the previous verification. Issue is resolved, finding has been CLOSED.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed		

Finding	2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in un-ambiguous style; address the context (e.g. section)*	The following list of documents is requested: • WBT/Usage survey team training records • Sales receipts with unique ID numbers on it and confirming transfer of ownership of credits • BioLite Internal Report for internal training		
Corrective Action #1	The requested documents are being submitted.		

Finding	**2**
This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.	
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	• WBT/Usage survey team training records- provided • Sales receipts with unique ID numbers on it and confirming transfer of ownership of credits- provided • BioLite Internal Report for internal training- Provided. Finding is CLOSED.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open) ☒ The finding is closed

Table 4.4: FAR from this verification

Finding	**-**		
Classification	☐ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in un-ambiguous style; address the context (e.g. section)*	NA		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details. In case the MR is changed as part of the CA, the PP is requested to indicate the revised sections as well as the new version No.*	-		
DOE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	-		
Conclusion	☐ To be checked during the next periodic verification ☐ Additional action should be taken (finding remains open)		

Finding	-
Tick the appropriate checkbox	☐ The finding is closed

5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CLs are closed out. For details of the assessments pl. refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

5.1. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity.

Table 5-1: Project Parties and project participants

Characteristic	Party	Project Participant
Non-Annex 1	Kenya	BioLite India Private Limited
Annex 1	NA	NA

5.2. Implementation of the project

The survey records conducted 02/01/2023 to 13/03/2023 /SUR/,/USAGE/ were assessed and compared during onsite audit and interview response by the sampled project technologies users. The value of η_{new}, i.e., efficiencies of system being deployed is compared to the WBT test Records/report /WBT/, /WBTD/ (January- February 2022) submitted. The VER's were issued for 3 monitoring periods under CDM, and the applied MP is the second issuance request under GS. The VVB assessed and confirms that the results of the survey and WBT test record are valid for the applied monitoring period (01/01/2022 to 31/12/2022) under GS. During the verification, an onsite visit was carried out on 24/07/2023 to 26/07/2023. Based on this audit and the reviewed project documentation, it can be confirmed that w.r.t. the realized technology, the project has been implemented and operated as described in the registered PoA-DD, VPA-DD.

Purpose: The VPAs involves the distribution of domestic fuel-efficient cook stoves, the BioLite HomeStove, BioLite Jiko Malkia, EcoZoom Jiko Bora Mama Yao, EcoZoom Jiko Bora and EcoZoom Jiko Fresh in Kenya. Presently, most people in Kenya are using traditional cook stoves for cooking i.e. 3 stone stove or other rudimentary technology. The replacement of inefficient stoves with efficient cook stove leads to the reduction in biomass consumption.

Measures taken: The VPAs covered in this MP involve marketing and distribution of improved cook stoves for low-income households in Kenya. The ICSs provide clean energy for cooking.

The VVB has assessed the implementation of projects based on number of stoves that are disseminated. The number of stoves disseminated is verified based from the Total Sales record. The total sales record provides address of enduser. This helps to verify the number of ICS distributed in each region. However, it should be noted that the stratified sampling has been undertaken in line with the registered monitoring plan.

The total number of ICS distributed under these CPAs is as follows:

S.No.	GS Reference No.	Number of ICS Distributed**
1	GS 11192	8,085
2	GS 11193	15,754
3	GS 11194	15,812
4	GS 11195	389
5	GS 11196	9,984
6	GS 11197	7,801
7	GS 11198	17,000
8	GS 11199	17,000
9	GS 11200	16,991
10	GS 11879	16,938
11	GS 11880	16,947
12	GS 11881	16,981
13	GS 11882	361
Total		**160,043**

**The strata wise distribution of ICS is described under section 5.10 of this FVR.

During the interviews with the PD, the VVB assessed how double counting has been avoided. The VVB confirms that the PD has a system/procedure to avoid double counting (by aggregating the unique database like ID, VPA No., Date of installation and other details)/DB/. The VVB check on the avoidance of double counting by checking if the unique IDs, phone number or address or similar name with same contact details. Based on the assessment, the VVB confirms that there was no repetation of the ICS with in the same PoA database. Regarding double counting of the same ICS across different PoA other than the existing is ruled out as each ICS has a unique number which cannot be utilize to claim carbon credits.

As per the ex-ante calculation by PDD, estimated emission reduction equivalent to the monitoring period 631,898 tCO_2e (for applied monitoring period). However, the actual accrued emission reduction as per the MR/MR/ submitted for verification are 388,718 tCO_2e.

On the basis of onsite assessment and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the GS registered and revised PDDs, and GS4GG Transition Annex. /PDD/GS4GG TA/

This is the 5th periodic verification under first renewable crediting period (CP1) of the improved cook stove project under GS4GG. The MR follows the appropriate version of the template. The project has disseminated 160,043 stoves.

5.3. Project history

The program is a voluntary initiative coordinated by BioLite India Private Limited (BioLite) as the coordinating/managing entity (CME). The PoA is a registered CDM

PoA with Ref no: 7997. The Coordinating/managing entity (CME), BioLite India Private Limited as performed transition from CDM to GS4GG of the Gold Standard Programme of Activities titled “BioLite Improved Cook stoves Programme” in Kenya and Uganda: GS PoA ID – GS 11191.

The verification team has reviewed the responses and can confirm that they have been addressed appropriately. Please refer to section 4 (Verification findings).

5.4. Post registration changes

PRC has been requested after transition to GS and as a part of applied verification.

5.5. Compliance with the GS monitoring plan

Section B.7 of the VPA-DD was reviewed for each VPAs and cross-checked on the system to confirm the implementation of the revised monitoring system as described in the updated PDD. The PDDs were updated following the requirements of the para 5 “Reporting the Outputs of The SGD Impact Tool” of “THE SDG IMPACT TOOL MANUAL”, version v. 1.1/SDGIT/. Please refer to the closure of the CAR 2 raised under the PRC report submitted along with the Verification Report.

Evidence was available to the verification team to check the compliance of the monitoring plan.

The reporting procedures reflect the requirements of the monitoring plan for the carbon monitoring and sustainability development criteria. All relevant data stored is for the whole monitoring period and traceable to the computer server at the PP office and database records

All CAR were addressed successfully during the course of verification.

5.6. Compliance with the SDG Impact monitoring plan

The PDDs were updated following the requirements of the para 5 “Reporting the Outputs of The SGD Impact Tool” of “THE SDG IMPACT TOOL MANUAL”, version v. 1.1/SDGIT/. Please refer to the closure of the CAR 2 raised under the validation report for the included parameters is submitted along with the Verification Report. The SDG indicators as per the GS matrix are monitored and reported appropriately and cross-verified by means of desk review of supporting documents, interviews with the PP and selected households. The monitoring system and all applied procedures are in compliance to the SDG Impact monitoring plan in the GS4GG Transition Annex/GS4GG TA/, the GS4GG principles and the “SGD Impact Tool”/SDGIT/.

During the onsite visit, the verification team has randomly verified 18 randomly selected ICS users to conduct verification assessment and interviews. The questions asked, where applicable, were based on requirements of the GS4GG/GS/,/GST/ and GS4GG Transition Annex AA/GS4GG TA/.

The main topics included, but not limited to the followings:

- Air quality in project households
- Households having access to affordable, reliable and modern project ICS

- Access to basic services to households
- HH reporting time saving due to reduced collected fuel consumption / cooking time in project

A summary of interviewed questions and feedback received as presented in the below table for **SDG Impact Assessment (additional to SDG 13):**

<table>
<tr><th>SD indicator</th><th>Chosen Parameter</th><th>Value</th><th>Verification team assessment</th></tr>
<tr><td>SDG 1: No Poverty</td><td>HHS_{Project} - (Average household savings due to decrease in expenditure on basic services such as cooking in project)</td><td><table><tr><th>GS ID</th><th>Value</th></tr><tr><td>GS 11192 to GS 11200</td><td>0</td></tr><tr><td>GS 11879 to GS 11882</td><td></td></tr></table></td><td>This parameter is included following the requirements of the 5 “Reporting the Outputs of The SDG Impact Tool” of “THE SDG IMPACT TOOL MANUAL”, version v. 1.1/SDGIT/.

The program is developed with the objective to make efficient, economic (fuel economy), healthy devices to all the strata of community including the poor people. The end users were also surveyed to confirm if the ICS saved fuel. Based on survey results, it was confirmed that ICS reduced the fuel consumption as well time for cooking and hence led to savings which was utilize for other expenses.</td></tr>
<tr><td>SDG 5: Gender Equality</td><td>HHTS_{Project} - Hrs/HH/day (Average time saving associated with cooking and/or fuel collection time in project)</td><td><table><tr><th>GS ID</th><th>Value</th></tr><tr><td>GS 11192 to GS 11200</td><td>0.33</td></tr><tr><td>GS 11879 to GS 11882</td><td></td></tr></table></td><td>During the survey, the PP has enquired about reduction in time saving due to reduced collected fuel consumption / cooking time in project while cooking on improved stove. The End users have confirmed that there was certain decrease in the fuel consumption, and hence corresponding decrease in the time required to collect the fuel. The VVB has interviewed the sampled end users and verified the parameter by comparing the requirements of monitoring under GS. For further details of assessment pertaining to sampling, please refer section 5.10 of FVR.

The data was based on the Project survey results conducted. The data is derived from the monitoring survey. The monitoring survey results confirmed reduction in the fuel requirement to cook food which in turn saves the time for women for fuel collection.</td></tr>
<tr><td>SDG 7: Affordable</td><td>HHB_{Project} - Number</td><td><table><tr><th>GS ID</th><th>ICS Distributed</th></tr><tr><td>GS 11192</td><td>8,085</td></tr><tr><td>GS 11193</td><td>15,754</td></tr></table></td><td>The number of stoves distributed are tracked through distribution records for ICS recorded</td></tr>
</table>

<table>
<tr>
<td>and Clean Energy</td>
<td>(Number of beneficiaries household under project)</td>
<td>
<table>
<tr><td>GS 11194</td><td>15,812</td></tr>
<tr><td>GS 11195</td><td>389</td></tr>
<tr><td>GS 11196</td><td>9,984</td></tr>
<tr><td>GS 11197</td><td>7,801</td></tr>
<tr><td>GS 11198</td><td>17,000</td></tr>
<tr><td>GS 11199</td><td>17,000</td></tr>
<tr><td>GS 11200</td><td>16,991</td></tr>
<tr><td>GS 11879</td><td>16,938</td></tr>
<tr><td>GS 11880</td><td>16,947</td></tr>
<tr><td>GS 11881</td><td>16,981</td></tr>
<tr><td>GS 11882</td><td>361</td></tr>
<tr><td>Total</td><td>160,043</td></tr>
</table>
</td>
<td>chronologically in end user Distribution databases. The same value is consistently applied in the MR. This parameter is included following the requirements of the 5 “Reporting the Outputs of The SDG Impact Tool” of “THE SDG IMPACT TOOL MANUAL”, version v. 1.1/SDGIT/.</td>
</tr>
<tr>
<td></td>
<td>ACS_{Project} - % (Access to affordable and clean energy (% of operating ICS units under project))</td>
<td>
<table>
<tr><th>GS ID</th><th>Value</th></tr>
<tr><td>GS 11192 to GS 11200</td><td>88.61</td></tr>
<tr><td>GS 11879 to GS 11882</td><td></td></tr>
</table>
</td>
<td>The Verification Team undertook the review of Usage Survey records, frequency of cooking, and end user interviews during onsite assessment for checking usage. For further details of assessment pertaining to sampling, please refer section 5.10 of FVR.

Total number of ICS distributed is 160,043. The ICS have a lifetime of 5 years and were found to be in use 88.61% of the samples monitored.</td>
</tr>
<tr>
<td>SDG 15: Life on Land</td>
<td>FS_{Project} - Tonnes/year (Quantity of non-renewable woody biomass saved in project)</td>
<td>
<table>
<tr><th>VPA ID</th><th>Non-renewable fuel Consumption (tonnes)</th></tr>
<tr><td>GS 11192</td><td>20,069</td></tr>
<tr><td>GS 11193</td><td>37,571</td></tr>
<tr><td>GS 11194</td><td>37,695</td></tr>
<tr><td>GS 11195</td><td>958</td></tr>
<tr><td>GS 11196</td><td>24,248</td></tr>
<tr><td>GS 11197</td><td>18,984</td></tr>
<tr><td>GS 11198</td><td>40,923</td></tr>
<tr><td>GS 11199</td><td>41,113</td></tr>
<tr><td>GS 11200</td><td>40,197</td></tr>
<tr><td>GS 11879</td><td>38,201</td></tr>
<tr><td>GS 11880</td><td>39,063</td></tr>
<tr><td>GS 11881</td><td>43,325</td></tr>
<tr><td>GS 11882</td><td>982</td></tr>
</table>
</td>
<td>The parameter is monitored based on the monitoring surveys. The end users confirmed that there was reduction in the fuel consumption. The VVB has verified the submitted survey records and confirms the reported value as accurate. For further details of assessment pertaining to sampling, please refer section 5.10 of FVR.</td>
</tr>
</table>

For further details concerning the SDG Impact indicators please refer to Annex 2.

However, during course of verification Refer CL 02, CL 03, CAR 01, CAR 02 and FAR 04 were raised and corrections were requested. All Findings were addressed successfully during the course of verification.

5.7. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied monitoring methodology

“AMS-II. G: “Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass” (Version 03.0)”

5.7. Carbon Monitoring parameters

During the verification all relevant monitoring parameters as listed in the GS revised and registered PDDs have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

After appropriate corrections were carried out by the project participant it can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

Data and parameters monitored:

<table>
<tr><th>Parameter</th><th>Monitored Value</th><th>Verification opinion</th></tr>
<tr>
<td>N_y - Number of cook stoves in operation or replaced</td>
<td>
<table>
<tr><th>VPA ID</th><th>Ny</th></tr>
<tr><td>GS 11192</td><td>7,163</td></tr>
<tr><td>GS 11193</td><td>13,958</td></tr>
<tr><td>GS 11194</td><td>14,010</td></tr>
<tr><td>GS 11195</td><td>344</td></tr>
<tr><td>GS 11196</td><td>8,846</td></tr>
<tr><td>GS 11197</td><td>6,912</td></tr>
<tr><td>GS 11198</td><td>15,062</td></tr>
<tr><td>GS 11199</td><td>15,062</td></tr>
<tr><td>GS 11200</td><td>15,054</td></tr>
<tr><td>GS 11879</td><td>15,008</td></tr>
<tr><td>GS 11880</td><td>15,015</td></tr>
<tr><td>GS 11881</td><td>15,046</td></tr>
<tr><td>GS 11882</td><td>319</td></tr>
</table>
</td>
<td>The number of stoves distributed are tracked through distribution records for ICS recorded in end user Distribution databases. Each user fills Customer Agreement Forms that contain the name of the purchaser, the serial number of the stoves, the date of sale and the buyer's telephone number. The sellers retain one copy of warranty registration and the stove sales data is accordingly updated following the CAF.

CME has followed the registered monitoring plan of the PoA and VPA-DD and set forth the provision to conduct an annual survey to monitor this parameter through sampling and survey. Furthermore, the team randomly selected households from the database and conducted onsite audit and compared the information in the database with the actual stoves being used.

The reported value of the monitored parameter are deemed as accurate.

Refer Assessment under Table A-2: (Project specific) Periodic Verification Checklist</td>
</tr>
<tr>
<td>η_{new} - Efficiency of the system being deployed as part of the project activity</td>
<td>
<table>
<tr><th>GS ID</th><th>Value</th></tr>
<tr><td>GS 11192 to GS 11200</td><td>39.24 %</td></tr>
<tr><td>GS 11879 to GS 11882</td><td></td></tr>
</table>
</td>
<td>The efficiency of stoves deployed was determined by conducting water boiling tests (WBT) for a representative random sample from stove type during the applied MP (under GS) by third party.

Monitoring of the efficiency of the system being deployed is applied to be annual which is in line with registered monitoring plan.

Refer Assessment under Table A-2: (Project specific) Periodic Verification Checklist. For</td>
</tr>
</table>

<table>
<tr><th>Parameter</th><th>Monitored Value</th><th>Verification opinion</th></tr>
<tr><td></td><td></td><td>further details of assessment pertaining to sampling, please refer section 5.10 of FVR.</td></tr>
<tr><td>CU - Continuous use of baseline stoves</td><td>
<table>
<tr><th>VPA ID</th><th>CU</th></tr>
<tr><td>GS 11192</td><td>3,281</td></tr>
<tr><td>GS 11193</td><td>6,393</td></tr>
<tr><td>GS 11194</td><td>6,417</td></tr>
<tr><td>GS 11195</td><td>158</td></tr>
<tr><td>GS 11196</td><td>4,052</td></tr>
<tr><td>GS 11197</td><td>3,166</td></tr>
<tr><td>GS 11198</td><td>6,899</td></tr>
<tr><td>GS 11199</td><td>6,899</td></tr>
<tr><td>GS 11200</td><td>6,895</td></tr>
<tr><td>GS 11879</td><td>6,874</td></tr>
<tr><td>GS 11880</td><td>6,877</td></tr>
<tr><td>GS 11881</td><td>6,891</td></tr>
<tr><td>GS 11882</td><td>146</td></tr>
</table>
</td><td>This is the actual number of baseline stoves still in operation. PP undertook annual sampling and surveying to determine whether the households are still continuing with the inefficient baseline stoves along with the improved cook stove. After this step the fuel wood consumption in baseline stoves is excluded from the ex-ante fixed B_{old} to arrive at emission reductions. The data pertaining to approximate combustion of fuel wood in traditional cookstove is monitored by PP through sampling and survey and the results achieved is adjusted from the ex-ante B_{old} value. Procedures for sampling have been duly articulated in the field monitoring report, and a sample of survey questionnaires furnished to VVB.

Refer Assessment under Table A-2: (Project specific) Periodic Verification Checklist. For further details of assessment pertaining to sampling, please refer section 5.10 of FVR.</td></tr>
<tr><td>$B_{y\ savings}$- Quantity of woody biomass that is saved in tonnes</td><td>
<table>
<tr><th>VPA ID</th><th>$B_{y\ savings}$</th></tr>
<tr><td>GS 11192</td><td>3.06</td></tr>
<tr><td>GS 11193</td><td>2.94</td></tr>
<tr><td>GS 11194</td><td>2.94</td></tr>
<tr><td>GS 11195</td><td>3.02</td></tr>
<tr><td>GS 11196</td><td>2.97</td></tr>
<tr><td>GS 11197</td><td>2.98</td></tr>
<tr><td>GS 11198</td><td>2.95</td></tr>
<tr><td>GS 11199</td><td>2.96</td></tr>
<tr><td>GS 11200</td><td>2.90</td></tr>
<tr><td>GS 11879</td><td>2.76</td></tr>
<tr><td>GS 11880</td><td>2.82</td></tr>
<tr><td>GS 11881</td><td>3.12</td></tr>
<tr><td>GS 11882</td><td>3.34</td></tr>
</table>
</td><td>The CME is using option 2 under paragraph 6 of AMS-II.G version 03. The fuel consumption in the baseline, efficiency of stove used in the baseline and efficiency of improved cook stoves are considered to determine the $B_{y\ savings}$.

Parameter B_{old}, η_{old} are ex-ante fixed.

$B_{y,savings}$, is calculated using option 2 of the methodology AMS-II. G V3:

$B_{y,savings} = B_{oldadjusted} \times (1 - \eta_{old}/\eta_{new})$</td></tr>
</table>

Refer CL 01, FAR 03 and FAR 04 were raised and corrections were requested. All findings were addressed successfully during the course of verification. Please refer to section 4 (Verification findings).

Data and parameters not monitored:

Parameter	Value	Verification opinion / Data source
η_{old} (Efficiency of the baseline cook stove being replaced)	0.10 (fraction)	Default value given in AMS II.G version 03
NCV $_{biomass}$ (Net Calorific value of non-renewable woody biomass)	0.015 (TJ/tonne)	Default value given in AMS II.G version 03

<table>
<tr><th>Parameter</th><th>Value</th><th>Verification opinion / Data source</th></tr>
<tr><td>$EF_{projected\_fossilfuel}$ (Emission factor for substitution of non-renewable woody biomass by similar consumers)</td><td>81.6 (tCO2/TJ)</td><td>Default value given in AMS II.G version 03</td></tr>
<tr><td>L_y (Leakage correction factor)</td><td>0.95 (percentage)</td><td>Default value given in AMS II.G version 03</td></tr>
<tr><td>B_{old} (Quantity of woody biomass used in the absence of the project activity in tonnes)</td><td><table><tr><th>GS ID</th><th>B_{old} (tonnes/household/year)</th></tr><tr><td>GS 11192</td><td>4.72</td></tr><tr><td>GS 11193</td><td>4.55</td></tr><tr><td>GS 11194</td><td>4.55</td></tr><tr><td>GS 11195</td><td>4.66</td></tr><tr><td>GS 11196</td><td>4.60</td></tr><tr><td>GS 11197</td><td>4.61</td></tr><tr><td>GS 11198</td><td>4.56</td></tr><tr><td>GS 11199</td><td>4.58</td></tr><tr><td>GS 11200</td><td>4.49</td></tr><tr><td>GS 11879</td><td>4.30</td></tr><tr><td>GS 11880</td><td>4.38</td></tr><tr><td>GS 11881</td><td>4.81</td></tr><tr><td>GS 11882</td><td>5.11</td></tr></table></td><td>Calculated as per values fixed in registered CPA-DD as 5.17 t/household/y rural, 3.98 t/household/y urban</td></tr>
<tr><td>$f_{NRB,y}$ (Fraction of woody biomass saved by the project activity in period y that can be established as non-renewable biomass)</td><td><table><tr><th>GS ID</th><th>Value</th></tr><tr><td>GS 11192 to 11194</td><td>0.9150</td></tr><tr><td>GS 11195 to 11200</td><td>0.9217</td></tr><tr><td>GS 11879, GS 11880 to 11882</td><td>0.9217</td></tr></table></td><td>Calculated as per Tool 30: Calculation of the fraction of non- renewable biomass, EB 97, Annex 9 using recent national data available
This value was validated during previous verification and review request, MP from 01 Jan 2019 - 25 Jan 2020 (https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss289087271/view)</td></tr>
</table>

5.8. Contribution to SDG

During the verification, the SDG Impact indicators were verified with regards to the appropriateness that will contribute to SDGs.

It was evidenced that the project contributes to SDGs in host country of Kenya.

For details assessment of SDG Impact indicators, refer to section 5 above.

5.9. Monitoring report

A Gold Standard Monitoring Report along with relevant supporting documents were submitted to the verification team by the project participants. These documents form the basis for the verification opinion of TÜV NORD.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the Monitoring report is complete and transparent and accordance with the registered and revised PDDs, and relevant GS requirements.

5.10. Sampling

Monitoring surveys were conducted for this issuance in 02/01/2023 to 13/03/2023. The thermal efficiency of the stoves, water boiling tests were conducted using WBT protocol by PCIA/GACC as available on GACC website. The WBT was conducted during January-February 2022.

A stratified random sampling was carried out across all specific-case VPAs and all 03 ($\eta_{new,y,i}$, N_y and CU) parameters covered in this monitoring report.

i. Sampling overview

Representative sampling has been undertaken as part of SSC-PoA-wide Sampling Plan (by grouping and sampling across CPAs). The Sampling is based on 95/10 confidence/precision.

ii. Objectives and Reliability Requirements

The objective was to obtain an unbiased and reliable estimate of the proportion or mean value of the following parameters over the course of the monitoring period, and with 95/10 confidence/precision for sampling across CPAs.

1. Thermal Efficiency of operational ICS: $\eta_{new,y,i}$
2. Ny - Number of cook stoves in operation or replaced (Stove Operating Fraction Uy (input to Ny))
3. Continuous use of traditional stoves (**CU**)

iii. Target Population

The target population for the three parameters stated above are all ICS recorded in the project database.

iv. Sampling Frame

The target population are the stoves that were distributed and recorded. Since not all of the criteria for homogenous end users are met, a stratified random sampling approach was pursued. As such, the following sampling frames were determined for each variable in question:

$\eta_{new,y,I}$ - ***By stove type: HS, JB, JF and MY***- Stove type was chosen since different values were expected for different models of stove and their age.

Ny and CU- ***By year, type and geography*** - Based on year, stove model and geography (urban/rural).

Variable(s)	Sampling frame	Strata	Rationale for stratification
		By stove type and vintage:	Stove type and vintage

$\eta_{new,y,i}$	Stratified random sampling for a mean parameter	HS 2017/2018	Same values were expected for these models of stove and vintages
		JB 2017	Different values were expected for this model of stove and vintage
		JB 2018	See above
		JF 2018	See above
		MY 2018	See above
		HS 2019/20/21/22	Conservatively applying the monitored efficiency value of 2019 vintage stoves to other vintages.
		JB 2019	Different values were expected for this model of stove and vintage
		JF 2019	See above
		MY 2019	See above
		MY 2020	See above
		JM 2020	See above
		MY 2021	See above
		JM 2021	See above
		MY 2022	See above
		JM 2022	See above
N_y	Stratified random sampling for a proportional parameter	By stove type, vintage and geography:	Based stove model, geography (urban/rural) and vintage
		U JB, JF, MY 2018	JB, JF & MY combined since no meaningful difference in values expected, urban / rural and vintage kept separate
		R JB, JF, MY 2018	See above
		U JB, JF, MY 2019	See above
		R JB, JF, MY 2019	See above
		U JB 2017	See above
		R JB 2017	See above
		U JF 2017	See above
		R JF 2017	See above
		U HS 2017/2018	See above
		R HS 2017/2018	See above
		U HS 2019/20/21/22	See above
		R HS 2019/20/21/22	See above
		U MY 2020	See above
		R MY 2020	See above
		U JM 2020	See above
		R JM 2020	See above
		U MY 2021	See above
		R MY 2021	See above
		U JM 2021	See above
		R JM 2021	See above
		U MY 2022	See above
		R MY 2022	See above
		U JM 2022	See above
		R JM 2022	See above

CU	Stratified random sampling for a mean parameter	By stove type, vintage and geography:	Based stove model, geography (urban/rural) and vintage
		U JB, JF, MY 2018	JB, JF & MY combined since no meaningful difference in values expected, urban / rural and vintage kept separate
		R JB, JF, MY 2018	See above
		U JB, JF, MY 2019	See above
		R JB, JF, MY 2019	See above
		U JB 2017	See above
		R JB 2017	See above
		U JF 2017	See above
		R JF 2017	See above
		U HS 2017/2018	See above
		R HS 2017/2018	See above
		U HS 2019/20/21/22	See above
		R HS 2019/20/21/22	See above
		U MY 2020	See above
		R MY 2020	See above
		U JM 2020	See above
		R JM 2020	See above
		U MY 2021	See above
		R MY 2021	See above
		U JM 2021	See above
		R JM 2021	See above
		U MY 2022	See above
		R MY 2022	See above
		U JM 2022	See above
		R JM 2022	See above

v. Sampling Method

Stratified Random Sampling was applied across the ICS population. Random numbers were generated using the random number generator function. The ICS distribution data was arranged by date of distribution, and the samples corresponding to the random numbers obtained via online random number generator were picked for sampling.

vi. Sampling Size

For the estimation of the proportion or mean value of the parameters investigated, the minimum sample size for each sample frame has to achieve the 95/10 confidence/precision for biennial sampling, and 95/10 for cross-CPA, annual sampling. For applied monitoring period (annual), 95/10 was applied in order to calculate all of the required sample sizes. In order to calculate the sample sizes, values for the proportions, mean values, and standard deviations are required. For this monitoring period, the CME considered that the most updated knowledge about the expected values of the parameters are based on the project developer's and CME's knowledge and experience as per the requirements of para 13 (b) & (c) of the standard "Sampling and surveys for CDM project activities and programme of activities". The requirements of para 13 (a) of the standard are met in the application

of different equations for type of parameter for calculation of sampling size which is described below.

The required sample sizes were derived using equation (1), (2), (3), (4) and (9) of Appendix 3 of the Guideline: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0 for monitoring parameter as follows:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

where,
n = number of ICS to be sampled
N = Total number of ICS in the population
z = Constant referring to level of confidence (1.96 for 95 % confidence)
Precision = Required precision (e.g. 10% = 0.10)

$$V = \frac{SD^2}{p^{-2}}$$

(For proportion parameters):

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$$

$$p^- = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$$

Where,
g_i = weight of strata i in the population
p_i = expected proportion of strata i in the population
k = total number of strata in the population

and Where (for mean parameters):

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * SD_i^2)}{N}$$

$$Mean = \frac{\sum_{i=1}^{k} g_i * m_i}{N}$$

Where,
SD_i = expected standard deviation of strata i in the population
m_i = expected mean of strata i in the population

The sample size calculator with results below shown beside the number of samples that were covered during monitoring:

Parameter: η_{new}

Strata	Total population(N)	Reliability	Sample Size (n) required	Samples covered during monitoring	Value
HS-2018	7047	95/10	2	3	36.13%
HS-2019	1427	95/10	2	2	36.29%

JB-2017	8595	95/10	2	3	32.70%
JB-2018	4032	95/10	2	2	33.33%
JB-2019	265	95/10	2	2	34.02%
JF-2018	370	95/10	2	2	32.43%
JF-2019	879	95/10	2	2	32.92%
MY-2018	7185	95/10	2	3	37.45%
MY-2019	10420	95/10	2	3	38.09%
MY-2020	9828	95/10	2	3	38.61%
MY-2021	34024	95/10	2	3	38.93%
MY-2022	31521	95/10	2	4	39.38%
JM-2020	7796	95/10	2	3	41.95%
JM-2021	9838	95/10	2	3	42.49%
JM-2022	26816	95/10	2	4	42.99%

Parameter: **U_y (Input to Ny)**

Strata	Total population(N)	Reliability	Sample Size (n) required	Samples covered during monitoring	Value
Urban-JB, JF, MY-2018	5985	95/10	3	8	88%
Rural-JB, JF, MY-2018	5602	95/10	2	2	100%
Urban-JB, JF, MY-2019	5555	95/10	2	6	83%
Rural-JB, JF, MY-2019	6009	95/10	3	7	86%
Urban-JB-2017	4509	95/10	2	3	67%
Rural-JB-2017	4086	95/10	2	5	60%
Urban-HS-2018	620	95/10	2	5	80%
Rural-HS-2018	6427	95/10	3	3	100%
Urban-HS-2019	271	95/10	2	2	100%
Rural-HS-2019	1156	95/10	2	7	86%
Urban-MY-2020	5348	95/10	2	6	83%
Rural-MY-2020	4480	95/10	2	7	86%
Urban-JM-2020	4240	95/10	2	3	100%
Rural-JM-2020	3556	95/10	2	5	80%
Urban-MY-2021	15518	95/10	6	11	82%
Rural-MY-2021	18506	95/10	7	15	93%
Urban-JM-2021	4487	95/10	2	6	83%
Rural-JM-2021	5351	95/10	2	4	100%
Urban-MY-2022	14947	95/10	6	13	92%
Rural-MY-2022	16574	95/10	6	12	92%
Urban-JM-2022	13806	95/10	5	11	91%
Rural-JM-2022	13010	95/10	5	9	89%

Parameter: **CU**

Strata	Total population(N)	Reliability	Sample Size (n) required	Samples covered during monitoring	Value
Urban-JB, JF, MY-2018	5985	95/10	2	8	1.02
Rural-JB, JF, MY-2018	5602	95/10	2	2	0.65
Urban-JB, JF, MY-2019	5555	95/10	2	6	0.86
Rural-JB, JF, MY-2019	6009	95/10	2	7	1.27
Urban-JB-2017	4509	95/10	2	3	1.33
Rural-JB-2017	4086	95/10	2	5	1.72
Urban-HS-2018	620	95/10	2	5	1.19
Rural-HS-2018	6427	95/10	2	3	1.51
Urban-HS-2019	271	95/10	2	2	1.05
Rural-HS-2019	1156	95/10	2	7	1.34
Urban-MY-2020	5348	95/10	2	6	0.88
Rural-MY-2020	4480	95/10	2	7	0.99
Urban-JM-2020	4240	95/10	2	3	0.85
Rural-JM-2020	3556	95/10	2	5	0.99
Urban-MY-2021	15518	95/10	2	11	0.76
Rural-MY-2021	18506	95/10	2	15	0.81
Urban-JM-2021	4487	95/10	2	6	0.90
Rural-JM-2021	5351	95/10	2	4	1.10
Urban-MY-2022	14947	95/10	2	13	0.76
Rural-MY-2022	16574	95/10	2	12	0.45
Urban-JM-2022	13806	95/10	2	11	0.69
Rural-JM-2022	13010	95/10	2	9	0.78

Based on the registered monitoring plan, 95/10 reliability level is selected for CPA specific sampling for all the parameters listed above at monitoring frequency prescribed in CPA-DD. The target population for the three parameters stated above are total Installed ICS models (HS, JB, JF, MY) covered under the monitoring period as recorded in the project installation database/DB/. Sample size calculation is assessed to be in accordance with registered sampling plan in PoA-DD/CPA-DD and the guideline "Sampling and surveys for CDM project activities and programme of activities ", version 04.0 for sampling.

Every individual project stove in the CPAs covered under this MR (observed to be uniquely identifiable by its ID number) was observed and assessed to be appropriate.

CME/PP has submitted sample size calculation spreadsheet and random number generator where it was demonstrated that samples are drawn randomly using stratified random sampling technique. VVB further has crosschecked the sampling approach by CME as per MR section D.4 against related CPA-DD requirements. Besides the related sample size have been checked with corresponding supporting documents. Input parameters for the sampling calculation have been checked whether consistent with the stated approach and against PoA-DD, CPA-DD and sampling guidance. Further, VVB has recalculated the required confidence/precision to be met and found the same inline.

5.10.1. Implementation of the sampling plan

The VVB assessed that the random number generator applied by the PP used the overall population to draw samples for monitoring. The VVB also noted that this process was applied on the end users for the “urban” and “rural” strata. The VVB confirms that these strata are defined based on the registered monitoring plan. By randomly selecting the end users across the total population there is equal probability for the end-users from all the regions to get picked up.

The VVB confirms that all ICSs distributed under the 13 VPAs were considered for sample selection in the random number generator. Thus, the samples drawn are deemed representative of the end users of each strata. During the assessment, the VVB also confirmed that 76 rural and 74 urban samples were drawn by the CME (refer tab “Monitoring Survey data” of the ER worksheet). The VVB perform the document review of the screenshots which were captured by the PP. The random sampling was performed from the publically available website Stat Trek (https://stattrek.com/). While reviewing the random numbers the VVB also checked and confirms that the random numbers were drawn on date 12/07/2022

- ✓ which is prior to the date of actual survey
- ✓ the screenshot confirms that 150 random samples were collected (more than the required sample size of 56)
- ✓ the VVB also verified the corresponding PDF reports generated by the Stat Trek (https://stattrek.com/) along with the which demonstrated the selection of samples along with “GS PoA 11191 MP#5 Distribution Database - Usage Stratified Random Sampling.xlsx” worksheet.

Thus, it is safely concluded that the PD has appropriately applied random sampling and maintained the evidence such screenshot of random number generation from online website, etc. and submit for issuance reviews.

The verification team confirms that the PP has appropriately applied a sampling approach to determine the monitored values. Further it has been checked whether the PP correctly applied the implemented sampling plan including

(i) description of the implemented sampling design

(ii) collected data

(iii) analysis of collected data

(iv) demonstration on whether the required confidence/precision has been met.

The following sources of information have been used in this context:

- /MR/
- /ER/
- /WBT/
- /PoA-DD/
- /VPA-DD/

The PPs have applied sampling approaches for the following parameters monitored:

1. **Ny = Drop-off of technologies in use per year: input variable to Ny**

   The VPA implementer is maintaining database of all the stove installed under the VPA. The parameter of randomly selected (stratified random samples) samples of households annually, were assessed during the onsite audit. The households selected were visited by surveyor/s on behalf of VPA Implementer. During visit, the existence and functionality of the project appliance i.e. project ICS was confirmed through a visual assessment of the appliance with the unique ID clearly visible.

Strata	Total population(N)	Sample Size (n) required	Samples covered during monitoring	Value
Urban-JB, JF, MY-2018	5985	3	8	88%
Rural-JB, JF, MY-2018	5602	2	2	100%
Urban-JB, JF, MY-2019	5555	2	6	83%
Rural-JB, JF, MY-2019	6009	3	7	86%
Urban-JB-2017	4509	2	3	67%
Rural-JB-2017	4086	2	5	60%
Urban-HS-2018	620	2	5	80%
Rural-HS-2018	6427	3	3	100%
Urban-HS-2019	271	2	2	100%
Rural-HS-2019	1156	2	7	86%
Urban-MY-2020	5348	2	6	83%
Rural-MY-2020	4480	2	7	86%
Urban-JM-2020	4240	2	3	100%
Rural-JM-2020	3556	2	5	80%
Urban-MY-2021	15518	6	11	82%
Rural-MY-2021	18506	7	15	93%
Urban-JM-2021	4487	2	6	83%
Rural-JM-2021	5351	2	4	100%
Urban-MY-2022	14947	6	13	92%
Rural-MY-2022	16574	6	12	92%
Urban-JM-2022	13806	5	11	91%
Rural-JM-2022	13010	5	9	89%

2. Continuous use of baseline stoves (CU)

This is the actual number of baseline stoves still in operation. CME undertook annual sampling and surveying to determine whether the households are still using the inefficient baseline stoves along with the improved cook stove. After this step the fuel wood consumption in baseline stoves is excluded from the ex-ante parameter B_{old} to arrive at emission reductions. The data is gathered at end user household end pertaining to approximate combustion of traditional stoves during field surveys by a surveyor team.

Strata	Total population(N)	Sample Size (n) required	Samples covered during monitoring	Value
Urban-JB, JF, MY-2018	5985	2	8	1.02
Rural-JB, JF, MY-2018	5602	2	2	0.65
Urban-JB, JF, MY-2019	5555	2	6	0.86
Rural-JB, JF, MY-2019	6009	2	7	1.27
Urban-JB-2017	4509	2	3	1.33
Rural-JB-2017	4086	2	5	1.72
Urban-HS-2018	620	2	5	1.19
Rural-HS-2018	6427	2	3	1.51
Urban-HS-2019	271	2	2	1.05
Rural-HS-2019	1156	2	7	1.34
Urban-MY-2020	5348	2	6	0.88
Rural-MY-2020	4480	2	7	0.99
Urban-JM-2020	4240	2	3	0.85
Rural-JM-2020	3556	2	5	0.99
Urban-MY-2021	15518	2	11	0.76
Rural-MY-2021	18506	2	15	0.81
Urban-JM-2021	4487	2	6	0.90
Rural-JM-2021	5351	2	4	1.10
Urban-MY-2022	14947	2	13	0.76
Rural-MY-2022	16574	2	12	0.45
Urban-JM-2022	13806	2	11	0.69
Rural-JM-2022	13010	2	9	0.78

Procedures for sampling have been duly articulated in the field monitoring survey spreadsheet and corresponding survey forms containing survey records were furnished to VVB for assessment.

Monitoring surveys were conducted by trained personnel using stratified random sampling following the standard and guideline for Sampling and surveys for CDM project activities and programme of activities version 09. As described above, it can be said that sampling was accurate.

3. η_{new} - Efficiency of the system being deployed as part of the project activity

The efficiency of stoves deployed was determined by conducting water boiling tests (WBT) for a representative random sample. The tests were conducted following WBT protocol by trained field personnel by third party i.e. CIRCODU. The CME has undertaken a Water Boiling Test Records by CIRCODU.

Strata	Total population(N)	Sample Size (n) required	Samples covered during monitoring	Value
HS-2018	7047	2	3	36.13%
HS-2019	1427	2	2	36.29%
JB-2017	8595	2	3	32.70%
JB-2018	4032	2	2	33.33%
JB-2019	265	2	2	34.02%
JF-2018	370	2	2	32.43%
JF-2019	879	2	2	32.92%
MY-2018	7185	2	3	37.45%
MY-2019	10420	2	3	38.09%
MY-2020	9828	2	3	38.61%
MY-2021	34024	2	3	38.93%
MY-2022	31521	2	4	39.38%
JM-2020	7796	2	3	41.95%
JM-2021	9838	2	3	42.49%
JM-2022	26816	2	4	42.99%

The verification team has reviewed the step-by-step protocol followed in determining the sample size per model, selecting appropriate conditions and conducting the overall WBTs. The director in charge Director CIRCODU (External WBT agency) has been interviewed on procedures (telephonically), calibration and training. The WBT reports have been analysed. The VVB identified that there was change in the efficiencies and accordingly raised finding CL 01 (which was successfully closed). The VVB has further verified the monitoring results and found that the relative precision was met in the efficiency determination for the stove models.

The calculations of sample sizes and measurement procedures have largely followed the requirements in applicable version of PoA-DD and CPA-DD, however during course of verification findings have been raised and closed successfully.

5.10.2. Sampling approaches during verification

During the verification, the VVB has applied the random number generator on the PP's sample and drawn the samples for the verification. The VVB also noted that this process was applied on the end users for the strata urban and rural.

A sampling approach has been taken for the following monitored parameter(s):

Parameter	Sampling approach [1)]	Sampling Type [2)]	Population	Sample Size

	$\eta_{new,}$	SiRS	PS	42 (HS {5}, JB {7}, JF {4}, JM {10}, MY {16})	14 (08 Urban and 06 Rural)
	U_y	SiRS	PS	150 (76 rural and 74 urban)	18 (11 Urban and 07 Rural)
	CU	SiRS	PS	150 (76 rural and 74 urban)	18 (11 Urban and 07 Rural)

[1)] *Sampling Approaches:*

SiRS: Simple Random Sampling
StRS: Stratified Random Sampling
SS: Systematic Sampling
CS: Cluster Sampling
MSS: Multi-stage Sampling

[2)] *Sampling Types:*

AS: Acceptance Sampling
PS: Parameter Sampling
COM: Full data check at higher data aggregation levels and sampling at original data levels

The Verification team has adopted the acceptance sampling approach in accordance with § 29, 30, 31 and 32 of the "Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 09.0", considering AQL 0.5 % and UQL 20%, Producer risk of 10% and consumer risk of 20% for determination of the sample size to be verified for onsite audit assessment. Considering the above § under applied sampling standard, VVB should have verified 8 samples under the acceptance sampling approach with acceptance (c) number 0. The verification team has verified total of 18 samples (all the 18 samples were part of the monitoring survey and WBT as well). Thus, verification team has verified optimum number of samples from CME samples during onsite audit assessment. These samples were randomly selected (from PP samples) by Verification Team using random excel function. The sampled end users were assessed applying onsite interview demonstrating implementation of the project ICS, the kitchen condition to confirm presence of additional ICS (if any), continuous use of baseline stove (if any), and also confirmation on the usage rate of project and baseline devices have been reconfirmed during video telephonic/ skype call/ interview with the end user. The list of the end users verified through photographs and telephonic/ skype call is presented under section above (Table 7-2).

AQL	0.5%
UQL	20%
Producer risk	10%
Consumer risk	10%
Sample size	8
Acceptance Number	0

CME sampling-based monitoring records/data results were found in line with those verified during the VVB 's onsite audit and further verification of results/records. All the samples verified during onsite assessment were found to be operational/WBT tested, during the onsite audit interview/verification. Verification team further compared the onsite assessment result with submitted Survey and WBT records and were found to be in line. Details on each ICS sample verified through onsite assessment are presented under Section 5.10.1 above. Based on the assessment of 18 onsite

assessed samples observing records of each sample prepared and submitted by CME before onsite assessment, it could be confirmed that the result presented for all the monitored parameters e.g. continuous use of baseline stoves (CU), Number of stoves in operation and Efficiency of the system being deployed as part of the project activity is reproducible and thus sampling result is deemed reproducible and thus, sampling result could be confirmed and deemed acceptable. Further, the verification team reviewed all the primary monitoring records before and during onsite audit assessment to assess the consistency of information with ER calculation spreadsheet and found the monitoring data to be correctly transcribed into the ER sheet and MR. Based on above assessment, the verification team concludes that sampling results and values presented by CME in the MR and ER calculation spread sheet and results of survey and WBT records are consistent with the onsite observation and interview with the end users.

5.11. ER Calculation

During the verification, mistakes in the ER calculation were identified. Corresponding CARs were raised. A revised ER calculation was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all corresponding CARs could be closed out. Thus, it is confirmed that the ER calculation is overall correct.

Baseline Emissions:

Emission reductions are calculated as follows:

$$\mathbf{ER_y = (B_{y,savings} * N_y) * (f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossil\ fuel})} \quad \textbf{Equation (1)}$$

ER_y	Emission reductions during the period y in tCO2e
$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in period y that can be established as non-renewable biomass
$NCV_{biomass}$	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne)
$EF_{projected\_fossil\ fuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO2/TJ
N_y	Number of cook stoves in operation or replaced
$B_{y,savings}$	Quantity of woody biomass that is saved in tonnes per appliance.

$\mathbf{B_{y,savings,i}}$ is estimated using option 2 of the methodology AMS II.G V3:

$$\mathbf{B_{y,\ savings} = [(B_{old} - CU) * L] * (1 - \eta_{old}/\eta_{new})} \quad \textbf{Equation (2)}$$

B_{old}	Quantity of biomass used in the absence of the project activity in tonnes/ year
CU	Quantity of woody biomass for the continuous use (CU) of baseline stoves
η_{old}	Weighted average value is used since the replaced systems are unimproved and improved baseline technologies.

η_{new}	The result obtained from independent testing is used. Efficiency of the system being deployed as part of the project activity (fraction), as determined using the Water Boiling Test (WBT) protocol. Use weighted average values if more than one type of system is being introduced by the project activity.
L	Leakage adjustment factor (fraction)

Sample Calculation for GS 11192 has been presented below:
$B_{y,savings}$ = {(4.72 - 0.40*0.95)(1-0.10/0.3924)}
$B_{y,savings}$ = 3.06 tons wood-eq/HH-yr

Emission reduction (ER_y) = (3.06 * 7,032 x 0.9150 x 0.015 x 81.60) = 24,113 tCO_2e

Therefore, the emission reductions achieved for this monitoring period are **388,718 tCO_2e.**

The ER spreadsheet was reviewed and could confirmed is overall correct.

However, during course of verification CL 01, FAR 03 were raised. The verification team has reviewed the responses and could confirm that they have been addressed appropriately. Please refer to section 4 (Verification findings).

5.12. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this GS project activity have been defined. The procedures defined can be assessed as appropriate for the purpose. No significant deviations thereof have been observed during the verification.

5.13. Comparison with ex-ante estimated emission reductions

The MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PDD.

Ex-Ante ERs for this monitoring period (365 days): **631,898** tCO_2e

Ex-Post ERs for this monitoring period (for applied monitoring period): **388,718 tCO_2e**

Difference: **243,180** tCO_2e

The ex-post value is found to be far lower than the ex-ante determined value.

5.14. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installed ICS, which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are compliant with the GS requirements or any other scheme the monitoring is referring to. The VVB confirms that the project developer was interviewed and grievance register was checked. It could be

ascertained that there is a fully functional grievance mechanism in place. The VVB confirms that there were no complaints during applied monitoring period.

5.15. Hints for next periodic Verification

All FARs have been addressed in this verification. No FARs for next periodic verification.

6. VERIFICATION AND CERTIFICATION STATEMENT

BioLite India Private Limited has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 5th periodic verification (CP1) for the project: "BioLite Improved Cook Stoves Programme; PoA ID: GS 11191", with regard to the relevant requirements for GS project activities. The project reduces GHG emissions due to displacement of non-renewable cooking fuel by efficient improved cook stoves.

This verification covers the period from 01/01/2022 to 31/12/2022 (including both days).

GS ID	Monitoring period (MP):		Total GS VERs
GS 11192 to GS 11200, GS 11879 to GS 11882	From:	To:	388,718 tCO2e
	2022-01-01	2022-12-31	

In the course of the verification, 02 Corrective Action Requests (CAR) were raised and successfully closed; 3 CL and all FAR from last verification were resolved. The verification is based on the draft monitoring report, revised monitoring report, and the monitoring plan as set out in the registered PDD, the validation report, emission reduction calculation worksheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant. As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AMS-II.G: "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass" (Version 03.0)
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 5th periodic verification of first renewable crediting period (CP1), the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. The emission reductions are calculated in compliance with the monitoring plan and Gold Standard conservativeness principle. Furthermore, all parameters listed in the Sustainability monitoring plan are duly monitored and verified. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above-mentioned reporting period as follows:

Emission reductions (GS VERs): **388,718 tCO_2e**

New Delhi, 15/11/2023	Essen, 15/11/2023
Prakash Mishra	Stefan Winter
TÜV NORD JI/CDM Certification Program	TÜV NORD JI/CDM Certification Program
Verification Team Leader	Final Approval

7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

Reference	Document
Monitoring Report	
/MR/	• GS PoA 11191 CP1 MP5 MR ver 1.0 dated 08/06/2023 • GS PoA 11191 CP1 MP5 MR ver 2.0 dated 08/08/2023 • GS PoA 11191 CP1 MP5 MR ver 3.0 dated 24/08/2023 • GS PoA 11191 CP1 MP5 MR ver 4.0 dated 09/11/2023
ER spreadsheet	
/ER/	• GS PoA 11191 CP1 MP5 ER calculator ver 1.0 dated 08/06/2023 • GS PoA 11191 CP1 MP5 ER calculator ver 2.0 dated 08/08/2023 • GS PoA 11191 CP1 MP5 ER calculator ver 3.0 dated 24/08/2023 • GS PoA 11191 CP1 MP5 ER calculator ver 4.0 dated 06/11/2023
Database	
/SUR//USAGE/	• Scanned copies of Usage Survey Forms, dated January 2023 • Usage monitoring, integrated into ER worksheet • Grievance Register
/WBT/, /WBTD/	• PoA 7997 CP1 MP5_WBT Efficiency Calculator.xlsx • WBT Data sheet forms • Water boiling test report by CIRCODU dated March 2023 • Calibration Certificate of WBT Equipment (Barometer, Moisture meter, Weighing scale)
/DB/	• Scanned copies of Survey Data (Monitoring Survey forms) • End User Warranty Cards/Warranty registration - Agreement Forms • GS PoA 11191 CP1 MP5 Distribution Database
/SALES REC/	Total Sales record of the improved cook stoves for the entire monitoring period (Conservative assumption for date of stove installation = date of installation + 01-month, Example - stove sold in the month of June will be credited in the month of July)
/TRG/	• Surveyor training for 5th MP on 30/12/2022 • CIRCODU Lab staff training.pdf • CIRCODU Lab staff Competence Certificate dated 18/03/2023 • CIRCODU F32 Training Attendance List dated 09/01/2023

Reference	Document
/TECH/	• Technical Specification sheet for Biolite Home Stove and Jiko Malkia, Ecozoom cookstove (Jiko Bora Mama Yao),
/RANDOM/	• Online Random number snapshots – Random number generated with the use of application • Stove Sale receipts/Warranty Registration
SDG Impact Indicators	
/ Air quality /	Project Usage Survey, integrated into ER worksheet under tab “SD Parameters Assessment”
/Livelihood for poor/	Project Usage Survey, integrated into ER worksheet under tab “SD Parameters Assessment”
/Access to affordable and clean energy services/	Project Usage Survey, integrated into ER worksheet under tab “SD Parameters Assessment”
/HH reporting time saving due to reduced collected fuel consumption / cooking time in project/	Project Usage Survey, integrated into ER worksheet under tab “SD Parameters Assessment”

Table 7-2: Background investigation and assessment documents

Reference	Document
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/GS4GG TA/	GS4GG Requirements
/GSR/	GS requirements
/GSM/	AMS-II. G: “Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass” (Version 03.0) ASB0035: Baseline woody biomass consumption for household cookstoves in Kenya (version 01.0)
/GSS/	Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities, version 04.0
/KP/	Kyoto Protocol (1997)

Reference	Document
/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)
/IPCC/	Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories: 1. Non-CO_2 Stationery Combustion 2. Emissions from Livestock and Manure Management (Chapter 10) 3. IPCC Second Assessment Report – Climate Change 1995: A Report of the Intergovernmental Panel on Climate Change
/GSPoA-DD/	PoA-DD for "BioLite Improved Cook stoves Programme", version 02 dated 03/12/2021 Transition PoA Design document for the PoA-DD - "BioLite Improved Cook stoves Programme", version 05 dated 09/11/2023
/PDD/ **/VPA/**	Transition VPA-DD: 1. CPA 003 – BioLite HomeStove in Kenya - (version 2.0, Dated :03/12/2021) 2. CPA 008 – Charcoal Stoves in Kenya - (version 2.0, Dated :03/12/2021) 3. CPA 009 – Charcoal Stoves in Kenya (version 2.0, Dated :03/12/2021 4. CPA 041 – BioLite HomeStove in Kenya (version 2.0, Dated :03/12/2021) 5. CPA 051 – Charcoal Stoves in Kenya (version 2.0, Dated :03/12/2021) 6. CPA 052 – Charcoal Stoves in Kenya (version 2.0, Dated :03/12/2021) 7. CPA 053 – Charcoal Stoves in Kenya (version 2.0, Dated :03/12/2021) 8. CPA 054 – Charcoal Stoves in Kenya (version 2.0, Dated :03/12/2021) 9. CPA 055 – Charcoal Stoves in Kenya (version 2.0, Dated :03/12/2021) 10. CPA 056 – Charcoal Stoves in Kenya (version 1.0, Dated :01/04/2021) 11. CPA 057 – Charcoal Stoves in Kenya (version 1.0, Dated :01/04/2021) 12. CPA 058 – Charcoal Stoves in Kenya (version 1.0, Dated :01/04/2021) 13. CPA 059 – Charcoal Stoves in Kenya (version 1.0, Dated :01/04/2021) VPA-DD applicable for this MP: 1. GS 11192 - Version 6.0 dated 28/08/2023 2. GS 11193 - Version 6.0 dated 28/08/2023 3. GS 11194 - Version 6.0 dated 28/08/2023 4. GS 11195 – Version 6.0 dated 28/08/2023 5. GS 11196 - Version 6.0 dated 28/08/2023 6. GS 11197 - Version 6.0 dated 28/08/2023 7. GS 11198 - Version 6.0 dated 28/08/2023 8. GS 11199 - Version 6.0 dated 28/08/2023 9. GS 11200 - Version 6.0 dated 28/08/2023 10. GS 11879 - Version 3.0 dated 28/08/2023 11. GS 11880 - Version 3.0 dated 28/08/2023 12. GS 11881 - Version 3.0 dated 28/08/2023 13. GS 11882 - Version 3.0 dated 28/08/2023
/PS/	CDM Project Standard (Version 3.0)

Reference	Document
/SDGIT/	"Reporting the Outputs of The SGD Impact Tool" of "THE SDG IMPACT TOOL MANUAL", version v. 1.1
/VAL/	• Design Change Validation Report to assess the Design Changes *(under performance / issuance track as per the GS email to the project developer dated 01 March 2023 by GS to the PD)*, version 02, dated 15/11/2023 • GS Validation Report for Programme of Activities (PoA) Transition from CDM to GS4GG version 02 dated 14/12/2021 • Validation Report for Transition of Component Project Activities from CDM to GS4GG issued by Carbon Check (India) Private Limited, Version 04 dated 29/06/2022
/VER/	• Verification Report, Monitoring Report and ER spreadsheets issued under CDM (https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/YNXCPIJ5ZO7DTRGMV0F2AKEU486LQS/view?cp=1)
/VVS/	UNFCCC CDM Validation and Verification Standard (Version 03)

Table 7-3: Websites used

Reference	Link	Organization
/GS/	http://www.goldstandard.org/	Gold Standard for Global Goals
/unfccc/	http://cdm.unfccc.int	UNFCCC
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Hesbon Nyangena	Biolite Manager, carbon Project Development
/IM01/	V	☐ Mr. ☒ Ms	Hawa Mukami	Biolite, Carbon Associate
/IM01/	V	☒ Mr. ☐ Ms	Donald Maringa	Biolite, carbon Associate
/IM01/	V	☒ Mr. ☐ Ms	Muoki Justus	Biolite, Data Enumerator
/IM02/	V	☒ Mr. ☐ Ms	Rohit Lohia	Director, Climate Secure India Pvt. Ltd.
/IM02/	V	☐ Mr. ☒ Ms	Ashutosh Tiwari	Senior Consultant, Climate Secure India Pvt. Ltd.
/IM03/	V	☒ Mr. ☐ Ms	Joseph Ndemere	CIRCODU, Director General
/IM03/	V	☐ Mr. ☒ Ms	Patricia Nyansheegu	CIRCODU, Quality Manager
/IM03/	V	☒ Mr. ☐ Ms	Rashid Sengupta	CIRCODU, Technical Manger
/IM03/	V	☐ Mr. ☒ Ms	Lucy Partaati (respondent) for Timos Partaati (End-user) Stove serial No.: 14296001)	Sampled ICS user (Only Usage Survey)
/IM03/	V	☐ Mr. ☒ Ms	Mary Wanjiru (Stove serial No.: 14306526)	Sampled ICS user (Only Usage Survey)
/IM03/	V	☐ Mr. ☒ Ms	Wambani Kinanja Nonnie (Stove serial No.: CCA01026887)	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Everlyn Oketch (Stove serial No.: 12056254)	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Christinne Anyango Ochieng Stove Serial No.: 11248315	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Catherine Muthoni Ireri Stove serial No.: 11251145	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Millicent Atieno Stove serial No.: 14268466	Sampled ICS user (Survey + Usage and WBT)

Reference	MoI[1]		Name	Organisation / Function
/IM03/	V	☐ Mr. ☒ Ms	Mumbuli Monicah Stove serial No.: 11252047	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Florence Nduku Muasya Stove serial No.: 14293601	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Elizabeth Nthenya Makau Stove serial No.: 14289924	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Mary Wanza (respondent) for David Kioko (End-user) Stove serial No.: 12064195	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Judy Mutongoi (respondent) for Christine Mbulwa (stove owner) Stove serial No.: HSB0005251	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☒ Mr. ☐ Ms	Esther Mwende Nzomo Stove serial No.: HSB0008134	Sampled ICS user (Only Usage Survey)
/IM03/	V	☐ Mr. ☒ Ms	Eunice Mbinya Mutunga Stove serial No.: 14297968	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Peninah Mwami Stove serial No.: 14292484	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Felistas Chelagat Stove serial No.: 14298802	Sampled ICS user (Survey + Usage and WBT)
/IM03/	V	☐ Mr. ☒ Ms	Regina Rotich Stove serial number: 14306023	Sampled ICS user (Only Usage Survey)
/IM03/	V	☐ Mr. ☒ Ms	Sarah Tiem Stove serial No.: 14297365	Sampled ICS user (Survey + Usage and WBT)

[1)] Means of Interview: (**T**elephone, **E**-Mail, **V**isit/ Onsite Assessment)

ANNEX

A1: Verification Protocol

A2: Statements of Competence of involved Personnel

ANNEX 1: VERIFICATION PROTOCOL

Table A-1: GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
Raw data generation				
• Installation of measuring equipment • Dysfunction of installed equipment • Maloperation by operational personnel • Downtimes of equipment • Exchange of equipment • Change of measurement equipment characteristic • Insufficient accuracy • Change of technology • Accuracy of values supplied by Third Parties	• Installation of modern and state of the art equipment • Process control automation • Internal data review • Regular visual inspect-ions of installed equip-ment • Only skilled and trained personnel operates the relevant equipment • Daily raw data checks • Immediate exchange of dysfunctional equipment • Stand-by duty is organized • Training • Internal audit procedures • Internal check of QA/QC measures of involved Third Parties	• Inadequate installation / operation of the monitoring equipment • Inadequate exchange of equipment • Change of personnel • Undetected measurement errors • Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies) • Non-application of management system procedures • Insufficient accuracy • Inappropriate QA/QC measures of Third Parties	• Site – visit • Check of equipment • Check of technical data sheets • Check of suppliers information / guarantees • Check of calibration records, if applicable • Check of maintenance records • Counter-check of raw data and commercial data • Check of CDM management system • Check of CDM related procedures • Application of CDM management system procedures • Check of trainings	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
			• Check of responsibilities • Check of QA/QC documentation / evidence of involved Third Parties	
Raw data collection and data aggregation				
• Wrong data transfer from raw data to daily and monthly aggregated reporting forms • IT Systems • Spread sheet programming • Manual data transmission • Data protection • Responsibilities	• Cross-check of data • Plausibility checks of various parameters. • Appropriate archiving system • Clear allocation of responsibilities • Application of CDM Management system procedures • Usage of standard software solutions (Spreadsheets) • Limited access to IT systems • Data protection procedures	• Unintended usage of old data that has been revised • Incomplete documentation • Ex-post corrections of records • Ambiguous sources of information • Non-application of management system procedures • Manual data transfer mistakes • Unintended change of spread sheet programming or data base entries • Problems caused by updating/upgrading or change of applied software	• Check of data aggregation steps • Counter-calculation • Data integrity checks by means of graphical data analysis and calculation of specific performance figures • Check of management system certification • Check of data archiving system • Check of application of Management system procedures	• **See Table A-2**
Other calculation parameters				
• Emission factors, oxidation factors, coefficients	• The values and data sources applied are defined in the PDD and monitoring plan	• Unintended or intended Modification of calculation parameters • Wrong application of values	• Update-check of regulatory framework • Countercheck of the applied MP in the MR against the methodology and the PDD	• **See Table A-2**

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including *Forward Action Requests*)
		• Misinterpretations of the applied methodology and/ or the PDD • Missing update of applicable regulatory framework (e.g. IPCC values)		
Calculation Methods				
• Applied formulae • Miscalculation • Mistakes in spread-sheet calculation	• Advanced calculation and reporting tools • A CDM coordinator is in charge of the CDM related calculations • Usage of tested / counterchecked Excel spreadsheets • Involvement of external consultants	• The danger of miscalculation can only be minimized.	• Countercheck on the basis of own calculation. • Spread sheet walk-trough. • Plausibility checks • Check of plots	• **See Table A-2**
Monitoring reporting				
• Data transfer to the author of the monitoring report • Data transfer to the monitoring report • Unintended use of outdated versions	• An experienced CDM consultant is responsible for monitoring reporting. • CDM QMS procedures are defined	• The danger of data transfer mistakes can only be minimized • Inappropriate application of QMS procedures	• Counter check with evidence provided. • Audit of procedure application	• **See Table A-2**

Table A-2:(Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
A. Description of the project activity				
***A.1.* Purpose and general description of the project activity** *Check if the MR includes the following:* - *Purpose of the PA and the measures taken to reduce GHG emissions* - *Brief description of the installed technology and equipment* - *Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc.)* - *Total emission reductions achieved in this monitoring period*	/PDD/ /MR/	The verification team has checked section in the MR and confirms that the information provided is complete and correct with regards to the following: ☒ Purpose of the PA and the measures taken to reduce GHG emissions ☒ Brief description of the installed technology and equipment ☒ Relevant dates for the project activity (e.g., construction, commissioning, continued operation periods etc ☒ Total emission reductions achieved in this monitoring period In this context no finding has been identified	OK	OK
***A.2.* Location of project activity** *Check if the MR reflects correctly the following:* - *Host Party(ies)* - *Region / State / Province etc.* - *City / Town / Community etc.*	/MR/ /PDD/ /IM01/ /IM02/	The verification team has checked the MR and confirms by means of comparison with the information given in the PDD and information gathered during the onsite audit that the information provided is complete and correct with regards to the following: ☒ Host Party(ies) ☒ Region / State / Province ☒ City / Town / Community ☒ Physical / Geographical location	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
- *Physical / geographical location (e.g. Latitude and Longitude)*		In this context no finding has been identified.		
A.3. **Parties and Project Participants** *Check if the MR includes all PPs:* - *All PPs as displayed on the GS website*	/MR/ /GS/ /IM01/ /IM02/	The verification team has checked the MR as well as the GS website and confirms that: ☒ all PPs as displayed on the project related GS website are correctly listed In this context no findings have been identified:	OK	OK
A.4. **Reference of applied methodology** *Check if the MR correctly describes / includes the following:* - *Reference to the applicable version of the methodology* - *Reference to the applicable version(s) of relevant methodological tools*	/MR/ /PDD/ /GS/	The verification team has checked the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC/ GS website that the information provided is complete and correct with regards to the following: ☒ Number, title and version of the applicable GSF/CDM Methodology ☒ Name and version of applicable GSF/CDM methodological tools In this context no finding has been identified:	OK	OK
A.5. **Crediting period of project activity** *Check if the MR correctly includes the following:* - *Start date of the crediting period.* - *Length and type of the crediting period*	/PDD/ /MR/ /GS/	The verification team has checked the MR and confirms by means of comparison with the information displayed on the GS website that the information provided is complete and correct with regards to the following: ☒ Start date of the crediting period. ☒ Type and length of the crediting period In this context no finding has been identified.	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A.6. **Publication of the Verification Work Plan and monitoring report**	/GS/	The verification workplan has been submitted to PP and GS Registry well before the onsite audit.	OK	OK
B. Implementation of project activity				
B.1. **Description of implemented registered project activity** *Check if the MR correctly describes / includes the following:* - *Implementation status of the PA* - *Detailed description of installed technology(ies) / technical processes and equipment applied*	/MR/ /PDD/ /IM01/	The verification team has checked the MR and confirms by means of comparison with the information given in the PDD the project standard and information gathered during the onsite assessment: ☒ the description of the implementation status of the PA is in line with the applicable provisions of the GS4GG Requirements and Toolkit ☒ an appropriate description of the installed technology(ies), technical process and equipment has been included In this context no finding has been identified.	OK	OK
B.1.1. Initial project implementation *Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?* *Further focus on the potential phase wise implementation and check the reporting on the corresponding status and starting dates accordingly.* *Check if the project is still in compliance with the applicability conditions of the methodology.*	/MR/ /PDD/ /IM01/	The verification team has checked the implemented project activity and the MR and confirms by means of comparison with the information given in the PDD, the applicable GS4GG Requirements and Toolkit and information gathered during the onsite assessment that: ☒ the project has been implemented and operated as per the registered PDD and the GS Passport and all physical features of the project are in place ☒ the project has been implemented phase wise and corresponding evidence has been provided	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		☒ the project is still in compliance with the applied methodology In this context no finding has been identified.		
B.1.2. Technical equipment changes *Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied.* *Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.*	/MR/ /PDD/ /GST/ /IM01/ /IM02/	The verification team has checked the implemented project activity and the MR and confirms by means of comparison with the information given in the PDD, the applicable GS4GG Requirements and Toolkit and information gathered during the onsite assessment and interviews that: ☒ no technical equipment has been exchanged or modified during the monitoring period ☒ the notations of key equipment are consistently applied in the project documentation In this context no finding has been identified.	OK	OK
B.1.3. Operation of the project activity *Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.* *Consider e.g. interviews with operational personnel, operation log sheets, data management system records.* *In case of changes, check whether the project is still in line with the registered PDD and assure that these*	/MR/ /GST/ /PDD/	The verification team has checked the implemented project activity and the MR and confirms by means of comparison with the information given in the PDD, the applicable GS4GG Requirements and Toolkit and information gathered during the audit and interviews that: ☒ no relevant operation modes of the project activity have been exchanged or modified during the monitoring period ☐ the following changes have been adopted during the monitoring period; however, the project is still in line with the registered PDD:	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
changes have been considered in the monitoring report and the emission reduction calculation.				
B.1.4. Incidents *Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?* *Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.*	/MR/ /IM01/ IM02/	The verification team has checked the implemented project activity and the MR and confirms by means of comparison with the information given in the PDD, the applicable GS4GG Requirements and Toolkit and information gathered during the site visit and interviews that: ☒ no significant incidents, deviant operation modes and / or downtimes of the equipment happened during the monitoring period ☐ the following incidents, deviant operation modes and / or downtimes of the equipment happened during the monitoring period:	OK	OK
B.1.5. Legislation Find out – esp. in the context of methodological requirements - whether relevant legislation with effect on the project activity in the host country has been changed. Assess, in case of changes, whether consequences for the PA with regard to relevant GS requirements have been accounted for. In case of changes data sources shall be referenced.	/MR/ /IM01/ IM02/	The verification team has checked the host country legislation and confirms by means of comparison with the implemented project that: ☒ no relevant legislation with effect on the project activity in the host country has been changed In this context no findings have been identified.	OK	OK
B.1.6. Open issues from GS validation	/PDD/ /VAL/	☐ There were no open issues addressed in the validation report ☒ All open issues from the validation have been appropriately addressed.	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?		☐ The following issues related to the validation have not yet been appropriately addressed:		
B.1.7. Open issues from previous verification *Check in case of further periodic verifications whether there are any open issues indicated in previous verification reports (FAR).*	/VER/ /GSR/	☐ There were no open issues addressed in the previous verification report ☒ All open issues from the previous verification have been appropriately addressed. ☐ The following issues related to the previous verification have not yet been appropriately addressed:	~~**FAR01**~~ ~~FAR#1from GS4GG performance review report for GS 11195 to GS 11199 and GS 11200,~~ ~~**FAR 3**~~ ~~(Applicable to GS 11192, GS 11193, GS 11194) FAR from 1st periodic verification of First Crediting Period under GS4GG;~~ ~~**FAR 4**~~ ~~(Applicable to GS~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
			~~11192, GS 11193, GS 11194) FAR from 1st periodic verification of First Crediting Period under GS4GG,~~ **FAR 2** ~~(Applicable to GS GS11879 to GS11890) FAR from Design Review under Gold Standard for the Global Goals (combined preliminary review + validation + design review for transition),~~	

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
			~~**FAR 5** (Applicable to GS GS11879 to GS11890) FAR from Design Review under Gold Standard for the Global Goals (combined preliminary review + validation + design review for transition),~~	
C. Description of monitoring system				
***C.1.* Monitoring Plan – PDD** *Check if the monitoring plan is in accordance with the monitoring plan contained in the registered GS PDD (or any accepted revised MP).* *Please check esp. if*	/MR/ /PDD/	By means of comparison of the MR with the registered / revised GS PDD (or any revisions thereof) the verification team has checked whether the MP is in compliance with the registered GS PDD and the transition annex. The outcome is as follows: ☒ The MP is completely in accordance with the last registered/ revised version of the PDD. In this context no findings have been identified.	OK	OK

<table>
<tr><th>Checklist Item
(incl. guidance for the verification team)</th><th>Refe-rence</th><th>Verification Team Comments
(Means and results of assessment)</th><th>Draft Concl.</th><th>Final Concl.</th></tr>
<tr><td>- all parameters stated in the MP of the registered PDD have been monitored and updated as applicable
- the monitoring equipment has been controlled and calibrated as per the MP
- the monitoring results are consistently recorded as per the approved frequency
- QA/QC procedures have been applied in accordance with the MP</td><td></td><td></td><td></td><td></td></tr>
<tr><td>C.2. Monitoring Plan – Meth Compliance
Check if the monitoring plan is in accordance with the applied methodology.
In case the methodology references applicable tools it has to be ensured that the MP is also compliant with those tools.
Also please specify if monitoring aspects have been identified that are not specified in the methodology but may enhance the level of accuracy and completeness of the monitoring plan – this esp. applies for SSC PAs.</td><td>/MR/
/VER/
/PDD/
/GST/</td><td>By means of comparison of the MR with the applied Standard methodology and related tools the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology. The outcome is as follows:
☒ The MP is completely in accordance with the applied methodology by the project
☒ The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:
<table>
<tr><td>1</td><td>Title (of the tool)</td><td>GS4GG Requirements</td></tr>
<tr><td></td><td>MP compliance</td><td>☒full compliance
☐findings have been raised
☐N/A (for MP)</td></tr>
<tr><td>2</td><td>Title (of the tool)</td><td>Tool for the demonstration and assessment of additionality</td></tr>
<tr><td></td><td>Version</td><td>6.1</td></tr>
</table></td><td>OK</td><td>OK</td></tr>
</table>

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		☐ MP compliance ☐full compliance ☐findings have been raised ☒N/A (for MP), In this context no findings have been identified:		
C.3. **Management System** *Check if the GHG data monitoring system can be assessed as appropriate.* *In case reference is made to a (certified) company quality management system, check if all GHG related monitoring procedures have been fully integrated in the project participant's quality management system.* *In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.*	/MR/ /PDD/ /VER/	*Description:* The monitoring system is described in Section C of the MR including monitoring and survey methods applied. A project database which is established and managed by the project management unit office. *Verifier´s action:* The project database, survey procedures and forms have been reviewed by the verification team. The verification team as interviewed enumerators, to confirm the quality control and monitoring procedures are implemented appropriately. *Conclusion:* The management system was set up as a stand-alone system to monitor the ICS program.	OK	OK
C.4. **Roles and Responsibilities** *Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan. Please consider the complete data trail from raw data generation to submission of the final data.*	/MR/ /PDD/	*Description:* Section C described the monitoring system which includes monitoring methods applied for: 1. Quality control measures 2. Carbon monitoring survey 3. Usage survey	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
In case of changes, assure that the implemented monitoring procedures have not been affected.		*Verifier´s action:* Section C of MR was reviewed and the roles and responsibilities are defined. *Conclusion:* No inconsistencies found.		
***C.5.* Emergency procedures for the monitoring system** *Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these procedures have been implemented, when required*	/MR/ /PDD/ /IM01/ /IM02/	*Description:* Emergency procedures are included in the MR. *Verifier´s action:* The verification team has interviewed the representatives of BioLite India Private Limited on how the emergency procedures are implemented for the program. Emergency procedures are implemented. *Conclusion:* No inconsistencies found.	OK	OK
***C.6.* Data archive and data protection** *Check whether all records of monitoring parameters are archived according to the monitoring plan.* *Assess further whether appropriate measures have been taken in order to avoid unintended or intended manipulation or loss of the measured data.*	/MR/ /PDD/ /IM01/ /IM02/	*Description:* Data archiving and data protection included in the MR. *Verifier´s action:* Review of MR and cross-checked in server for data archiving and data protection. *Conclusion:* No inconsistences found.	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
D. Data and parameters				
D.1. **Data and Parameters fixed ex ante and ex post**				
D.1.1. Compliance with registered PDD and the applied methodology (ex-ante) *Check whether the value applied is in compliance with the registered PDD and the applied methodology or any other tool.*	/MR/ /PDD/	By means of comparison of the MR with the registered PDD (or any revisions thereof) the verification team confirms that: ☒ all ex-ante data and parameters are in compliance with the registered PDD and the applied methodology or any other tool. In this context, CL 01, FAR 03 findings have been identified.	~~CL 01, FAR 03~~	OK
D.1.2. Compliance with registered PDD and the applied methodology (ex post) *Check whether the value applied is in compliance with the registered PDD and the applied methodology or any other tool.*	/MR/ /PDD/	By means of comparison of the MR with the registered PDD (and the revision) the verification team confirms that: ☒ all ex-post and parameters are in compliance with the registered PDD and the applied methodology or any other tool. In this context, FAR 04 finding has been identified.	~~FAR 04~~	OK
D.2. **Data and Parameters monitored for ER**				
D.2.1. N_y		**Number of cook stoves in operation or replaced**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination*	/IM01/ /PDD/ /AMSII G/ /DB/ /USAGE/	*Description:* The number of stoves distributed are tracked through distribution records for Cookstoves recorded chronologically in end user Distribution databases. Each user fills Customer Agreement Forms (CAF) that contain the name of the purchaser, the serial number of the stoves, the date of distribution and the user's telephone number.	~~CL 02,~~ ~~CAR 01~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
methods have been used. Furthermore, verify the frequency of measurements as per the requirements. *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*		PP has followed the registered monitoring plan of the PDD set forth the provision to conduct an annual survey to monitor this parameter through sampling and survey. *Verifier´s action:* The verification team pulled stored random CAF and compared the details of the CAF indicated with the information in the provided end user database. Furthermore, the team randomly selected households from the database and conducted onsite audit and compared the information in the database with the actual stoves being used. *Conclusion:* Refer closure to CL 02 and CAR 01.		
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring*	/DB/ /MR/	*Description:* The number of stoves sold is ensured by CAF (customer Agreement Form) cum warranty cards. One database depicts the summary for each stove type with details of the purchaser (CAF). *Verifier´s action:* The verifier cross-checked all documents: the CAF, the distribution databases and carried out onsite audit interviews.	~~CL 02,~~ ~~CAR 01~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
equipment has been carried out by competent personnel.		*Conclusion:* Refer closure to finding CL 02 and CAR 01.		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /DB/ /ER/	☒ Correct ☐ Not correct (initial assessment) *Description:* The value given in the MR deemed as appropriate. *Verifier´s action:* The verification team compared the monitoring procedures, Data bases, CAF cum Warranty Cards and QA/ QC measures. *Conclusion:* Refer closure to finding CL 02 and CAR 01	~~CL 02,~~ ~~CAR 01~~	OK
D.2.2. η_{new}		**Efficiency of the system being deployed as part of the project activity**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.*	/IM03/ /AMS-II.G/ /WBT/ /ER/	*Description:* The efficiency of stoves deployed was determined by conducting water boiling tests (WBT) for a representative random sample from each stove type. The PP has undertaken • Water Boiling Test Records Dated March 2023 by CIRCODU Cookstove Testing Laboratory in Kenya	~~CAR 02 and FAR 04~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.	/TRG/	Monitoring of the efficiency of the system being deployed is applied to be annual which is in line with registered monitoring plan. *Verifier´s action:* The verification team has reviewed the step-by-step protocol followed in determining the sample size per age group, selecting appropriate conditions and conducting the overall WBTs. The WBT reports have been analyzed. *Conclusion:* The calculations of sample sizes and measurement procedures have largely followed the Partnership for Clean Indoor Air WBT protocol and followed the excel calculation sheets. Refer closure to CAR 02 and FAR 04.		
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.*	/WBT/ /IM03/	*Description:* The Verification checked calibration records and status of equipment used in conducting the WBTs (Thermometers, scales etc). *Verifier´s action:* The results of Water Boiling Test Records dated March 2023 by CIRCODU were verified for applied monitoring period (Annual monitoring frequency). The audit team assessed the project using other means of verification and conducted interviews with the relevant key personnel using Skype/ telephone communication. Questions included testing procedures, QA/QC measures, calculations and testing conditions. The stoves selected and their ages were checked and compared with the information in the WBT reports.	~~CAR 02 and FAR 04~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
		Conclusion: Refer closure to CAR 02 and FAR 04.		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /IM03/	☒ Correct ☐ Not correct (initial assessment) *Description:* Values have not been presented in section D.2 of the MR and as per the provided excel calculations. *Verifier´s action:* The random sampling procedures as well as testing procedures have been assessed. Interviews were also undertaken. *Conclusion:* Refer closure to CAR 02 and FAR 04.	~~CAR 02 and FAR 04~~	OK
D.2.3. CU		**Number of households continuously using baseline stoves**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been*	/MR/ /PDD/ /ER/ /SALES REC/	*Description:* This is the actual number of baseline stoves still in operation. CME undertook annual sampling and surveying to determine whether the households are still continuing with the inefficient baseline stoves along with the improved cook stove. After this step the fuel wood consumption in baseline stoves is excluded from the ex-ante fixed B_{old} to arrive at emission reductions. The data pertaining to approximate combustion of fuel wood in	~~CL 03 and FAR 04~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
used. Furthermore, verify the frequency of measurements as per the requirements. *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/SUR/USAGE/ /IM01/ /IM02/	traditional cookstove is monitored by CME through sampling and survey and the results achieved is adjusted from the ex-ante B_{old} value. Verification team has assessed sampling results applying acceptance sampling method and interview during the onsite audit with end users. Moreover, verification team compared the results with onsite audit information and values applied for the parameter which is also found to be adjusted from fixed B_{old} value. Procedures for sampling have been duly articulated in the field monitoring report, and a sample of survey questionnaires furnished to VVB. *Verifier´s action:* The verifier checked the field report and procedures to calculate the sample, in line with CDM sampling guidelines. *Conclusion:* Refer closure to CL 03 and FAR 04.		
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.*	/MR/ /PDD/ /ER/ /IM01/ /IM02/ /SALES REC/	*Description:* Monitoring surveys were conducted by trained personnel using stratified random sampling following the standard and guideline for Sampling and surveys for CDM project activities and programme of activities. As described above, it can be said that sampling was accurate. *Verifier´s action:*	~~CL 03 and FAR 04~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out by competent personnel.	/SUR/USAGE/	The VT has carried out desk reviews of monitoring report, usage survey report and onsite assessment if the sample sizes and procedures were carried out correctly. Interviews with personnel responsible for conducting the survey were also performed onsite. *Conclusion:* The CME has followed the sampling plan and procedures form measurement of the parameter as prescribed in the registered CPA monitoring plan. Refer closure to CL 03 and FAR 04.		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /ER/ /PDD/ /SALES REC/ /SUR/USAGE/	☒ Correct ☐ Not correct (initial assessment) *Description:* The accurate measurement of the parameter cannot be ascertained. *Verifier´s action:* The values given per year were checked against the report and calculations. The values presented in the MR were assessed against monitoring survey report, monitoring survey data analysis sheet, onsite audit and interviews with the team who conducted the field monitoring survey. *Conclusion:* Refer closure to CL 03 and FAR 04.	~~CL 03 and FAR 04~~	OK
D.2.4. $B_{y\ savings}$		**Quantity of woody biomass that is saved in tonnes**		

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.* *Assess whether the measurement / determination method is in line with the registered monitoring plan and the applied methodology.*	/IM01/ /PDD/ /MR/ /ER/	*Description:* CME is using option 2 under paragraph 6 of AMS-II.G version 03. The fuel consumption in the baseline, efficiency of stove used in the baseline and efficiency of improved cook stoves are considered to determine the $B_{y\ savings}$. $B_{y,savings}$, is calculated using option 2 of the methodology AMS-II.G V3: $B_{y,savings} = [(B_{old\ (adjusted)} * (1 - \eta_{old}/\eta_{new})$ *Verifier´s action:* The verification team checked the applied methodology and the ER calculations. *Conclusion:* The applied calculations are traceable; however, CL 01 and FAR 04 were raised and resolved.	~~CL 01 and FAR 03~~	OK
b) Accuracy and QA/QC Procedure *In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.* *Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the*	/PDD/ /MR/ /ER/	*Description:* No need for QA/QC procedures as the parameter is calculated. No monitoring equipment involved. *Verifier´s action:* The verification team checked the applied methodology and the ER calculations. *Conclusion:*	~~CL 01 and FAR 03~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
monitoring equipment has been carried out by competent personnel.		Refer closure to CL 01 and FAR 03. .		
c) Correctness *Determine whether the value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /AMSIIG/ /ER/	☒ Correct ☐ Not correct (initial assessment) *Description:* The value is not deemed as correct as inconsistencies are identified for parameter B_{old}. *Verifier´s action:* The methodology and calculations were checked. *Conclusion:* Refer closure to CL 01 and FAR 03.	~~CL 01 and FAR 03~~	OK
***D.3.* Parameters monitored for Sustainability Development**				
D.3.1.SDG No.1 **No Poverty**		**$HHS_{Project}$ - Average household savings due to decrease in expenditure on basic services such as cooking in project**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD.*	/MR/ /DB/ /IM02/ /SUR/USAGE/ /ER/	*Description:* During the survey, the PP has enquired about reduction in money saving due to reduced collected fuel consumption in project while cooking on improved stove. The end users have confirmed that there was certain decrease in the fuel consumption and hence Saving in the money required to purchase the fuel.	~~CL 01~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
	/SDGIT/	*Verifier´s action:* The VVB has verified the parameter by comparing the requirements of monitoring under GS. *Conclusion:* The monitoring of this SD indicator is in accordance with the GS standard and 5 "Reporting the Outputs of The SGD Impact Tool" of "THE SDG IMPACT TOOL MANUAL", version v. 1.1. Refer closure to CL 01.		
b) Correctness and Scoring *Determine whether the monitoring method/value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed assessment of the conservativeness of the approach used should begiven.* *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/MR/ /DB/ /SUR/USAGE/ /ER/ /IM02/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data was based on the Project survey results conducted. The data is derived from the monitoring survey. The monitoring survey results confirmed reduction in the fuel requirement to cook food which in turn saves the money for the purchase of fuel. *Verifier´s action:* The database was verified and found data correct. *Conclusion:* The data was verified and found appropriate. Refer closure to CL 01.	~~CL 01~~	OK
D.3.2.SDG No.5 Gender Equality		**$HHTS_{Project}$ - Average time saving associated with cooking and/or fuel collection time in project**		
a) Measurement / Determination method	/MR/ /DB/	*Description:* During the survey, the PP has enquired about reduction in time saving due to reduced collected fuel consumption / cooking time	OK	OK

Checklist Item (incl. guidance for the verification team)		Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Describe how the monitoring parameter was measured / determined. *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD.*		/IM02/ /SUR/USAGE/ /ER/	in project while cooking on improved stove. The end users have confirmed that there was certain decrease in the fuel consumption, and hence corresponding decrease in the time required to collect the fuel. *Verifier´s action:* The VVB has verified the parameter by comparing the requirements of monitoring under GS. *Conclusion:* The monitoring of this SD indicator is in accordance with the GS standard.		
b) Correctness and Scoring *Determine whether the monitoring method/value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed assessment of the conservativeness of the approach used should begiven.* *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*		/MR/ /DB/ /SUR/USAGE/ /ER/ /IM02/	☒ Correct ☐ Not correct (initial assessment) *Description:* The data was based on the Project survey results conducted. The data is derived from the monitoring survey. The monitoring survey results confirmed reduction in the fuel requirement to cook food which in turn saves the time for women for the collection fuel. *Verifier´s action:* The database was verified and found data correct. *Conclusion:* The data was verified and found appropriate.	OK	OK
D.3.3.SDG No. 7	**Affordable and Clean Energy**		**$HHB_{Project}$ - Number of beneficiaries household under project**		

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		$ACS_{Project}$ - Affordable and clean energy services (% of operating ICS units under Project)		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD.*	/MR/ /PDD/ / Access to affordable and clean energy services / /SUR/USAGE/ /ER/ /SDGIT/	*Description:* The data is derived from the monitoring survey. *Verifier´s action:* Majority of the end user confirmed that ICS promotes Affordable and clean energy services. *Conclusion:* The monitoring of this SD indicator is in accordance with the GS standard and Reporting the Outputs of The SGD Impact Tool" of "THE SDG IMPACT TOOL MANUAL", version v. 1.1. Refer closure to CAR 01and CAR 02.	~~CAR 01, CAR 02~~	OK
b) Correctness and Scoring *Determine whether the monitoring method/value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed assessment of the conservativeness of the approach used should begiven.* *Score in accordance to Toolkit Annex I*	/MR/ /PDD/ / Access to affordable and clean energy services /	☒ Correct ☐ Not correct (initial assessment) *Description:* During onsite assessments the monitoring survey results confirms that the ICS promotes Affordable and clean energy services. *Verifier´s action:* The supportive documents are assessed. *Conclusion:*	~~CAR 01, CAR 02~~	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.	/SUR/USAGE/ /ER/	The database was verified and found data correct. Refer closure to CAR 01 and CAR 02.		
D.3.4. SDG No. 15 **Life on Land**		**$FS_{Project}$ - Quantity of non-renewable woody biomass saved in project**		
a) Measurement / Determination method *Describe how the monitoring parameter was measured / determined.* *Assess whether the measurement / determination method is in line with the registered passport, applied toolkit and PDD. .*	/MR/ /PDD/ /ER/ /DB/ /SUR/USAGE/	*Description:* The parameter is monitored based on the monitoring survey. The VVB has verified the submitted survey records and confirms the reported value as accurate. *Verifier´s action:* The VVB has verified the submitted survey records and confirms the reported value as accurate. *Conclusion:* The monitoring of the indicator is consistent with the GS standard.	OK	OK
b) Correctness and Scoring *Determine whether the monitoring method/value given in the sustainability monitoring report is correct or determined in a conservative manner.* *In case of conservative approaches used in lieu of the monitoring as per registered passport detailed*	/MR/ /PDD/ /ER/	☒ Correct ☐ Not correct (initial assessment) *Description:* The VVB has verified the submitted survey records and confirms the reported value as accurate. *Verifier´s action:*	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
assessment of the conservativeness of the approach used should be given. *Score in accordance to Toolkit Annex I* *In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.*	/DB//SUR/USAGE/	The database was verified and found data correct. *Conclusion:* The data was verified and found correct.		
***D.4.* Sampling**				
a) Implementation of sampling plan *Check whether the PP has applied a sampling approach to determine the monitored values (as per section D.2 above).* *If this is the case, please provide an assessment whether the PPs have correctly and sufficiently described the implemented sampling plan including* - *Description of the implemented sampling design* - *Collected data* - *Analysis of collected data* - *Demonstration on whether the required confidence/precision has been met.*	/MR/ /PDD/	☒ A sampling approach has been taken by the PP due to large number of implemented cookstoves/ICS. *Description:* The PP has conducted sampling, and also reported necessary substantiation and its appropriate application. *Verifier´s action:* The survey records are reviewed and assessed. *Conclusion:* Sampling is applied appropriately.	OK	OK
b) Sampling during verification *In case the VT has applied a sampling approach in the course of the verification the approach shall be described for each parameter.*	/MR/ /PDD/	☒ A sampling approach has been applied by the VT for selected the household for the field inspection and interview. *Description:*	OK	OK

Checklist Item (incl. guidance for the verification team)	Refe-rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		According to GS requirements, the sampling plan of 95/10 a sample size of 150 (usage survey) is sufficient to ensure the number of households interviewed is representative.		
E. Calculation of Emission reductions				
E.1. **Traceability** *Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spreadsheet shall be used. All applied formulae must be visible.*	/MR/ /ER/	The verification team has checked the emission reduction calculation and confirms that: ☒ the calculation is fully traceable ☒ all applied formulae are visible	OK	OK
E.2. **Parameter consistency** *Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?* *Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure the consistency of notations for all parameters in the PDD, MR and calculation spreadsheet.*	/MR/ /ER/ /PDD/	The verification team has checked the emission reduction calculation and the MR and confirms that: ☒ all parameter notations are consistent in the project documentation ☒ all internal and external parameters and data used for calculation are consistently applied Refer section 4 for closure of CL 01, CAR 01 and FAR 04.	~~CL 01, CAR 01 and FAR 04~~	OK
E.3. **Correctness of calculation** *Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.*	/MR/ /PDD/ /ER/	The verification team has checked the emission reduction calculation and the MR and confirms that: ☒ all applied formulae for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan ☒ the provided calculations are complete	~~CL 01~~	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan. *Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.*		However, CL 01 is raised. Refer section 4 for closure of CAR.		
E.4. **Emission reductions table** *Check if the MR includes a summary table of the emission reductions calculation specifying separately* - *Total baseline emissions* - *Total project emissions:* - *Total leakage* - *Total emission reductions.* *Assess whether the values are correct or need to be revised as a consequence of issues identified above.*	/MR/ /ER/	☒ The MR includes a summary table of the emission reductions calculation. ☒ The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately. ☒ The values as specified in the ER summary table are correct; no issues have been identified during the verification which require changes in the ER calculation. ☒ During the verification issues with impact on the ER calculation have been identified. In this context, no findings are raised.	OK	OK
E.5. **Comparison with ex-ante determined emission reductions** *Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.* *Check further whether in case of an increase an appropriate explanation is included in the MR.* *Assess in case of a significant increase whether this is due to technical or organisational changes within or*	/MR/ /ER/ /PDD/	The verification team has checked the MR and confirms that: ☒ the MR includes a comparison of actual emission reductions with the estimations of the registered PDD ☐ the increase has been appropriately explained In this context no findings have been identified:	OK	OK

Checklist Item (incl. guidance for the verification team)	**Refe-rence**	**Verification Team Comments** (Means and results of assessment)	**Draft Concl.**	**Final Concl.**
outside the control of the PP which might require a notification / approval of changes.				

ANNEX 2: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. VICTOR CLAUDIO ABARCA ARRIAGADA

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2025-07-05
VCS / ISO 14064-2	Lead Assessor (Validation, Verification)	2025-07-05

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
6.1	Construction
13.1	Solid waste and wastewater

420 - Rev. 2, Date: 2022-10-13

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Prakash Kumar Mishra

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor Host country expert India, Bangladesh, Kenya, Uganda, Nepal	2026-05-07
VCS / ISO 14064-2	Senior Assessor Host country expert India, Bangladesh, Kenya, Uganda, Nepal	2026-05-07
UER	Senior Assessor Host country expert India, Bangladesh, Kenya, Uganda, Nepal	2026-05-07
Gold Standard	Senior Assessor Host country expert India, Bangladesh, Kenya, Uganda, Nepal	2026-05-07

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
3.1	Energy demand

146 - Rev. 8, Date: 2023-06-12

146_S01-VA060-F20_2023-06-12_rev8 S01-VA060-F20 rev3 / 2012-10-25

TÜV NORD Certification

Statement of Competence

Appointment and authorization according to the procedures of the TÜV NORD JI/CDM Certification Program

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2023-07-27
VCS / ISO14064-2	Senior Assessor (Validation, Verification) Technical Reviewer	2023-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
4.1	Cement and lime production
4.2	Paper
5.2	Caprolactam, nitric and adipic acid
9.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
10.1	Fugitive emissions from oil and gas
13.1	Solid waste and wastewater
13.2	Manure

163 – Rev. 7, Date: 2020-07-22

163_S01-VA060-F20_2020-07-22_rev7 S01-VA060-F20 rev3 / 2012-10-25