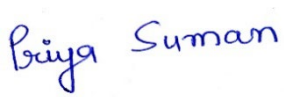
Verification and certification report form for Gold Standard project activities

BASIC INFORMATION	
Title and GS reference number of the project activity	TASC Clean Cooking PoA – VPA 4 (Zambia) (GS11604)
Scale of the project activity	☒ Large-scale ☐ Small-scale
Version number of the verification and certification report	07
Completion date of the verification and certification report	21/06/2024
Monitoring period number and duration of this monitoring period	MP1: 16/04/2021– 15/04/2023 (Inclusive)
Version number of the monitoring report to which this report applies	1.9 dated: 20/06/2024
Crediting period of the project activity corresponding to this monitoring period	16/04/2021 – 15/04/2026 (inclusive)
Project representative(s)	The African Stove Company Ltd. (TASC);
Host Party	Zambia
Applied methodologies and standardized baselines	Technologies and Practices to Displace Decentralized Energy Consumption (version 3.1)
Mandatory sectoral scopes	03
Conditional sectoral scopes, if applicable	-
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered VPA-DD	9,765(tCO_2e)
Certified amount of GHG emission reductions or GHG removals for this monitoring period	8,962 (tCO_2e)
SDG Impacts:	1. SDG 1: No poverty 2. SDG 3: Good health and wellbeing 3. SDG 5: Gender Equality 4. SDG 7: Affordable and Clean Energy 5. SDG 8: Decent work and Economic Growth 6. SDG 12: Responsible Consumption & Production 7. 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	 Priya Suman, Compliance Officer

SECTION A. Executive summary

Carbon Check (India) Private Ltd. (CCIPL) is performing the first periodic verification of the GS project “TASC Clean Cooking PoA – VPA 4 (Zambia)” (GS project id: GS 11604) for the period 16/04/2021 –15/04/2023 (Inclusive). The VPA will stimulate the installation of Jikokoa charcoal stove manufactured by Burn Manufacturing LLC, with a thermal efficiency of 53.7%. All the stoves were distributed from 16/04/2021 across Zambia and not limited to any specific provinces.

According to the VPA-DD /B04/ & MR /01/, the project activity "TASC Clean Cooking PoA – VPA 4 (Zambia)" is part of TASC Clean Cooking PoA (GS11009) and is implemented in Zambia. The African Stove Company Ltd. (TASC) is the coordinating/managing entity (CME) and also the implementer of the VPA. The overall objective of the VPA is to contribute to the achievement of the Sustainable Development Goals (SDGs) through the distribution of Improved Cookstoves (ICS) in households of Zambia.

This report summarises the findings of the verification of the project, performed on the basis of Gold standard for global goals (GS4GG), as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the Gold Standard. Verification is required for all registered GS project activities intending to confirm their achieved emission reductions and proceed with request for issuance of CERs. This report contains the findings and resolutions from the verification and a certification statement for the verified emission reductions.

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 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 “TASC Clean Cooking PoA – VPA 4 (Zambia)” in the host country “Zambia” for the period 16/04/2021 – 15/04/2023 (Inclusive).

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. CCIPL’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 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 VPA-DD
- To verify the implemented monitoring plan with the registered 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.

Verification process:

The verification comprises a review of the monitoring report /01/ over the monitoring period from 16/04/2021 –15/04/2023 (Inclusive) and based on the registered VPA-DD /B04/ as part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology, and all related evidence provided by project participants.

On-site interviews and inspections are also performed as part of the verification process.

Conclusion:

The verification team assigned by the validation & verification body (VVB) concludes that the monitoring report /01/, meet all relevant requirements of the Gold Standard as per the requirements of GS4GG. The verification has been conducted in-line with the GS4GG requirements/B03/

The project activity was correctly implemented according to the selected monitoring methodology, monitoring plan and the registered VPA-DD /B04/. 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. The following table provides the resulted emission reduction from the project as verified through the document review and on-site interviews by the verification team.

Vintage	**ER (tCO_2e)**
16/04/2021 – 31/12/2021	2,960 tCO_2e
01/01/2022 – 31/12/2022	4,661 tCO_2e
01/01/2023 – 15/04/2023	1,341
Total for the monitoring period	**8,962 tCO_2e**

CCIPL as a Validation & verification body (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** (e.g. name of central or other office of VVB or outsourced entity)	**Involvement in**			
						Desk/document review	**On-site inspection**	**Interviews**	**Verification findings**
1.	Team Leader / Verifier /	IR	Choudhary	Aparna	CCIPL	X	X	X	X

	Technical Expert								
2.	Assessor	IR	KV	Kiran	CCIPL	X	X	X	X
3.	Trainee Assessor	IR	Bijani	Vishal	CCIPL	X	X	X	X
4.	Local Expert	EI	Sinyunga	Butano	CCIPL		X	X	

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)
1.	Technical reviewer	IR	Dimri	Anubhav	CCIPL
2.	Approver	IR	Suman	Priya	CCIPL

SECTION C. Means of verification

C.1. Desk/document review

The verification was performed primarily based on the review of the Monitoring report /01/ 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. Documents reviewed or referenced during the verification are listed in Appendix 3 below.

C.2. On-site inspection

Onsite physical audit has been performed. The Team leader has conducted the on-site inspection and in particular the end user households have been visited.

Furthermore, VVB has considered the Site Visit and Remote Audit Requirements and Procedures, version 1.0/B06/ for conducting the onsite visit. In accordance with the requirements provided in the §3.1.1(b) of the Site Visit and Remote Audit Requirements and Procedures, version 1.0/B06/.

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
/01/	Barlow	George	TASC	14/09/2023 to 16/09/2023	VPA Design, Organization Structure, Stove Distribution Mechanism, Details of survey, methodology, Survey results, QA/QC procedure etc.	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/02/	Bianca	Stead	TASC	14/09/2023 to 16/09/2023	MR preparation, GS requirements, Emission reduction calculations, methodology	Aparna Choudhary, Kiran KV, Vishal

					applicability, start date justification, Project Design, ownership details, carbon credit ownership arrangements, monitoring and reporting arrangements, QA/QC procedures, baseline assessment, Project technology etc.	Bijani, Butano Sinyunga
/03/	Banda	Mathew	KDSL	14/09/2023 to 16/09/2023	Habit Surveys, Feedback from the local stakeholders, KPT Surveys process, Stove Distribution Mechanism	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/04/	Chanda	Gift	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS2) 148585143	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/05/	Chibwe	Diana	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148643312	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/06/	Muzyamba	Constance	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148601277	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/07/	Afumba	Given	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148545811	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/08/	Cheembo	Mooya	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148603259	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/09/	Moono	Ian	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148592178	Aparna Choudhary, Kiran KV, Vishal

						Bijani, Butano Sinyunga
/10/	Chitangala	Custer C.	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148617832	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/11/	Kantu	Brendah	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148641342	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/12/	Kapata	Mercy	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148581172	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/13/	Kapyololo	Margaret	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148538895	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/14/	Walubita	Akufuna	Habit survey participant (MP2)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 2) 148617941	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/15/	Mutale	Musalo	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148569563	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/16/	Niovu	Deobrah	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148581410	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/17/	Peter	Munenga	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148617766	Aparna Choudhary, Kiran KV, Vishal Bijani,

						Butano Sinyunga
/18/	Bandwa	Exildah	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148555023	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/19/	Chungu	Mary	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148621919	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/20/	Mulenga	Lainess	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148645525	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/21/	Kasung'ami	Christopher	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148629336	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/22/	Kyeya	Paul	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148549061	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/23/	Yowanu	Christabel	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148668300	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/24/	Mwanza	Justina	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148556846	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/25/	Florence	Mbevia	Habit survey participant (MP1)	14/09/2023 to 16/09/2023	Habit Surveys Questionnaire (HS 1) 148583909	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano

						Sinyunga
/26/	Labani	Emeldah	KPT Survey Participant (MP1)	14/09/2023 to 16/09/2023	KPT Survey 148643823	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/27/	Kayana	Eunice	KPT Survey Participant (MP1)	14/09/2023 to 16/09/2023	KPT Survey 148551405	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/28/	Chilesh e	Blessing	KPT Survey Participant (MP1)	14/09/2023 to 16/09/2023	KPT Survey 148591664	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/29/	Manda	Raymond	KPT Survey Participant (MP1)	14/09/2023 to 16/09/2023	KPT Survey 148573120	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/30/	Tangan yika	Racheal	KPT Survey Participant (MP1)	14/09/2023 to 16/09/2023	KPT Survey 148580900	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/31/	Musond a	Hildah	KPT Survey Participant (MP1)	14/09/2023 to 16/09/2023	KPT Survey 148605379	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/32/	Muakon ge	Mercy	KPT Survey Participant (MP1)	14/09/2023 to 16/09/2023	KPT Survey 148584379	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga
/33/	Kafwila	Beauty	KPT Survey Participant (MP1)	14/09/2023 to 16/09/2023	KPT Survey 148558354	Aparna Choudhary, Kiran KV, Vishal Bijani, Butano Sinyunga

C.4. Sampling approach

As the target population is homogeneous, PP has initially conducted simple random sampling plan using 90/10 as confidence/precision for the biennial KPT. As per the finding raised in the Technical Review rounds on the appropriateness of the applied (90/10) confidence/precision level for the biennial KPT, the applied methodology TPDDTEC v3.1 /B02/ did not have any specific requirement for confidence/precision levels achieved for the biennial KPT. Therefore, CDM sampling standard v9.0 /B05/ para 11, footnote 6 was referred that further refers to General guidelines for SSC CDM methodologies v23.1 /B08/ section 4.8.2 point 27 (a) footnote 4 which states “In order to apply the survey results for the monitoring period before or after the survey date, the requirements of biennial sampling should be met i.e. survey results show the confidence/precision of 95/10”.Based on the finding confidence/precision was updated to 95/10 for the biennial KPT, as it was found the calculated sampling size also meets 95/10 confidence/precision requirement. Therefore, the biennial frequency of the KPT survey applied is deemed to be accepted by the verification team. The calculation for achieved confidence/precision is provided in the ER sheet /02/ cells AY7 to AY12 in the “MRV1 pKPT Calculations” tab. This is in line with the applied methodology /B02/. The sample size for each parameter is determined following guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 9.0 /B05/ in accordance with the paragraph 27 of the sampling standard.

In line with paragraph 27 of the Sampling Standard, the verification team has applied simple random sampling approach through on-site interviews on the monitoring survey as part of verification. The project participant had applied sampling approach to the monitoring survey /10/, conducted by the representatives of project participant. The verification team has chosen acceptance sampling in accordance with paragraph 27 of the sampling standard /B05/.

The verification team of the VVB has applied a sampling approach for on-site visits as part of verification in accordance with the paragraph 25 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, version 9/B05/. In accordance with the paragraph 28 of the sampling standard/B05/, acceptance sampling has been chosen by the verification team and accordingly steps listed in paragraph 28 of the sampling standard shall be followed. Verification team has opted for AQL of 0.5 % and UQL of 20 % in accordance with the paragraph 30 of the sampling standard/B05/; producer risk of 10 % and consumer risk of 10 % paragraph 31 of the sampling standard/B05/ in determining the VVB’s sample size. Accordingly, site visits for 11 households/Samples per CPA from the PP’s sample size for the project for the monitoring period with acceptance number (c) as 0 for Habit Surveys. For KPT, the verification team has opted for AQL of 0.5 % and UQL of 20 % in accordance with the paragraph 30 of the sampling standard/B05/; producer risk of 10 % and consumer risk of 20 % in accordance with the paragraph 31 of the sampling standard/B05/ in determining the VVB’s sample size. In accordance with the paragraph 39(c) of the sampling standard/B05/site visit for 8 households/samples with acceptance number (c) as 0 was conducted for KPT, as Zambia is a LDC, leading to consumer risk being higher than 10 %.

The KPT was conducted once during the period 16/04/2021 – 15/04/2023, and the participants were interviewed by the verification team. The habit survey participants for the survey carried out during the period 20/05/2022-21/05/2022 (HS 1) and 12/06/2023 - 15/06/2023 (HS 2) were interviewed. The survey participants were interviewed by the verification team.

The Information provided in the monitoring survey /10/, has been cross checked during the Onsite visit. As a part of simple random sampling, the Verification team could confirm the monitoring survey data /10/ with no discrepant records. Thus, PP's set of records has been accepted in line with § 33 of the sampling standard, version 09 /B05/.

Parameter	Verification approach	Population (for VVB's sample)	VVB's Sample Size
Habit surveys/10/	Sampling Survey	126 (HS 1), 120 (HS 2)	11 each for HS 1 and HS 2
KPT Surveys/09/	Sampling Survey	45 samples	08 samples for KPT

The details of the sample interviewed are listed in section C.3 (under the list of interviewed persons). 11 samples for both HS1 and HS2 Habit surveys and 08 samples for the KPT survey and thus c=0. 2 out of 11 records (refer CL03) for survey conducted for HS1 were found discrepant. Based on the VVB survey results the usage rate was calculated as 81.8%. the usage rate applied by the project is 75% which is more conservative than the value achieved in the VVB survey. For the habit survey of MP2 (11 records) and the KPT survey (08) conducted, there was no discrepancy recorded by the VVB. Thus, PP's set of records are deemed to be appropriate and has been accepted in line with §33 of the sampling standard (version 09.0) /B05/. For the impact parameters, questionnaire was prepared and was used during the survey by the PP. During the on-site interviews, the verification team cross-checked these sample documents, and no discrepancies were found in the impact parameters as well. They were also interviewed to ensure that the process, method used, and their competency to confirm such standardised test were appropriately applied. The sampling technique to draw such samples were found adequate and the sample collectors were found competent to perform such task.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

The VVB had raised 10 clarifications (CLs) and 09 corrective action requests (CARs) and satisfactorily closed. 01 FAR is also raised.

SECTION D. Verification findings

D.1. Remaining forward action requests from validation and/or previous verifications

There were 02 forward action requests from the validation, and all have been closed. This is the first monitoring period for the VPA, and thus previous verification is not applicable.

FAR 1: During this validation VVB did not conduct a physical site visit and conducted a remote audit instead. As per GS document Site Visit and Remote Audit Requirements and Procedures v 1.0 dated 17/11/2021, §3.2.2 A physical site visit by VVB is mandatory at the first verification of a project.

PP's response: The VVB carried out a physical site visit from 14/09/2023 – 16/09/2023, thereby fulfilling the requirement for a physical site visit before the first verification of the project.

VVB's assessment: on-site visit was conducted from 14/09/2023 to 16/09/2023, refer to section C.3 of this FVR.

FAR 2: An onsite LCS shall be conducted prior to the 1st monitoring. The LCS report shall be updated accordingly. All stakeholders inputs shall be describe in Section G of the monitoring report. Verifying VVB shall provide details assessment in FVR.

PP's response: The in person local stakeholder consultation was completed on 19/05/2022 followed by a 2-month stakeholder consultation round. The details of this consultation are outlined in section G of this monitoring report.

VVB's response: in-person LSC has been conducted on 19/05/2022 and a 2-month stakeholder consultation round from 27/06/2022 to 27/08/2022. PP has provided a LSC report/11/ and information on LSC in section G.1 of the MR/01/. VVB's assessment can be found in section D.2 of this FVR.

D.2. Compliance of the project implementation and operation with the registered project design document

Means of verification	Document Review, Interview
Findings	CL01 has been raised.
Conclusion	Verification team confirms that the latest available version of the monitoring report template has been used and the MR is in compliance with the monitoring report form and related monitoring report template guide. As verified from on-site interview, the audit team confirm the project implementation and operation complies with the VPA-DD/B04/. The starting date of stove distribution/04/ is 16/04/2021 which is confirmed from the registered VPA-DD /B04/ and validation report /B04/. The project boundary in the registered VPA-DD /B04/ is in line with the actual project boundary. CCIPL confirms that the project cookstoves are operational through on-site visits and interviews with end users. Each cookstove has a unique identification number that was provided in the end user agreement and are correct according to the project database. Each cookstove is also physically marked with its unique identification number. Along with the serial number, the stove technology, end username, address, commissioning date etc. had also been noted which were found to be consistent on ground. It is noted that no changes have been observed or identified, that may impact the additionality. No addition of component nor extension of technology, no addition nor removal of project sites, no change of values of the actual operational parameter relevant to determination of emission reductions which are within the control of the PP; no change has been observed or identified that may impact the scale of the project activity or applicability of baseline and monitoring methodology Technologies and Practices to Displace Decentralized Energy Consumption (version 3.1) /B02/. The first ICS's distribution was started from 16/04/2021. A total of 1,100 (VPA4) cookstoves were distributed in the MP1 (16/04/2021 to 28/05/2021). Each stove is assigned a unique serial number, the same was confirmed upon review of the distribution database/04/ of the VPA. Verification team based on the review of the MR /01/ and provided evidence confirms that the households/end users relinquish their right of carbon credits. Furthermore, the ICS implemented under the project is uniquely identified, thus avoiding any potential double counting. As verified through document review and on-site interviews, the project implementation and operation, all physical features of the project comply with the VPA-DD /B04/.

	Verification team has checked the information in the monitoring report /01/ and compared it against the registered VPA-DD /B04/ and found to be consistent. Verification team confirms that: a) The project activity is implemented as per registered VPA-DD/B04/. b) The actual operation of the proposed project activity is in line with the registered/revised VPA-DD /B04/. c) It has reviewed the registered VPA-DD /B04/ including the monitoring plan, the applied monitoring methodology and found that the final MR/01/ for this monitoring period is in line with all the above-mentioned documents. Verification team has reviewed the LSC report /11/ of the joint stakeholder consultation and stakeholder feedback round was conducted for GS11145 TASC Clean Cooking PoA – VPA 1 (Zambia), GS11596 TASC Clean Cooking PoA – VPA 3 (Zambia), GS11604 TASC Clean Cooking PoA – VPA 4 (Zambia), the date of in-person consultation was 19/05/2022 and the stakeholder feedback round was held from 27/06/2022 to 27/08/2022. Verification team of CCIPL based on review of records and on-site interviews confirms that a robust and effective grievance addressal mechanism is in place and however, no grievances were reported during the monitoring period/11/. In summary, the monitoring period is reasonable, and the operation of the project activity is in accordance with the registered/revised VPA-DD /B04/.

D.3. Post-registration changes

D.3.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents[1]

Not applicable

D.3.2. Corrections

PP has revised the method of calculation to be in line with the applied methodology /B02/ equation 1, which is applicable if the project and baseline fuels and emission factors are same. Previously, the calculation were done as per the validated VPA-DD. On the review of the MR/01/ and the ER sheet /02/ it is observed that the resulting ERs from both the calculation approach are identical and the correction in the calculation approach is deemed appropriate.

PP has revised the SDG 5 impact to not include the time saved related to fuel collection as in this VPA charcoal is used as fuel, which is bought not collected, only time saved in cooking will be reported. The exclusion of time saved in fuel collection is deemed appropriate as the same was observed in the on-site visit by the verification team.

D.3.3. Changes to the start date of the crediting period

Not applicable

D.3.4. Inclusion of a monitoring plan

Not applicable

[1] Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

D.3.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

Not applicable

D.3.6. Changes to the project design

Not applicable

D.3.7. Changes specific to afforestation and reforestation project activities

Not applicable

D.4. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	Document Review, Interview
Findings	--
Conclusion	The verification team is able to confirm that the monitoring plan contained in the included VPA-DD /B04/ is in accordance with the approved methodology applied by the project activity, i.e. Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 3.1 /B02/. The monitoring plan is in accordance with the approved methodology, Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 3.1 /B02/, applied by the VPA and as provided in the included VPA-DD /B04/. The verification took cognizance of § 341 to § 343 of CDM VVS for PoAs, version 03.0 /B01-1/.

D.5. Compliance of monitoring activities with the registered monitoring plan

D.5.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	Document Review, Interview
Findings	--
Conclusion	The following parameters have been fixed ex-ante for the VPA considered under this monitoring period:

Parameter	Description of the parameter	Value	Source	Assessment by VT
$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during year y, in tonnes	2.56 tonnes	Baseline kitchen performance tests (KPTs)	The value is consistent with included VPA -DD /B04/ and fixed ex - ante for the duration of the crediting period.

	$EF_{b,i,CO2}$	CO_2 emission factor arising from use of fuel type i in baseline scenario	Fuel: 3.304 tCO_2/t_{fuel}	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5–- Default emission factors for stationary combustion in the residential and agriculture/forestry/ fishing/fishing farms categories	The value is consistent with included VPA -DD /B04/ and fixed ex - ante for the duration of the crediting period.
	$EF_{b,i,nonCO2}$	Non-CO_2 emission factor arising from use of fuel type i in baseline scenario	Fuel: 0.173 tCO_2/t_{fuel}	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5–- Residential Source Emission Factors.	The actual value is based on the IPCC guidelines and is slightly different from the value reported in the included VPA -DD /B04/ and fixed ex - ante for the duration of the crediting period.
	$EF_{p,i,CO2}$	CO_2 emission factor arising from use of fuel type i in project scenario	Fuel: 3.304 tCO_2/t_{fuel}	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5–- Default emission factors for	The value is consistent with included VPA -DD /B04/ and fixed ex - ante for the duration of the

				stationary combustion in the residential and agriculture/ forestry/ fishing/fishing farms categories	crediting period.
	$EF_{p,i,nonCO2}$	Non-CO_2 emission factor arising from use of fuel type i in project scenario	Fuel: 0.173 tCO_2/t_{fuel}	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5–- Residential Source Emission Factors.	The actual value is based on the IPCC guidelines and is slightly different from the value reported in the included VPA -DD /B04/ and fixed ex - ante for the duration of the crediting period.
	$NCV_{b,i}$	Net calorific value of the fuel type i used in the baseline	Fuel: 0.0295 TJ/tonnes	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1: Introduction, Table 1.2–- Default net calorific values	The value is consistent with included VPA-DD /B04/ and fixed ex- ante for the duration of the crediting period.
	$NCV_{p,i}$	Net calorific value of the fuel type i used in the project scenario	Fuel: 0.0295 TJ/tonnes	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1: Introduction, Table 1.2–- Default net calorific values	The value is consistent with included VPA-DD /B04/ and fixed ex- ante for the duration of the

					crediting period.
	$f_{NRB,b,i,y}$	Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass	Fuel: 0.91 Renewable solid biomass fuels (Crop residues / cow dung): 0.0000 Fossil fuels: 1	From C4 EcoSolutions report dated: 11/03/2022 /16/	The value is consistent with included VPA-DD /B04/ and the fNRB report and fNRB calculation sheet/16/ and fixed ex-ante for the duration of the crediting period.

Verification team confirms that the Data and parameters fixed ex-ante are in accordance with the registered PoA-DD and registered/ included VPA-DD /B04/ and the monitoring plan.

The verification took cognizance of §344, §345l) and §357 of CDM VVS for PoAs, version 03.0 /B01-1/.

D.5.2. Data and parameters monitored

Means of verification	Document Review, Interview
Findings	CAR 01 had been raised and has been resolved.
Conclusion	The verification team confirms that the data and parameters monitored are in compliance with the registered VPA-DD /B04/ and the monitoring plan.

Parameter	Description of the parameter	Value	Source	Assessment by VT
$B_{p,y,i}$	Quantity of fuel consumed in baseline scenario p during year y, in tonnes and as derived from the statistical analysis conducted on the data collected during the project	0.7773 (HS1 and HS2)	Field performance tests (FPTs) TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.6, MRV1 pKPT Calculations, cell AY18	The value is determined based on the Project KPTs /09/ conducted by the PP. The value was checked during the verification and the KPT survey report /09/

	performance field tests			report was cross checked.
$U_{p,y}$	Usage rate in project scenario p during year y determined on a sampling basis	HS1: 75% HS2: 75%	Annual Usage Survey	VVB has conducted household surveys to verify the value provided by PP. VVB observed that all the households visited is in possession of project ICS and has been in use. However, PD based on Mandatory usage level has only claimed for 75% of usage. VVB confirms that the requirements provided in requirements and guidelines: usage rate monitoring version 2.0 has been followed. Checklist for the usage rate assessment has been added in annex 3 of this report

	$N_{p,y}$	Technologies in the Monitoring Database for project scenario p through year y	1,100 ICS (HS1 and HS2)	Monitoring database	The value provided in MR has been cross checked with the database/ 04/ provided by PP and is found to be consistent
	$LE_{p,y}$	Leakage in project scenario p during year y	0 (HS1 and HS2)	Leakage Assessment	VVB during the interview with the end users confirmed that no leakage is applicable during the current monitoring period.
	BSA/HHS	Proportion of population living in households with access to basic services	1,100 ICS (HS1 and HS2) HS1: 1923.88 Kwacha/year HS2: 1304.85 Kwacha/year	1.Monitoring Database ICS distribution records 2.Ex-post Monitoring Survey Records	The value provided in MR has been cross checked with the database/ 04/ provided by PP and is found to be consistent
	SPM_{HH}	Air quality in project household	HS1: 99% HS2: 100%	Ex-post monitoring survey records	VVB has conducted verification surveys based on random sampling following the guidelines of Sampling and surveys for CDM project

					activities and programmes of activities/B05/ to verify the value provided by PP. It has been found that the value provided by PP is consistent with the value observed by VVB during verification survey.
	HHTS	Time saving per household	HS1: 100% HS2: 100%	Ex-post monitoring survey records	VVB has conducted verification surveys based on random sampling following the guidelines of Sampling and surveys for CDM project activities and programmes of activities/B05/ to verify the value provided by PP. It has been found that the value provided by PP is consistent with the value

				observed by VVB during verification survey.
$AACS_{HH}$	Number of households and institiution having access to affordable, reliable and modern energy services	1,100 ICS (HS1 and HS2)	ICS Monitoring Database	The value provided in MR has been cross checked with the database/ 04/ provided by PP and is found to be consistent
QE IG	Quantitative employment and income generation	14 (HS1 and HS2)	Employment records	The employment contract/12/ of all the 14 employees has been provided to VVB by PP. The same has been cross checked to verify the value.
$B_{y,savings}$	Reduction in domestic fuel consumption	1.7857 tonnes (HS1 and HS2)	Ex-post monitoring survey records	The value has been obtained by subtracting parameter Bp,y,i from Bold,i. VVB confirmed that the value provided in ER sheet/02/ is appropriate.

	It is confirmed that the verification team assessed the data / information flow from the point of monitoring to emission reduction calculation and found no gap in the same. Please refer to the Annex 4 for assessment of each parameter

D.5.3. Implementation of sampling plan

Means of verification	Document Review, Interview
Findings	CL02 had been raised and has been resolved.
Conclusion	According to the methodology TPDDTEC version 3.1 /B02/if the population is more than 1000, a minimum sample size of 100 is required for survey. PP selected 126 households/samples for HS1 (20/05/2022 to 21/05/2022) and 120 for HS2 (12/06/2023 to 15/04/2023). According to the section 13.2.1 (pg 33) of the VPA-DD /B04/ the parameter $B_{p,y,i}$ requires biennial monitoring, so the KPT is only conducted once for this monitoring period and is deemed appropriate by the verification team. Based on the confidence interval and precision level of 95/10, PP selected 45 samples for conducting KPT, a precision value achieved was 4.60%. The Usage Rate used by the PP for the VPA is 75% based on the mandatory usage.

D.6. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	Document Review, Interview
Findings	--
Conclusion	The moisture meters (Ryobi 2 in 1 moisture testers (5-50%/±2%)) and scales (ACCUD 75kg x 10g (0.01kg resolution)) are used in the KPT surveys of which the invoices are provided by the PP named “Moisture_Meter_Invoice_VPA4” /14-1/, dated 12/01/2022, “Scale_Invoice_VPA4” /14-2/ dated 18/06/2021. The manufacturer specification provided for the products /15/ and the invoices /14/ are reviewed and it confirms that the devices used in the KPT surveys are newly purchased.

D.7. Assessment of data and calculation of emission reductions or net removals

D.7.1. Calculation of baseline value of each SDG Impacts

Means of verification	Document Review, Interview
Findings	CAR 02 was raised and has been resolved.
Conclusion	The SDG Impacts in the baseline scenario are calculated as follows: **SDG 13: Climate Action** $BE_{b,y}$ (tCO_2e/yr) Baseline emissions for baseline scenario b in year y = HS1 : 7,366 HS 2 : 5,499 $BE_{b,y} = \sum_{b,p} N_{p,y} * U_{p,y} * (ER_{b,p,y,CO2} + ER_{b,p,y,nonCO2})) - \sum LE_{p,y}$

Where:

$\sum_{b,p}$ Sum over all relevant (baseline b) couples
= 1,100 ICS

$N_{p,y}$ Cumulative number of project technology-days included in the sales/distribution database for project scenario p against baseline scenario b in year y
= 1,100 * Total Technology days
= HS 1: 442,042 days
HS 2: 330,000 days

$U_{p,y}$ Cumulative usage rate for technologies in baseline scenario p in year y,

= 75%

$ER_{b,y,CO2}$ Specific CO_2 emission savings for an individual technology of Baseline b in year y, in tCO_2/day as derived from the statistical analysis of the data collected from the field tests
= HS 1: 0.0211 tCO_2/day
HS 2: 0.0211 tCO_2/day

$ER_{b,y,nonCO2}$ Specific non-CO_2 emission savings for an individual technology of Baseline b in year y, in tCO_2 as derived from the statistical analysis of the data collected from the field tests
= HS 1: 0.0011 tCO_2/day
HS 2: 0.0011 tCO_2/day

$ER_{b,y,CO2} = \sum_i \{ f_{NRB,b,i,y} * B_{b,y,i} * NCV_{b,i} * EF_{b,i,CO2} \}$

Where:

$f_{NRB,b,i,y}$ Fraction of woody biomass used in year y for fuel type *i* that can be established as non-renewable biomass (NRB)
= 0.91

$B_{b,y,i}$ Fuel consumption for fuel type *i* used in baseline b in year y in tonnes, from baseline KPTs
= 2.56t

$NCV_{b,i}$ Net calorific value of the fuel type *i* used in baseline b (TJ/tonnes)
= 0.0295

$EF_{b,i,CO2}$ CO_2 emission factor of the fuel type *i* used in the baseline
= HS 1: 3.304 tCO_2/tonne of charcoal
HS 2: 3.304 tCO_2/tonne of charcoal

i Fuel Type

$ER_{b,y,nonCO2} = \sum_i \{ B_{b,y,i} * NCV_{b,i} * EF_{b,i,nonCO2} \} - \sum_i \{ B_{p,y,i} * NCV_{p,i} * EF_{p,i,nonCO2} \}$

Where:

$EF_{b,i,nonCO2}$ non-CO_2 emission factor of the fuel type *i* used in the baseline
= HS 1: 0.173 tCO_2/tonne of charcoal
HS 2: 0.173 tCO_2/tonne of charcoal

	SDG 1: No Poverty $BSA_{Baseline}$ Number of ICS distributed in baseline = 0 $HHS_{Baseline}$ % HH reporting money saving due to reduced fuel consumption in baseline = 0 **SDG 3: Good Health and Well Being** $SPM_{HH,Baseline}$% HH reporting reduction in smoke/PM emissions while cooking on improved stove in baseline = 0 **SDG 5: Gender Equality** $HHTS_{Baseline}$% HH reporting time saving from fuel collection due to reduced fuel consumption in baseline = 0 **SDG 7: Affordable and Clean Energy** $ACS_{Baseline}$ Access to affordable and clean energy (Number of operating ICS units under Baseline) = 0 **SDG 8: Decent Work and Economic Growth** QE $IG_{Baseline}$ Quantitative Employment and income generation (Number of person (male and female) hired under Baseline) = 0 **SDG 12: Responsible Consumption and Production** $B_{b,y,i}$ Fuel consumption for fuel type *i* used in baseline b in year y in tonnes, from baseline KPTs = 2.56t (KPT value retrieved from Baseline KPT's) The overall baseline emission for HS 1 is 7,366 tCO_2e/yr and for HS 2 is 5,499 tCO_2e/yr total for the monitoring period 12,865 tCO_2e/yr.

D.7.2. Calculation of project value of each SDG Impacts

Means of verification	Document Review, Interview
Findings	--
Conclusion	The SDG Impacts in the baseline scenario are calculated as follows: **SDG 13: Climate Action** The overall GHG reductions achieved by the project activity will be calculated as follows: $ER_y = \sum BE_{b,y} - \sum PE_{p,y} - \sum LE_{p,y}$ Where: ER_y Emission reduction for total project activity in year y (tCO_2e/yr) = HS1: 5,131 HS2: 3,831 $BE_{b,y}$ Baseline emissions for baseline scenario b in year y (tCO_2e/yr) = HS 1: 7,366 HS 2: 5,499

$PE_{p,y}$	Project emissions for project scenario p in year y (tCO_2e/yr) = HS 1: 2,234 HS 2: 1,668
$LE_{p,y}$	Leakage for project scenario p in year y (tCO_2e/yr) = 0
As per the methodology the governing equation for the emission reduction calculations is as follows with ($\sum BE_{b,y} - \sum PE_{p,y}$) is directly merged in to the following equation. $ER_y = \sum_{b,p} N_{p,y} * U_{p,y} * (ER_{b,p,y,CO2} + ER_{b,p,y,nonCO2})) - \sum LE_{p,y}$ Where:	
$\sum_{b,p}$	Sum over all relevant (baseline b/project p) couples = 1,100 ICS
$N_{p,y}$	Cumulative number of project technology-days included in the sales/distribution database for project scenario p against baseline scenario b in year y = 1,102 * Total Technology days = HS 1: 442,042days HS 2: 330,000 days
$U_{p,y}$	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) = 75% (HS 1 & 2)
$ER_{b,p,y,CO2}$	Specific CO_2 emission savings for an individual technology of Project against an individual technology of Baseline b in year y, in tCO_2/day as derived from the statistical analysis of the data collected from the field tests = HS 1: 0.01471 tCO_2e/day = HS 2: 0.01471 tCO_2e/day
$ER_{b,p,y,nonCO2}$	Specific non-CO_2 emission savings for an individual technology of Project against an individual technology of Baseline b in year y, in tCO_2/day as derived from the statistical analysis of the data collected from the field tests = HS 1: 0.00077 tCO_2e/day = HS 2: 0.00077 tCO_2e/day
$LE_{p,y}$	Leakage for project scenario p in year y (See Section E.3) = 0% = 0 tCO_2e/yr
$ER_{b,p,y,CO2} = \sum_i \{ f_{NRB,b,i,y} * B_{b,y,i} * NCV_{b,i} * EF_{b,i,CO2} \} - \sum_i \{ f_{NRB,b,i,y} * B_{p,y,i} * NCV_{p,i} * EF_{p,i,CO2} \}$	
Where:	
$f_{NRB,b,i,y}$	Fraction of woody biomass used in year y for fuel type *i* that can be established as non-renewable biomass (NRB) = 0.91
$B_{b,y,i}$	Fuel consumption for fuel type *i* used in baseline b in year y in tonnes, from baseline KPTs = 2.56t

	$B_{p,y,i}$ Fuel consumption for fuel type *i* used in project p in year y in tonnes, as derived from the statistical analysis of the data collected from the field tests = 0.7773t $NCV_{b,i}$ Net calorific value of the fuel type *i* used in baseline b (TJ/tonnes) = 0.0295 $NCV_{p,i}$ Net calorific value of the fuel type *i* used in project p (TJ/tonnes) = 0.0295 $EF_{b,i,CO2}$ CO_2 emission factor of the fuel type *i* used in the baseline = HS 1: 3.304tCO_2/tonne of charcoal = HS 2: 3.304 tCO_2/tonne of charcoal $EF_{p,i,CO2}$ CO_2 emission factor of the fuel type *i* used in the project = HS 1: 3.304 tCO_2/tonne of charcoal = HS 2: 3.304 tCO_2/tonne of charcoal *i* Fuel Type $ER_{b,p,y,nonCO2} = \sum_i \{ B_{b,y,i} * NCV_{b,i} * EF_{b,i,nonCO2} \} - \sum_i \{ B_{p,y,i} * NCV_{p,i} * EF_{p,i,nonCO2} \}$ Where: $EF_{b,i,nonCO2}$ non-CO_2 emission factor of the fuel type *i* used in the baseline = HS 1: 0.173 tCO_2/tonne of charcoal = HS 2: 0.173 tCO_2/tonne of charcoal $EF_{p,i,nonCO2}$ non-CO_2 emission factor of the fuel type *i* used in the project = HS 1: 0.173 tCO_2/tonne of charcoal = HS 2: 0.173 tCO_2/tonne of charcoal LEy Leakage for project scenario p in year y = 0% **SDG 1: No Poverty** Net Benefit (SDG 1) = $BSA_{Project} - BSA_{Baseline}$ = 1,100 Where: $BSA_{Baseline}$ Number of ICS distributed in baseline = 0 $BSA_{Project}$ Number of ICS distributed in Project = 1,100 Net Benefit (SDG 1) = HHSProject – HHSBaseline = 99% (HS 1& 2) Where: $HHS_{Baseline}$ % HH reporting money saving due to reduced fuel consumption in baseline = 0 $HHS_{Project}$ % HH reporting money saving due to reduced fuel consumption in project = 99% (HS 1& 2) **SDG 3: Good Health and Well Being** Net Benefit (SDG 3) = $SPM_{HH,Project} - SPM_{HH,Baseline}$

= 99% HS 1
= 100% HS 2

Where:

$SPM_{HH,Baseline}$ % HH reporting reduction in smoke/PM emissions while cooking on improved stove in baseline = 0

$SPM_{HH,Project}$ % HH reporting reduction in smoke/PM emissions while cooking on improved stove in project = HS1: 99%
= HS2: 100%

SDG 5: Gender Equality

Net Benefit (SDG 5) = $HHTS_{Project} – HHTS_{Baseline}$
= 100% (HS 1& 2)

Where:

$HHTS_{Baseline}$ % HH reporting time saving from cooking on a more efficient stove

= 0

$HHTS_{Project}$ % HH reporting time saving from cooking on a more efficient stove

= 100% (HS 1& 2)

SDG 7: Affordable and Clean Energy

Net Benefit (SDG 7) = $ACS_{Project}$ - $ACS_{Baseline}$
= 1,100

Where:

$ACS_{Baseline}$ Access to affordable and clean energy (Number of operating ICS units under Baseline)
= 0

$ACS_{Project}$ Access to affordable and clean energy (Number of operating ICS units under Project)
= 1,100

SDG 8: Decent Work and Economic Growth

Net Benefit (SDG 8) = $QE\ IG_{Project}$ - $QE\ IG_{Baseline}$
= 14 (HS 1& 2)

Where:

$QE\ IG_{Baseline}$ Quantitative Employment and income generation (Number of person (male and female) hired under Baseline)
= 0

$QE\ IG_{Project}$ Quantitative Employment and income generation (Number of person (male and female) hired under Project)
= 14

SDG 12: Responsible Consumption and Production

$B_{y,savings} = B_{b,y,i} – B_{p,y,i}$

Where:

$B_{y,savings}$ Reduction in domestic fuel consumption (tonnes/year)
= 1.7857t

$B_{b,y,i}$ Fuel consumption for fuel type *i* used in baseline b in year y in tonnes, from baseline KPTs
= 2.56t

$B_{p,y,i}$ Fuel consumption for fuel type *i* used in project p in year y in tonnes, as derived from the statistical analysis of the data collected from the field tests

= 0.77731t

	The project value for the emission reduction are HS1:2,234 tCO2e/yr and HS2: 1,668 tCO2e/yr total for the monitoring period 3,902 tCO2e/yr

D.7.3. Calculation of leakage GHG emissions

Means of verification	Document Review, Interview
Findings	NA
Conclusion	A justification has been provided for each condition as per the methodology TPDDTEC, version 3.1/B02/. There are no leakages applicable for the reported monitoring period.

D.7.4. Summary calculation of SDG Impacts

Means of verification	Document Review, Interview
Findings	CAR 03 was raised and has been resolved.
Conclusion	

	SDG Impact	**Baseline values**	**Project values**	**Net benefit**
13	Tonnes CO_2 equivalent emissions	HS1: 7,366 HS2: 5,499 Total: 12,865	HS1: 2,234 HS2: 1,668 Total: 3,902	HS1: 5,131 HS2: 3,831 Total: 8,962
1	Number of ICS distributed	0(ICS distributed) 0 Kwacha/year (Financial savings)	1,100 (ICS distributed) HS1: 1923.88 Kwacha/year HS2: 1304.85 Kwacha/year	1,100 (ICS distributed) HS1: 1923.88 Kwacha/year HS2: 1304.85 Kwacha/year
3	% HH reported reduction in smoke/PM Emissions while cooking on ICS	0	HS1: 99% HS2: 100%	HS1: 99% HS2: 100%
5	% HH reporting time saving from cooking due to more efficient stove	0	100% (HS 1 & 2)	100% (HS 1 & 2)
7	Access to affordable and clean energy (number of ICS distributed)	0	1,100	1,100
8	Quantitative employment and income generation (Number of persons hired)	0	14	14
12	Charcoal fuel savings while cooking on project ICS in tonnes per annum	2.56	0.7773	1.7857

	The data presented in the monitoring report /01/ and emission reduction worksheet /02/ were assessed by reviewing in detail project documentation, collection of monitored data, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. Sufficient evidence were presented and verified by the CCIPL for the reported emission reductions as listed above.

D.7.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered VPA-DD

Means of verification	Document Review, Interview
Findings	CAR04 was raised and has been resolved.
Conclusion	The ex-ante estimate value of the emission reductions for the monitoring period as per the registered VPA-DD /B04/ is 5,934 tCO_2e for HS1 and 4,430 tCO_2e for HS2, the actual emission reductions achieved are 5,131 tCO_2e for HS1 and 3,831 tCO_2e for HS2.

SDG	Values estimated in ex ante calculation of approved VPA-DD	Actual values achieved during this monitoring period
13	HS1: 5,934 (tCO_2e) HS2: 4,430(tCO_2e)	HS1: 5,131 (tCO_2e) HS2: 3,831(tCO_2e)
1	1,100 (Number of ICS distributed)	1,100 (Number of ICS distributed)
3	100%	HS1: 99% HS2: 100%
5	100%	100% (HS 1 & 2)
7	1,100 (Number of ICS distributed)	1,100 (Number of ICS distributed)
8	30 (Number of persons hired)	14 (Number of persons hired during MP 1 & 2)
12	2.08 (tonnes/year)	MP1: 1.7857 (tonnes/year) (MP 1 & 2)

The emission reduction calculations provided in the spreadsheet /02/ have been verified to be correct and in line with the registered VPA-DD /B04/.

D.7.6. Remarks on difference from estimated value in registered VPA-DD

Means of verification	Document Review, Interview
Findings	--
Conclusion	The ex-ante estimate value of the emission reductions for the monitoring period as per the registered VPA-DD /B04/ is HS1: 5,934 (tCO_2e) and HS2: 4,430 (tCO_2e) and the actual emission reductions achieved for the monitoring period is HS1: 5,131(tCO_2e) and HS2: 3,831 (tCO_2e). For SDG 13, since actual emission reduction is lower than the estimated value and hence it is acceptable to the verification team. The monitoring report /01/ provides reason for decrease in the actual emission reduction and the same was confirmed by the verification team by interviewing the

	representatives of PP and by reviewing the actual implementation status of the project. For other SDG parameters, PP has provided justification in the Monitoring report and assessment of the same is provided below: • SDG 1: The actual value is same as the estimated value, which is deemed appropriate and thus acceptable to the VVB. • SDG 3: The actual value is same as the estimated value for HS2, which is deemed appropriate and thus acceptable to the VVB. For HS1 value is less than the estimated value, which is deemed appropriate and thus acceptable to the VVB. • SDG 5: The actual value is same as the estimated value, which is deemed appropriate and thus acceptable to the VVB. • SDG 7: The actual value is same as the estimated value, which is deemed appropriate and thus acceptable to the VVB. • SDG 8: The actual value is less than the estimated value, due to less number of personnel hired for distribution and monitoring compared to the ex-ante estimates. • SDG 12: The actual value is less than the estimated value the MP's, it is due to the ex-ante value is calculated based on the estimated fuel use and the ex-post value calculated as per the project KPT, which is deemed appropriate and thus acceptable to the VVB. • SDG 13: The actual value is lower than the estimated value, it is due to the distribution in HS1 was progressive and HS2 was just 300 days, which less than the estimated MP days, hence, actual values are less than the estimated values, which is deemed appropriate and thus acceptable to the VVB.

SECTION E. Internal quality control

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The verification report passed a technical review before being submitted to the Gold Standard. The technical review is performed by a technical reviewer qualified in accordance with CCIPL's qualification scheme for validation and verification.

SECTION F. Verification/Certification opinion

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Carbon Check (India) Private Ltd. (CCIPL) has performed the 1st and 2nd periodic verification of the registered GS Project Activity "TASC Clean Cooking PoA – VPA 4 (Zambia)".

The verification team assigned by the VVB concludes that the project activity as described in the VPA-DD /B04/ and the Monitoring report /01/, meets all relevant requirements of the Gold Standard. The verification has been conducted in line with the GS4GG requirements for project activities.

Verification methodology and process

The Verification team confirms the contractual relationship signed between the VVB, Carbon Check (India) Private Ltd. and the Project Participant on 12/07/2022 /17/. The team assigned to the verification meets the CCIPL's internal procedures including the UNFCCC/GS requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and CCIPL's procedures and requirements.

The verification has been performed as per the requirements described in the GS4GG and constitutes the review and completion of the following steps:

- Reviewing the VPA-DD /B04/, including the monitoring plan and the corresponding validation report /B04/;
- Desk review of the MR /01/ and other relevant documents including documents related to the project activities in emission reductions;
- Review of the applied monitoring methodology Technologies and Practices to Displace Decentralized Energy Consumption (version 3.1) /B02/;
- On-site inspection (14/09/2023 to 16/09/2023)
- Resolution of CARs and CLs raised during verification
- Issuance of Verification Report

The project activity was correctly implemented according to selected monitoring methodology, monitoring plan and the registered 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 document review and remote interviews, the verification team confirms that the project activity has resulted in emission reduction of 5,342 tCO_2e for HS1 and 3,988 tCO_2e for HS2.

This statement covers verification period:
16/04/2021 –15/04/2023 (Inclusive)

The VVB has raised 10 clarifications and 09 corrective action requests and 01 forward action request.

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

The VVB, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 5,131 tCO_2e for HS1 and 3,831 tCO_2e for HS2 and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records.

Vintage for MP1	**ER (tCO_2e)**
16/04/2021 – 31/12/2021	2,960 tCO_2e
01/01/2022 – 31/12/2022	4,661 tCO_2e
01/01/2023 – 15/04/2023	1,341 tCO_2e
Total for the monitoring period	**8,962 tCO_2e**

Appendix 1. Abbreviations

Abbreviations	Full texts
BE	Baseline Emissions
CA	Corrective Action/ Clarification Action
CER	Certified Emission Reduction
CAR	Corrective Action Request
CCIPL	Carbon Check (India) Private Ltd.
CL	Clarification Request
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
DVR	Draft Verification Report
EB	CDM Executive Board
EF	Emission Factor
FA	Final Approval
FAR	Forward Action Request
FVR	Final Validation Report
GHG	Greenhouse gas(es)
GS	Gold Standard
GWh	Giga Watt Hour
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LE	Leakage Emissions
MP	Monitoring Period
MR	Monitoring Report
MWh	Mega Watt Hour
OSV	On Site Visit
PE	Project Emissions
PP(s)	Project Participant(s)
PRC	Post registration change
QC/QA	Quality Control/ Quality Assurance
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
VVB	Validation & verification Body

Appendix 2. Documents reviewed or referenced

S. No.	Document
/01/	1. Monitoring Report (Version 1.0 dated 24/07/2023) 2. Monitoring Report (Version 1.9 dated 20/06/2024)
/02/	1. Emission reductions sheet (Corresponding to /01-2/)
/03/	Evidence for avoidance of double counting dated: 05/10/2020
/04/	VPA distribution records
/05/	Training Manual (KPT ODK instructions and field training PPT)
/06/	Jikokoa classic report: Lab report from the Kenya Industrial Research and Development (KIRDI) for the thermal efficiency testing of cookstoves dated 13/10/2020
/07/	Proof of Carbon Wavier certification dated 12/05/2022
/08/	Sample agreements with the end user demonstrating that stoves are free of cost.
/09/	KPT survey records: for MP1 and MP2
/10/	Usage Monitoring Survey (Habit Surveys)
/11/	LSC report
/12/	Employment List
/13/	Verification call recordings MRV1 and MRV2
/14/	Moisture meter invoice and scale invoices 1. Moisture_Meter_Invoice_VPA4 2. Scale_Invoice_VPA4
/15/	Manufacturer specification for monitoring equipment mentioned in /14/
/16/	1. Third Party fNRB report by C4 EcoSolutions dated: 11/03/2022 2. fNRB calculation sheet corresponding to the fNRB report
/17/	Counter signed contract between PP and VVB dated: 12/07/2022

Background Documents

Ref no.	Reference Document
/B01/	1. Validation and Verification Standard for PoAs, version 03.0 2. Project Standard for PoAs, version 03.0 3. Project Cycle Procedure for PoAs, version 03.0
/B02/	Technologies and Practices to Displace Decentralized Energy Consumption (version 3.1)
/B03/	1. Gold Standard Principles and Requirements version 1.2, dated 24/10/2019 2. Gold Standard Programme of Activity Requirements version 1.2, dated 24/10/2019 3. GS Validation & Verification Body Requirements version 2.0, dated 14/01/2021 4. GS Validation and Verification Standard version 1.0, dated 06/03/2023 5. Community Services Activity Requirements (version 1.1) under GS4GG https://globalgoals.goldstandard.org/200-gs4gg-community-services-activity-requirements/
/B04/	Registered VPA-DD, Version 1.8 dated 15/02/2023 and Corresponding validation report Registered PoA-DD, Version 05, dated 03/02/2022 and Corresponding Validation Report
/B05/	Sampling and Survey a) CDM Sampling Standard, version 09.0 b) Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0.
/B06/	Site Visit and Remote Audit Requirements and Procedures, version 1.0 dated 17/11/2021
/B07/	Cookstove Usage Rate Guidelines, version 2.0 dated 27/10/2020
/B08/	Guideline: General guidelines for SSC CDM methodologies Version 23.1

Appendix 3. Competence Certificates of Team Members

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Ms. Aparna Choudhary

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☐ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☐ CCB Expert	☐ Legal Expert	☐ Financial Expert	☐ Environmental, Health and Safety financial matters
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	
☒ Local Expert for India			

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☐ TA 14.1	☐ TA 15.1	☐ TA 16.1		

Issue Date
5th December 2023

Expiry Date
31st December 2024

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
2022[1]	Annual revision
Jan 2023	Annual revision
Dec 2023	Change in the template due to revision in TA and function

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

[1] Please refer to previous version of FM 7.9 for the revision history

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Kiran KV

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☐ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☐ CCB Expert	☐ Legal Expert	☐ Financial Expert	☐ Environmental, Health and Safety financial matters
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	
☒ Local Expert for India			

in the following Technical Areas:

☐ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☒ TA 14.1	☒ TA 15.1	☐ TA 16.1		

Issue Date

5th December 2023

Expiry Date

31st December 2024

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
2022	Initial Adoption
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Dec 2023	Change in the template due to revision in TA and function

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

[1] Please refer to previous version of FM 7.9 for the revision history

Carbon Check (India) Private Limited

Certificate of Competency

Butano Sinyunga

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☐ Validator	☐ Verifier	☐ Team Leader	☐ Technical Expert
☐ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☐ CCB Expert	☐ Legal Expert	☐ Financial Expert	☐ Environmental, Health and Safety financial matters
☐ SDG+	☐ Social no-harm(S+)	☐ Environment no-harm(E+)	
☒ Local Expert for Zambia			

in the following Technical Areas:

☐ TA 1.1	☐ TA 1.2	☐ TA 2.1	☐ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☐ TA 13.1	☐ TA 13.2
☐ TA 14.1	☐ TA 15.1	☐ TA 16.1		

Issue Date

1st December 2023

Expiry Date

31st December 2024

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

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Dec 2023	Template changes to include additional functions and TA

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

[1] Please refer to previous version of FM 7.9 for the revision history

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Anubhav Dimri

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☒ Plastic Waste Expert
☒ CCB Expert	☐ Legal Expert	☒ Financial Expert	☒ Environmental, Health and Safety financial matters
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	

☒ Local Expert for India, RSA and Spanish speaking countries

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☒ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☒ TA 14.1	☒ TA 15.1	☒ TA 16.1		

Issue Date

5th December 2023

Expiry Date

31st December 2024

Ms. Priya Suman
Compliance Officer

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

Revision date	Summary of changes
2022[1]	Annual revision
Jan 2023	Annual revision
Dec 2023	Change in the template due to revision in TA and function

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

[1] Please refer to previous version of FM 7.9 for the revision history

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

Table 1. FARs from this verification

FAR ID	**01**	**Section no.**		**Date:** 23/01/2024
Description of CAR				
• In the registered VPA DD, the baseline scenario is identified as the households using charcoal for day to day cooking purpose. However during the onsite survey, VVB has observed that the following household were using the higher efficient cookstoves such as Electric stove and LPG in the baseline scenario.148617766 (Peter Munenga) • 148569563 (Christon Sinkala) Therefore PP is requested to remove these households from the database in upcoming monitoring periods. During the onsite visit and interviews, VVB has observed that the following stoves were damaged beyond repairs and as notified by the households, the stoves were neither repaired nor replaced.: • 148581172 (Mercy Kapata) • 148569563 (Christon Sinkala) • 148643312 (Diana Chibwe) Therefore PP is requested to remove these household from the database in upcoming monitoring periods				
PP response				**Date:** 18/03/2024

This FAR has been added to Section B.1.1 in the MR and has been responded to as follows: Stove serial numbers 148617766 (Peter Munenga) and 148569563 (Christon Sinkala): The baseline scenario was assessed at validation prior to the project implementation and it is not the baseline scenario that is being assessed in this verification. Solwezi is a peri-urban area and many of the households do have access to electricity/LPG and may own an electric/LPG stove, however, this does not mean that they are using an electric/LPG stove as their primary stove. Many do not use it at all as electricity and LPG are expensive. The primary stove captured in the baseline scenario for the VPA was a charcoal brazier (traditional stove) and the primary fuel type was charcoal – this scenario was assessed, validated and certified at the VPA inclusion stage. In an improved cookstove project the baseline scenario is compared with the project scenario (for each MP) and emission reductions are based on the reduction in fuel being used. This is also why KPTs are the most accurate way of monitoring this parameter value, because they isolate fuel use in the household (i.e. only charcoal use), so that there is a clear like-for-like comparison between the baseline device and the project device using the same fuel; any other fuel use is not captured as it is not relevant to the project as the project only places focus on the reduction of charcoal being used, not electricity or LPG. However, in accordance with this FAR, these stoves will be will be excluded from the database for future monitoring periods. Stove serial number 148569563 (Christon Sinkala): This household, discovered to have a damaged stove, participated in a habit survey during May 2022 (for MP1), where they reported the stove as intact and in daily use. During the verification site visit in September 2023, the household disclosed that the stove had sustained damage within the last approximately three months, which was not captured in the May 2022 surveys. To facilitate reporting of stove damage, all households received leaflets with TASC contact details upon receiving their stoves. Stove serial numbers 148643312 (Diana Chibwe) and 148581172 (Mercy Kapata): These stoves were reported as damaged within the two months preceding the site visit in September 2023. Despite this, they were found to be operational during the monitoring period, as confirmed by the habit survey. However, now that the damage has been identified, all three of these stoves will be excluded from the database for future monitoring periods.
Documentation provided by the CME
VVB assessment **Date:** 19/03/2024
VVB should confirm that the stoves with the serial number 148617766, 148569563, 148569563, 148643312 and 148581172 has been removed from the database used for the ER calculation.

Table 2. CARs from this verification

CAR ID	01	**Section no.**	Cover page	**Date:** 04/10/2023
Description of CL				
PP is requested to add the details of all validated VPA in Programme of activity information table. It has been observed that PP has provided the version number of PoA DD in the KPI table of MR, PP is requested to provide the version number of VPA DD in this section PP is requested to provide the date of last annual report in KPI table of MR				
PP response				**Date:** 30/11/2023
1) The details of all validated VPA's have been updated in PoA information table in MR 2) The version number of VPA DD has been updated in the KPI table in MR 3) There is no annual report for this VPA. The design review was only completed and approved by SustainCert on 03/03/2023 and therefore the annual report is not yet required.				
Documentation provided by PP				
VVB assessment				**Date:** 10/01/2024

1. Details of validated VPAs is added in the PoA information table.

2. Version number for VPA-DD provided in the findings response below is 1.8. PP has also provided the VPA DD version 1.8 to VVB. However the version number of VPA DD mentioned in KPI table of MR is 1.7. Therefore PP is requested to correct the same

3. Justification is provided by the PP regarding the date of the last annual report.

   Hence, CAR01 is open

PP response	**Date:** 22/01/2024
The VPA-DD version number has been updated to v1.8 in the KPI table of the MR. The updated MR is "TASC_Zam_VPA_4_MR_v1.3".	
VVB assessment	**Date:** 23/01/2024
Version number of the applicable VPA-DD has been updated in the KPI table. Hence, CAR01 is closed.	

CAR ID	02	**Section no.**	D.1	**Date:** 04/10/2023
Description of CAR				
The value of '$B_{b,y}$' in the VPA-DD is 2.56, in the MR the value for '$B_{b,y}$' is given as 2.5630, which is not conservative and is inconsistent, PP is requested to update the value accordingly.				
PP response				**Date:** 30/11/2023
The $B_{b,y}$ value has been updated in section D.1 of the MR.				
Documentation provided by PP				
VVB assessment				**Date:** 10/01/2024
Value of $B_{b,y}$ is updated and the value is as per the VPA-DD. Hence, CAR02 is closed.				

CAR ID	03	**Section no.**	D.2	**Date:** 04/10/2023
Description of CAR				
In section D.2 the monitored parameter $B_{y,savings}$ for MP2 is mentioned as 2.0739, which is not consistent with the $B_{y,savings}$ for the MP2 mentioned in the section D.3 and the ER calculation sheet. PP is requested to revise this section.				
PP response				**Date:** 30/11/2023
The value for $B_{y,savings}$ has been updated to 1.7857 in section D.2 which is consistent with the value given in section D.3 and the ER calculation sheet.				
Documentation provided by PP				
TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5				
VVB assessment				**Date:** 10/01/2024
The value for $B_{y,savings}$ is now updated in the section D.2 of the MR and is now consistent with the section D.3 of the MR and the ER sheet. Hence, CAR03 is closed.				

CAR ID	04	**Section no.**	D.2	**Date:** 04/10/2023
Description of CAR				
In the section D.2, data parameters monitored, PP is requested to add the reference for the values in the source section of the parameters, with the cell number, tab and file name for the excel sheet, that is used for the reference.				
PP response				**Date:** 30/11/2023
The references for each parameter have been updated in the "source of data" row in all of the tables in section D.2. of the MR.				

For SDG 13:

- Data/Parameter: $B_{p,y,i}$, the reference "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, pKPT Calculations, cell AY18" was added in "Source of data" section

An error was noted in the VPA_4_MRV_1_KPT_v1 excel workbook. The average moisture and adult equivalent calculations (AV1:BA47) were calculated using the wrong columns but this has been amended. As a result of this, the $B_{p,y,I}$ value increased from 0.7741 to 0.7773, this also resulted in a corresponding decrease in ER's.

- Data/Parameter: $U_{p,y}$, the references "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "Upy MRV 1" tab, cell E8" and "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "Upy MRV 2" tab, cell E11" were added in "Source of data" section. More information was also added to the "Additional comment" section of the table.

- Data/Parameter: $N_{p,y}$, the reference "Zambia – VPA 4_Database, "Charcoal Stoves" tab, cell M1105" was added in "Source of data" section.

- Data/Parameter: $LE_{p,y}$, the reference "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "Ex Post MRV 1" tab, cell E19" was added in "Source of data" section

For SDG 1:

- Data/Parameter: BSA/HHS, the reference "Zambia – VPA 4_Database, "Charcoal Stoves" tab, cell M1105" was added in "Source of data" section

For SDG 3:

- Data/Parameter: SPM_{HH}, the references "MP1: TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "SDG Calculations MRV 1" tab, cell E5" and "MP2: TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "SDG Calculations MRV 2" tab, cell E5" were added in "Source of data" section

For SDG 5:

- Data/Parameter: HHTS, the references "MP1: TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "SDG Calculations MRV 1" tab, cell K5" and "MP2: TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "SDG Calculations MRV 2" tab, cell K5" were added in "Source of data" section. The description was changed to "% of households reporting time savings" in accordance with VPA-DD. Measurement methods and procedures were changed to "Ex-post monitoring survey assessing on a sampled basis the percentage of VPA households reporting time saved whilst cooking when using the project ICS vs. baseline."

For SDG 7:

- Data/Parameter: $AACS_{HH}$, the reference "Zambia – VPA 4_Database, "Charcoal Stoves" tab, cell M1105" was added in "Source of data" section

For SDG 8:

- Data/Parameter: QE IG, an error was made in the MR, the correct number of employments generated is 14. This has been corrected in the MR.

For SDG 12:

- Data/Parameter: $B_{y,savings}$, the reference "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "Ex Post MRV 1" tab, cell E5" was added in "Source of data" section.

Documentation provided by PP

TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5

Zambia – VPA 4_Database
VPA_4_Habit_MRV1
VPA_4_Habit_MRV2

VVB assessment	**Date:** 10/01/2024

PP has mentioned sources for all the parameters in the section D.2 of the updated MR.

Hence, CAR04 is closed.

CAR ID	05	**Section no.**	D.2	**Date:** 04/10/2023

Description of CAR

It has been observed that PP has provided the SDG 3 and 5 contribution values in section D.2 of MR. However, the value is not provided in the excel spreadsheet which can be traced to the survey records. PP is requested to provide the same to VVB.

PP response	**Date:** 30/11/2023

For SDG 3:
SPM_{HH} was assessed according to the beneficiary responses in the habit surveys.

- For MP1: responses were recorded in column CO "Stove_Smoke" of the "data" tab in VPA_4_Habit_MRV1 and further analysed in the TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "SDG Calculations MRV 1" tab where the value of 99% is shown in cell E5.
- For MP2: responses were recorded in column DC "StoveSmoke" of the "data" tab in VPA_4_Habit_MRV2 and further analysed in the TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "SDG Calculations MRV 2" tab where the value of 100% is shown in cell E5.

For SDG 5:
HHTS was assessed according to the beneficiary responses in the habit surveys.

- For MP1: responses were recorded in column CF "Cooking_Time" of the "data" tab in VPA_4_Habit_MRV1 and further analysed in the TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "SDG Calculations MRV 1" tab where the value of 100% is shown in cell K5.
- For MP2: responses were recorded in column CS "IsTimeSavedCooking" of the "data" tab in VPA_4_Habit_MRV2 and further analysed in the TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5, "SDG Calculations MRV 2" tab where the value of 100% is shown in cell K5.

Documentation provided by PP

VPA4_Habit_MRV1
VPA4_Habit_MRV2
TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5

VVB assessment	**Date:** 10/01/2024

The values for the SDG 3 and SDG 5 can now be found in the ER sheet and can be traced back to the survey records.

Hence, CAR05 is closed.

CAR ID	06	**Section no.**	D.2	**Date:** 04/10/2023

Description of CAR

For the calculation of usage rate, in the section B.7.1 of VPA DD version 1.6 and section D.2 of MR, PP has mentioned that "*The usage rate shall be calculated for each age (simple random / stratified random sampling to be applied as applicable)*". In section D.2 of MR, PP has also stated that "The monitored usage rate as per the user habit surveys is 100%., while in section D.4 of MR, PP has stated that electric stove and charcoal brazier as secondary stoves along with the ICS are in use in the household in project scenario. PP is requested to clarify how the usage rate of 100% has been determined if other stoves are in use for cooking in the project scenario

It has been observed that PP has not provided the calculation of usage rate determined through habitat survey in the MR or ER sheet. PP is requested to provide the same (weighted average usage rate).

PP is also requested to describe in MR how the continues use of baseline stove and use of any other device for cooking in the project scenario has been taken into consideration while calculating the ER.

PP response	**Date:** 30/11/2023

1. According to Table 1 in the GS Requirements and Guidelines: Usage Rate Monitoring v2.0 document it is stated that to practice "Mandatory" monitoring the PD need to do the following activities:

I. Define use and non-use

Usage is not defined in the VPA-DD. This has occurred erroneously and was not picked up during validation and design review. As per other VPAs in the PoA (for example in "TASC_Zam_VPA_1and3_MR_v1.5_Clean"), project device usage is categorized by household responses in the habit survey that include: "Everyday" and "Several times a week". Non-usage is categorized by household responses that include: "Less than weekly" and "Never". In this context, 100% of households surveyed said that they use the stove either "every day" or "several times a week".

That other types of stoves were present in the baseline does not bear relevance to the usage rate of the project device. Stoves were distributed to households that use charcoal as a fuel for cooking in the baseline scenario and the quantity of charcoal fuel used in that scenario was measured via baseline KPTs. This process takes into account any cooking that may take place on secondary devices.

KPT's were then utilized to measure/quantify household charcoal fuel use in the project scenario and any residual baseline stove usage is also taken into account at this stage. As stated on page 18 of the VPA -DD: "Use of the baseline appliance will be monitored via the habit survey (parameter Up,y) and any residual use will be captured in the kitchen performance tests (parameter Bp,y,i) which records all charcoal use. If the baseline appliance is still in use, higher charcoal usage will be recorded in the KPTs, resulting in lower ER's".

As the project is only claiming the mandatory level of monitoring requirements, a conservative 75% usage rate is applied during the monitoring period.

II. In person household usage survey

In person household usage surveys are completed for each monitoring period. Please see "VPA_4_Habit_MRV1" and "VPA_4_Habit_MRV2" for the usage and habit survey results.

III. Verification of accuracy of results

Household surveys were carried out by trained staff employed by TASC (PD). The TASC call center in Lusaka Zambia carried out verification check to confirm stove usage details from a subset of 5-10% of randomly selected habit/usage survey participants. These verification phone calls were recorded and the recordings will be shared with the VVB.

Please note that all the evidence mentioned above has been placed in the "Mandatory Monitoring" folder that was shared with the VVB.

2. A calculation for Upy for each monitoring period was added into the ER calculation sheet in the tabs labelled "Upy MRV 1" and "Upy MRV 2". Please note that the data used to calculate Upy MRV 1 is from column AT in the "VPA_4_Habit_MRV1" excel workbook, the data used to calculate Upy MRV 2 is from column BB in the "VPA_4_Habit_MRV2" excel workbook. Furthermore, as we are only applying mandatory monitoring, we can only claim a usage value of 75% even if a higher usage rate has been monitored.

3. All of the stoves were distributed between 16/04/2021 and 28/05/2021 and are therefore the same age. Due to this, there was no need for a weighted average calculation to be done. As shown in the table below (from GS Requirements and Guidelines: Usage Rate Monitoring v2.0 document, page 7), the stoves are all between 1 – 2 years old so a weighted average is not needed.

Example – 1 Cooking device project meeting the mandatory level (usage rate capped at 75%) monitoring requirements

Age group	Cooking device population in each age group	Survey results	Values applied for weighted average assessment
0 - 1	5000	70%	70%
1 – 2	3000	90%	75%
2 - 3	2000	95%	75%
Total cooking devices	10000	Weighted average usage rate (Up,y)	72.5%

Documentation provided by PP

VPA4_Habit_MRV1
VPA4_Habit_MRV2
GS Requirements and Guidelines: Usage Rate Monitoring v2.0
TASC Zambia VPA4-DD v1.8
TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5
Mandatory Monitoring Folder

VVB assessment **Date:** 10/01/2024

1. Usage rate is now 75% in the MR and ER sheet. PP has implemented Mandatory usage and provided information on Mandatory usage rate in the section D.4 of the MR.
2. PP has provided calculation of usage rate in the ER sheet
3. As the stoves are of same age, weighted average is not required to be used in the calculation of the usage rate.

Hence, CAR06 is closed.

CAR ID	07	**Section no.**	E.5	**Date:** 04/10/2023

Description of CAR

It has been observed that the ex-ante emission reduction provided in the section E.5 of MR is not consistent with the value provided in ER sheet. PP is requested to correct the same.

PP response **Date:** 30/11/2023

The values for the ex-ante emission reductions in section E.5. of the MR have been corrected and are now consistent with those provided in the ER calculation sheet.

Documentation provided by PP

VVB assessment **Date:** 10/01/2024

The values of ex ante emission reduction has been made consistent with ER sheet.

Hence, CAR07 is closed

CAR ID	08	**Section no.**	E.5	**Date:** 04/10/2023

Description of CAR

In the section E.5 PP has mentioned Actual values for ER in MP1 as “7.880”, PP is requested to rectify this typo.

PP response **Date:** 30/11/2023

This has been corrected accordingly in section E.5. of the MR and is consistent with the values given in the ER calculations.

Documentation provided by PP

VVB assessment **Date:** 10/01/2024

The values of actual ERs in the section E.5 of the updated MR are in line with the ER sheet in the.

Hence, CAR08 is closed.

CAR ID	09	Section no.	ER sheet	Date: 04/10/2023
Description of CAR				
PP is requested to use “ROUNDDOWN” function in calculating ‘baseline emission’, ‘project emission’ and ‘emission reduction’ in the ER calculation sheet.				
PP response				**Date:** 30/11/2023
The “ROUNDDOWN” function has been applied to the final emission reduction calculations and baseline emission calculations in the ER calculation sheet and these values have been amended accordingly in the MR.				
Documentation provided by PP				
VVB assessment				**Date:** 10/01/2024
PP has used the “ROUNDDOWN” function in calculating the final ER. Hence, CAR09 is closed				

Table 3. CL from this verification

CL ID	01	Section no.	A.4	Date: 04/10/2023
Description of CL				
It has been observed that in section A.4 of MR, PP has provided the start date, end date and duration of the total crediting periods. PP is also requested to provide the end date and duration of the current crediting period which is 1st crediting period. Also, it has been observed that in section c.1.2 of VPA DD version 1.6, the expected operational lifetime of VPA is given as 15 years. PP is requested to provide the technical specification from manufacturer for the operational lifetime of the cookstoves. As per the database provided, the first and the last distribution dates of the cookstove was 16/04/2021 and 16/03/2022 respectively. During the verification survey, VVB has observed that one ICS from MP1 survey list and 2 ICS from MP2 survey list have been found to be damaged. No repairs or replacements were done. Based on the response from the households, it has been observed that grievance or replacements are not carried out by PP. Therefore PP is requested to clarify the longevity of the VPA considering the lifetime of the ICS and the future distribution plans.				
PP response				**Date:** 30/11/2023
The dates for the current crediting period (16/04/2021 – 15/04/2026) have been added in section A.4. of the MR. The total operational lifetime of the VPA has been given as 15 years in section C.1.2. of the VPA -DD and the stove manufacturers (BURN) have stated that the average operational lifetime of the Jikokoa stove model is 10 years (as evidenced in the “BURN Waiver Letter” document provided) if the stoves are used according to the guidance provided. There is no obligation on the PP to repair or replace the stoves, where they are mis-used or damaged by the beneficiary. All stove beneficiaries were given an information leaflet labelled “Jikokoa Charcoal Handout 270421” when they received their stoves with usage instructions and the PP (TASC)’s contact details to report any grievances. The beneficiaries are told to use these contact details should they have any queries regarding the stove or if the stove is broken/damaged and it will then be fixed or replaced. The information leaflet is provided in addition to this as evidence. To date the PP has not receive d any grievance notifications or any specific requests to repair or replace stoves. Where stoves are damaged through mis-use the PP will not replace them. Where it is a technical failure of the device, the stove will either be under warrantee from the manufacturer (Burn) and eligible for replacement, or if not it is at the PPs discretion as to whether a replacement will be made.				
Documentation provided by PP				
BURN Waiver Letter Stove beneficiary information leaflet Jikokoa Charcoal Handout 270421				
VVB assessment				**Date:** 10/01/2024
Dates of current monitoring period are mentioned in the section A.4 of the updated MR. From the manufacturer specification, it has been observed that the project ICS has an average operational lifetime of 10 years. PP has provided the households with the contact details in case of any grievances but PP				

has not received any grievances from the households.

Hence, CL01 is closed

CL ID	02	Section no.	B.1.1	Date: 04/10/2023

Description of CL

PP is requested to provide the design review document for VPA DD for VPA 4 and validation report, as PP has mentioned TBD in the section B.1.1 'Forward action request'.

PP response **Date:** 30/11/2023

The VPA design review document (GS 11604 GS4GG Design Review_round II 2023-02-15 Clean V1.0) and validation report (VPA4_FVR_V1.8) will be provided as needed. Two FAR's outlined in the design review document have been added to Section B.1.1 in the MR and responded to accordingly.

Documentation provided by PP

VPA4_FVR_V1.8
GS 11604 GS4GG Design Review_round II 2023-02-15 Clean V1.0

VVB assessment **Date:** 10/01/2024

PP has provided GS 11604 GS4GG Design Review_round II 2023-02-15 Clean V1.0 for review, and the VPA4_FVR_V1.8 in the supporting documents. PP has also mentioned the two FARs that are outlined in the design review in the section B.1.1 of the updated MR.

Hence, CL02 is closed.

CL ID	03	Section no.	D.2	Date: 04/10/2023

Description of CL

Based on the VVB onsite survey of 11 household each for 2 Monitoring periods, the following discrepancies has been observed between the datasets provided by PP and the VVB survey data.

For MP1,
The households with stove serial number 148617766 (Peter Munenga) and 148569563 (Christon Sinkala) have been found to be using electric stove in baseline scenario.

The stove id 148569563 is found to be damaged and not in operational in the last 3 months(approximately).

The household with stove serial number 148581410 (Ian Nyendwa) is found to be using tradition stove (one meal per week) and electric stove (2 meals per week) in the project scenario along with the distributed ICS.

For MP2
The households with stove serial number 148643312 (Diana Chibwe): The ICS was damaged a few months ago (approximately). The cooking device found in the baseline was LPG and electric stove, which is currently in use everyday as the ICS is non-operational

The households with stove serial number 148601277 (Constance Muzyamba): The household is also using electric stove in project scenario at the rate of 2 meals/week

The households with stove serial number 148545811 (Given Afumba): Traditional stove as well as electric stove has been identified as baseline cooking devices. In project scenario, only one meal per day is cooked using project ICS. Traditional cooking device is not in use but electric stove is used for cooking 2 meals/day even in project scenario.

The households with stove serial number 148581172 (Mercy Kapata): The ICS was damaged 2 months ago (approximately)

The households with stove serial number 148585143 (Gift Chanda): Household is using electric stove in project scenario for cooking at the rate of 2 meals/day. Only one meal/day is cooked using project ICS.

The households with stove serial number 148603259 (Mooya Cheembo): Traditional baseline stove is still for cooking at the rate of 3 meals/week and electric stove is used for cooking at the rate of one meal/week

The households with stove serial number 148592178 (Enock Moono): Electric stove was identified as a baseline

cooking device along with traditional stove, which is currently used for cooking at the rate of 2 meals/day (cooking for commercial purpose).

Referring to CDM Sampling and surveys for CDM project activities and programmes of activities version 9.0, para 38, PP is requested to clarify the discrepancy found between the PP and VVB et of records.

PP response	**Date:** 30/11/2023

For MP1 stoves:
Stove serial number 148617766 (Peter Munenga) and 148569563 (Christon Sinkala): The baseline scenario was assessed at validation prior to the project implementation and it is not the baseline scenario that is being assessed in this verification. Where electrical stoves are now present in project households, this is accounted for in the KPT by isolating the fuel use attributable to the baseline and project charcoal devices.

Stove serial number 148569563: The household that was found to have a damaged stove completed a habit survey in May 2022 (for MP1) and at that time reported that the stove was intact and being used everyday. The household stated in September 2023 (during the verification site visit) that the stove had been damaged during the last 3 months (approximately) and therefore this would not have been picked up in the habit surveys done in May 2022. All households were given leaflets with TASC contact details to report any stove damage when they received their stoves.

Stove serial number 148581410 (Ian Nyendwa): the habit survey was completed in May 2022, at which time he reported that he used the stove everyday and had no alternate stoves. Since this was over a year ago, the household may have started using a traditional and electric stove after the habit survey was completed and therefore this would not be shown in the habit survey results. However, all charcoal usage is accounted for in the KPT surveys, regardless of the stove in which it is used.

For MP2 stoves:
Habit surveys were carried out at these households between 12 – 14 June 2023. All of the households, except 148581172, reported that their stoves were intact, they used their cookstove everyday and they had no alternate stoves at the time of the survey.

Stove serial numbers 148643312 (Diana Chibwe), 148581172 (Mercy Kapata): these stoves are reported as damaged during the last 2 months, and are deemed operational during the monitoring period as corroborated by the habit survey, but will be removed from the database for future monitoring periods.

Stove serial numbers 148601277, 148545811, 148585143, 148603259 and 148592178: the VVB reports that households were observed as using electric stoves “in the baseline scenario”, however as this is the project scenario, the finding is unclear. It also does not specify whether these households reported only using an electric stove “in the baseline scenario” or if they used both an electric stove and charcoal brazier. Therefore, this ex-post assessment of the baseline scenario is unreliable. Solwezi is a peri-urban area and many of the households do have access to electricity and may own an electric stove, however, this does not mean that they are using an electric stove as their primary stove. Many do not use it at all as electricity is expensive. The primary stove captured in the baseline scenario for the VPA was a charcoal brazier (traditional stove) and the primary fuel type was charcoal – this scenario was assessed, validated and certified at the VPA inclusion stage.

In an improved cookstove project the baseline scenario is compared with the project scenario (for each MP) and emission reductions are based on the reduction in fuel being used. This is also why KPTs are the most accurate way of monitoring this parameter value, because they isolate fuel use in the household (i.e. only charcoal use), so that there is a clear like-for-like comparison between the baseline device and the project device using the same fuel; any other fuel use is not captured as it is not relevant to the project as the project only places focus on the reduction of charcoal being used, not electricity.

As per the justifications listed above, the PP does not recognize any discrepancies between the VVB findings and the survey results.

Documentation provided by PP
VPA4_Habit_MRV1 VPA4_Habit_MRV2

VVB assessment	**Date:** 10/01/2024

PP in the section A.1 of VPA DD has mentioned that “*The VPA Implementer will capture data from each household about the baseline appliance and fuel source that is being used, to ensure that households using*

charcoal on grates are targeted by the VPA" and "*The ICS will be distributed by TASC in urban or peri-urban Zambia to individual households, which have been identified as using charcoal for day-to-day cooking purposes*". However, it has been observed that PP has distributed ICS to the household which have been identified to be using high efficient cooking device in the baseline during the verification survey by the VVB (The households with stove serial number 148617766 (Peter Munenga) and 148569563 (Christon Sinkala)).

PP is requested to remove the ICS which was found damaged and the households which was found to be using the high efficient cooking device instead of tradition stoves from the project database.

Usage rate calculation based on the verification survey conducted by VVB for MP1 is given below.
Total number of samples = 11
Household used ICS everyday = 9 (excluding the ICS with serial number 148617766, and 148569563)
Therefore, Upy = 81.8%.

Usage rate calculation based on the verification survey conducted by VVB for MP1 shows a higher usage rate (81.8% including the 2 damaged ICS) than the one provided by PP (75%) and therefore PP's sample set and usage rate value which is more conservative is deemed to be acceptable to VVB.

The definition of usage defined by PP in the MR as "Everyday" and "Several times a week" and therefore the use of ICS in the household has been found to be present in all household except the household with the ICS serial numbers 148643312, and 148581172. Usage rate calculation based on the verification survey conducted by VVB for MP2 shows a higher usage rate (81.8% including the 2 damaged ICS) than the one provided by PP (75%) and therefore PP's sample set and usage rate value which is more conservative is deemed to be acceptable to VVB.

The above assessment has been done in accordance with the para 38 of CDM Sampling and surveys for CDM project activities and programmes of activities version 9.0.

Hence, CL03 is open

PP response	**Date:** 22/01/2024
ICS with serial numbers 148617766, and 148569563 have been removed from "Zambia - VPA 4_Database v1.1" and technology days in "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.6" have been amended. Number of devices is now 1,100. This resulted in the following changes to the ER's: MP1 ER's: 6,510 -> 6,498 MP2 ER's: 4,860 -> 4,851 The MR has been updated accordingly "TASC_Zam_VPA_4_MR_v1.3".	
VVB assessment	**Date:** 23/01/2024
The ICS with serial number 148617766, and 148569563 are removed from the database, tech days and ER calculation are updated accordingly. Hence, CL03 is closed.	

CL ID	04	**Section no.**	D.2	**Date:** 04/10/2023
Description of CL				
PP is requested to clarify the number of employments generated as in the supporting documents provided, there are 14 contracts provided, but in the MR the number of employments generated is 15, PP is requested to address this discrepancy.				
PP response				**Date:** 30/11/2023
An error was made in the MR, the correct number of employments generated is 14. This has been corrected in the MR.				
Documentation provided by PP				
VVB assessment				**Date:** 10/01/2024
As per the employment records provided by the PP, number of employment generated is 14 and same is mentioned in the updated MR. Hence, CL04 is closed.				

CL ID	05	**Section no.**	Excel sheet, D.2	**Date:** 04/10/2023
Description of CL				

It has been observed that PP has provided the calculation of $N_{p,y}$ value of both the MP in the excel sheet "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.1", tab "technology days", cell "I2" and "I3". The effective start date of 1127 device distributed is provided in column A and technology days are determined according to the dates provided in the column A. Therefore, it can be assumed that each date provided in column A of the tab corresponds to the effective start date of respective cookstove distributed. The first and last effective start date being 16/04/2021 and 16/03/2022 respectively. The data provided in the file "Zambia - VPA 4_Database" shows only 1102 stove records.

PP is requested to provide necessary evidence to prove the effective start date and total number of the cookstoves distributed.

PP is requested to clarify the number of Stove distributed in the both the monitoring period as in the distribution records total entries are '1,102', but the number of stove distributed is mentioned as '1,127' throughout the MR.

PP response	**Date:** 30/11/2023

An error was made. The correct number of stoves that have been distributed is 1,102. This has been corrected in the ER calculations and in the MR.

The effective start date of distribution was 16/04/2021 as shown in the VPA 4 Database and evidenced by the End User Agreement for Keddy Chisenga (serial nr: 148618687) who received a stove on this date.

All of the stoves were distributed during the first monitoring period, no distributions took place during the second monitoring period.

Documentation provided by PP

Device_EndUserAgreement_Zambiavpa4_148618687
Zambia - VPA 4_Database

VVB assessment	**Date:** 10/01/2024

The "technology days" tab is now updated to show the correct number of the devices distributed. Evidence for the start date is also provided in the form of "Device_EndUserAgreement_Zambiavpa4_148618687" confirming the distribution date for stove and start date of the distribution. Distribution records provided show the distribution is done between the dates 16/04/2021 to 28/05/2021, proving the distribution happened in the first monitoring period and no distribution happened in the second monitoring period.

Hence, CL05 is closed.

CL ID	06	**Section no.**	D.4	**Date:** 04/10/2023

Description of CL

It has also been observed that PP has opted for Good practice level of usage. PP is requested to provide a detailed description in MR, how the requirements of Mandatory and Good practice usage level has been met as given in the section 2.2 and 2.3 of GS REQUIREMENTS AND GUIDELINES: USAGE RATE MONITORING version 2.0. Evidences to substantiate the usage rate requirements is requested to provide to VVB.

PP response	**Date:** 30/11/2023

The PP has opted for the "Mandatory Monitoring Requirements". According to Table 1 in the GS Requirements and Guidelines: Usage Rate Monitoring v2.0 document it is stated that to practice "Mandatory" monitoring the PD need to do the following activities:

I. Define use and non-use

As of yet, usage has not formally been defined in the respective VPA-DD's. This has occurred erroneously and was not picked up during validation and design review. Project device usage is defined as "Everyday" and "Several times a week" as determined through the habit survey. Non-usage is defined as "Less than weekly" and "Never" usage as determined through the habit survey. As the project utilizes KPT's to measure/quantify fuel use, any residual baseline stove usage is also captured in the project charcoal use. As stated on page 18 of the VPA -DD: "Use of the baseline appliance will be monitored via the habit survey (parameter Up,y) and any residual use will be captured in the kitchen performance tests (parameter Bp,y,i) which records all charcoal use. If the baseline appliance is still in use, higher charcoal usage will be recorded in the KPTs, resulting in lower ER's".

II. In person household usage survey

In person household usage surveys are completed for each monitoring period. These surveys include a kitchen observation, an interview with the primary cook, photos of the cooking area and recording the GPS coo-ordinates. These activities thereby fulfil the household usage study requirements in Section 2.2 of the GS Requirements and Guidelines: Usage Rate Monitoring v2.0 document. Please review the documents labelled

"KPT_ODK_Instructions" and "Walkthrough_Field training_Zambia" which are training presentations for in field monitoring activities. All of the data collected by the monitors is uploaded onto TASC's specifically designed cloud-based monitoring system. Please see "VPA_4_Habit_MRV1" and "VPA_4_Habit_MRV2" for the usage and habit survey results.

III. Verification of accuracy of results

Household surveys were carried out by trained staff employed by TASC (PD). The TASC call center in Lusaka Zambia carried out verification check to confirm stove usage details from a subset of 5-10% of randomly selected habit/usage survey participants. These verification phone calls were recorded, and the recordings will be shared with the VVB.

Please note that all the evidence mentioned above has been placed in the "Mandatory Monitoring" folder that will be shared with the VVB.

Documentation provided by PP

Walkthrough_Field training_Zambia
KPT_ODK instructions
VPA_4_Habit_MRV1
VPA_4_Habit_MRV2
Mandatory Monitoring Folder

VVB assessment	**Date:** 10/01/2024

PP has opted for mandatory monitoring requirements and mentioned the steps for mandatory monitoring requirements in the section D.4 of the updated MR and is as per the GS REQUIREMENTS AND GUIDELINES: USAGE RATE MONITORING version 2.0.

Hence, CL06 is closed.

CL ID	07	**Section no.**	E.1	**Date:** 04/10/2023

Description of CL

As per section B.6.1 of VPA DD version 1.6, ER has to be calculated using the following equations.

$ERy = \sum b,pNp,y^* Up,y^* (ERb,p,y,CO2 + ERb,p,y,nonCO2)) - \sum LEp,y$

$ERb,p,y,CO2 = \sum i \{ fNRB,b,i,y^* Bb,y,i^* NCVb,i^* EFb,i,CO2\} - \sum i \{ fNRB,b,i,y^* Bp,y,i^* NCVp,i^* EFp,i,CO2\}$

$ERb,p,y,nonCO2 = \sum i \{ Bb,y,i^* NCVb,i^* EFb,i,nonCO2\} - \sum i \{ Bp,y,i^* NCVp,i^* EFp,i,nonCO2\}$

However, in the section E of MR, it has been observed that the ER has been calculated as the equations mentioned below.

For baseline emission

$BEb,y = \sum b,pNp,y^* Up,y^* (ERb,p,y,CO2 + ERb,p,y,nonCO2)) - \sum LEp,y$

$ERb,p,y,CO2 = \sum i \{ fNRB,b,i,y^* Bb,y,i^* NCVb,i^* EFb,i,CO2\}$

$ERb,p,y,nonCO2 = \sum i \{ Bb,y,i^* NCVb,i^* EFb,i,nonCO2\} - \sum i \{ Bp,y,i^* NCVp,i^* EFp,i,nonCO2\}$

For Project emission

$ERy = \sum b,pNp,y^* Up,y^* (ERb,p,y,CO2 + ERb,p,y,nonCO2)) - \sum LEp,y$

$ERb,p,y,CO2 = \sum i \{ fNRB,b,i,y^* Bb,y,i^* NCVb,i^* EFb,i,CO2\} - \sum i \{ fNRB,b,i,y^* Bp,y,i^* NCVp,i^* EFp,i,CO2\}$

$ERb,p,y,nonCO2 = \sum i \{ Bb,y,i^* NCVb,i^* EFb,i,nonCO2\} - \sum i \{ Bp,y,i^* NCVp,i^* EFp,i,nonCO2\},$

When the methodology and VPA DD version 1.6 provides provision for direct calculation of ER by merging baseline and project emissions into a single equation, PP has determined baseline and project emission separately and measured ER by considering the difference of baseline and project emissions.

Moreover, as it can be observed above, PP has considered project emission($Bp,y,i^* NCVp,i^* EFp,i,nonCO2$) for the determination of $ERb,p,y,nonCO2$ in baseline emission calculation. Similarly, baseline emissions (fNRB,b,i,y*

Bb,y,i* NCVb,i *EFb,i,CO2, and Bb,y,i* NCVb,i * EFb,i,nonCO2) has been considered for the determination of ERb,p,y,CO2 and ERb,p,y,nonCO2 in project emission calculation.

Considering the above comments, PP is requested to clarify the deviation in the quantification approach of the emission reduction calculation.

PP response	**Date:** 30/11/2023

This finding was addressed based on the TR findings of CCIPL 1934.

The calculation approach in the registered PDD has been erroneously included. This has been corrected in the MR and the ER calculation sheet. The ERy calculation is now strictly according to equation 1 on p.19 of the TPDDTEC v3.1 methodology and updated in Section E2. As a result of the update, parameters EF_{bCO2}, EF_{pCO2}, $EF_{bnonCO2}$ and $EF_{pnonCO2}$ have been changed to $EF_{fuel,CO2}$ and $EF_{fuel,nonCO2}$. Also, fNRB is now also treated in accordance with Equation 1.

A statement regarding the correction has been added in section B.2.2 of the MR.

It should be noted that this correction has no impact on actual ER calculations; the output numbers are identical to the previous approach.

Documentation provided by PP

TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5
TASC_Zam_VPA_4_MR_v1.2

VVB assessment	**Date:** 10/01/2024

It has been observed that the ER has been calculated using the equation 1 of applied methodology although PP has used a different approach in the equation.

PP has also provided a justification in section B.2 of the MR.

Justification provided by PP is deemed to be acceptable to VVB.

Hence, CL07 is closed.

CL ID	08	**Section no.**	ER sheet	**Date:** 04/10/2023

Description of CL

PP is requested to clarify how the moisture content of the charcoal has been determined in the KPT survey. Also it has been observed that the charcoal moisture dry basis and wet basis is found to be the same in the KPT results provided in excel spreadsheet "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.1", tab "KPT calculations". PP is requested to provide a clarification on this as well.

Also, the charcoal consumption data has been provided in column E, F, and G on the same tab of the excel spreadsheet "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.1". However, the reference of these values leads to the column H, L, and P respectively of tab "stock comparison", spreadsheet "VPA 4 Charcoal_MRV_1_KPT_v1", while the actual reference is found in column G, K, and O of tab "stock comparison". PP is requested to clarify on this.

PP response	**Date:** 30/11/2023

1. The moisture content of the charcoal used during the KPT tests was measured as per the guidance provided in the KPT version 4.0 protocol using the infrared sensor on the Ryobi 2 in 1 moisture meters. Moisture content is measured in dry basis and to get the wet basis value the following equation is applied:

$$MC_{wet} = \frac{MC_{dry}}{1 + MC_{dry}}$$

This equation was extracted from the KPT protocol v3.0 spreadsheet and can be used to calculate the wet-basis moisture content (MC_{wet}) if the dry-basis moisture content (MC_{dry}) is known.

2. The values for charcoal moisture dry basis (cells H1:K47) and wet basis (Cells L1:O47) in the "MRV1 pKPT Calculations" tab of the "TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.3" excel workbook were not found to be the same when the values were rounded to two decimal places instead of being

shown as whole numbers.

3. New tabs “MRV1 pKPT Day 0”, “MRV1 pKPT Day 1”, “MRV1 pKPT Day 2”, “MRV1 pKPT Day 3” and “MRV1 pKPT Stock Comparison” were added to the “TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5” excel workbook and the values given in the “MRV1 KPT Calculations” tab were linked to tabs within the same workbook to make the reference cells easier to find. All of these values were taken from the “VPA 4_MRV_1_KPT_v1” excel workbook.

Documentation provided by PP

TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5
VPA 4_MRV_1_KPT_v1

VVB assessment | **Date:** 10/01/2024

1. PP has provided appropriate reference moisture content calculations, wet basis is calculated with the help of the equation provided by using the dry basis readings in the tab “MRV1 pKPT Calculations” tab of the “TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.3” excel workbook, the dry basis readings are referenced from New tabs “MRV1 pKPT Day 0”, “MRV1 pKPT Day 1”, “MRV1 pKPT Day 2”, “MRV1 pKPT Day 3”.
2. Reference provided for the moisture content is found to be appropriate.

Hence, CL08 is closed.

CL ID	09	**Section no.**	ER sheet	**Date:** 04/10/2023

Description of CL

As per the equation provided in section B.6.1 of VPA DD version 1.6, $ER_{b,p,CO2}$ is the product of $B_{ysaving,l,j}$,f_{nrb}, NCV, $EF_{b,l,CO2}$ and $ER_{b,p,nonCO2}$ is the product of $B_{ysaving,l,j}$, NCV, and $EF_{b,i,nonCO2}$. The calculation provided in the excel sheet “TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.1”, tab “Ex-post MRV 1” and “Ex-post MRV2” cell E10, and E11 which contains the calculation of $ER_{b,p,yCO2}$ and $ER_{b,p,y,nonCO2}$ does not includes NCV in the calculation. Also in the calculation of $ER_{b,p,y,nonco2}$, f_{nrb} has been included. PP is requested to clarify the discrepancy in the calculation observed. The calculation for determination of EF_{bCO2} and $EF_{bnonCO2}$ is requested to be added in the MR.

The value of EF_{CO2}, and EF_{nonCO2} provided in section D.1 of MR is found to be inconsistent with the value provided in VPA DD version 1.6. PP is requested to clarify the discrepancy.

PP response | **Date:** 30/11/2023

1. The following equation is used to calculate $ER_{b,p,y,CO2}$ (cell E10) in the “Ex Post MRV 1” tab of the “TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5” excel sheet:

$$ER_{b,p,y,CO2}\ (tCO_2/annum) = B_{ysaving,l,}\ (t/annum) * f_{nrb} * EF_{b,fuel,CO2}\ (tCO_2/\ t\ charcoal)$$

However, the value for $EF_{b,fuel,CO2}$ (cell E8) in the “Ex Post MRV 1” tab of the “TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5” excel sheet is calculated according to this equation:
$EF_{b,fuel,CO2}\ (tCO_2/\ t\ charcoal) = NCV\ (TJ/t\ charcoal) * EF_{b,fuel,CO2}\ (tCO_2/\ TJ)$ in Cell E12 of the “Ex Ante MRV 1” tab.
Therefore, the NCV value is taken into account in this equation and then carried through into the equation in the “Ex Post MRV 1” tab.
The above applies to the $ER_{b,p,y,CO2}$ calculations in the Ex-Post calculations for MRV 1 and MRV 2.

2. With regards to the calculation of $ER_{b,p,y,nonco2}$, the use of the f_{nrb} value in the equation as seen in the “TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5” is correct. An error was made in the VPA-DD. The equation should be:

$ER_{b,p,y,nonCO2}$, $(tCO_2/annum) = B_{ysaving,l,}\ (t/annum) * f_{nrb} * EF_{b,fuel,nonCO2}\ (tCO_2/\ t\ charcoal)$

$$EF_{b,fuel,nonCO2}\ (tCO_2/\ t\ charcoal) = NCV\ (TJ/t\ charcoal) * EF_{b,fuel,N2O}\ (tCO_2/\ TJ) * EF_{b,fuel,CH4}\ (tCO_2/\ TJ)$$

The calculation for $EF_{b,fuel,N2O}\ (tCO_2/\ TJ)$ is shown in cells H1:H7 in the “Ex Ante MRV 1” tab and the calculation for $EF_{b,fuel,CH4}\ (tCO_2/\ TJ)$ is shown in cells I1:I7 of the same tab in the “TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5” excel sheet.

3. The value of EF_{CO2} (3.304 tCO2/t fuel), and EF_{nonCO2} (1.099 tCO2/t fuel) provided in section D.1 of MR were found to be consistent with the values given in the document “TASC Zambia VPA4-DD v1.8 Clean”

Documentation provided by PP

TASC Zam VPA4 ER calc sheet MRV1&2 combined v1.5
TASC Zambia VPA4-DD v1.8 Clean

VVB assessment | **Date:** 10/01/2024

1. As per the ER sheet
   $ER_{b,p,y,CO2}$ *(tCO2/annum)=* $B_{ysaving,l}$ *(t/annum) ** f_{nrb} *** $EF_{b,fuel,CO2}$ *(tCO2/ t charcoal)*
   $EF_{b,fuel,CO2}$ *(tCO2/ t charcoal) = NCV (TJ/t charcoal) ** $EF_{b,fuel,CO2}$ *(tCO2/ TJ)*
   Representing the inclusion of NCV in the calculation of $ER_{b,p,y,CO2}$
   Calculation for $ER_{b,p,y,nonCO2}$ also includes f_{nrb} *as per the ER sheet and the MR section E.1*
2. *It has been observed that the calculation has been done appropriately as per methodology. Justification has been added by PP in section B.2 of MR*
3. The value of EF_{CO2} (3.304 tCO2/t fuel), and EF_{nonCO2} (1.099 tCO2/t fuel) provided in section D.1 of MR is found to be consistent with the VPA-DD v1.8

Hence, CL09 is closed

CL ID	10	**Section no.**	Supporting documents	**Date:** 04/10/2023

Description of CL

PP is requested to provide evidence for “training records”, “Grievance book”, and "TASC GS11009 Stakeholder Consultation Report Zambia v1.0" to VVB

PP response | **Date:** 30/11/2023

Evidence of the grievance book is given in the form of a photograph in Section G.1. of the MR. The document titled "TASC GS11009 Stakeholder Consultation Report Zambia v1.0" will be provided to the VVB. The presentations titled “KPT_ODK Instructions” and “Walkthrough_Field training_Zambia” were used during the monitor training sessions and will also be provided to the VVB. The “KPT_ODK Instructions” and “Walkthrough_Field training_Zambia” can be found in the Mandatory Monitoring folder.

Documentation provided by PP

TASC GS11009 Stakeholder Consultation Report Zambia v1.0
KPT_ODK Instructions
Walkthrough_Field training_Zambia

VVB assessment | **Date:** 10/01/2024

PP has provided training records, and included the image of the grievance book in the section G.1 of the updated MR.
Hence, CL10 is closed.

Annex 1: Assessment of data and parameters fixed ex-ante at the time of validation

Relevant SDG Indicator	SDG 13, Climate action
Parameter	$B_{b,\,y}$
Data unit	Tonnes per household per annum
Default values used	2.56 tonnes charcoal
Purpose of data	Calculation of the baseline scenario
Source	Baseline KPTs

Relevant SDG Indicator	SDG 13, Climate action
Parameter	$EF_{b,i,CO2}$
Data unit	$tCO_2/tfuel$
Default values used	Fuel: 3.304 $tCO_2/tfuel$
Purpose of data	Calculation of baseline scenario
Source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5 - Default emission factors for stationary combustion in the residential and agriculture/forestry/fishing/fishing farms categories

Relevant SDG Indicator	SDG 13, Climate action
Parameter	$EF_{b,i,nonCO2}$
Data unit	$tCO_2/tfuel$
Default values used	Fuel: 0.173 $tCO_2/tfuel$
Purpose of data	Calculation of baseline scenario
Source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5 – Residential Source Emission Factors The value has changed from the ex-ante estimates as the revised values for the GWPs have been used for N_2O and CH_4.

Relevant SDG Indicator	SDG 13, Climate action
Parameter	$EF_{p,i,CO2}$
Data unit	$tCO_2/tfuel$
Default values used	Fuel: 3.304 $tCO_2/tfuel$
Purpose of data	Calculation of Baseline scenario
Source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5 – Default emission factors for stationary combustion in the residential and agriculture/ forestry/ fishing/ fishing farms categories

Relevant SDG Indicator	SDG 13, Climate action
Parameter	$EF_{p,i,nonCO2}$

Data unit	tCO_2/tfuel
Default values used	Fuel: 0.173 tCO_2/tfuel
Purpose of data	Calculation of the baseline scenario
Source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5 – Residential Source Emission Factors The value has changed from the ex-ante estimates as the revised values for the GWPs have been used for N_2O and CH_4.

Relevant SDG Indicator	SDG 13, Climate Action
Parameter	$NCV_{b,i}$
Data unit	TJ/tonne
Default values used	Charcoal: 0.0295 TJ/ tonnes
Purpose of data	Calculation of the baseline scenario
Source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1: Introduction, Table 1.2- Default net calorific values

Relevant SDG Indicator	SDG 13, Climate Action
Parameter	$NCV_{p,i}$
Data unit	TJ/tonne
Default values used	Charcoal: 0.0295 TJ/ tonnes
Purpose of data	Calculation of the baseline scenario
Source	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1: Introduction, Table 1.2- Default net calorific values

Relevant SDG Indicator	SDG 13, Climate Action
Parameter	$f_{NRB,b,i,y}$
Data unit	Fraction of non- renewable biomass used in the baseline
Default values used	Fuel: 0.91
Purpose of data	Calculation of the baseline scenario
Source	C4 EcoSolutions study; dated 11/03/2022 and fNRB calculation sheet/16/

Annex 2: Assessment of data and parameters monitored

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 13
Data / Parameter: **(as in monitoring plan of VPA-DD):**	$B_{p,y,i}$

Unit	Tonnes per household per annum
Measuring frequency/Time Interval:	Updated every two years
Reported value	0.7773
Verified Source of Data	Field Performance Tests (FPTs) The value is determined based on the Project KPTs /09/ conducted by the PP. The value was checked during the verification and the KPT survey report /09/ report was cross checked.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	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
VVB Assessment	The parameter $B_{p,y,i}$ is verified from the ER sheet /02/, KPT survey records /09/ and the MR /01/ the values are consistent throughout.

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 13 Indicator 13.2.1 “Amount of CO2e emissions reduced by the project per year”
Data / Parameter: **(as in monitoring plan of VPA-DD):**	$U_{p,y}$
Unit	Fraction (or %)
Measuring frequency/Time Interval:	Annual
Reported value	HS1: 75% HS2: 75%
Verified Source of Data	Annual usage survey VVB has conducted household surveys to verify the value provided by PP. VVB observed that all the households visited is in possession of project ICS and has been in use. However, PD based on Mandatory usage level has only claimed for 75% of usage. VVB confirms that the requirements provided in requirements and guidelines: usage rate monitoring version 2.0 has been followed. Checklist for the usage rate assessment has been added in annex 3 of this report

Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	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
VVB Assessment	According to the habit survey /10/ the usage rate is 100% but the value taken is 90% implementing 'Good Practice', the value is conservative and is consistent with the ER sheet /02/ and in the MR /01/.

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 13 Indicator 13.2.1 "Amount of CO2e emissions reduced by the project per year"
Data / Parameter: **(as in monitoring plan of VPA-DD):**	$N_{p,y}$
Unit	Number
Measuring frequency/Time Interval:	Continuous
Reported value	1,100 (HS1 and HS2)
Verified Source of Data	Monitoring Database The value provided in MR has been cross checked with the database/04/ provided by PP and is found to be consistent
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place

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
VVB Assessment	According to the VPA distribution record/04/ the number of the ICS distributed in the VPA is 1,100, which is consistent with the MR/01/ and the ER sheet/02/.

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 13 Indicator 13.2.1 “Amount of CO2e emissions reduced by the project per year”
Data / Parameter: **(as in monitoring plan of VPA-DD):**	$LE_{p,y}$
Unit	Tonnes of CO2 equivalent per year
Measuring frequency/Time Interval:	Aggregate leakage can be assessed for multiple project scenarios, if appropriate, every two years
Reported value	0 (HS1 and HS2)
Verified Source of Data	Leakage assessment, VVB during the interview with the end users confirmed that no leakage is applicable during the current monitoring period.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	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
VVB Assessment	Leakage emissions in the project activity are considered as 0, justifications are provided in the section E.3 of the MR /01/ which is appropriate.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 1 Indicator 1.4.1 “Proportion of population living in households with access to basic services”
Data / Parameter: **(as in monitoring plan of VPA-DD):**	BSA/ HHS
Unit	Number
Measuring frequency/Time Interval:	Annually
Reported value	1,100 ICS in use (HS1 and HS2) HS1: 1923.88 Kwacha/year HS2: 1304.85 Kwacha/year
Verified Source of Data	1. Monitoring Database ICS distribution records 2. Ex- post Monitoring Survey Records The value provided in MR has been cross checked with the database/04/ provided by PP and is found to be consistent
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	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
VVB Assessment	According to the VPA distribution record/04/ the number of the ICS distributed in the VPA is 1,100, which is consistent with the MR/02/ and the ER sheet/02/.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Relevant SDG Indicator	SDG 3 Indicator 3.9.1 “Mortality rate attributed to household and ambient air pollution”
Data / Parameter: **(as in monitoring plan of VPA-DD):**	SPM_{HH}
Unit	%
Measuring frequency/Time Interval:	Annually
Reported value	HS1: 99% HS2: 100%

Verified Source of Data	Ex- post Monitoring Survey Records VVB has conducted verification surveys based on random sampling following the guidelines of Sampling and surveys for CDM project activities and programmes of activities/B05/ to verify the value provided by PP. It has been found that the value provided by PP is consistent with the value observed by VVB during verification survey.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	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
VVB Assessment	From the habit survey records /10/ the value of SPM_{HH} is observed as 99% for MP1 and 100% for MP2, and are consistent in the MR /01/.

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 5 Indicator 5.4.1 “Proportion of time spent on unpaid domestic and care work, by sex, age and location”
Data / Parameter: **(as in monitoring plan of VPA-DD):**	HHTS
Unit	%
Measuring frequency/Time Interval:	Annual
Reported value	100% (HS1 & HS2)
Verified Source of Data	Ex- post Monitoring Survey Records VVB has conducted verification surveys based on random sampling following the guidelines of Sampling and surveys for CDM project activities and programmes of activities/B05/ to verify the value provided by PP. It has been found that the value provided by PP is consistent with the value observed by VVB during verification survey.

Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	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
VVB Assessment	Based on the habit survey records /10/ the value of HHTS is verified and is consistent in the MR /01/ as well.

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 7 Indicator 7.1.2 “Proportion of population with primary reliance on clean fuels and technology”
Data / Parameter: **(as in monitoring plan of VPA-DD):**	$AACS_{HH}$
Unit	Number
Measuring frequency/Time Interval:	Continuous
Reported value	1,100 ICS
Verified Source of Data	ICS Monitoring Database The value provided in MR has been cross checked with the database/04/ provided by PP and is found to be consistent
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	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
VVB Assessment	According to the VPA distribution record/04/ the number of the ICS distributed in the VPA is 1,100, which is consistent with the MR/01/ and the ER sheet/02/.

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**
Relevant SDG Indicator	SDG 8 Indicator 8.5.1 “Average hourly earnings of female and male employees, by occupation, age and persons with disabilities”
Data / Parameter: **(as in monitoring plan of VPA-DD):**	QE IG
Unit	Number
Measuring frequency/Time Interval:	Annually
Reported value	14
Verified Source of Data	Employment Records The employment contract/12/ of all the 14 employees has been provided to VVB by PP. The same has been cross checked to verify the value.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	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
VVB Assessment	As per the employment records/12/ provided, 14 people were employed for the VPA.

Monitoring Parameter Requirement	**Assessment/ Observation by the VVB**

Relevant SDG Indicator	SDG 12 Indicator 12.2.2 "Domestic material consumption, domestic material consumption per capita and domestic material consumption per GDP"
Data / Parameter: **(as in monitoring plan of VPA-DD):**	$B_{y,savings}$
Unit	Tonnes/ year
Measuring frequency/Time Interval:	Annually/ biennially
Reported value	1.7857 tonnes
Verified Source of Data	Ex- post Monitoring Survey Records The value has been obtained by subtracting parameter $B_{p,y,i}$ from $B_{old,i}$. VVB confirmed that the value provided in ER sheet/02/ is appropriate.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Assessment of details of monitoring equipment, its specification and calibration as per the requirements of registered VPA-DD:	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
VVB Assessment	The values for $B_{y,savings}$ is 1.7857 tonnes in the MR/01/, and are found to be consistent with the Monitoring survey /10/.

Appendix 5. Checklist for evaluating the compliance of project with requirement and guidelines -Usage rate requirement (2.0)

Section	Sub Section	Criteria	VVB response
1. Scope and applicability	N/A	a. VVBs the project/PoA undergoing certification involve any one or more of the following technologies: solid, gaseous fuel based improved cooking technologies for example	Yes, the project activity involves the distribution of improved cookstoves.

		firewood, charcoal based improved cookstove, household biogas digesters, solar cookers, etc.?	
		b. If there is any conflict with the TPDDTEC methodology, are all the rules and requirements contained in this Annex given precedent and followed by the project/PoA?	There is no conflict observed with the TPDDTEC methodology.
2. Requirements and guidelines	2.1 Levels of usage	a. Has the project/PoA clearly specified the usage monitoring requirement level in the VPA-DD/VPA-DD?	Yes, please refer section B.7.1 of VPA DD/B03/
		b. Has the project/PoA correctly applied the level of usage and associated monitoring requirements in accordance with the claimable usage rates?	Yes. As per the article 2.3 of the guideline/B07/, Mandatory level of usage with maximum 75% usage rate has been applied
		c. In case the project/PoA applies a different level of usage as compared to the registered VPA-DD, have the monitoring requirements from the levels below been followed?	VPA DD has specified the level of usage as Good practice, which is mentioned in the section B.7.1 of VPA DD/B03/. The MR has also followed Mandatory usage level which is explained in section D.2 and D.4 of MR/01-b/ which is conservative compared to the usage rate stated in the VPA-DD. Thus, acceptable to the verification team.
	2.2 Mandatory monitoring requirements	a. Has the project/PoA defined project technology “use” and “non-use” (Step 1) and documented the criteria applied for defining them in the VPA-DD(s)?	Use and Non-use has been defined in the section B.7.1 of VPA DD/B03/. The same has been applied in the current monitoring period for determining the usage rate value.
		b. Is the project’s definition of “use” and “nonuse” correct and their documentation of the criteria applied for defining this done correctly?	The definition for use and non use has been added in the section D.2 of the MR/01-b/ and is consistent with the definition provided in the section B.7.1 of registered VPA DD/B03/
		c. Has the project/PoA correctly identified criteria to define use and non use considering the representative cooking practices and likely project technology use?	Yes, the use and non use project technology has been identified during the monitoring survey and can be assessed from the excel spreadsheet/02/ sheet tab “Upy Habit 1” and “Upy Habit 2”. VVB Confirms that the usage rate has been calculated based on the user identified as per the criteria defined.
		d. Has the project developer carried out in-person household usage surveys (Step 2) by: i. Determining the minimum sample size for the survey as per the methodology requirements?	d. i. yes, the detailed sampling procedure is given in section D.4 of MR/01-b/ and detailed assessment has been added in section E.5.3 of this report ii. yes, the questionaries conducted and the photographs taken during monitoring survey has been verified by VVB

		ii. Performing the following monitoring activities, at minimum, as per the requirements of this Annex: Kitchen observation, interview of the primary cook, taken photos of the cooking areas and recorded the GPS coordinates of the household?	
		e. Has the project developer performed the verification checks (Step 3) prior to the verification by the VVB?	Yes, the same has been verified on the basis of the review of call records and verification checks spreadsheet/13/ provided by PP.
		f. Has the project developer kept a record of the verification checks containing the details. of households and their responses?	Yes, the records are also provided to the VVB in the habit survey/11/
		g. VVBs the evidence establish a clear relationship between the usage claimed by the project and observations made during the in-person household surveys?	Yes, the observation provided in the evidence /11/ has been cross checked with the ER sheet/02/ and VVB confirms that the evidence establishes a clear relationship between the usage rate claimed by project and observations made in in-person surveys.
	2.3 Good practice monitoring requirements for improved cooking devices.	a. Has the project/PoA successfully met all the mandatory usage rate requirements?	VVB confirms that the project met all the mandatory usage rate requirement defined in the section 2,2 of REQUIREMENTS AND GUIDELINES: USAGE RATE MONITORING version 2.0./B07/
		b. Is the project/PoA eligible to apply the good practice monitoring requirements?	Yes, PP has followed all procedure required for the mandatory as well as good practice usage requirements as provided in section D.4 of MR/01/
		c. Has the project developer carried out the following monitoring activities as per the relevant requirements: i. Field team training and supervision ii. End-user training and follow-up visits? Awareness campaign?	Based on the review of the section D.4 of MR/01/ and its supporting documents/05/09/10/11/. VVB confirms that the monitoring activities have been carried out as per the requirement.
		d. Has the project developer provided evidence for trainings, follow up site visits, awareness campaign?	Yes, the evidence/05/09/10/11/ have been provide to VVB and verified.
		e. In VVB's opinion, i. Can the effectiveness of the trainings, follow up site visits and awareness campaigns be confirmed? ii. Should project developer make changes in registered trainings, site visits and awareness campaigns to enhance the effectiveness?	i. Based on the review of the MR/01/, and supporting documents, VVB confirms that the trainings, follow up visits and awareness campaigns are deemed to be effective, and ii. No further changes are required.

	2.4 Best practice monitoring requirements	a. Has the project/VPA successfully met all the mandatory & good practice usage rate requirements?	PoA has not opted for this level of usage, and therefore not applicable for this PoA
		b. Is the project/PoA eligible to apply the best practice monitoring requirements?	
		c. Has the project developer carried out stove use monitoring activities as per the relevant requirements?	
		d. Has the project developer correctly calculated the stove use based on the stove use monitoring?	
3. Determination of usage rate ($U_{p,y}$)		a. Has the project developer applied the applicable cap at individual age-group?	Yes, verified based on review of ER sheet /02/, tab “Upy Habit 1” and “Upy Habit 2”.
		b. Has the project developer appropriately applied the weighted-average usage rate quantification approach to each monitored project technology age group?	Yes,