



Verification and certification report GS programme of activities

BASIC INFORMATION	
Title and GS ID of the programme of activities (PoA)	ECO_A_BURN multi-country Clean Cooking Programme GS ID: GS10789
Version number(s) of the PoA-DD(s) to which this report applies	Version 4.1
Title and GS ID (s) of the VPAs	GS10789 VPA1: Efficient and Clean Cooking for households in Somalia GSID: GS10790
Version number of the verification and certification report	04
Completion date of the verification and certification report	08/02/2022
Monitoring period number and duration of this monitoring period	First Monitoring Period 02/10/2019 to 19/01/2021
Version number of the monitoring report to which this report applies	Version 4.0 (Dated: 03/02/2022)
Activity Requirements applied	Community Services Activities
Product Requirements applied	GHG Emission Reduction & Sequestration
Coordinating/managing entity (CME)	BURN Manufacturing Co.
Host Country	Federal Republic of Somalia
Applied methodologies and standardized baselines	Technologies and Practices to Displace Decentralized Thermal Energy Consumption' (TPDDTEC), version 03.1
Mandatory sectoral scopes	3: Energy demand
Conditional sectoral scopes, if applicable	Not applicable
SDG Impact	SDG 1: No Poverty SDG 3: Good Health and Well Being SDG 7: Affordable and Clean Energy SDG 8: Decent Work and Economic Growth SDG 13: Climate Action
Name and UNFCCC reference number of the VVB	E-0052: Carbon Check (India) Private Ltd.
Name, position and signature of the approver of the verification and certification report	Amit Anand, CEO 

SECTION A. Executive summary

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Introduction:

BURN Manufacturing Co. (the CME) has appointed the VVB, Carbon Check (India) Private Ltd. (CC IPL) to perform the combined validation with first verification/16/of the large scale VPA titled “GS10789 VPA1: Efficient and Clean Cooking for households in Somalia” (hereafter called “the VPA”). This report summarises the findings of the verification of the VPA, performed on the basis of relevant applicable Gold standard for global goals (GS4GG), as well as criteria given to provide for consistent project operations, monitoring and reporting and compliance with host country criteria and other relevant UNFCCC CDM/(GS4GG) criteria.

The VPA deploys efficient improved charcoal cookstoves (ICS), known as ‘Jikokoas’ reducing woody biomass consumption for urban and peri-urban households in the Federal Republic of Somalia. The PoA is a voluntary action by the CME.

Objective:

Verification is the periodic independent review and ex-post determination of both quantitative and qualitative information by a Validation & verification body (VVB) of the monitored reductions in GHG emissions that have occurred as a result of the registered GS project activity during a defined monitoring period.

Certification is the written assurance by a Validation & verification body (VVB) that, during a specific period, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the “GS10789 VPA1: Efficient and Clean Cooking for households in Somalia” in the host country “Somalia” for the period 02/10/2019 to 19/01/2021 (including both the days).

The purpose of verification is to review the monitoring results and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data and used to confirm the reductions in anthropogenic emissions by sources, is sufficient, definitive and presented in a concise and transparent manner. CC IPL’s objective is to perform a thorough, independent assessment of the registered project activity.

In particular, the monitoring plan, monitoring report and the project’s compliance with relevant GS and host Party criteria are verified in order to confirm that the component project/s has/have been implemented in accordance with the previously registered project design and conservative assumptions, as documented. It is also confirmed if the monitoring plan is in compliance with the registered/revised VPA DD and the approved monitoring methodology.

Scope:

The scope of the verification is:

- To verify the project implementation and operation with respect to the registered/included VPA-DD.
- To verify the implemented monitoring plan with the registered/included VPA-DD or approved revised VPA-DD and applied baseline and monitoring methodology.
- To verify that the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification shall ensure that the reported emission reductions are complete and accurate, in order, to be certified.

The verification comprises a review of the monitoring report covering the monitoring period from 02/10/2019 to 19/01/2021 and based on the registered/included VPA-DD including the monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participant.

The verification team assigned by the VVB concludes that the PoA DD /B03/, VPA 10790 /B03/, as described in the VPA-DD and the monitoring report /2/, meet all relevant requirements of the GS4GG requirements /B08/ and UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M & P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the GS4GG requirements /B08/ and CDM VVS for PoAs requirements Version 03.0 /B01-1/.

The component project activities were correctly implemented according to selected monitoring methodology, monitoring plan and the approved revised VPA-DD/s. The monitoring system was implemented, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and remote interviews, the verification team confirms that the VPA has resulted in 309,201tCO₂e emission reductions during the first monitoring period.

CC IPL, as a VVB, is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation	Involvement in			
						Desk/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader / Technical Expert	IR	Singh	Vikash Kumar	CC IPL	X		X	X
2.	Local Expert	ER	Hersi	Abdillahi Mohamed	CC IPL	X		X	
3.	Trainee Assessor	IR	Suman	Priya	CC IPL	X		X	X

B.2. Technical reviewer and approver of the verification report

No.	Role	Type of resource	Last name	First name	Affiliation
1.	Technical reviewer	IR	C.	Indumathi	CC IPL
2.	Approver	IR	Anand	Amit	CC IPL

Audit Team Experience:

The team composition is linked to the methodology and local experience in the host country.

Vikash Kumar Singh: Qualified lead assessor and internal technical reviewer for offset projects validations and verifications under CDM, VCS and Gold Standard (GS) and actively been involved in the validation and verification or internal technical review of more than 200 GHG offset projects. He is qualified as technical expert for TA 1.2, 3.1, 4.1, 13.1 and 13.2 under CDM. He has undergone extensive training in the validation and verification of carbon offset projects including the accreditation requirements for the VVBs. He has also received accreditation from the California Air Resources Board (ARB) under Executive Order H2-13-174 as a GHG offset lead verifier for carbon offsets projects and is a specialist for the livestock protocol. Currently, he is employed with Carbon Check in the capacity of Compliance Officer. He holds a Bachelor of Science degree in Environment & Water Management and Master of Science degree in Environmental Management. He has been involved in number of GS validation and verification projects (as internal technical reviewer and team leader) for e.g. Up Energy's Improved Cookstove Carbon Project, Uganda with GS reference number GS 1044, Dissemination of Fuel Efficient Biomass Stoves and Water Purification Systems in Tanzania with GS reference number GS 850. He has also attended Several Gold Standard VVB webinar training and also webinar on GS4GG and passed the online examination under GS4GG. He was also involved as validation and verification assessor in the following Gold Standard Projects: GS 1078, GS 1044, GS 976, GS 850, GS 916 PoA (GS 1231 (VPA 01) GS 1029 (VPA 02), GS 1030 (VPA 03), GS 1031 (VPA 04) and GS 4364.

Abdillahi Mohamed Hersi: is an appointed Local Expert for Somalia. He has over forty years professional experience including project management techniques, preparation of project proposals for soliciting funds for international organizations' projects. Extensive experience in working with aid organizations such as Save the Children and Care International and UN-Habitat, and ICRC. Special emphasis of Verification and Validation of quality Assurance of the Higher Education Institutions (HEIs) in Somaliland.

Priya Suman: Priya is qualified as Trainee Auditor in TA 1.2, 3.1 and 13.1. She has also attended Several Gold Standard VVB webinar training including training on GS4GG.

Indumathi C: She is an appointed Team Leader /Technical Expert for technical area TA 1.1, 1.2, 3.1, 13.1 & 13.2 and Technical Reviewer. She is having more than 12 years of experience, she is certified Energy Manager, Bureau of Energy Efficiency, Govt. of India. She carried out technical reviews for climate change mitigation projects under different carbon credit mechanisms (UNFCCC, Gold Standard and Voluntary Carbon Standard) for various sectors like renewable energy (solar, wind, hydro, biomass), energy efficiency (cook stoves) and waste to energy (biogas).

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human Error: Recording and reporting of the information in the ER spreadsheet.	Medium	All the input data in the ER spreadsheet including sales database, determination of parameter for efficiency testing including data calculation. This includes all the parameters to be	The risk was mitigated by the training of the personnel involved in the data capture, calculation and by following the monitoring responsibilities. The training records were reviewed which were also confirmed during the remote

			<i>monitored ex-post as per the PoA-DD/VPA-DDs /B03/.</i>	<i>interviews. Verification team, based on the above, confirms that the risk is appropriately mitigated.</i>
2.	<i>Information System: Use of spreadsheets without adequate controls related to data changes/updates, version tracking, traceability, security</i>	<i>Medium</i>	<i>The data is recorded in the spreadsheets based on the raw data collected during the survey. The access to the spreadsheets for calculation of ERs, monitoring and sales database and Stove efficiency testing records is controlled.</i>	<i>The identified risk was mitigated by managing access to the records. It was confirmed through interviews that the raw data is collected by the field personnel and then transmitted and stored electronically to the CME's office. The data quality control is maintained by the CME.</i>
3.	<i>Accuracy of the measuring equipment</i>	<i>Low</i>	<i>Check the calibration records for the measurement equipment used for efficiency test.</i>	<i>The risk due to accuracy of the measuring equipment was ensured by planning to check calibration certificates of the measuring equipment used for stove efficiency (water boiling tests).</i>
4.	<i>Competence of personnel involved in conducting standardized tests viz., WBT</i>	<i>Medium</i>	<i>Interview of the personnel involved and check the training records / accreditation certificates (applicable in case of institutions) involved in conducting such tests.</i>	<i>The risk was mitigated by reviewing the training records of the personnel involved in conducting such tests and by following the monitoring responsibilities. For institutions involved in conducting such tests their accreditation certificates were checked to establish their competence for conducting such tests. The training records and certificates were reviewed which also confirmed during the interviews.</i>
5.	<i>Sample</i>	<i>Medium</i>	<i>Sample size is suitable and the surveyed households at the VPA level are random.</i>	<i>Cross-check the procedure to identify the sample size against the sampling guideline and standard and confirm the sample size is calculated correctly.</i>

C.2. Consideration of materiality in conducting the verification

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The threshold of materiality was evaluated based on §13 of "Guideline: Application of materiality in verifications" Version 02.0 /B07/ and §305 of CDM VVS for PoAs, version 03.0 /B01-1/. It was concluded that the materiality threshold applicable to the project activity based on actual emission reductions achieved is 5% of 309,201tCO₂e which is equal to 15,460 tCO₂e.

In planning the verification, the verification team took cognizance of §11 and 12 of the "Guideline: Application of materiality in verifications" Version 02.0 /B07/. A materiality threshold of 15,637 tCO₂e is determined in line with §306 (d) of CDM VVS for PoAs, version 03.0.

Based on the above, activities in which risks were assessed were:

1. Monitoring system including the data input procedure (including relevant personnel and applicable template forms used)
2. Copy of the agreement between household and Project Participant (s) (origin of data)
3. Stove unique ID system

4. ER sheet (application of data)
5. Data flow
6. Data control procedures
7. Monitoring survey records
8. Stove efficiency test (WBT) records

In conducting the verification, VVB took cognizance of §13-17 of the “Guideline: Application of materiality in verifications” Version 02.0 /B07/ and based on the input of data from different sources checked through sampling of records during remote interviews. Data flow was checked through electronic database /6/ and ER sheet /4/. The competence of the personnel involved in conducting the stove efficiency testing, recording of data and calculation of the emission reductions data has been checked by the verification team by means of remote interviews.

The risks identified can be mitigated through cross check with all sets of documents. The verification team performed the following checks in order to mitigate the effects of the above-identified sources of error:

Mitigation of Human error risks: The verification team mitigated the risk by checking the training records of the personnel and assessing their competencies, skills, monitoring / testing procedure followed, understanding of the monitoring survey form / WBT protocol and testing procedure etc. during the remote interviews. Further, data was crosschecked with the ER calculation spreadsheet /4/ and the raw data.

Mitigation due to error in Information system: Verification team by conducting interviews with the personnel responsible for such activities mitigated the risk due to error in information system. It was confirmed through interviews that the raw data is collected by the field personnel and then transmitted and stored electronically at CME’s office. The data quality control is maintained by the CME.

Accuracy of the measuring equipment: The risk due to inaccuracy in measurements was mitigated by reviewing calibration certificates of all the project equipment.

Competence of personnel involved in conducting standardized tests viz., WBT: Verification team has reviewed the abilities, qualifications and recognition of involved personnel and institutions of the measuring team involved in the WBT. The WBT has been carried by BURN Manufacturing Lab, located in Ruiru Kenya. The WBT has been carried out by the well-trained personnel. The verification team based on remote interviews confirms that the team was qualified to carry out the WBT in line with the protocol.

Mitigation due to error in Sampling: The verification team mitigated the risk by checking the ER sheet /04/ for VPA, list of random samples /5/ generated for monitoring surveys for VPA and sample size calculation sheet /04/ and interviews with personnel responsible for the same.

In conducting the verification, VVB took cognizance of §13-17 of the “Guideline: Application of materiality in verifications” (version 02.0) /B07/ and based on the input of data from different sources checked through sampling of records during remote interviews. Some mistakes were identified and subsequently corrected. These findings are detailed in Appendix 4 and they were successfully closed. Therefore, related identified mistakes as listed in findings in Appendix 4 to this report have been determined to be immaterial. All identified inconsistencies and clarification requests have been successfully closed.

Based on the assessment carried out, CCIPL confirms with a reasonable level of assurance that the claimed emission reductions are free from material errors, omissions or misstatements.

SECTION D. Means of verification

D.1. Desk/document review

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The verification was performed primarily based on the review of the Monitoring report /2/ and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology /B02/. Documents reviewed or referenced during the verification are listed in Appendix 3 below.

D.2. On-site inspection

As per the Gold standard requirements and in the view of current situations where travel restrictions have been put in place for domestic as well as international travel around the world due to COVID-19 pandemic, the VVB has decided to conduct the validation remotely (without on-site inspection) for the project in accordance with the provisions of paragraph 4.1.1. (b) of Rule Update: COVID 19: Interim Measures, which states:

“If site visit cannot be postponed due to significant impact of delaying the site visit on VVB and/or project developer due to timeline/commitment as per validation/verification or GS-VERs delivery agreement, VVB may replace mandatory on-site visits with remote audits. The audit may include but not limited to validation, verification, the inclusion of VPAs, design change review etc.” The alternative means used for the verification is remote interviews as well as document reviews. In opinion of CCIPL, the alternative means used are justified and they are sufficient for the purpose of verification. Remote interviews were performed by verification team in order to assess the following:

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Franz Thaler	Johann	mkaarbon safari (external consultant)	09/09/2021	Project implementation and operation, monitoring procedure, data and information flow	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
2	Chris	McKinney	Burn Manufacturing Chief Commercial Officer	09/09/2021	Project implementation and operation, monitoring procedure, data and information flow	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
3	Njihia	Samuel	Burn Manufacturing market Intelligence Manager	09/09/2021	Project implementation and operation, monitoring procedure, data and information flow	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
4	Martha	Jepkirui	BURN Manufacturing Co.	09/09/2021	Project implementation and operation, monitoring procedure, data and information flow	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
5	Antony	Rono	BURN Manufacturing Co. Data Scientist	09/09/2021	Project implementation and operation, monitoring procedure, data and information flow	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
6	Kithome	Felistus	BURN Manufacturing Co. Customer Care	09/09/2021	Project implementation and operation, monitoring procedure, data and information flow	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
7	Edward	Omondi	BURN Manufacturing Co. After Sales Manager	09/09/2021	Project implementation and operation, monitoring procedure, data and information flow	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi

8	maxamed	Aamina	End-user 139612093	09/09/2021	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
9	xaashi	Ayaan	End-user 139100068	09/09/2021	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
10	maxamed	Deeqa	End-user 141930024	09/09/2021	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
11	Ibrahim	Deeqo	End-user 137469867	09/09/2021	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
12	faraax jamac	Dhoofa	End-user 303996478	09/09/2021	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
13	ibrahim muxumed5	Xamilo	End-user 141693455	09/09/2021	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
14	Goox	Hodan	End-user 141028220	09/09/2021	Usage monitoring survey+KPT	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi

15	Kaltuun hysi	Osman	End-user 139648288	09/09/2021	Usage monitoring survey+KPT	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
16	Jamac Diriye	Amina	End-user 135209522	26/01/2022	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
17	Muxumed	Amina	End-user 134259643	26/01/2022	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
18	Maxamed cowale	Caasha	End-user 134369156	26/01/2022	Usage monitoring survey+ KPT	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
19	Ibrahim Cali	Fartun	End-user 135883477	26/01/2020	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
20	Sicial Gele	Hani	End-user 303131520	26/01/2020	Usage monitoring survey + KPT	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
21	Faarax Xuseen	Najma	End-user 134632019	26/01/2022	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi

22	Sahal	Rooda	End-user 137956579	26/01/2022	Usage monitoring survey + KPT	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi
23	Mohamed	Roodas	End-user 130718675	26/01/2022	Usage monitoring survey	Vikash Kumar Singh, Priya Suman, Abdillahi Mohamed Hersi

D.4. Sampling approach

>> VVB has used sampling during verification for checking the Usage Survey and Impact Parameters

Considering the sampling standard (version 09.0) /B06/, a sample size for 8 households were chosen (with no non-responses) for the project activity. A sample size of 8 was required, based on an AQL of 0.5 % and UQL of 20 %, the producer risk used is 5 % and consumer risk used was 20 %. Acceptance number I thus determined for the sample is 0.

Verification team for its acceptance sampling has opted 8 sample. Verification team has chosen 16 random samples, The additional 8 samples is to cover any non-response.

Out of these 16 samples, verification team could not get few of the respondents at home and hence they were considered non-response. The details of the sample interviewed are listed in section D.3 (under the list of interviewed person). No discrepancy was found in any of the samples and thus c=0, i.e. no discrepant records were observed. Thus, PP's set of records has been accepted in line with §32 of the sampling standard (version 09.0) /B06/. For the impact parameters questionnaire were prepared and was used during the survey by the CME. Verification team has cross verified these sample documents during the remote interview.

Data collection for usage/monitoring survey was conducted from 1st March 2021 to 12th April 2021. Some additional usage/monitoring surveys were conducted in the period between December 08th to December 12th, 2021 in order to comply with the minimum of 6 months usage criterion for age group 0-1 stoves and minimum of 18 months usage criterion for age group 1-2 stoves.

For thermal efficiency of the stoves WBT were conducted. As the monitoring parameter under consideration is determined by standardized test procedures, /14/ the QA/QC and calibrations are at the test conduction by the measuring team. Accordingly, the verification team has focused on abilities, qualifications and recognition of involved personnel and institutions of the measuring team involved in the WBT. Verification team interviewed the personnel responsible for carrying out WBT it was ascertained that the personnel are competent to carry out the standardized tests and follow the instructions and requirements of protocol for carrying out such tests. Furthermore, the Verification Team also reviewed the training certificates of the personnel and ascertained that they are trained before undertaking the WBT to refresh their skills /13/. The same is found acceptable by Verification Team. The monitoring equipment used for conducting the stove efficiency tests are weighing scale, digital thermometer, and oven. Calibration certificates of all these equipment /07/ were checked by the verification team. Furthermore, all the 13 households, where the WBTs were conducted has confirmed /05/ that their stoves were taken by the CME for conducting water boiling tests and they received a new cookstoves as a replacement. The replacement records /06/ were also verified by reviewing the database during the remote interviews.

SECTION E. Verification findings

E.1. General

E.1.1. Compliance of the monitoring report with the monitoring report form

Means of verification	DR, I
Findings	-
Conclusion	CME has used the Monitoring report form for GS4GG Monitoring report version 1.1/B03/. Verification team confirms that the latest available version of the Monitoring report template has been used by the CME and the MR is in compliance of the monitoring report form and instructions therein. This confirms compliance with the §336 and §337 of CDM VVS for PoAs, version 03.0 /B01-1/and GS4GG requirements /B08/.

E.1.2. Remaining forward action requests from validation and/or previous verifications

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FAR # 1: The PP is requested to clarify how the multiple stoves and the time gap from sales to actual usage at households are monitored and considered in the ER estimation.

FAR # 2: At time of verification, the PP shall demonstrate that their distributed stoves are used by the people in urban area or the people who used charcoal in their baseline scenario. Please refer to the section B.1.1 of the monitoring report for the CME response of aforementioned FARs

E.2. Programme of activities

E.2.1. Compliance of the programme implementation with the registered programme design document

Means of verification	Document Review, Interview
Findings	--
Conclusion	CCIPL by means of document review and remote interview, assessed that all the features (technology, project equipment and monitoring) of the registered PoA DD /B03/ are in place and that the project participants have operated the project as per the registered/ PoA DD /B03/. The location of the project activity is clearly defined in the registered PoA DD /B03/. PP has implemented a project in Somalia which seeks to improve health and incomes throughout Somalia. These efficient cookstoves translate into considerable charcoal savings when compared to traditional cookstoves. The Jikokoa stove's design takes into account the local cooking culture in the project area to ensure that improvements in technology and improved standards of living do not come at the expense of cultural traditions. The technical specification of the stoves are as below. Stove Model: Jikokoa G3.5 Stove body: CRCA Carbon Steel painted high gloss black epoxy powder coat High power thermal efficiency (average of cold start and hot start): 48.1% Power output: 1.99 kW Stove Model: Jikokoa Xtra (G4) Stove body: CRCA Carbon Steel painted high gloss black epoxy powder coat High power thermal efficiency (average of cold start and hot start): 44.6% Power output: 2.36 Based on review of the documents and remote interview, verification team confirms that up-to the reported monitoring period, the CME has distributed //06/ total 78,902 improved cookstoves.

	As verified during the remote interviews, the project implementation and operation, the physical features of the project stoves complies with the registered project design document /B03/. Verification team has checked the information in the monitoring report /02/ and compared against the registered/ VPA DD /B03/ and found consistent. During the remote interviews, the verification team has checked the project location, implementation, technology applied, project equipment, physical features and monitoring system against the information in the registered/ /B03/. The verification team confirms actual operation of the VPAs and PoA implementation and operation in compliance with the PoA DD and VPA DD /B03/ in order to confirm the compliance of § 338, § 339 and § 340 of CDM VVS for PoAs, Version 03.0 /B01-1/ and GS4GG requirements /B08/.
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E.2.2. Implementation and operation of the management system

Means of verification	Document Review, Interview
Findings	--
Conclusion	The PoA management system including the record-keeping system has been explained in the section B of the PoA DD /B03/. During the course of verification, verification team based on review of provided documents and remote interviews has assessed this management system. Verification team evaluated the management systems in place to implement the monitoring of the project activity. This included the roles and responsibilities of the monitoring staff, data collection, transfer and aggregation procedures, data storage and archiving procedure for the monitoring system. Monitoring surveys were conducted by a team of 21 Enumerators which were trained for the data collection by BURN team to ensure understanding of usage/monitoring requirements, data collection procedure, and specific requirements pertaining to KPTs and WBTs was conducted by BURN Manufacturing Lab, located in Ruiru Kenya, /7/ In order to ensure completeness and accuracy of monitoring information, the CME operates and manages an electronic data management system that stores information on and track all efficient cooking technologies under the VPA. It was confirmed during the remote interviews and by checking the monitoring system that all the roles and responsibilities related to monitoring are fulfilled by representatives of CME. The responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan /B03/. The details about monitoring system have been provided in the Monitoring report /2/. The data flow and management and reporting structure was also checked during the remote interviews. The verification team has also checked the Grievance Mechanism /11/ and found it to be in place The verification team confirms that the monitoring management system of the CDM PoA is in place, with the responsibilities properly identified and in place. This confirms the compliance of § 338 (a) and § 345 (b) (iv) of CDM VVS PoAs. Version 03.0 /B01-1/ and GS4GG requirements /B08/.

E.2.3. Post-registration changes

E.2.3.1 Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

>> The project has requested and gotten approval from the Gold Standard to deviate from the registered monitoring plan. The approval has been granted under the COVID-19 interim measure. The Deviation Reference Number is "COVID_DEV 185". The temporal changes are as follows: The PD is allowed to partially carry out usage rate monitoring remotely by complying with the following requirements (and taking into consideration the GS recommendations):

- a) The project must ensure that it applies conservative values for the usage rate (through approaches described in below).
- b) The final usage rate value (determined based on both the physical vs remote monitoring) shall be weighted to be representative of the quantity of project technologies of each age being credited in each project scenario.

VVB response: Based on the review of excel sheet "20211022 Database Technology Days and Stoves in Use_v2.1 .xlsx", worksheet tab "Summary", the verification team confirms that the final usage rate value (determined based on both the physical vs remote monitoring) has been weighted to be representative of the quantity of project technologies of each age being credited in a given project scenario.

- c) The developer shall use the sample for households for usage survey in line with applied methodology requirements, for example, for age group– 0-1 - cookstoves operating within their first year, the project developer shall only consider those cookstoves for monitoring usage survey whose operational duration is demonstrably, at minimum, 6 months.

VVB response: The verification team confirms that on the basis of review of column B, worksheet tab "KOB0 Usage Survey Results"/ 3SEP2021 Jikokoa Somalia reporting template - Usage Monitoring 2021 -V8.xlsx. that all stoves making part of age group 0-1 have at least 6 months of usage and stoves of age group 1-2 have at least 18 months of usage The minimum total sample size shall be at least 100, as required by the methodology. The sample size for carrying our usage surveys for each vintage shall be increased from a minimum of 30 to 40 or higher.

VVB response: The CME has meet the requirement of methodology as the total sample size in the usage survey is 114 households, 64 of age group 0-1 and 50 of Age group 1-2.

- d) The Monitoring Report and ER/monitoring spreadsheets shall clearly record and differentiate between the households monitored physically (along with KPT monitoring) and monitored remotely.

VVB response: Based on the review of ER spreadsheet "3SEP2021 Jikokoa Somalia reporting template - Usage Monitoring 2021 - V8.xlsx/worksheet tab "Usage Analysis" verification team confirms that the excel sheet clearly differentiates between usage surveys carried out remotely and physical visit.

S. No.	Requirements for the VVB	Justification as how it has been addressed
1.	<i>The VVB shall cross-verify the results by listening to the recorded conversation and/or speaking With. randomly selected end-users.</i>	VVB has cross-verified the results of monitoring survey by speaking with randomly selected end-users. Please refer section C.3 and C.4 of this report for details of acceptance sampling opted by the VVB.
2.	<i>VVB shall ensure the completeness and conservativeness of the monitored parameters at the time of verification and issuance review.</i>	VVB confirms the completeness and conservativeness of the monitored parameters at the time of verification and issuance review. Please refer to section "Annex 2: Assessment of data and parameters monitored" of this report for assessment of individual

		ex-post parameters.
3.	VVB may use alternative means to verify project usage claims and ensure conservativeness; for example; accounting the manufacturer specifications or similar stove specifications on the durability of the stove; project maintenance records; etc.	VVB confirms that during remote interview VVB has checked the project usage claims and conservativeness of data; by checking and accounting the manufacturer specifications or similar stove specifications on the durability of the stove; project maintenance records; etc.

E.3. Component project activities

E.3.1. Compliance of the VPA implementation with the included VPA design document

Means of verification	Document Review, Interview
Findings	--
Conclusion	As a part of the remote interviews, the verification team was able to confirm that the Programme of activities and the component project activities' implementation are in accordance with the project description contained in the PoA and included VPA-DD/B03/. It was confirmed that BURN Manufacturing Co. is the Coordinating/Managing Entity for the PoA. The actual component project activity are in line with the VPA DD /B03/. The information (including data and variables) provided in the MR /2/ is in line with the details provided in the VPA DD /B04/. CC IPL's verification team considers the project description of the project contained in the MR /B04/ to be complete and accurate. The VPA comply with the relevant methodology, tools, forms and guidance. The project has been implemented as described in the VPA DDD. There are no changes from the project design, except that no stoves of the model Ecoa Char MMJ have been distributed yet. At the end of the monitoring period, 78,902 stoves had been distributed./06/ In accordance with §340 of CDM VVS for PoAs, version 03.0 /B01-1/, the verification team confirms that there is no information (data and variables) in the current monitoring period that are different from that stated in the approved revised VPA-DDs which has caused an increase in the estimates of GHG emission reductions. Verification team has assessed the project in order to check any proposed or actual changes to the project design in accordance with §267 of CDM VVS for PoAs, Version 03.0. In the opinion of CC IPL, there is no change to the project design. CC IPL's verification team confirms that the VPAs are implemented within the boundary of the PoA as described in the PoA-DD. In the opinion of CC IPL, there is no change to the project design. CC IPL's verification team confirms that the VPA is implemented within the boundary of the PoA as described in the PoA /B04/ and the implementation and operation of the project activity has been conducted in accordance with the description contained in the PoA DD and VPA DD. The verification team took cognizance of § 338, § 339 and § 340 of the CDM VVS for PoAs, version 03.0 /B01-1/ to conduct the verification and remote interviews in accordance with the § 319 and 320 of the CDM VVS for PoAs, version 03.0 /B01-1/ and GS4 GG requirements /B08/.

E.3.2. Compliance of the registered monitoring plan with applied methodologies and standardized baselines

Means of verification	Document Review, Interview
Findings	--
Conclusion	The verification team is able to confirm that the monitoring plan contained in the VPA DD is in accordance with the approved methodology applied by the project activity, i.e. (TPDDTEC), version 03.1 /B02/. The verification took cognizance of § 341 to § 343 of CDM VVS for PoAs, Version 03.0 /B01-1/ and GS4GG requirements /B08/.

E.3.3. Compliance of monitoring activities with the registered monitoring plan

The monitoring has been carried out in accordance with the monitoring plan contained in the VPA DD /B03/. This conclusion has been made based on assessment below.

E.3.3.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	Document Review, Interview
Findings	--
Conclusion	Verification team confirms that the Data and parameters fixed ex ante are in compliance with the VPA DD /B03/ and the monitoring plan. Please refer Appendix 5 for detailed analysis of the ex-ante parameters. The verification took cognizance of § 344 of CDM VVS for PoAs, Version 03.0 /B01-1/ and GS4GG requirements /B08/.

E.3.3.2. Data and parameters monitored

Means of verification	Document Review, Interview
Findings	--
Conclusion	The Verification team confirms that the Data and parameters monitored are in compliance with the VPA DDs and the monitoring plan /B03/. A complete assessment of each of the monitored parameters has been provided in Appendix 6 of the verification report. The verification took cognizance of § 344, § 345(c), §356 and §357 of CDM VVS for PoAs, Version 03.0 /B01-1/ GS4GG Requirements/B08/.

E.3.3.3. Implementation of sampling plan

Means of verification	Document Review, Interview
Findings	--
Conclusion	The total population of the stoves distributed under the VPA is 78,902 however the stove in use under the VPA considered for the monitoring period is 43,909 .The monitoring parameters required to be monitored through the sampling plan are: 1. Usage rate in project scenario p during year y; Up,y 2. Quantity of fuel that is consumed in project scenario p during year y; Pp,y 3. Leakage in project scenario p during year y; LEp,y 4. Efficiency of the ICS of each type i being deployed as part of the project activity; $n_{new,i}$ 5. Adjustment to account for any continued use of preproject devices (baseline stove) in the project scenario during the year y; μy VVB based on the document review and remote interview confirms that CME has applied simple random sampling approach. Random generator has been used to randomly select households. Selected households were contacted via telephone to check the availability for physical visits and KPTs as well as conducting telephone usage surveys. Furthermore, Adjustment to account for any continued use of preproject devices has been taken into account in the project KPTs As per the applied methodology, the minimum sample size is 100. However, as per the deviation approval by SustainCert /15/, the minimum number per age group

was determined to be 40. The project developer sampled 64 of age group 0-1 and 50 of Age group 1-2..
As confirmed by the CME out of sampled households, 55 were phone calls, and 59 physical visits were conducted across both age groups.

As confirmed by the CME a total of 40 households were replaced due to unreachability of the households at the time of the surveys, while another 28 households declined to participate in the surveys for various reasons. 8 households with stoves of age group 1-2 were skipped, because their stoves were less than 18 months in use.

Results:

Usage survey and project KPT

Type of survey	Period of survey	Actual number of samples conducted	Achieved precision
Usage/monitoring survey	1st March 2021 to 12th April 2021 and December 08th to December 12 th 2021	114	Not applicable. Minimum sample size of 100
Project KPT	27th March 2021 to 21st April 2021	60	12.3% Please note that the precision level was calculated based on the fuel savings. Since an unpaired sampling approach has been chosen, considering the results of baseline and project KPT.

Water Boiling Tests

Stove type	Period of WBT	Actual number of samples conducted	Achieved precision
Jikokoa Classic	12/04/2021 to 23/06/2021	8 Age group 0-1: 4 Age group 1-2: 4	Age group 0-1: 2.42% Age group 1-2: 1.61%
Jikokoa Xtra	21/06/2021 to 22/09/2021	5 Age group 0-1: 4 Age group 1-2: 1	Age group 0-1: 2.40% Age group 1-2: 0.25%

The actual sample size in all the cases was not less than either the calculated sample size or the minimum sample size as per the PoA-DD /B03/.

The verification team has checked and found that for all the parameters meets the confidence/precision and inline with the VPA DD.

	The sampling plan implemented by the CME is in accordance with the applied approved monitoring methodology /B02/ and the PoA-DD/ VPAs /B03/. The CME has appropriately performed Simple Random Sampling procedure in line with the applied methodology and best suited for this type of project. The verification took cognizance of § 346 of CDM VVS for PoAs, Version 03.0 /B01-1/and GS4GG Requirements /B08/.
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E.3.4. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	Document Review, Interview
Findings	--
Conclusion	The stove efficiency testing has been determined by WBTs conducted in line with the guidance provided by the CME in the VPA-DDs /B04/ /7/. A series of performance tests were conducted by the BURN Manufacturing Lab, located in Ruiru Kenya, on Jikokoa. The tests were conducted between 07th April, 2021 and 22nd September, 2021. A total of eight (8) Jikokoa G3.5 and five (5) Jikokoa Xtra stoves which had been sampled from registered customers, were collected and tested during this exercise. The stoves to be tested had been picked by random sampling from the registered customer's database and were representative in age groups of the whole population. During the remote interviews, it was confirmed that the BURN Manufacturing Lab has relevant experience and competence in monitoring cookstove. The monitoring equipment used for conducting the stove efficiencies by WBTs are thermometer, weighing machine and oven. All the monitoring equipment were duly calibrated and hence deemed acceptable /7/. The appropriate QA/QC procedures have been followed for the monitoring parameters. The verification took cognizance of section 10.2.6 of CDM VVS for PoAs, version 03.0 /B01-1/ and GS4GG requirements /B08/.

E.3.5. Assessment of data and calculation of emission reductions or net removals

In line with the requirement of §356 and §357 of CDM VVS for PoAs, Version 03.0 /B01-1/, the verification team has reviewed the Monitoring report /02/ and ER spread sheets /4/ to check the arithmetic calculation of the emission reductions. The equation used for the calculation is compared with those provided in the VPAs /B04/ and the methodology (TPDDTEC), version 03.1 /B02/.

E.3.5.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	Document Review, Interview
Findings	--
Conclusion	The equations for baseline emissions, as provided in the Monitoring report /1/ and confirmed with the VPAs /B03/ and the methodology (TPDDTEC), version 03.1 /B02/, are: SDG 13: Climate Action $ER_y = \sum_{b,p} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b, fuel} * (f_{NRB,b,y} * EF_{fuel, CO_2} + EF_{fuel, nonCO_2})) - \sum LE_{p,y}$ Where: $\sum_{b,p}$ Sum over all relevant (baseline b/project p) couples $N_{p,y}$ Cumulative number of project technology-days included in the project database for project scenario p against baseline scenario b in year y $U_{p,y}$ Cumulative usage rate for technologies in project scenario p in year y, based on cumulative adoption rate and drop off rate revealed by usage surveys (fraction) $P_{p,b,y}$ Specific fuel savings for an individual technology of project p

	against an individual technology of baseline b in year y, in tons/day, as derived from the statistical analysis of the data collected from the field tests f NRB,b, y Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario) NCVb,fuel Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton) EFb,fuel,CO2 CO2 emission factor of the fuel that is substituted or reduced. 112 tCO2/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel EFb,fuel,nonCO2 Non-CO2 emission factor of the fuel that is reduced LEp,y Leakage for project scenario p in year y (tCO2e/yr) $ER_{y,2019} = 12,857.13 * 0.8898 * 3.816 * (0.99 * 1.7472 + 0.1356) - 0 = 81,483 \text{ tCO}_2\text{e}$ $ER_{y,2020} = 35,859.32 * 0.8898 * 3.816 * (0.99 * 1.7472 + 0.1356) - 0 = 227,263 \text{ tCO}_2\text{e}$ $ER_{y,2021} = 71.47 * 0.8898 * 3.816 * (0.99 * 1.7472 + 0.1476) - 0 = 455 \text{ tCO}_2\text{e}$ Total ERY = 81,483 tCO2e + 227,263tCO2e + 455 tCO2e = 309,201 tCO2e $P_{p,b,y} = (P_{b,y} - P_{p,y}) * CF$ Pp,b,y = Specific fuel savings in wood equivalent Pb,y = Baseline fuel consumption Pp,y = Project fuel consumption CF = Wood-to-charcoal conversion factor $P_{p,b,y} = (1.028 - 0.392) * 6 = 3.816$ Results from this monitoring period shows that the project has achieved 309,201tCO2e emission reductions. The verification team confirms that the calculation of baseline emission and emission reductions is in accordance with the applied methodological equation. Calculations have been checked and confirmed from the ER spread sheet /4/. The verification took cognizance of § 356 of CDM VVS for PoAs, version 03.0 /B01-1/ and GS4GG requirements /B08/.
--	--

E.3.5.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	Document Review, Interview
Findings	--
Conclusion	There are no project emissions identified in the monitoring methodology /B02/ and the VPA DD /B04/ and GS4GG requirements/B08/.

E.3.5.3. Calculation of leakage GHG emissions

Means of verification	Document Review, Interview
Findings	--
Conclusion	Not applicable in this monitoring period. As per the applied methodology TPDDTEC (see e.g. Annex 5), leakage assessment is required every 2 years. Since the leakage assessment has been carried out at the time of design certification, no leakage assessment is needed at this 1 st performance certification.

E.3.5.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	Document Review, Interview
Findings	--
Conclusion	The verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in

	accordance with the pre-defined formulae from VPA DD. The total number of Ers achieved during the monitoring period is 309,201tCO₂e. In summary, verification team confirms that actual emission reduction is lower than the estimate of the VPA for the current monitoring period. The verification took cognizance of § 356 of CDM VVS PoAs, version 03.0 /B01-1/ and GS4GG requirements /B08/.
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E.3.5.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included VPA

Means of verification	Document Review										
Findings	--										
Conclusion	Comparison of the actual GHG emission reductions with the estimates in the included specific VPAs is given in the below table. <table border="1"> <thead> <tr> <th>SDG</th><th>Ex-ante value in the VPA-DDs</th><th>Actual values achieved during this monitoring period</th><th>Assessment by the verification team</th></tr> </thead> <tbody> <tr> <td>13</td><td>256,033</td><td>309,201</td><td>SDG 13, the actual value is higher than the estimated (ex-ante) value. The full year equivalent stoves credited are lower in the PDD than in the ex-post scenario, since, even though more stoves have been estimated to be distributed in year 2, year 2 only contributes with 111 days to the monitoring period. While year 1 with significantly less estimated stoves in the PDD compared to the ex-post scenario contribute with 365 days to the monitoring period.</td></tr> </tbody> </table> The verification team took cognizance of § 356 of CDM VVS for PoAs, version 03.0 /B01-1/ and GS4GG requirements /B08/.			SDG	Ex-ante value in the VPA-DDs	Actual values achieved during this monitoring period	Assessment by the verification team	13	256,033	309,201	SDG 13, the actual value is higher than the estimated (ex-ante) value. The full year equivalent stoves credited are lower in the PDD than in the ex-post scenario, since, even though more stoves have been estimated to be distributed in year 2, year 2 only contributes with 111 days to the monitoring period. While year 1 with significantly less estimated stoves in the PDD compared to the ex-post scenario contribute with 365 days to the monitoring period.
SDG	Ex-ante value in the VPA-DDs	Actual values achieved during this monitoring period	Assessment by the verification team								
13	256,033	309,201	SDG 13, the actual value is higher than the estimated (ex-ante) value. The full year equivalent stoves credited are lower in the PDD than in the ex-post scenario, since, even though more stoves have been estimated to be distributed in year 2, year 2 only contributes with 111 days to the monitoring period. While year 1 with significantly less estimated stoves in the PDD compared to the ex-post scenario contribute with 365 days to the monitoring period.								

E.3.5.6. Remarks on difference from estimated value in included VPA

Means of verification	Document review										
Findings	-										
Conclusion	Comparison and remarks on difference of the actual GHG emission reductions with the estimates in the included specific VPAs is given in the below table. . <table border="1"> <thead> <tr> <th>SDG</th><th>Ex-ante value in the VPA-DDs</th><th>Actual values achieved during this monitoring period</th><th>Assessment by the verification team</th></tr> </thead> <tbody> <tr> <td>13</td><td>256,033</td><td>309,201</td><td>SDG 13, the actual value is higher than the estimated (ex-ante) value. The full year equivalent stoves credited are lower in the PDD than in the ex-post scenario, since, even though more stoves have been estimated to be distributed in year 2, year 2 only contributes with 111 days to the monitoring period. While year 1 with significantly less estimated stoves</td></tr> </tbody> </table>			SDG	Ex-ante value in the VPA-DDs	Actual values achieved during this monitoring period	Assessment by the verification team	13	256,033	309,201	SDG 13, the actual value is higher than the estimated (ex-ante) value. The full year equivalent stoves credited are lower in the PDD than in the ex-post scenario, since, even though more stoves have been estimated to be distributed in year 2, year 2 only contributes with 111 days to the monitoring period. While year 1 with significantly less estimated stoves
SDG	Ex-ante value in the VPA-DDs	Actual values achieved during this monitoring period	Assessment by the verification team								
13	256,033	309,201	SDG 13, the actual value is higher than the estimated (ex-ante) value. The full year equivalent stoves credited are lower in the PDD than in the ex-post scenario, since, even though more stoves have been estimated to be distributed in year 2, year 2 only contributes with 111 days to the monitoring period. While year 1 with significantly less estimated stoves								

				in the PDD compared to the ex-post scenario contribute with 365 days to the monitoring period.
	1	62%	44.5%	The reported actual average charcoal savings are lower than expected (44.5% vs. 62%), however still within a reasonable margin.
	3	80%	79.8%	The reported health benefits are only marginally less (79.8%) than what has been estimated (80%), hence immaterially different.
	7	35,717	43,909	The actual value is 23 % higher than the estimated (ex-ante) value. This is due to higher actual credited project technology days (i.e. more full year equivalent stoves credited).
	8	25	49	For SDG 8, the actual value is higher than the estimated (ex-ante) value. More jobs have been created than estimated. Since the actual workload for distribution/sale, follow up, sensitization, awareness raising, monitoring has been higher than expected. For all other SDGs, the actual values are lower than the estimated (ex-ante) values.

E.3.6. Assessment of reported sustainable development co-benefits

Means of verification	Document review
Findings	-
Conclusion	Please refer appendix 6 for the detailed benefits

SECTION F. Internal quality control

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The final verification report passed a technical review . A technical reviewer qualified in accordance with the CCIPL's qualification scheme for GS4GG requirements and CDM has performed the technical review.

SECTION G. Verification opinion

>>

Carbon Check (India) Private Ltd. has performed the first verification of the GS Programme of Activities "ECO_A_BURN multi-country Clean Cooking Programme" for the VPA "GS10789 VPA1: Efficient and Clean Cooking for households in Somalia" in Somalia (hereafter referred to as "Programme of Activities or PoA")

The verification team assigned by the VVB concludes that the PoA DD/B03/, VPA DD /B03/, and the Monitoring report /02/, meet all relevant GS4GG requirements /B08/ and requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M& P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS for programme of activities requirements version 03.0 /B01-1/.

Verification methodology and process:

The Verification team confirms the contractual relationship signed on 30/10/2020 between the VVB, Carbon Check (India) Private Ltd. and the Co-ordinating Managing Entity/ Project Participant, (BURN Manufacturing Co.). The team assigned to the verification meets the Carbon Check (India) Private Ltd.'s internal procedures including the UNFCCC and GS requirements for the team

composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and Carbon Check's procedures and requirements.

The verification is being performed as per the requirements described in the CDM VVS for PoAs, version 03.0 /B01-1/ and GS4GG requirements and constitutes the review and completion of the following steps:

- Reviewing the PoA DD/ and VP A DD /B03/, including the monitoring plan and the corresponding validation report/s /B03/;
- Desk review of the validation report, MR and other relevant documents including documents related to the project activities in emission reductions
- Review of the applied monitoring methodology (TPDDTEC), version 03.1; /B02/
- Review of any CMP and EB decisions, clarifications and guidance;
- Remote assessment interviews (09/09/2021)
- Resolution of CARs and CLs raised during verification
- Issuance of Verification Report

The component project activities were correctly implemented according to the selected monitoring methodology, monitoring plan and the VPA DD. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and remote interviews, the verification team confirms that the VPA has resulted in the 309,201tCO₂e emission reductions during the first monitoring period.

CC IPL as a VVB is therefore pleased to issue a positive verification opinion in the attached Certification statement.

SECTION H. Certification statement

>>

Carbon Check (India) Private Ltd., the VVB, has performed the verification of the GS Programme of Activities, GS10789 VPA1: Efficient and Clean Cooking for households in Somalia. which involves highly efficient improved charcoal cookstoves (ICS), known as 'Jikokoas' reducing woody biomass consumption for urban and peri-urban households in the Federal Republic of Somalia. The CME and VPA implementer are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the component project activity/ies. It is VVB's responsibility to express an independent verification statement on the reported GHG emission reductions from the component project/s. The VVB does not express any opinion on the selected baseline scenario or on the validated and registered PoA-DD/VPA-DDs. The verification is carried out in-line with the CDM VVS and GS4GG requirements.

The verification was performed to identify the compliance of the component project/ies with implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, through obtaining evidence and remote interviews that included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and ii) the collection of evidence supporting the reported data.

The verification is based on:

- PoA DD, Version 4.1 dated 13/10/2021;
- VPAs included in the PoA and its monitoring plan for the monitoring period 02/10/2019 to 19/01/2021.
- Approved monitoring methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption' (TPDDTEC), version 03.1;
- GS Validation report /B03/ for the PoA and the VPA/s;

- Monitoring report Version 2.0 dated 23/10/2021
- This statement covers verification period from 02/10/2019 to 19/01/2021.

The VVB had raised zero (00) clarification requests and Four (04) corrective action request and (02) FARs

The VVB considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the monitoring methodology and the monitoring plan contained in the VPA DD.

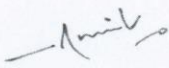
The VVB, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 309,201tCO₂e and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records. The break-up of emission reduction up-to 02/10/2019 to 19/01/2021 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 onwards	Emission reductions from 1 January 2021
Emission reductions (t CO ₂ e)	0	308,746	455

Appendix 1. Abbreviations

Abbreviations	Full texts
AQL	Acceptable Quality Limit
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CAR	Corrective Action Request
CC IPL	Carbon Check (India) Private Ltd.
CER	Certified Emission Reduction
CIRCODU	Center for Integrated Research and Community Development Uganda
CL	Clarification Request
CME	Co-ordinating and Managing entity
VPA	Voluntary Project Activity
VPA-DD	Voluntary Project Activity Design Document
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DR	Document review
VVB	Designated Operational Entities
DVR	Draft Verification Report
EB	CDM Executive Board
EF	Emission Factor
EI	External individual
FA	Final Approval
FAR	Forward Action Request
FVR	Final verification Report
GACC	Global Alliance for Clean Cookstoves
GHG	Greenhouse gas(es)
GS4GG	Gold Standard for the Global Goals
GWh	Giga Watt Hour
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource
MP	Monitoring Period
MWh	Mega Watt Hour
MR	Monitoring Report
PoA	Programme of Activities
PoA-DD	Programme of Activities Design Document
PP	Project Participant
QC/QA	Quality control /Quality assurance
SDG	Sustainable Development Goal
TA	Technical Area
TR	Technical Review
TRF	Transition Request Form
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Limit
VVS	Validation and Verification Standard
WBT	Water boiling test

Appendix 2. Competence of team members and technical reviewers

		Carbon		CHECK					
Carbon Check (India) Private Ltd.									
<u>Vikash Kumar Singh</u>									
has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 07.0):									
For following functions:									
Validator	☒	Team Leader	☒	Technical reviewer	☒				
Verifier	☒	Technical Expert	☒	Local Assessor ¹	☒				
In the following Technical Areas:									
TA 1.1	☒	TA 3.1	☒	TA 5.2	☐	TA 9.2	☐	TA 13.2	☒
TA 1.2	☒	TA 4.1	☒	TA 8.1	☐	TA 10.1	☐	TA 14.1	☐
TA 2.1	☐	TA 5.1	☐	TA 9.1	☐	TA 13.1	☒		
									
Mr. Amit Anand									
CEO									
Date of Approval				Valid Till					
24/12/2020				24/12/2021					
Revision History of the Document									
26/12/2014					Initial Adoption				
24/12/2015					Annual Revision				
20/01/2016					Interim Revision for office address change				
23/12/2017					Annual Revision				
24/12/2017					Annual Revision				
24/12/2018					Annual Revision				
24/12/2019					Annual Revision				
01/03/2020					Interim Revision for office address change				
01/09/2020					Interim Revision for CCIPL logo change				
24/12/2020					Annual Revision				
¹ India, South Africa									
CARBON CHECK (INDIA) PRIVATE LIMITED									
CIN: U74930DL2012PTC232495									
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Corporate off: Unit No. 1701, Logix City Centre Office Tower, Plot No. BW-58, Sector-32 Noida, Uttar Pradesh									
Tel: +91 120 4373114 URL: www.carboncheck.co.in e-mail: info@carboncheck.co.in									



Carbon Check (India) Private Ltd.

Indumathi. C

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

For following functions:

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

In the following Technical Areas:

TA 1.1	☒	TA 3.1	☒	TA 5.2	☐	TA 9.2	☐	TA 13.2	☒
TA 1.2	☒	TA 4.1	☐	TA 8.1	☐	TA 10.1	☐	TA 14.1	☐
TA 2.1	☐	TA 5.1	☐	TA 9.1	☐	TA 13.1	☒		

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

Date of Approval
29/09/2021

Valid Till
24/12/2021

Revision History of the Document

26/12/2014	Initial Adoption
24/12/2015	Annual Revision
20/01/2016	Interim Revision for office address change
23/12/2017	Annual Revision
24/12/2017	Annual Revision
24/12/2018	Annual Revision
24/12/2019	Annual Revision
01/03/2020	Interim Revision for office address change
01/09/2020	Interim Revision for CCIPL logo change
24/12/2020	Annual Revision

¹ India and Sri Lanka

CARBON CHECK (INDIA) PRIVATE LIMITED
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Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
/1/	BURN Manufacturing Co.	Initial Monitoring report Interim version of monitoring report	Version 1.0, dated 06/09/2021 Version 2.0, dated 23/10/2021	CME
/2/	BURN Manufacturing Co.	Interim Monitoring report Final Monitoring Report	Version 3.0, dated 16/12/2021 Version 4.0, dated 03/02/2022	CME
/3/	BURN Manufacturing Co.	Emission reduction calculation spread sheets corresponding to /1/	Version 1.0,	CME
/4/	BURN Manufacturing Co.	Interim- Emission reduction calculation spread sheets corresponding to /3/ Final Emission reduction calculation spread sheets corresponding	Version 3.0, Version 4.0	CME
/5/	BURN Manufacturing Co.	Usage monitoring survey • POA 10789 Somalia DB V5 2021-01-20_Sampling • 20220302_Jikokoa Somalia reporting template - Usage • Monitoring 2021 - V9.xlsx • 19AUG2021 GS10790 Usage Survey Compliance Report_final • Recordings of Usage Monitoring surveys • Project survey_Physical visits_GPS coordinates • Evidence for random number generator for sampling Age 0-1 Age 1-2 • Photos kitchen areas_in person visits_BURN10790	Version 09	CME
/6/	BURN Manufacturing Co.	VPA distribution records • 20220302_Database Technology Days and Stoves in • Use_v2.2.xlsx	-	CME
/7/	BURN Manufacturing Co.	WBT records • Equipment ○ Calibration certificates of instruments used (thermometer, weighing scale) ○ Equipment specification • WBT test record (Jikokoa classic and Jikokoa xtra) ○ Consent forms ○ Data entry sheets ○ WBT spreadsheets ○ WBT analysis • WBT summary result	-	CME

		• WBT report version 1.2		
/8/	BURN Manufacturing Co.	Audio files of 10% verification audio files, and radio advertisement	-	CME
/9/	BURN Manufacturing Co.	• Photographs of bill board and activator demonstration, Post sale Home Follow up visits, posters • TV advertisements	-	CME
/10/	BURN Manufacturing Co.	Employment list • Sample Employee Contracts • 25AUG2021 Burn staff from 2019		CME
/11/	BURN Manufacturing Co.	Grievance Register		
/12/	BURN Manufacturing Co.	Jikokoa Product Leaflet/stove manual	-	CME
/13/	BURN Manufacturing Co.	Training manual • 2FEB2021 Enumerators' Training Document-Usage Monitoring and KPT • Training Participant Lists • 24 FEB 2021 Call Agents Training Attendance Sheet.pdf • 24 Feb 2021 Training Confirmation Sheet Ahmed Aden Hargeisa (TL).pdf • 24 Feb 2021 Training Confirmation Sheet for abdigani Hargeisa (TL).pdf • 24FEB2021 Training Confirmation Sheet for Mohamed Ali Aden Burco (TL).pdf • 27 FEB 2021 Hargeisa Training Attendance Sheet.pdf • 28 FEB 2021 Mogadishu Training Attendance Sheet.pdf	-	CME
/14/	BURN Manufacturing Co.	WBT conducting methodology for the cook stoves	-	CME
/15/	BURN Manufacturing Co.	Deviation approval from GS for partially carry out usage rate monitoring remotely	Dated 10/02/201	CME
/16/	CC IPL	Signed contract for combined design certification with first verification and performance review	Dated 30/10/2020	CC IPL
/B01/	UNFCCC	1.Validation and Verification Standard for PoAs, version 03 2.Project Standard for PoAs, version 3	http://cdm.unfccc.int/	Others
/B02/	UNFCCC	Applied baseline and monitoring methodology, Technologies and Practices to Displace Decentralized Thermal Energy Consumption' (TPDDTEC), version 03.1	https://globalgoals.goldstandard.org/	Others
/B03/	GS	a. PoA DD: GS 10789 ECOA_BURN multi-country Clean Cooking Programme b. VPA DD: GS 10790 GS10789 VPA1: Efficient and Clean Cooking for households in Somalia c. Corresponding validation reports	Version 04.1; Dated:13/10/2021 Version. 4.0 Dated: 13/10/2021	Others
/B04/	Web sites	Websites:	--	Others

		http://cdm.unfccc.int/ http://www.ipcc-nggip.iges.or.jp/ http://www.pciaonline.org/testing http://circodu.org.ug/		
/B05/	UNFCCC	Guidelines: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0	http://cdm.unfccc.int/	Others
/B06/	UNFCCC	Standard: Sampling and surveys for CDM project activities and programmes of activities, version 09.0	http://cdm.unfccc.int/	Others
/B07/	UNFCCC	Guideline: Application of materiality in verifications" Version 02.0	http://cdm.unfccc.int/	Others
/B08/	GS	a) GS4GG "Principles & Requirements", version 1.2 b) GS4GG "Programme Of Activity Requirements", version 1.2 c) GS4GG "Community Services Activity Requirements", version 1.2 d) GS4GG "GHG Emissions Reduction & Sequestration Product Requirements, version 2.0 e) GS4GG "Safeguarding Principles & Requirements", version 1.2	http://www.goldstandard.org	Others

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CAR from this verification

CAR ID	01	Section no.	MR	Date: 18/10/2021
Description of CAR				
As per the paragraph 19 d) of the standard VVS for PoA version 3.0 "Assess the accuracy, conservativeness, relevance, completeness, consistency and transparency of the information provided by the coordinating/managing entity;"				
Kindly update the MR for following comments as per the latest available VPA DD				
- Section key project information of the MR does not refer to the latest submitted PoA DD. - Section B.1 thermal efficiency of the cookstoves - Section D.1 version number of the CDM fNRB tool, Tool 30 - Section D.1 value applied for the parameter Pb,y - Section D.2 additional comment for the parameter Np,y - Section D.2 value applied for the parameter Pp, y				
CME response				Date: 23/10/2021
The MR has been updated related to the aforementioned points raised by the VVB.				
Documentation provided by CME				
Monitoring report (20211023_GS10790 Monitoring-Report MP1_v2.0.docx)				
VVB assessment				Date: 25/10/2021
CME has submitted revised MR and inconsistency has been removed; checked and confirmed by the verification team.				

CAR ID	02	Section no.	MR	Date: 18/10/2021
Description of CAR				
The supporting documents mentioned under section D.4 of the MR Sampling Method has not been provided to VVB for review.				
CME response				Date: 23/10/2021
The documents mentioned on page 30 of the MR have now been submitted to the VVB (see file names under 'Documentation provided by CME'.				
Documentation provided by CME				
POA 10789 Somalia DB V5 2021-01-20_Sampling.xlsx 20210209-0926-95872.csv Screenshot 2021-02-13 at 19.27.06 20210209-0942-73393.csv Screenshot 2021-02-13 at 19.42.35				
VVB assessment				Date: 25/10/2021
The verification team confirms that above documents has been provided by CME. CAR is closed.				

CAR ID	03	Section no.	MR	Date: 18/10/2021
Description of CAR				
As per the section the section 3.1.4 of the GS4GG Programme Of Activity Requirements version 1.2 "VPA/CPA crediting period start date is VPA/CPA Start Date" and section 4.1.10 of the GS4GG principles & requirements version 1.2 states "For distributed technology projects, the start date is the date of implementation of the first unit under the project."				
In the above background, the start date of the crediting period has been shifted from 02/07/2019 to 02/10/2019 however, the monitoring report and the ER sheet does not consider the same.				
CME response				Date: 23/10/2021
The MR and ER sheet do now consider the updated start date of the crediting period being 02/10/2019.				
Documentation provided by CME				
MR, version 02 ER calculation spreadsheet, version 02				
VVB assessment				Date: 25/10/2021
Based on the review revised MR and ER sheet the verification team confirms that start date of the crediting period has been revised.				

CAR ID	04	Section no.	MR	Date: 18/10/2021
Description of CAR				
As per the GS review comments revised VPA DD and ER sheet does not claims ER from charcoal production and claims ER from charcoal use only. Furthermore, the formula for Pp,b,y has been added in section B.6.3 of the VPA DD. CME is requested to adhere the consistency between VPA DD and MR.				
CME response				Date: 23/10/2021
MR and ER sheet have been updated. No ERs from charcoal production are claimed anymore. The formula for Pp,b,y has been added in sections E.1 and E.2 of the MR.				
Documentation provided by CME				
MR, version 02 ER calculation spreadsheet, version 02				
VVB assessment				Date: 25/10/2021
CME has submitted revised MR and ER Sheet and ERs from charcoal production has been removed, furthermore, formula for Pp,b,y has been added in sections E.1 and E.2 of the revised MR. checked and confirmed by the verification team.				

Table 2. CLs from this verification

CL ID	XX	Section no.	XX	Date: DD/MM/YYYY
Description of CAR				
CME response				Date: DD/MM/YYYY
Documentation provided by CME				
VVB assessment				Date: DD/MM/YYYY

Table 3. FAR from GS design review comments

FAR ID	01	Section no.	MR	Date: 22/10/2021
Description of CAR				
The PP is requested to clarify how the multiple stoves and the time gap from sales to actual usage at households are monitored and considered in the ER estimation.				
CME response				Date: 23/10/2021
With regards to stoves that were distributed via third parties contracted by the PP, the time gap between shipment to the distributor and actual stove usage was determined by calculating the average of the total lag time between shipping date and the registration date for all registered stoves. The average gap period was determines to be 147 days. The start date for the unregistered stoves was therefore determined to be their ship date plus the average lag time. This has been demonstrated in the Database (20211022 Database Technology Days and Stoves in Use_v2.1 .xlsx) submitted by the PP (worksheet tab 'Somalia Assignments'/Column H to L). The 'start date of use' of the stoves is shown in column L, which then forms the basis for determining the start date when the stove is eligible for crediting as shown in column M as well as the number of days stove is claiming credits shown in column T.				
In terms of multiple stove use, the proportion of the same was determined during usage/monitoring surveys (worksheet tab 'Usage Analysis', rows 31 to 35/3SEP2021 Jikokoa Somalia reporting template - Usage Monitoring 2021 - V7.xlsx) . Subsequently, it was conservatively discounted in the ER calculation (see worksheet tab 'ER ICS TPDDTEC'/rows 33 to 53)				
Documentation provided by CME				
20211022 Database Technology Days and Stoves in Use_v2.1 .xlsx 3SEP2021 Jikokoa Somalia reporting template - Usage Monitoring 2021 - V7.xlsx BURN GS PoA_VPA 1_Somalia_ER calculation 1st verification_v.2.0.xlsx				
VVB assessment				Date: 25/10/2021
Based on the review of revised ER calculation sheet, Database Technology Days and Stoves in Use usage monitoring survey template the verification team confirms that CME has applied conservative approach to calculate the multiple stoves and the time gap from sales to actual usage at households are monitored and considered in the ER estimation. Checked and confirmed				

FAR ID	02	Section no.	MR	Date: 22/10/2021
Description of CAR				
At time of verification, the PP shall demonstrate that their distributed stoves are used by the people in urban area or the people who used charcoal in their baseline scenario.				
CME response				Date: 23/10/2021
BURN specifically targets charcoal users in urban areas of Somalia when distributing the Jikokoa charcoal stoves. BURN has set up distribution points for Jikokoa stoves in charcoal-predominant urban areas. Although third party distributors are used for logistics services, BURN's own Activator staff is fully responsible for sourcing, onboarding, and tracking all new last-mile distribution points, ensuring that stoves are marketed in the appropriate areas. In addition, the Activators undergo extensive training to ensure they market and sell Jikokoa stoves to the intended end users i.e. charcoal users. The project survey and project KPT being representative of the population captured for those households which were visited physically amongst others the GPS coordinates. It can be corroborated that all of those GPS coordinates are in urban/peri-urban areas.				
Documentation provided by CME				

Project survey_Phyiscal visits_GPS coordinates.xlsx	
VVB assessment	Date: 25/10/2021
Based on the review of Project survey_Phyiscal visits_GPS coordinates provided by CME the verification team confirms that CME has targeted to distribute the stoves solely in urban area and people who used charcoal in their baseline scenario.	

Appendix 5. Data and parameters fixed ex ante

SDG 13: Climate Change

Data/Parameter	CO2 emission factor arising from use of fuel wood in baseline scenario EFb,CO2
Data unit:	tCO2/TJ
Value(s) applied	112
Purpose of data	CO2 Emission calculation in baseline
Source and Verification of the source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 2, chapter 2 (Table 2.5) The value of this parameter is fixed ex-ante /B03/.

Data/Parameter	Non-CO2 emission factor arising from use of fuel wood in baseline scenario EFb,non-CO2
Data unit:	tCO2e/TJ
Value(s) applied	2021: 8.4 tCO2e/TJ for methane and 1.06 tCO2e/TJ for N2O CH4 = 0.3 tCH4/TJ * 28 (GWP) N2O = 0.004 tN2O/TJ * 265 (GWP) 2019 and 2020: 7.5 tCO2e/TJ for methane and 1.192 tCO2e/TJ for N2O CH4 = 0.3 tCH4/TJ * 25 (GWP) N2O = 0.004 tN2O/TJ * 298 (GWP)
Purpose of data	Non-CO2 Emission calculation in baseline
Source and Verification of the source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 2, chapter 2 (Table 2.5) GS rule update APPLICABILITY OF GLOBAL WARMING POTENTIAL FOR GOLD STANDARD FOR THE GLOBAL GOALS PROJECTS. The value of this parameter is fixed ex-ante /B03/.

Data/Parameter	CO2 emission factor arising from use of fuel wood in project scenario EFp,CO2
Data unit:	tCO2/TJ
Value(s) applied	112
Purpose of data	CO2 emission calculation in project scenario
Source and Verification of the source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 2, chapter 2 (Table 2.5) The value of this parameter is fixed ex-ante /B03/.

Data/Parameter	Non-CO2 emission factor arising from use of fuel wood in project scenario EFp,non-CO2
Data unit:	tCO2e/TJ
Value(s) applied	2021: 8.4 tCO2e/TJ for methane and 1.06 tCO2e/TJ for N2O CH4 = 0.3 tCH4/TJ * 28 (GWP) N2O = 0.004 tN2O/TJ * 265 (GWP) 2019 and 2020: 7.5 tCO2e/TJ for methane and 1.192 tCO2e/TJ for N2O CH4 = 0.3 tCH4/TJ * 25 (GWP) N2O = 0.004 tN2O/TJ * 298 (GWP)
Purpose of data	Non-CO2 emission calculation in project scenario
Source and Verification of the source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 2, chapter 2 (Table 2.5)

	The value of this parameter is fixed ex-ante /B03/.
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Data/Parameter	Net calorific value of the fuel wood used in baseline NCVb
Data unit:	TJ/ton of fuel wood
Value(s) applied	0.0156
Purpose of data	CO2 emission calculation in baseline scenario
Source and Verification of the source	IPCC default 2006, volume 2, chapter 1 (Table 1.2)
	The value of this parameter is fixed ex-ante /B03/.

Data/Parameter	Net calorific value of the fuel wood used in project Scenario NCVp
Data unit:	TJ/ton of fuel wood
Value(s) applied	0.0156
Purpose of data	CO2 emission calculation in project scenario
Source and Verification of the source	IPCC default 2006, volume 2, chapter 1 (Table 1.2)
	The value of this parameter is fixed ex-ante /B03/.

Data/Parameter	Non-renewability status of woody biomass fuel in scenario i during year y fNRBi,y
Data unit:	TJ/ton of fuel wood
Value(s) applied	0.99
Purpose of data	ER calculation
Source and Verification of the source	C4EcoSolutions Report.
	The fNRB value will remain fixed during the crediting period

Data/Parameter	Wood-to-charcoal conversion factor
Data unit:	kg firewood / kg charcoal
Value(s) applied	6
Purpose of data	Used to calculate fuel savings in fuel wood equivalent
Source and Verification of the source	IPCC default value
	The value of this parameter is fixed ex-ante /B03/.

Data/Parameter	Quantity of charcoal that is consumed in baseline scenario b during year y Pb,y
Data unit:	t/household/year
Value(s) applied	1.028
Purpose of data	Used to calculate the fuel savings
Source and Verification of the source	Baseline KPT (file: BURN GS PoA_VPA 1_Somalia_ER calculation 1st verification_v.2.0.xlsx)
	The baseline will remain by-default fixed during the crediting period since the project activity targets nonindustrial applications (see page 6 of TPDDTEC)

Appendix 6. Data and parameters monitored

SDG 13

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Number of project cookstove credited (units) Np,y
Monitoring frequency	Continuously
Value(s) applied	Full year stoves equivalent: 2019: 12,857.13 2020: 35,859.32 2021: 71.47 The abovementioned values already take into account multi project stove use in a household.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Measurement methods and procedures	Distribution database
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /5/ and the ER sheet /4/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Usage rate in project scenario p during year y Up,y
Monitoring frequency	Annual
Value(s) applied	88.98% (Weighted average usage rate) Age Group 0-1 usage rate: 90% (cap value good practice as per “Usage Rate Monitoring Requirements and Guidelines”) Age Group 1-2 usage rate: 88.0% (which is at the same time the cap value good practice as per “Usage Rate Monitoring Requirements and Guidelines”) Only those households have been accounted for as users who use the project stove for at least 7 meals per week and who indicated the last usage within a week. Those households, for which on-site observations in the kitchen did not indicate clear usage, have been defined as “Non-user”.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Measurement methods and procedures	Usage/monitoring survey /5/ Supporting files: 20220302_Jikokoa Somalia reporting template - Usage Monitoring 2021 - V9.xlsx 20220302_Database Technology Days and Stoves in Use_v2.2.xlsx Any continued baseline stove use has been accounted for as part of the project KPTs.
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /5/ and the ER sheet /4/.
How were the values in the monitoring report verified?	NA
Does the data management (from data	Yes, the data management ensures correct transfer

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

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Quantity of fuel that is consumed in project scenario p during year y Pp,y
Monitoring frequency	Every 2 years or in case that aging test approach (as per Annex 8 of the applied methodology) is applied, once prior to 1st issuance.
Value(s) applied	0.392
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Measurement methods and procedures	Determined through project KPT. The procedure as per Annex 4 of the applied methodology TPDDTEC has been followed. A project KPT has been conducted in March and April 2021 on 60 randomly selected end-users. Trained enumerators already conducting the baseline KPT have carried out the project KPT. The same type of weighing scales as used for the baseline KPTs have been used. Two age groups have been considered being representative of the total population of project cookstoves in the database. The sample size was sufficient to achieve a precision level of 12.3% at 90% confidence. Please note that the precision level was calculated based on the fuel savings. Since an unpaired sampling approach has been chosen, considering the results of baseline and project KPT Hence, the 90/30 confidence/precision level for the unpaired sampling approach as required by TPDDTEC is met. The detailed household responses and the unpaired sampling KPT analysis are provided in the ER calculation spreadsheet (please refer to file name in "Source of data").
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA

Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /5/ and the ER sheet /4/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Leakage in project scenario p during year y LEp,y
Monitoring frequency	Every two years
Value(s) applied	0
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Measurement methods and procedures	-
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /5/ and the ER sheet /4/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.

of emission reductions and are necessary QA/QC processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Efficiency of the ICS of each type i being deployed as part of the project activity $h_{new,i}$
Monitoring frequency	Annual
Value(s) applied	Weighted average thermal efficiency: Jikokoa Classic: 47.32% Jikokoa Xtra: 45.04% Age wise thermal efficiency: Jikokoa Classic: Age 0-1: 48.08% Age 1-2: 46.82% Jikokoa Xtra: Age 0-1: 44.64% Age 1-2: 45.11%
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Measurement methods and procedures	The procedures as outlined in Annex 8 of TPDDTEC has been followed. The WBT results of each age group comply with the 90/10 rule.
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /5/ and the ER sheet /4/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.

QA/QC processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Adjustment to account for any continued use of pre project devices (baseline stove) in the project scenario during the year y _{My}
Monitoring frequency	Annual
Value(s) applied	N/A
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Measurement methods and procedures	The project KPT has captured the total project fuel consumption on all stoves, i.e. also includes the fuels consumed on any baseline stoves. Hence, no separate survey has been necessary for this 1st verification.
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	NA
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

SDG 1

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Monetary savings related to the purchase of charcoal
Monitoring frequency	At least once every two years (biennial)
Value(s) applied	44.5%
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes

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

SDG 3

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Perceived air quality
Monitoring frequency	At least once every two years (biennial)
Value(s) applied	79.8% perceive an improved air quality
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Measurement methods and procedures	Carrying out surveys (either site visits or telephone surveys) to check on the money spent for purchasing charcoal in the project scenario compared to the baseline scenario
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval:	NA

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

SDG 7

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Number of sold/distributed ICS in use
Monitoring frequency	Continuously
Value(s) applied	43,909 (N° of yr-stoves in use)
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Measurement methods and procedures	The total number of ICS sold/distributed is summed up in the database
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of	NA

monitoring equipment? (Yes / No):	
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	NA
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

SDG 8

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Number of jobs created
Monitoring frequency	Annually
Value(s) applied	In the following the N° of employees across the monitoring period including both casual and contract employees:/10/ Casual Jobs 2 July 2019-31 Dec 2019 = 23 1 Jan 2020- 31 Dec 2020 = 52 1 Jan 2021- 19 Jan 2021 = 38 Contract Jobs 2 July 2019-31 Dec 2019 = 10 1 Jan 2020- 31 Dec 2020 = 12 1 Jan 2021- 19 Jan 2021 = 12
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Measurement methods and procedures	Counting employee contract
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole	NA

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

APPENDIX 8: Gold Standard Verification Protocol

CC IPL's Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Sustainability Monitoring					
1.1 Have all non-neutral indicators been monitored as per the sustainability monitoring plan?	/02/	DR,	Yes, all the non-neutral indicators have been monitored as per the sustainability monitoring plan.	OK	OK
1.2 Have the methods to monitor data changed? And are they suitable to the project scale and type?	/02/	DR	Methods to monitor data have not changed as compared with the monitoring plan in the registered passport and monitoring plan.	OK	OK
1.3 Has the way of monitoring been followed? With the inclusion of dates and parameters?	/02/	DR	The sustainability monitoring plan has been followed as per described in the Passport.	OK	OK
1.4 Have mitigation measures been put in place to prevent the risk of the violation of the safe guarding principle of "Do No Harm" assessment or to neutralise a Sustainable Development Indicator that is being monitored?	--	DR	NA	OK	OK
1.5 Has all the data in the Sustainability development matrix been verified and cross checked against available sources of project data? Has it been described how sustainable development would be affected if a variance occurred?	/02/	DR and remote interview	Yes, all data in the sustainability development matrix have been verified and cross checked from the supporting documents and during remote audit.	OK	OK
2. Other					
2.1 Are there any issues from the previous validation/verification? (ie FARs, requests/approvals for RMP)	/B03/	DR	No	OK	OK

¹ MoV = Means of Verification, DR = Document Review, I = Interview, www = internet search.

CC IPL's Checklist question	Ref.	MoV ¹	Findings, comments, references, data sources	Draft conclusion	Final conclusion
2.2 Has the project ever received any requests for reviews or incompletes from the UNFCCC or GS Secretariat?	/B03/	DR	No there are no request for reviews or incomplete for the project.	OK	OK
2.3 The evaluation of the status of mitigation and compensation measures has been verified.	/B03/	DR	Yes, the status of mitigation and compensation measures has been verified.	OK	OK