Verification and certification report form for programme of activities	
BASIC INFORMATION	
Title and UNFCCC reference number of the programme of activities (PoA)	Up Energy Improved Cookstove Programme, Uganda GS ID reference number - 10898
Version number(s) of the PoA-DD(s) to which this report applies	Version 3.0 dated 04/10/2021
GS ID (s) of the VPAs	11513, 11514, 11515, 11516, 11517, 11518, 11519, 11520, 11521, 11522, 11523, 11524, 11525, 11526, 11527, 11528, 11529, 11530, 11531, 11532, 11533, and 11534
Version number of the verification and certification report	03
Completion date of the verification and certification report	24/12/2022
Monitoring period number and duration of this morning period	First Monitoring Period 01/01/2021 – 31/12/2021 (including both the days)
Version number of the monitoring report to which this report applies	Version 3.0 (Dated: 22/12/2022)
Activity Requirements applied	Community Services Activities
Product Requirements applied	GHG Emission Reduction & Sequestration
Coordinating/managing entity (CME)	UpEnergy Group
Host Country	Uganda
Applied methodologies and standardized baselines	AMS-II.G.: "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass" (Version 05.0)
Mandatory sectoral scopes	3: Energy demand
Conditional sectoral scopes, if applicable	Not applicable
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	 Vikash Kumar Singh, Compliance Officer

SECTION A. Executive summary

>>

Introduction:

The Co-ordinating Managing Entity/Project Participant has appointed the VVB, Carbon Check (India) Private Ltd. (CCIPL) to perform an independent verification of the GS Programme of Activities, "Up Energy Improved Cookstove Programme, Uganda" in Uganda (hereafter referred to as "Programme of Activities or PoA") for the VPAs titled, "Up Energy Improved Cookstoves Programme, Uganda - CPA No 024 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 025 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 026 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 027 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 028 supported by Republic of Korea'', "Up Energy Improved Cookstove Programme, Uganda - CPA No 029 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 030 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 031 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 032 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 033 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 034 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 035 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda – CPA No 036 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 037 supported by Republic of Korea'', "Up Energy Improved Cookstove Programme, Uganda - CPA No 038 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 039 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 040 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 041 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 042 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 043 supported by Republic of Korea'', "Up Energy Improved Cookstove Programme, Uganda - CPA No 044 supported by Republic of Korea'', "Up Energy Improved Cookstoves Programme, Uganda - CPA No 045 supported by Republic of Korea''.

The PoA involves replacement of less efficient cooking stoves using woody biomass with improved cooking stoves (ICS) which are more efficient. The ICS distributed under VPAs of the PoA are more efficient in transferring heat from the fuel to the pot when compared to the stoves typically used in baseline. By replacing inefficient stoves, the PoA will save on consumption of woody biomass. As stated in the MR /01/ and verified during the on-site/remote interviews, Ecoeye Co., Ltd., and/or other Korean entity(ies) have fully sponsored the distribution of the ICS in VPA 11513 to VPA 11534 in order to make them accessible to the beneficiaries, as well covered the cost of operation and management of the CPAs in a financially sustainable condition. The full sponsorship cost per ICS is USD 8.00 including the manufacturing cost of an ICS /11/.

The VPAs are designed to generate emission reductions by distribution of the fuel-efficient wood / charcoal stoves. The fuel-efficient cook stoves are replacing the less efficient baseline stoves in common use (baseline scenario). The CME and VPA implementer are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the component project activities.

This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM Modalities & Procedures /B01-c/ and GS4GG requirements /B08/, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the CDM Executive Board and Gold Standard Secretariat. Verification is required for all registered GS project activities intending to confirm their achieved emission

reductions and proceed with request for issuance of VERs. This report contains the findings and resolutions from the verification and a certification statement for the certified emission reductions.

Objective:

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

Certification is the written assurance by a VVB that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the "Up Energy Improved Cookstove Programme, Uganda" in the host country Uganda for the period 01/01/2021 – 31/12/2021 (inclusive of both the dates).

The purpose of verification is to review the monitoring results and verify that the monitoring was implemented according to the monitoring methodology and the monitoring plan in the TRF-PoA /VPAs /B04/ and used to confirm that the reductions in anthropogenic emissions by sources, are sufficient, definitive and presented in a concise and transparent manner. CCIPL's objective is to perform a thorough, independent assessment of the implementation of the registered programme of activities / VPA-DDs /B04/.

In particular, the monitoring plan, monitoring report and the project's compliance with relevant UNFCCC 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/included component project design and conservative assumptions, as documented. It is also confirmed if the monitoring plan is in compliance with the registered/included VPA-DDs and the approved monitoring methodology.

Scope:

The scope of the verification is:

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

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

The verification comprises a review of the monitoring report covering the monitoring period from 01/01/2021 – 31/12/2021 and based on the registered/included VPA-DDs including the monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participant.

The verification team assigned by the VVB concludes that the TRF-PoA (Version 3.0, dated 04/10/2021) /B04/, VPA 11513 to VPA 11534 (Version 3.0 dated 28/09/2022) as described in the

VPA-DDs /B04/ and the monitoring report (version 3.0; dated 22/12/2022) /1/, meet all relevant requirements of the GS4GG requirements /B08/ and UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M & P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board and Gold Standard Secretariat. The verification has been conducted in-line with the GS4GG requirements /B08/ and CDM VVS for PoAs requirements Version 03.0 /B01/.

The voluntary project activities were correctly implemented according to selected monitoring methodology, monitoring plan and the approved revised VPA-DD/s. The monitoring system was implemented, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on-site inspection and interviews, the verification team confirms that the PoA has resulted in 600,815 tCO_2e emission reductions during the GS first monitoring period.

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

SECTION B. Verification team

B.1. Verification team, technical reviewer and approver[1]

Carbon Check (India) Private Ltd. has appointed a competent team as per the UNFCCC Accreditation Standard, GS4GG requirements and CCIPL's internal procedures. Further details regarding team competence can be found in Appendix 2. The team is outlined below:

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)
1.	Team Leader/Technical Expert	IR	Agarwalla	Sanjay Kumar	CCIPL
2.	Team Member	IR	Halder	Manas	CCIPL
3.	Trainee Assessor	IR	Shirke	Rishika Sanjay	CCIPL
3.	Local Expert	ER	Busingye	Debrah	CCIPL
4.	Technical Reviewer	IR	Seshan	Ranganathan	CCIPL
5.	Approver	IR	Singh	Vikash Kumar	CCIPL

[1] Confirming to the GS requirements of paragraph 2.2 of RU 2020 PR - PR, V1.2 (validation and verification by same VVB), VVB confirms that although validation for the transition of this PoA along with the VPAs from CDM to GS4GG was carried out by Carbon Check, but the validation team was different from the verification team. The validation team was as follows: Team Leader - Amit Anand; Trainee Assessor - Pallavi Ganesh Gedam.

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human Error: Recording and reporting of the information in the ER spreadsheet.	*Medium*	*All the input data in the ER spreadsheet including sales database, determination of parameter for efficiency testing including data calculation.* *This includes all the parameters to be monitored ex-post as per the PoA-DD/VPA-DDs /B04/.*	*The risk was mitigated by the training of the personnel involved in the data capture, calculation and by following the monitoring responsibilities. The training records were reviewed which were also confirmed during the on-site visit interviews. Verification team, based on the above, confirms that the risk is appropriately mitigated.*
2.	*Information System:* *Use of spreadsheets without adequate controls related to data changes/updates, version tracking, traceability, security*	*Medium*	*The data is recorded in the spreadsheets based on the raw data collected during the field visits. The access to the spreadsheets for calculation of ERs, monitoring and sales database and Stove efficiency testing records is controlled.*	*The identified risk was mitigated by managing access to the records. It was confirmed through interviews that the raw data is collected by the field personnel and then transmitted and stored electronically to the CME's office. The data quality control is maintained by the CME.*
3.	*Accuracy of the measuring equipment*	*Low*	*Check the calibration records for the measurement equipment used for efficiency test.*	*The risk due to accuracy of the measuring equipment was ensured by planning to check calibration certificates of the measuring equipment used for stove efficiency (water boiling tests).*
4.	*Competence of personnel involved in conducting standardized tests viz., WBT*	*Low*	*Interview of the personnel involved and check the training records / accreditation certificates (applicable in case of institutions) involved in conducting such tests.*	*The risk was mitigated by reviewing the training records of the personnel involved in the conducting such tests and by following the monitoring responsibilities. For institutions involved in conducting such tests their accreditation certificates were checked to establish their competence for conducting such tests. The training records and certificates were reviewed which also confirmed during the interviews.*
5.	*Sample*	*Medium*	*Sample size is not suitable or the surveyed stoves at*	*Cross-check the procedure to identify the sample size against the sampling guideline*

			the VPA level are not random.	*and standard and confirm the sample size is calculated correctly.*

C.2. Consideration of materiality in conducting the verification

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The threshold of materiality was evaluated based on §13 of "Guideline: Application of materiality in verifications" Version 02.0 and §306 of CDM VVS for PoAs, version 03.0 /B01/. It was concluded that the materiality threshold applicable to the project activity based on actual emission reductions achieved is 5% of 600,815 tCO_2e which is equal to 30,041 tCO_2e.

In planning the verification, the verification team took cognizance of §11 and 12 of the "Guideline: Application of materiality in verifications" Version 02.0. A materiality threshold of 30,041 tCO_2e is determined in line with §306 (d) of CDM VVS for PoAs, version 03.0 /B01-a/.

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

1. Monitoring system including the data input procedure (including relevant personnel and applicable template forms used)
2. Copy of the agreement between household and Project Participant (s) (origin of data)
3. Stove unique ID system
4. ER sheet (application of data)
5. Data flow
6. Data control procedures
7. Monitoring survey records
8. Stove efficiency test (WBT) records

In conducting the verification, VVB took cognizance of §13 of the "Guideline: Application of materiality in verifications" Version 02.0 and based on the input of data from different sources checked through sampling of records during on-site visit. Data flow was checked through comparison of data in hand-written forms, electronic database and ER sheet /2/. The competence of the personnel involved in conducting the stove efficiency testing, recording of data and calculation of the emission reductions data has been checked by the verification team by means of on-site visit interviews.

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

Mitigation of Human error risks: The verification team mitigated the risk by checking the training records of the personnel and assessing their competencies, skills, monitoring / testing procedure followed, understanding of the monitoring survey form / WBT protocol and testing procedure etc. during the on-site visit interviews. Further, data was crosschecked with the ER calculation spreadsheet /2/ and the raw data.

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

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

Competence of personnel involved in conducting standardized tests viz., WBT: Verification team has reviewed the abilities, qualifications and recognition of involved personnel and institutions of the measuring team involved in the WBT. The WBT has been carried by CIRCODU. The WBT has been carried out by the well-trained personnel and training certificate of the personnel has been provided to the verification team in this respect /5/. The training content /5/ has also been provided to the verification team. The verification team based on on-site visit interviews and review of competency documents /13/ and training records /5/ confirms that the team was qualified to carry out the WBT in line with the protocol.

Mitigation due to error in Sampling: The verification team mitigated the risk by checking the ER sheet /2/ for each VPAs, list of random samples /9/ generated for monitoring surveys for VPAs and sample size calculation sheet /2/ and interviews with personnel responsible for the same.

In conducting the verification, VVB took cognizance of §13-17 of the "Guideline: Application of materiality in verifications" (version 02.0) and based on the input of data from different sources checked through sampling of records during on-site visit interviews.

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

SECTION D. Means of verification

D.1. Desk/document review

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The verification was performed primarily based on the review of the Monitoring report /1/ and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology /B02/. Documents reviewed or referenced during the verification are listed in Appendix 3 of this report.

D.2. On-site inspection

The verification team has carried out on-site inspection and interviews in order to assess the information included in the monitoring report and monitoring measurement procedures adopted during the monitoring period. During the desk review, the relevant monitoring records were checked. Previous periodic monitoring reports and verification reports (for CDM), photographs of the instruments used for WBT, soft copy of original survey records and WBT records were used to cross check consistency of information.

Through the review of validation reports, previous verification reports, comparing the relevant evidence and interview with the CME's representatives, CCIPL has confirmed that the project is implemented in line with the PoA-DD / VPA-DDs during the monitoring period. There is no change of the project design, operation and monitoring plan.

On-site inspection and interviews were performed by verification team in order to assess the following:

On-site inspection and interviews: 02/11/2022 & 03/11/2022				
No.	**Activities performed on-site**	**Site location**	**Date**	**Team member**
1.	Opening Meeting and brief project description by the PP; check the project data base / sales records / end user agreement for the total	VPA implementer's office	02/11/2022	Sanjay Kumar Agarwalla, Manas Halder, Rishika

	number of stoves distributed under the VPAs.			Sanjay Shirke and Debrah Busingye
2.	Compliance of Monitoring plan with the applied methodology and registered monitoring plan; project implementation and operation as per the PoA-DD/VPA-DDs.	VPA implementer's office	02/11/2022	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
3.	Discussion on the monitoring survey and WBT process; review of QA/QC process (such as related to instruments utilized for carrying out such standardized tests for e.g., WBT) including interview/competency assessment (abilities, qualifications, training and recognition of involved personnel and institutions of the measuring team) of person/institution responsible for conduction of survey/WBTs; Review of monitored data, Discussion on Monitoring report and ER calculation spread sheets	VPA implementer's office	02/11/2022	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
4.	Physical site visit (to check project implementation and operation and sample households from CME/PP's survey samples)	End user house visit	02/11/2022 & 03/11/2022	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
5.	Discussion on OSV findings and Closing meeting.	VPA implementer's office	03/11/2022	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye

D.3. Interviews[2]

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Karthik	Anantha	UpEnergy	02/11/2022 (Remotely)	Project implementation and operation, monitoring procedure, data and information flow, Quality Assurance – Management and operating system, Monitoring records, MR and ER calculation	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
2.	C K	Kumarswamy	UpEnergy	02/11/2022 (Remotely)	Project implementation and operation, monitoring procedure, data and information flow, Quality Assurance	Sanjay Kumar Agarwalla, Manas Halder,

[2] Representatives of UpEnergey from India and Ecoeye from the Republic of Korea attended the interview remotely via Skype call and all other interviews were done physically during on-site visit.

					– Management and operating system, Monitoring records, MR and ER calculation	Rishika Sanjay Shirke and Debrah Busingye
3.	Sadashivan	Ashok	UpEnergy	02/11/2022 (Remotely)	Project implementation and operation, monitoring procedure, data and information flow, Quality Assurance – Management and operating system, Monitoring records, MR and ER calculation	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
4.	Wanyaka	Andrew	UpEnergy	03/11/2022	Project implementation and operation, monitoring procedure, data and information flow, Quality Assurance – Management and operating system, Monitoring records, MR and ER calculation	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
5.	Nalukonge	Shamin	UpEnergy	03/11/2022	Discussion on the monitoring survey; review of QA/QC process including interview/competency assessment of person responsible for conduction of survey	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
6.	Lee	Suheun	Ecoeye	02/11/2022 (Remotely)	Project implementation and operation	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
7.	Segujja	Rashid	CIRCODU	02/11/2022	Discussion on the WBT process; review of QA/QC process (such as related to instruments utilized for carrying out such standardized tests for e.g., WBT) including competency assessment (abilities, qualifications and recognition of involved personnel and institutions of the	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye

					measuring team) of person/institution responsible for conduction of WBTs	
8.	Nyashegu	Patricia	CIRCODU	02/11/2022	Discussion on the WBT process; review of QA/QC process (such as related to instruments utilized for carrying out such standardized tests for e.g., WBT) including competency assessment (abilities, qualifications and recognition of involved personnel and institutions of the measuring team) of person/institution responsible for conduction of WBTs	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
9.	-	Nangoye (Stove id: GPB57876)	End user	02/11/2022	On-site monitoring survey	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
10.	-	Agness (Stove id: GPM77040)	End user	02/11/2022	On-site monitoring survey	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
11.	Nabude	Rose (Stove id: GPM77951)	End user	02/11/2022	On-site monitoring survey	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
12.	Florence	Kayinza (Stove id: GPM60401)	End user	02/11/2022	On-site monitoring survey	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay

						Shirke and Debrah Busingye
13.	Ongoye	Opio (Stove id: KRH05055)	End user	02/11/2022	On-site monitoring survey	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
14.	Esther	Namataka (Stove id: GPM73411)	End user	02/11/2022	On-site monitoring survey	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
15.	-	Shakirah (Stove id: GPB57846)	End user	03/11/2022	On-site monitoring survey	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye
16.	Magret	Ikoko (Stove id: KPB04265)	End user	03/11/2022	On-site monitoring survey	Sanjay Kumar Agarwalla, Manas Halder, Rishika Sanjay Shirke and Debrah Busingye

D.4. Sampling approach

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As assessed in above sections, emission reductions for the twenty-two VPAs, (GS 11513 to GS 11534) are being claimed for this monitoring period and the total population of the stoves under these twenty-two VPAs are as below:

Sl. No.	VPA Reference No.	Number of ICS Distributed
1.	GS 11513	12,611
2.	GS 11514	12,611
3.	GS 11515	12,611
4.	GS 11516	12,611
5.	GS 11517	12,611
6.	GS 11518	12,611

7.	GS 11519	12,611
8.	GS 11520	12,611
9.	GS 11521	12,611
10.	GS 11522	12,611
11.	GS 11523	12,611
12.	GS 11524	12,611
13.	GS 11525	12,611
14.	GS 11526	12,611
15.	GS 11527	12,611
16.	GS 11528	12,611
17.	GS 11529	12,611
18.	GS 11530	12,611
19.	GS 11531	12,610
20.	GS 11532	12,610
21.	GS 11533	12,610
22.	GS 11534	12,647
Total		**277,475**

The monitoring parameters required to be monitored through the sampling plan are:
1. The thermal efficiency of operational ICS ($\eta_{new,y,i}$)
2. The average usage rate of ICS (U_y)
3. The quantity of woody biomass used in the project activity by traditional stoves (μ_{old})

Stratified sampling was applied by the CME for selection of the monitoring samples with 95/10 confidence/precision for cross-VPA sampling for all the parameters which is deemed acceptable as per the TRF PoA/ CPAs. For the thermal efficiency of the stoves ($\eta_{new,y,i}$) and the average usage rate of the appliance (U_y), sampling frames were chosen for the respective models of stoves distributed and considered for monitoring separately whereas the quantity of woody biomass used in the project activity by traditional stoves (μ_{old}) sampling frame was chosen for the vintage wise stove distributed (which is in line with the PoA-DD/VPA-DDs).

As per paragraph 25 of the Sampling Standard, version 09 /B07/, the verification team has to verify whether the project participants or the coordinating/managing entity have implemented the sampling and surveys according to the sampling plan in the registered monitoring plan. The verification includes determining:

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

Monitoring was conducted from March to May 2022 for this monitoring period. The results of sampling surveys are verified by the VVB by using acceptance sampling during on-site interviews carried out on 02/11/2022 and 03/11/2022.

In line with paragraph 26 of the Sampling Standard /B07/, the verification team has applied a sampling approach for on-site visits surveys as part of verification. Now as the CME had applied sampling approach, the verification team has chosen acceptance sampling in accordance with paragraph 28 of the sampling standard and accordingly steps listed in paragraph 29 of the sampling standard were followed.

VVB used sampling during verification for checking the operational status and to check if the WBT tests have been done in the households and it was confirmed that WBT tests were conducted in their households. A sample size of 8 was chosen. A sample size of 8 was required, based on an AQL of 1% and UQL of 20 %, producer risk of 10 % and consumer risk of 20%. Acceptance number (c) thus

determined for the samples is 0. VVB visited 8 samples. It was observed that out of the 8 samples, all 8 stoves were found to be operational and this matched with the CME's records and hence no discrepant records were observed with the MR /1/ and ER sheet /2/ and thus c=0. Thus, CME's set of records has been accepted in line with § 33 of the sampling standard, version 09 /B07/. Verification team has cross verified these sample documents during the on-site visit.

The sampling plan implemented by the CME is in accordance with the applied approved monitoring methodology /B02/ and the PoA-DD/VPA-DDs /B04/. The CME has appropriately performed Sampling procedure in line with the applied methodology and PoA-DD / VPA-DDs /B04/.

Verification team confirms that the end users have been selected at random and without any bias. Furthermore, based on review of the ex-post monitoring survey records /07/, the verification team confirms that the sampling survey covered end users covered in the VPAs. Thus, the survey design covers the region of distribution of the population (within the geographical boundary) and is representative in nature.

The verification team thus confirms that the sampling plan ensures that:
(a) The necessary confidence / precision of 95/10 each of the parameters is met.
(b) Samples are randomly selected and are representative of the population

This has been cross verified by the verification team from the supporting documents submitted.

SECTION E. Verification findings

E.1. General

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

Means of verification	Document Review, Interview
Findings	CAR 01 had been raised and resolved successfully. Refer appendix 4 for further details
Conclusion	CME has used the GS4GG template Monitoring Report, version 1.1 /B03-a/. Verification team confirms that the latest available version of the monitoring report template /B03/ has been used by the CME and the MR is in compliance with the monitoring report form and related template guide Monitoring Report, version 1.1 /B03-b/. This confirms compliance with the §336 and §337 of CDM VVS for PoAs, version 03.0 /B01/and GS4GG requirements /B08/.

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

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Not Applicable

E.2. Programme of activities

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

Means of verification	Document Review, Interview
Findings	CL 07 had been raised and resolved successfully. Refer appendix 4 for further details.
Conclusion	CCIPL by means of on-site interviews and document review, assessed that all physical features (technology, project equipment, and monitoring equipment) of the included VPAs in the TRF-PoA /B04/ are in place and that the

	coordinating/managing entity has operated the PoA and the VPAs as per the TRF-PoA /B04/ and the TRF-VPAs /B04/. There are no deviations or proposed or actual changes in the implementation or operation of the PoA and the included VPAs. The verification team confirms actual operation of the VPAs and PoA implementation and operation in compliance with the TRF-PoA / CPAs /B04/ in order to confirm the compliance of § 338, § 339 and § 340 of CDM VVS for PoAs, Version 03.0 /B01/ and GS4GG requirements /B08/.

E.2.2. Implementation and operation of the management system

Means of verification	Document Review, Interview
Findings	-
Conclusion	The PoA management system including the record-keeping system has been explained in the TRF-PoA /B04/. During the course of verification, verification team based on review of provided documents and on-site interviews has assessed this management system. Verification team evaluated the management systems in place to implement the monitoring of the project activity. This included the roles and responsibilities of the monitoring staff, data collection, transfer and aggregation procedures, data storage and archiving procedure for the monitoring system. Monitoring surveys were conducted by in house team of UpEnergy and WBTs have been done by a third party, Centre for Integrated Research and Community Development Uganda (CIRCODU). In order to ensure completeness and accuracy of monitoring information, electronic database is operated and maintained by the VPA implementer. This information is further maintained by the CME, who verifies the reported sales with the number of stoves produced by the manufacturer. The data is further periodically checked by the CME to ensure there is no double counting. This provision for the avoidance of double counting as outlined in the PoA management system has been verified by means of review records of sales database and on-site interviews during the course of verification. It was confirmed during the on-site interviews and by checking the monitoring system that all the roles and responsibilities related to monitoring are fulfilled by representatives of CME and the VPA implementer. The responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan /B04/. The details about monitoring system have been provided in the Monitoring report /1/. The data flow and management and reporting structure was also checked during the on-site interviews. The verification team confirms that the monitoring management system of the GS PoA is in place, with the responsibilities properly identified and in place. This confirms the compliance of § 338 (a) and § 345 (b) (iv) of CDM VVS PoAs. Version 03.0 /B01/ and GS4GG requirements /B08/.

E.3. Voluntary project activities

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

Means of verification	Document Review, Interview
Findings	CL 01 had been raised and resolved successfully. Refer appendix 4 for further details.

Conclusion	The implementation status of the PoA and the voluntary project activities is:

Project Participants:	UpEnergy Group
Title of PoA:	Up Energy Improved Cookstove Programme, Uganda
GS Reference No:	PoA – GS 10898 GS 11513, GS 11514, GS 11515, GS 11516, GS 11517, GS 11518, GS 11519, GS 11520, GS 11521, GS 11522, GS 11523, GS 11524, GS 11525, GS 11526, GS 11527, GS 11528, GS 11529, GS 11530, GS 11531, GS 11532, GS 11533, GS 11534
Applied Baseline and monitoring methodology:	AMS-II.G, Version 05
Project Scale:	Small scale
Location of the project activity:	Uganda
Reported monitoring Period verified in this verification:	01/01/2021 to 31/12/2021 (both days inclusive)

As a part of the on-site interviews, the verification team was able to confirm that the Programme of activities and the voluntary project activities' implementation are in accordance with the project description contained in the TRF-PoA and included VPA-DDs /B04/.

The VPAs include distribution of energy efficient improved cooking stoves. The VPA implementer is UpEnergy Uganda Ltd. The portable improved cook stoves (ICS) under the VPAs use charcoal/wood /3/ as fuel. These ICSs are efficient in transferring heat from the fuel to the pot, thus saving charcoal/wood fuel compared to the traditional stoves.

The number of stoves deployed under each VPAs have been confirmed by the monitoring database and as stated below:

Sl. No.	VPA Reference No.	Number of ICS Distributed
1.	GS 11513	12,611
2.	GS 11514	12,611
3.	GS 11515	12,611
4.	GS 11516	12,611
5.	GS 11517	12,611
6.	GS 11518	12,611
7.	GS 11519	12,611
8.	GS 11520	12,611
9.	GS 11521	12,611
10.	GS 11522	12,611
11.	GS 11523	12,611
12.	GS 11524	12,611
13.	GS 11525	12,611
14.	GS 11526	12,611
15.	GS 11527	12,611
16.	GS 11528	12,611
17.	GS 11529	12,611
18.	GS 11530	12,611

19.	GS 11531	12,610
20.	GS 11532	12,610
21.	GS 11533	12,610
22.	GS 11534	12,647
Total		**277,475**

The annual energy savings in GWh_{th} for the VPAs for the monitoring period were as follows:

VPA	GWh_{th}	Comment
GS 11513	125.98	In all the cases, energy savings is less than the small-scale threshold of 180 GWhth for Type II small scale project activities
GS 11514	124.20	
GS 11515	122.50	
GS 11516	121.38	
GS 11517	119.86	
GS 11518	118.73	
GS 11519	117.64	
GS 11520	116.79	
GS 11521	116.04	
GS 11522	115.80	
GS 11523	114.93	
GS 11524	114.04	
GS 11525	113.03	
GS 11526	111.82	
GS 11527	110.81	
GS 11528	109.96	
GS 11529	109.48	
GS 11530	108.60	
GS 11531	106.39	
GS 11532	103.22	
GS 11533	100.78	
GS 11534	98.43	

It was confirmed that UpEnergy Group is the Coordinating/Managing Entity for the PoA. The actual voluntary project activity/ies are in line with the TRF-VPAs /B04/. UpEnergy Uganda Ltd is the VPA implementer for the VPAs.

The information (including data and variables) provided in the MR /1/ is in line with the details provided in the TRF-VPAs /B04/.

CCIPL's verification team considers the project description of the project contained in the TRF-PoA and the TRF-VPAs /B04/ to be complete and accurate. The VPAs comply with the relevant methodology, tools, forms and guidance.

In accordance with §340 (c) of CDM VVS for PoAs, version 03 /B01/, the verification team confirms that there is no information (data and variables) in the current monitoring period that are different from that stated in the approved revised VPA-DDs which has caused an increase in the estimates of GHG emission reductions.

Verification team has assessed the project in order to check any proposed or actual changes to the project design in accordance with §267 of CDM VVS for PoAs, Version 03.0. In the opinion of CCIPL, there is no change to the project design. CCIPL's verification team confirms that the VPAs are implemented within the boundary of the PoA as described in the TRF PoA-DD.

In the opinion of CCIPL, there is no change to the project design. CCIPL's verification team confirms that the VPAs are implemented within the boundary of the PoA as

	described in the TRF-PoA /B04/ and the implementation and operation of the project activity has been conducted in accordance with the description contained in the TRF-PoA and TRF-CPAs. The verification team took cognizance of § 338, § 339 and § 340 of the CDM VVS for PoAs, version 03 /B01/ to conduct the verification and on-site interviews in accordance with the § 319 and 320 of the CDM VVS for PoAs, version 03 /B01/ and GS4 GG requirements /B08/.

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

Means of verification	Document Review, Interview
Findings	-
Conclusion	The verification team is able to confirm that the monitoring plan contained in the TRF-VPAs is in accordance with the approved methodology applied by the project activity, i.e. AMS-II. G, version 05 /B02/. The monitoring plan is in accordance with the approved methodology, AMS-II. G, version 05 /B02/, applied by the component project activities and as provided in the TRF-VPA /B04/. The verification took cognizance of § 341 to § 343 of CDM VVS for PoAs, Version 03.0 /B01/ and GS4GG requirements /B08/.

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

The monitoring has been carried out in accordance with the monitoring plan contained in the TRF-CPAs /B04/. This conclusion has been made based on assessment below.

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

Means of verification	Document Review, Interview
Findings	CL 02 and 03 had been raised and resolved successfully. Refer appendix 4 for further details
Conclusion	Verification team confirms that the Data and parameters fixed ex ante are in compliance with the TRF-VPAs /B04/ and the monitoring plan. Please refer Appendix 5 for detailed analysis of the ex-ante parameters. The verification took cognizance of § 344 of CDM VVS for PoAs, Version 03.0 /B01/ and GS4GG requirements /B08/.

E.3.3.2. Data and parameters monitored

Means of verification	Document Review, Interview
Findings	CL 03 and 04 had been raised and resolved successfully. Refer appendix 4 for further details
Conclusion	The Verification team confirms that the Data and parameters monitored are in compliance with the TRF-VPAs and the monitoring plan /B04/. A complete assessment of each of the monitored parameters has been provided in Appendix 6 of the verification report. The verification took cognizance of § 344, § 345(b), §356 and §357 of CDM VVS for PoAs, Version 03.0 /B01/ GS4GG Requirements/B08/.

E.3.3.3. Implementation of sampling plan

Means of verification	Document Review, Interview
Findings	CL 05 had been raised and resolved successfully. Refer appendix 4 for further details
Conclusion	Monitoring surveys were conducted during the current monitoring period.

The total population of the stoves under the twenty-two VPAs considered for the monitoring period is 277,475. The monitoring parameters required to be monitored through the sampling plan are:

1. The thermal efficiency of operational ICS ($\eta_{new,y,i}$)
2. The average usage rate of ICS (U_y)
3. The quantity of woody biomass used in the project activity by traditional stoves (μ_{old})

Across VPA stratified sampling was applied for the Twenty-two VPAs by CME for selection of the monitoring samples with 95/10 confidence/precision for all the three parameters for annual monitoring which is deemed acceptable as per the TRF-PoA /B04/ and TRF-CPAs /B04/.

For the thermal efficiency of the stoves ($\eta_{new,y,i}$) and the average usage rate of the appliance (U_y), sampling frames were chosen for the respective models of stoves distributed and considered for monitoring separately whereas the quantity of woody biomass used in the project activity by traditional stoves (μ_{old}) sampling frame was chosen for the vintage wise stove distributed.

Applying the random number generator, the ICS were randomly picked from the defined population up to the required sample size as calculated by the CME /9/. The verification team confirms that the applied method for sample size calculation is in accordance with the PoA-DD / VPA-DDs /B04/.

The number of samples for each of the parameters covered during the monitoring activity is as given below:

Parameter	**Sample Size (n) required**
η_{new} (RH)	2
η_{new} (BME)	2
η_{new} (Energy Empire)	2
η_{new} (TG)	2
η_{new} (Lugwana)	2
η_{new} (SHS-BOLD)	3
η_{new} (SHS-ILF)	2
η_{new} (SpendSmart)	2
U_y (RH)	2
U_y (BME)	7
U_y (Energy Empire)	2
U_y (TG)	2
U_y (Lugwana)	2
U_y (SHS-BOLD)	11
U_y (SHS-ILF)	9
U_y (SpendSmart)	2
μ_{old} (2020)	7
μ_{old} (2021)	3

The actual sample size in all the cases was not less than either the calculated sample size or the minimum sample size as per the PoA-DD /B04/. For the mean parameters, Student's t-distribution /B06/ has been used since the resulting sample size was less than 30 and this is deemed acceptable in line with the Standard for sampling and surveys for CDM project activities and Programme of Activities, version 09 /B07/.

For the monitoring parameters Uy and μ_{old}, data were collected following a specially designed survey form. For thermal efficiency of the stoves WBTs (Water Boiling Tests) were conducted. The monitoring survey conducted from March to May 2022 meeting the specified monitoring frequency requirements of "At minimum every 2

	years" as similar survey was last conducted in February 2021. However, the WBT was conducted from April to May2 022 which is slightly after the schedule of February 2022 (the delay was caused by transitioning of the PoA from CDM to GS4GG) but the η_{new} value recorded was conservative as the tests conducted in the month of May 2022 considered more wear and tear of the stove than if those would have conducted in Feb 2022 and also lower than the previous MP which was conducted in February 2021. The verification team has checked and found that for all the parameters the confidence/precision of 95/10 was met. The sampling plan implemented by the CME is in accordance with the applied approved monitoring methodology /B02/ and the PoA-DD/ TRF-VPAs /B04/. The CME has appropriately performed Stratified Random Sampling procedure in line with the applied methodology and best suited for this type of project. As the TRF-PoA /B04/ mentions the option for Stratified Random Sampling procedure, it is acceptable to the verification team. The necessary confidence / precision of 95/10 each of the parameters is met. This has been cross verified by the verification team from the supporting documents submitted. The verification took cognizance of § 346 of CDM VVS for PoAs, Version 03.0 /B01/and GS4GG Requirements /B08/.

E.3.4. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	Document Review, Interview
Findings	-
Conclusion	The stove efficiency testing has been determined by WBTs conducted in line with the guidance provided by the CME in the VPA-DDs /B04/ /10/. The WBTs were conducted by a third party, CIRCODU. During the on-site interviews, it was confirmed that the appointed third party has relevant experience and competence in monitoring cookstove projects in Uganda. The monitoring equipment used for conducting the stove efficiencies by WBTs are thermometer, weighing machine and moisture meter. All the monitoring equipment were duly calibrated and hence deemed acceptable /8/. The appropriate QA/QC procedures have been followed for the monitoring parameters. The verification took cognizance of section 10.2.6 of CDM VVS for PoAs, version 03 /B01/ and GS4GG requirements /B08/.

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

In line with the requirement of §356 and §357 of CDM VVS for PoAs, Version 03.0 /B01/, the verification team has reviewed the Monitoring report /1/ and ER spread sheets /2/ to check the arithmetic calculation of the emission reductions. The equation used for the calculation is compared with those provided in the TRF-VPAs /B04/ and the methodology AMS-II.G, Version 05 /B02/.

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

Means of verification	Document Review, Interview
Findings	CL 06 had been raised and resolved successfully. Refer appendix 4 for further details
Conclusion	The equations for baseline emissions, as provided in the Monitoring report /1/ and confirmed with the TRF-VPAs /B04/ and the methodology AMS-II.G, Version 05 /B02/, are: SDG 13: Climate Action $ER_y = (B_{y,savings} \times N_y \times U_y) \times (f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossilfuel})$

Where:

ER_y =Emission reductions during the year y in tCO_2e

$B_{y,savings}$ =Quantity of woody biomass that is saved in tonnes per appliance

$f_{NRB,y}$ =Fraction of woody biomass saved by the project activity in period y that can be established as non-renewable biomass

$NCV_{biomass}$ = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne)

$EF_{projected\_fossilfuel}$ = Emission factor for the substitution of non-renewable woody biomass by similar consumers (Default value of 81.6 tCO_2/TJ).

N_y = Number of appliances of the type being deployed during the period y as part of the SSC-VPA

U_y = Average usage rate (as opposite to drop-off) of appliances of type being deployed during period y as part of the SSC-VPA

$B_{y,savings}$ is estimated using the equation as follows:

$$B_{y,savings} = [(B_{old} - \mu_{old}) * L] * (1 - \eta_{old} / \eta_{new})$$

B_{old} =Quantity of biomass used in the absence of the project activity in tonnes/year (4.97 as per the VPA-DDs)

η_{old} =Efficiency of the system being replaced (fixed ex ante)

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

L =Net to gross Adjustment factor (0.95) applied in accordance with AMS-II.G, ver 05

μ_{old} = Quantity of woody biomass for the continued use of old stoves

From the above equation and the parameter values, emission reductions for the monitoring period 01/01/2021 to 31/12/2021 are calculated as:

Specific-case VPA reference number	Emission Reductions (tCO_2e)
GS 11513	30,270
GS 11514	29,844
GS 11515	29,436
GS 11516	29,165
GS 11517	28,800
GS 11518	28,529
GS 11519	28,267
GS 11520	28,063
GS 11521	27,884
GS 11522	27,825
GS 11523	27,615
GS 11524	27,402
GS 11525	27,160
GS 11526	26,869
GS 11527	26,625

	GS 11528	26,422
	GS 11529	26,307
	GS 11530	26,096
	GS 11531	25,565
	GS 11532	24,804
	GS 11533	24,215
	GS 11534	23,652
	Total	**600,815**

The verification team confirms that the calculation of baseline emission and emission reductions is in accordance with the applied methodological equation and the TRF-VPAs. Calculations have been checked and confirmed from the ER spread sheet /2/.

The verification took cognizance of § 356 of CDM VVS for PoAs, version 03.0 /B01/ andGS4GG requirements /B08/.

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

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

E.3.5.3. Calculation of leakage GHG emissions

Means of verification	Document Review, Interview
Findings	-
Conclusion	Net-to-gross adjustment factors for leakage (fixed default values of 0.95 as per AMS II.G. version 05) /B02/ was applied to the project activity to calculate Emission Reductions of this Monitoring Period. Verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the pre-defined formulae from TRF-CPAs /B04/.

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

Means of verification	Document Review, Interview
Findings	-
Conclusion	The verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the pre-defined formulae from TRF-VPAs. The total number of ERs achieved during the monitoring period is 600,815 tCO_2e. In summary, verification team confirms that actual emission reduction is lower than the estimate of the TRF-VPAs /B04/ for the current monitoring period. The verification took cognizance of § 356 of CDM VVS PoAs, version 03 /B01/ and GS4GG requirements /B08/.

Title and UNFCCC reference number of the VPA	Baseline emissions or baseline net GHG removals by sinks (tCO_2e)	Project emissions or actual net GHG removals by sinks (tCO_2e)	Leakage (tCO_2e)	GHG emission reductions or net GHG removals by sinks (tCO_2e)		
				Up to 31/12/2012	From 01/01/2013	Total amount
GS 11513	30,270	-	-	0	30,270	30,270
GS 11514	29,844	-	-	0	29,844	29,844
GS 11515	29,436	-	-	0	29,436	29,436
GS 11516	29,165	-	-	0	29,165	29,165
GS 11517	28,800	-	-	0	28,800	28,800
GS 11518	28,529	-	-	0	28,529	28,529
GS 11519	28,267	-	-	0	28,267	28,267
GS 11520	28,063	-	-	0	28,063	28,063
GS 11521	27,884	-	-	0	27,884	27,884
GS 11522	27,825	-	-	0	27,825	27,825
GS 11523	27,615	-	-	0	27,615	27,615
GS 11524	27,402	-	-	0	27,402	27,402
GS 11525	27,160	-	-	0	27,160	27,160
GS 11526	26,869	-	-	0	26,869	26,869
GS 11527	26,625	-	-	0	26,625	26,625
GS 11528	26,422	-	-	0	26,422	26,422
GS 11529	26,307	-	-	0	26,307	26,307
GS 11530	26,096	-	-	0	26,096	26,096
GS 11531	25,565	-	-	0	25,565	25,565
GS 11532	24,804	-	-	0	24,804	24,804
GS 11533	24,215	-	-	0	24,215	24,215
GS 11534	23,652	-	-	0	23,652	23,652

Total	**600,815**	**0**	**0**	**0**	**600,815**	**600,815**

E.3.5.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included VPA

Means of verification	Document Review
Findings	-
Conclusion	Comparison of the actual GHG emission reductions with the estimates in the included specific VPAs is given in the below table. The verification team took cognizance of § 356 of CDM VVS for PoAs, version 03 /B01/ and GS4GG requirements /B08/.

Title and UNFCCC reference number of the VPA	Actual values achieved by the VPAs during this monitoring period (tCO_2e)	Value estimated in ex ante calculation in the included VPA-DD(s) (tCO_2e)
GS 11513	30,270	41,186
GS 11514	29,844	41,186
GS 11515	29,436	41,186
GS 11516	29,165	41,186
GS 11517	28,800	41,186
GS 11518	28,529	41,186
GS 11519	28,267	41,186
GS 11520	28,063	41,186
GS 11521	27,884	41,186
GS 11522	27,825	41,186
GS 11523	27,615	41,186
GS 11524	27,402	41,186
GS 11525	27,160	41,186
GS 11526	26,869	41,186
GS 11527	26,625	41,186
GS 11528	26,422	41,186
GS 11529	26,307	41,186
GS 11530	26,096	41,186
GS 11531	25,565	41,186
GS 11532	24,804	41,186
GS 11533	24,215	41,186
GS 11534	23,652	41,186
Total	**600,815**	**906,092**

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

Means of verification	Document review
Findings	-
Conclusion	The actual emission reductions are less than the ex-ante estimated values in the VPA-DDs.

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

Means of verification	Document Review, Interview
Findings	-
Conclusion	The Verification team confirms that the data and parameters monitored related to sustainable development co-benefits are in compliance with the TRF-VPAs and

	the monitoring plan /B04/. A complete assessment of each of the monitored parameters has been provided in Appendix 6 of the verification report. The verification took cognizance of § 344, § 345(c), §356 and §357 of CDM VVS for PoAs, Version 03.0 /B01/ GS4GG Requirements/B08/.

SECTION F. Internal quality control

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

SECTION G. Verification opinion

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Carbon Check (India) Private Ltd. has performed the first verification of the GS Programme of Activities "Up Energy Improved Cookstove Programme, Uganda" in Uganda (hereafter referred to as "Programme of Activities or PoA") for the VPAs GS 11513 to 11534.

The verification team assigned by the VVB concludes that the TRF-PoA (Version 3.0, dated 04/10/2021), VPAs GS 11513 to GS 11534 as described in the TRF-VPAs /B04/ and the Monitoring report (Version 03, dated 22/12/2022) /01/, meet all relevant GS4GG requirements /B08/ and requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M& P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS for programme of activities requirements version 03.0 /B01/.

Verification methodology and process:

The Verification team confirms the contractual relationship signed on 26/09/2022 between the VVB, Carbon Check (India) Private Ltd. and the Co-ordinating Managing Entity/Project Participant, (Ecoeye Co., Ltd.) /17/. The team assigned to the verification meets the Carbon Check (India) Private Ltd.'s internal procedures including the UNFCCC and GS requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and Carbon Check's procedures and requirements.

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

- Reviewing the TRF-PoA (Version 3.0, date 04/10/2021), the TRF-VPAs for GS 11513 to GS 11534 /B04/, including the monitoring plan and the corresponding validation report/s /B04/;
- Previous CDM verification and certification reports and the monitoring reports for the previous monitoring periods;
- Desk review of the validation report, MR and other relevant documents including documents related to the project activities in emission reductions
- Review of the applied monitoring methodology (AMS-II.G, version 05);
- Review of any CMP and EB decisions, clarifications and guidance;
- On-site assessment interviews (02/11/2022 and 03/11/2022)
- Resolution of CARs and CLs raised during verification
- Issuance of Verification Report

The voluntary project activities were correctly implemented according to the selected monitoring methodology, monitoring plan and the TRF-VPAs. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on-site interviews, the verification team confirms that the PoA has resulted in the 600,815 tCO_2e emission reductions for the period 01/01/2021 - 31/12/2021 (inclusive of both the dates) during the first monitoring period for GS 11513 to GS 11534 and achieved SDG benefits as detailed in Appendix 6.

Verified emission reductions:

Specific-case VPA reference number	Emission Reductions (tCO_2e)
GS 11513	30,270
GS 11514	29,844
GS 11515	29,436
GS 11516	29,165
GS 11517	28,800
GS 11518	28,529
GS 11519	28,267
GS 11520	28,063
GS 11521	27,884
GS 11522	27,825
GS 11523	27,615
GS 11524	27,402
GS 11525	27,160
GS 11526	26,869
GS 11527	26,625
GS 11528	26,422
GS 11529	26,307
GS 11530	26,096
GS 11531	25,565
GS 11532	24,804
GS 11533	24,215
GS 11534	23,652
Total	**600,815**

CCIPL as a VVB is therefore pleased to issue a positive verification opinion in the Certification statement given below.

SECTION H. Certification statement

>>

Carbon Check (India) Private Ltd., the VVB, has performed the verification of the GS Programme of Activities, GS 10898, “Up Energy Improved Cookstove Programme, Uganda” in Uganda. The PoA involves replacement of less efficient cooking stoves using woody biomass with ICS which are more efficient. The ICS distributed under VPAs of the PoA are more efficient in transferring heat from the

fuel to the pot when compared to the stoves typically used in baseline. By replacing inefficient stoves, the PoA will save on consumption of woody biomass (either wood or charcoal made of wood).

The voluntary project activities of the Programme of Activities are designed to generate emission reductions by distribution of the fuel-efficient charcoal / wood fuel-based cook stoves in Uganda. The CME and VPA implementer are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the voluntary project activity/ies. It is VVB's responsibility to express an independent verification statement on the reported GHG emission reductions from the component project/s. The VVB does not express any opinion on the selected baseline scenario or on the validated and registered PoA-DD/VPA-DDs. The verification is carried out in-line with the CDM VVS and GS4GG requirements.

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

The verification is based on:

- TRF-PoA, Version 3.0 dated 04/10/2021;
- TRF-CPAs included in the PoA and its monitoring plan for the monitoring period 01/01/2021 – 31/12/2021.
- Approved CDM monitoring methodology AMS-II.G "Energy efficiency measures in thermal applications of non-renewable biomass", Version 05;
- Validation report for the PoA and the VPA/s;
- Monitoring report Version 3.0 dated 22/12/2022

This statement covers verification period from 01/01/2021 - 31/12/2021 (both dates included).

The VVB had raised seven (07) clarification requests and one (01) corrective action request, which have been successfully resolved by the CME. No FAR was raised.

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

The VVB, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 600,815 tCO_2e for the period 01/01/2021 - 31/12/2021 (inclusive of both the dates) and achieved SDG benefits as detailed in Appendix 6 and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records.

Appendix 1. Abbreviations

Abbreviations	Full texts
AQL	Acceptable Quality Limit
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CAR	Corrective Action Request
CCIPL	Carbon Check (India) Private Ltd.
CER	Certified Emission Reduction
CIRCODU	Centre for Integrated Research and Community Development Uganda
CL	Clarification Request
CME	Co-ordinating and Managing entity
VPA	Voluntary Project Activity
VPA-DD	Voluntary Project Activity Design Document
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DR	Document review
DVR	Draft Verification Report
EB	CDM Executive Board
EF	Emission Factor
EI	External individual
FA	Final Approval
FAR	Forward Action Request
FVR	Final verification Report
GACC	Global Alliance for Clean Cookstoves
GHG	Greenhouse gas(es)
GS4GG	Gold Standard for the Global Goals
GWh	Giga Watt Hour
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource
MP	Monitoring Period
MWh	Mega Watt Hour
MR	Monitoring Report
PoA	Programme of Activities
PoA-DD	Programme of Activities Design Document
PP	Project Participant
QC/QA	Quality control /Quality assurance
SDG	Sustainable Development Goal
TA	Technical Area
TR	Technical Review
TRF	Transition Request Form
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Limit
VVS	Validation and Verification Standard
VVB	Validation & Verification Body
WBT	Water boiling test

Appendix 2. Competence of team members and technical reviewers

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Sanjay Agarwalla

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
☒ 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			

Issue Date
24th December 2022

Expiry Date
23rd December 2023

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.0_112022

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. S. Ranganathan

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
☒ 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			

Issue Date

1st December 2022

Expiry Date

30th November 2023

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.0_112022

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	UpEnergy	Monitoring report for first monitoring period	Version 1.0, dated 11/10/2022, Version 3.0, dated 22/12/2022	CME
2	UpEnergy	Emission reduction calculation spread sheets for the twenty-two VPAs corresponding to /1/ including the Sales Database Summary of the cook stoves, WBT summary, Sample size calculation and Monitoring survey data	Version 1.0, dated 11/10/2022, Version 3.0, dated 22/12/2022	CME
3	UpEnergy	Stove specifications for BME, Energy Empire, Lugwana, RH, SHS-ILF, SHS-BOLD, SpendSmart and TG models used under the monitoring period Report of stove tests performed by third-party testing laboratory (Centre for Research in Energy and Energy Conservation)	-	CME
4	UpEnergy	Total sales record containing: • Model of project technology sold. • Quantity of units sold, • Stove serial number (unique ID). • Date of installation/distribution.	-	CME
5	UpEnergy	Specific training records of CIRCODU / surveying personnel on the following aspect: • Conducting of the monitoring survey using the questionnaire. • Checking of the quantity of fuel usage in each of the sampled households for the use of traditional stove. • Handling and use of measuring instruments. • Conducting water boiling tests using WBT Protocol version 4.2.3. • Data recording.	-	CME
6	UpEnergy	Copy of service agreement contract between UpEnergy and CIRCODU for conducting WBTs dated 04/02/2022	-	CME
7	UpEnergy	Scanned copies of monitoring surveys conducted between 28/03/2022 and 29/05/2022.	-	CME
8	UpEnergy	Calibration certificate for the monitoring equipment (barometer, ethernet multimeter, weighing scale) issued by Keane Engineering Technologies Ltd. dated 31/01/2022	-	CME
9	UpEnergy	Evidence for online random number generator for sampling.		CME
10	UpEnergy	WBT results and conducting methodology for the cook stoves.		
11	UpEnergy	Agreement copies:	-	CME

		• Emission Reductions Purchase Agreement between UpEnergy Group and UpEnergy (Uganda) Ltd. • Emission Reduction Development Funding Agreement between UpEnergy Group and Ecoeye Co., Ltd.		
12	UpEnergy	CME Manual for the PoA along with Organization Structure.	-	CME
13	CIRCODU	Competence of the persons who conducted survey and WBT	-	CME
14	UpEnergy	Copies of the contracts with stove manufacturers.	-	CME
15	UpEnergy	Sample end user sales agreement/receipt cum carbon credit waiver copies	-	CME
16	UpEnergy	Employee records	-	CME
17	CCIPL	Copy of engagement contract between CCIPL and Ecoey Co;, Ltd. dated 26/09/2022	-	Others
B01	UNFCCC	a) Validation and Verification Standard for PoAs, version 03 b) Project Standard for PoAs, version 03 c) Modalities and Procedures (Annex of Decision 3/CMP.1)	http://cdm.unfccc.int/	Others
B02	UNFCCC	Applied baseline and monitoring methodology, "AMS-II.G, version 05.0 "Energy efficiency measures in thermal applications of non-renewable biomass"	http://cdm.unfccc.int/	Others
B03	GS4GG	a) Template Monitoring Report, version 1.1 b) Template guide Monitoring Report, version 1.1	www.goldstandard.org	Others
B04	GS4GG	Registered GS PoA-DD and VPA-DDs and corresponding Validation Reports	-	Others
B05	Web sites	Websites: http://cdm.unfccc.int/ http://www.ipcc-nggip.iges.or.jp/ http://www.pciaonline.org/testing http://circodu.org.ug/	--	Others
B06	UNFCCC	Guidelines: Sampling and surveys for CDM project activities and programmes of activities (version 04.0)	http://cdm.unfccc.int/	Others
B07	GS4GG	Standard: Standard for sampling and surveys for CDM project activities and Programme of Activities (version 09.0)	www.goldstandard.org	Others
B08	GS4GG	a) GS4GG "Principles & Requirements", version 1.2 b) GS4GG "Programme of Activity Requirements", version 1.2 c) GS4GG "Community Services Activity Requirements", version 1.2 d) GS4GG "GHG Emissions Reduction & Sequestration Product Requirements, version 2.0 e) GS4GG "Safeguarding Principles & Requirements", version 1.2	--	Others

B09	UNFCCC	Monitoring Reports and Verification Reports of the previous monitoring periods for the CDM PoA 9956	http://cdm.unfccc.int/	Others

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

Table 1. Remaining FARs from validation and/or previous verification

Nil.

Table 2. CAR from this verification

CAR ID	01	**Section no.**	MR	**Date:** 16/11/2022
Description of CAR				
The verification team has noticed that the section numbers on the cover page of the monitoring report are not in accordance with the MR template. CME is requested to rectify this.				
CME response				**Date:** 17/11/2022
The clerical error is rectified on the cover page of the monitoring report. The revised MR is shared with VVB				
Documentation provided by CME				
1. Monitoring Report version 2				
VVB assessment				**Date:** 24/11/2022
CME has now rectified the section numbers on the cover page of the revised monitoring report. CAR 01 is closed.				

Table 3. CLs from this verification

CL ID	01	**Section no.**	MR	**Date:** 16/11/2022
Description of CL				
The value shown for 'Rated Thermal Efficiency' for the stove model SpendSmart (SST) in section B.1 of the monitoring report is not consistent with the registered CDM CPA-DD. Clarification requested.				
CME response				**Date:** 17/11/2022
The typo error of efficiency of SpendSmart(SST) stove is corrected and which is in line with the registered CPA-DD. The revised MR is shared with VVB				
Documentation provided by CME				
1. Monitoring Report version 2				
VVB assessment				**Date:** 24/11/2022
CME has now corrected the value for 'Rated Thermal Efficiency' in section B.1 of the revised monitoring report for the stove model SpendSmart (SST), and the value is now consistent with the registered CDM CPA-DD. CL 01 is closed.				

CL ID	02	**Section no.**	MR	**Date:** 16/11/2022
Description of CL				
Under section D.1 of the MR, 'Choice of data or Measurement methods and procedures' for parameter η_{old} states that the value applied is 'based on the default value as per AMS II.G. The VPA-DDs, on the other hand, states that the value applied is the weighted average calculated using the formula, *"ηold = [Default efficiency of Unimproved/Traditional Biomass stove] * [% of Unimproved/Traditional Biomass stove users] +*				

*[Default efficiency of other type of stoves] * [% of other type of stove users]*'. CME is requested to clarify the same.
CME response **Date:** 18/11/2022
The choice of data for the parameter *ηold in* section D.1 is updated which is in line with VPA-DD. The revised MR is shared with VVB
Documentation provided by CME
1. Monitoring Report version 2
VVB assessment **Date:** 24/11/2022
CME has now corrected the data and parameter table for parameter η_{old} , in section D.1 of the monitoring report, making it consistent with the registered VPA-DDs. CL 02 is closed.

CL ID	03	**Section no.**	MR	**Date:** 16/11/2022
Description of CL				
Verification team has noticed that the Data and parameters tables under section D of the monitoring report are not in accordance with the VPA-DDs. CME is requested to clarify the same.				
CME response				**Date:** 17/11/2022
The clerical error of aligning the data and parameters of section D is now updated which is in line with VPA-DD. The revised MR is shared with VVB				
Documentation provided by CME				
1. Monitoring Report version 2				
VVB assessment				**Date:** 24/11/2022
CME has now updated the data and parameters tables in the revised monitoring report, which is in line with the registered VPA-DDs. CL 03 is closed.				

CL ID	04	**Section no.**	MR	**Date:** 16/11/2022
Description of CL				
CME is requested to clearly state the value used for parameter η_{new}, which is required for calculating emission reductions, under section D.2 of the MR.				
CME response				**Date:** 17/11/2022
The weighted average been used for calculating emission reductions in ER sheet and the clerical error is rectified and updated in MR. The revised MR is shared with VVB				
Documentation provided by CME				
1. Monitoring Report version 2				
VVB assessment				**Date:** 24/11/2022
The value used for parameter $\eta_{new,}$ has been now included by the CME, under section D.2 of the revised monitoring report. CL 04 is closed.				

CL ID	05	**Section no.**	MR/ER spreadsheet	**Date:** 16/11/2022
Description of CL				
Under section D.4 of the MR, reference of page 57 of PoA-DD has been made for sampling frame description. It is not clearly mentioned if this is GS4GG or CDM PoA-DD. Also, the page number seems incorrect. Clarification is requested.				
CME response				**Date:** 17/11/2022
The reference for stratified random sampling in section D.4 is based on registered CDM PoA-DD. The error is corrected in the MR and the revised MR is shared with VVB				
Documentation provided by CME				
1. Monitoring Report version 2				
VVB assessment				**Date:** 24/11/2022
The PoA-DD page number reference has been revised by the CME, under section D.4 of the monitoring report. CL 05 is closed.				

CL ID	06	Section no.	ER spreadsheet	Date: 16/11/2022
Description of CL				
The verification team has noted the following: i. The average thermal efficiency value in the 'WBT Summary' tab of the ER spreadsheet for TG - KTG04091 (Cell D8) does not correlate with the WBT result excel sheet for the respective stove (TAMELA GROUP CH131-SN KTG04091). ii. Several of the average thermal efficiency values in the 'WBT Summary' tab of the ER spreadsheet is inconsistent with values mentioned in the PDF WBT report (Appendix 1: Detailed test results). CME is requested to clarify the above discrepancies observed.				
CME response				**Date:** 17/11/2022
1. The typo error of efficiency is rectified for stove model KTG04091 which is in line with the WBT excel result sheet. The revised ER sheet is shared with VVB. 2. The clerical error is rectified and the values of stove efficiencies in WBT summary tab is consistent with the WBT report. The updated WBT report along with ER spread sheets are shared with VVB.				
Documentation provided by CME				
1. Emission reduction sheet version 2 *2. WBT Report*				
VVB assessment				**Date:** 24/11/2022
1. The average thermal efficiency value for TG - KTG04091, in the ER spreadsheet's 'WBT Summary' tab, has been corrected by the CME to correspond with the WBT result excel sheet for the respective stove. 2. The CME has now made the average thermal efficiency values of all stoves in the ER spreadsheet's 'WBT Summary' tab consistent with the values mentioned in the PDF WBT report (Appendix 1: Detailed test results). CL 06 is closed.				

CL ID	07	Section no.	MR	Date: 16/11/2022
Description of CL				
CME is requested to clarify the Role of Ecoeye Co., Ltd. in project implementation and operation.				
CME response				**Date:** 17/11/2022
Ecoeye Co., Ltd is the project participant and supporting in project financing. Ecoeye has sponsored the distribution of ICS for the VPAs covered in this monitoring period (VPA24 to VPA 45).				
Documentation provided by CME				
VVB assessment				**Date:** 24/11/2022
CME has now clarified the role of Ecoeye Co., Ltd. in project implementation and operation, and this has been included in the revised monitoring report under section A.1. CL 07 is closed.				

Table 4. FARs from this verification

Nil.

Appendix 5. Data and parameters fixed ex ante

SDG 13: Climate Action

Parameter	Quantity of woody biomass used in the absence of the project activity in tonnes per household (B_{old})
Data unit:	Tonnes wood-eq/HH-year
Default values used:	4.97
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Efficiency of the system being replaced (η_{old})
Data unit:	Percentage
Default values used:	11.43%
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Net to gross adjustment factor to account for leakages (L_y)
Data unit:	Fraction
Default values used:	0.95
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Net calorific value for biomass used as cooking fuel ($NCV_{biomass}$)
Data unit:	TJ/tonne
Default values used:	0.015
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Emission factor for the substitution of non-renewable woody biomass by similar consumers ($EF_{projected\_fossil\_fuel}$)
Data unit:	tCO_2/TJ
Default values used:	81.60
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass. ($\mathbf{f_{NRB,y}}$)
Data unit:	Fraction
Default values used:	0.82
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Efficiency of the system being deployed at the time of VPA inclusion ($\eta_{specified}$)
Data unit:	Percentage
Default values used:	

Stove Type	**Thermal efficiency**
RH	36.30 %
BME	31.00 %
Energy Empire	33.00 %
TG	35.90%

	<table><tr><td>Lugwana</td><td>34.75 %</td></tr><tr><td>SHS - BOLD</td><td>37.30 %</td></tr><tr><td>SHS -ILF</td><td>38.00 %</td></tr><tr><td>SpendSmart</td><td>36.30 %</td></tr></table>
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is based on manufacturer specification /3/

SDG-1: No Poverty:

Parameter	Access to Basic Services (Number of ICS distributed under the baseline) ($BSA_{Baseline}$)
Data unit:	Number
Default values used:	0
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	% HH reporting money saving due to reduced fuel consumption in baseline ($HHS_{Baseline}$)
Data unit:	%
Default values used:	0
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

SDG 3: Good Health and Well Being

Parameter	% HH reporting reduction in smoke/PM emissions while cooking on improved stove in baseline ($SPM_{HH,Baseline}$)
Data unit:	%
Default values used:	0
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

SDG 5: Gender Equality

Parameter	% HH reporting time saving due to reduced collected fuel consumption / cooking time in baseline ($HHT_{Baseline}$)
Data unit:	%
Default values used:	0
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

SDG 7: Affordable and Clean Energy

Parameter	Access to affordable and clean energy (% of operating ICS units under Baseline) ($ACS_{Baseline}$)
Data unit:	%
Default values used:	0
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

SDG 8: Decent Work and Economic Growth

Parameter	Quantitative Employment and income generation (Number of person (male and female) hired under Baseline) ($QE\ IG_{Baseline}$)
Data unit:	Number
Default values used:	0
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

SDG 12: Responsible consumption and production

SDG 15: Life on Land

Parameter	Average fuel consumption per HH in Baseline ($FC_{Baseline}$)
Data unit:	tonnes/year/HH
Default values used:	4.97
Purpose of data	SDG 12/SDG 15 Impact calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Appendix 6. Data and parameters monitored

SDG 13: Climate Action

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Quantity of woody biomass used in the project activity by traditional stoves (μ_{old})
Measuring frequency/Time Interval:	At minimum every two years
Reporting frequency:	Annual/Biennial
Reported value:	0.491 tonnes wood/ HH year
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from monitoring survey of samples
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records and the ER sheet /2/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Efficiency of the system being deployed as part of the project activity (η_{new})
Measuring frequency/Time Interval:	Annual
Reporting frequency:	Annual

<table>
<tr><td>Reported value:</td><td>
<table>
<tr><th>Stove Type</th><th>Average Thermal efficiency</th></tr>
<tr><td>RH</td><td>33.69%</td></tr>
<tr><td>BME</td><td>29.49%</td></tr>
<tr><td>Energy Empire</td><td>31.40%</td></tr>
<tr><td>TG</td><td>33.85%</td></tr>
<tr><td>Lugwana</td><td>30.34%</td></tr>
<tr><td>SHS - BOLD</td><td>31.39%</td></tr>
<tr><td>SHS -ILF</td><td>31.98%</td></tr>
<tr><td>SpendSmart</td><td>35.12%</td></tr>
</table>

Weighted Average: 31.30%
</td></tr>
<tr><td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td><td>Yes</td></tr>
<tr><td>Details of monitoring equipment:</td><td>
The stove efficiency testing has been determined by WBTs conducted from April to May 2022, in line with the guidance provided by the CME in the VPA-DDs /B04/ /10/. The monitoring equipment used for conducting the stove efficiencies by WBTs are thermometer, weighing scale, standard mass and moisture meter. The equipment was either externally calibrated or were newly purchased at the time of use so measurements were done with the necessary guarantees /8/.

QA/QC procedures stated in MR comply with VPA-DDs and the details of equipment used for conducting WBT are as follows:

<table>
<tr><td>Name of the equipment</td><td>Barometer</td></tr>
<tr><td>Model/Type</td><td>WR100M</td></tr>
<tr><td>Serial number</td><td>SGW-300H</td></tr>
<tr><td>Ambient condition</td><td>Temp: 20.00+/- 1°C
Humidity: 51+/-1%</td></tr>
<tr><td>Calibration date</td><td>31/01/2022</td></tr>
<tr><td>Validity of calibration</td><td>30/01/2023</td></tr>
</table>

<table>
<tr><td>Name of the equipment</td><td>Ethernet Multimeter</td></tr>
<tr><td>Model/Type</td><td>2701</td></tr>
<tr><td>Serial number</td><td>0490-258500</td></tr>
<tr><td>Ambient condition</td><td>Temp: 20.00+/- 1°C
Humidity: 50+/-1%</td></tr>
<tr><td>Calibration date</td><td>31/01/2022</td></tr>
<tr><td>Validity of calibration</td><td>30/01/2023</td></tr>
</table>

<table>
<tr><td>Name of the equipment</td><td>Weighing scale</td></tr>
<tr><td>Model/Type</td><td>BLB 16 (Max capacity 16 kg with 0.1 kg resolution)</td></tr>
<tr><td>Serial number</td><td>1310049</td></tr>
<tr><td>Ambient condition</td><td>Temp: 20.8°C
Humidity: 44.5%</td></tr>
</table>
</td></tr>
</table>

	<table><tr><td>Calibration date</td><td>31/01/2022</td></tr><tr><td>Validity of calibration</td><td>30/01/2023</td></tr></table>
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	VPA-DDs do not specify the accuracy of the monitoring equipment (thermometer, mass balance and moisture meter). Verification team confirms that the accuracy of the monitoring equipment used represent good monitoring practice based on sectoral expertise.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	The equipment used has valid calibration certificate for the monitoring period.
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The exact calibration interval has not been provided in the registered CDM CPA-DD and the monitoring equipment to be used by the surveyor are to be calibrated as per manufacturer guidance. However, since all equipment are calibrated prior to use, the selected frequency represents good monitoring practice.
Company performing the calibration (internal or external calibration):	External. All equipment have been calibrated by Keane Engineering Technologies Ltd.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes, the calibration confirmed proper functioning of the monitoring equipment.
Is (are) calibration(s) valid for the whole reporting period?	Yes, the calibration is valid for the whole monitoring period.
If applicable, has the reported data been cross-checked with other available data?	The data has been cross-checked with the WBT test documents /10/. For the stove efficiency parameter, WBT have been performed and this has been checked by the verification team with the related spreadsheets. Furthermore, the verification team has cross checked all the raw data input records in the WBT calculation spread sheets including the calculation procedure for the sampled households and found them to be correct. All the raw data forms for the WBT carried out for efficiency parameter were checked by the verification team and thus no sampling of data is required. Correctness of the stove thermal efficiency values were verified by the verification team based on the review of the WBT calculation spread sheet for correctness of calculations in line with WBT protocol, original test records and review of measuring equipment used during WBTs for calibration and accuracy.
How were the values in the monitoring report verified?	The reported data has been cross-checked against the raw data sheets for the WBTs and calculation sheets /10/ and compared with the ER sheet /02/ and the MR /01/.
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. As the monitoring parameter under consideration is determined by standardized test procedures (WBT), the QA/QC and calibrations are at the test conduction by the measuring team for WBT. Accordingly, the verification team has focused on abilities, qualifications and recognition of involved personnel

	and institutions of the measuring team involved in the WBT. The WBT has been carried by CIRCODU. The WBT has been carried out by the well-trained personnel and training certificate of the personnel has been provided to the verification team in this respect /5/. The training content /5/ has also been provided to the verification team. The verification team based on on-site interviews and review of competency documents /13/ and training records /5/ confirms that the team was qualified to carry out the WBT in line with the protocol.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Number of appliances deployed (N_y)
Measuring frequency/Time Interval:	Continuous
Reporting frequency:	Yearly
Reported value:	**277,475** **VPA Reference No.** / **Number of ICS Distributed** GS 11513 — 12,611 GS 11514 — 12,611 GS 11515 — 12,611 GS 11516 — 12,611 GS 11517 — 12,611 GS 11518 — 12,611 GS 11519 — 12,611 GS 11520 — 12,611 GS 11521 — 12,611 GS 11522 — 12,611 GS 11523 — 12,611 GS 11524 — 12,611 GS 11525 — 12,611 GS 11526 — 12,611 GS 11527 — 12,611 GS 11528 — 12,611 GS 11529 — 12,611 GS 11530 — 12,611

	<table><tr><td>GS 11531</td><td>12,610</td></tr><tr><td>GS 11532</td><td>12,610</td></tr><tr><td>GS 11533</td><td>12,610</td></tr><tr><td>GS 11534</td><td>12,647</td></tr><tr><td>**TOTAL**</td><td>**277,475**</td></tr></table>
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Sales database
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	An electronic sales database has been maintained for the project activity.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DDs.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross-checked with the monitoring database and sample households and the scanned copy records were also checked.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VPA-DD):	Average usage rate of appliance type being deployed (U_y)
Measuring frequency/Time Interval:	At minimum every two years
Reporting frequency:	Annual/Biennial
Reported value:	90.92

Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from the monitoring survey of samples
Is accuracy of the monitoring equipment as stated in the VPA-DD? If the VPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA.
Is the calibration interval in line with the monitoring plan of the VPA-DD? If the VPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with VPA-DD.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, reported data in MR has been compared with monitoring survey records and the ER sheet /2/
How were the values in the monitoring report verified?	The values in the monitoring report were compared against the values in ER sheet
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. The sampling surveys has been carried out in house by UpEnergy /7/. The training content /5/ has also been provided to the verification team. The verification team based on on-site interviews and review of competency documents /13/ and training records /5/ confirms that the team was qualified to carry out the monitoring surveys.
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.

Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount achieved	Units/products
13 Climate Action (mandatory)	Amount of CO_2e emissions reduced by the project	600,815	$tCO_2(eq)$ VERs

1 No Poverty 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	1.4.1 Proportion of population living in households with access to basic services Indicator: Number of ICS distributed under the project as an indicator of providing basic service access to households	277,475	Number
1 No Poverty 1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	1.4.1 Proportion of population living in households with access to basic services Indicator: % users reporting money saving due to reduction in purchased fuel consumption in project	90.92%	%
3 Good Health and Well Being 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	3.9.1 - Mortality rate attributed to household and ambient air pollution Indicator: % users reporting reduction in smoke/PM after shifting to ICS in project	90.92%	%
5 Gender Equality 5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location Indicator: % users reporting time saving due to reduction in collected fuel consumption / cooking time in project	90.92%	%
7 Affordable and Clean Energy 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	7.1.2 Proportion of population with primary reliance on clean fuels and technology Indicator: % users reporting an operational ICS in project	90.92%	%
8 Decent Work and Economic Growth 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people	8.5.1Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	72	Number

and persons with disabilities, and equal pay for work of equal value	Indicator: Number of male / female numbers of employment created by project		
12 Responsible Consumption and Production 12.2 By 2030, achieve the sustainable management and efficient use of natural resources	12.2.2 - Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP Indicator: Average % Fuel savings reported by users in the project	54.35%	%
15 Life on Land 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	15.2.1 Progress towards sustainable forest management Indicator: Woodfuel eq savings reported by user in the project	2.70	Tonnes / user / year

Furthermore, during on-site interviews it was confirmed that no disputes, inputs and comments have been received via the Continuous Input and Grievance Mechanism during the monitoring period.

APPENDIX 7. Assessment of Safeguarding Principles

Safeguarding Principles	Assessment Questions/ Requirements	How Project will achieve Requirements through design, management or risk mitigation.	Verification team assessment
Principle 1. Human Rights	1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights	The PoA and CME both respect human rights and are not complicit in violence or human rights abuses.	The PoA involves dissemination of improved cookstove which users are free to choose. This project is a voluntary action by the project developer and no risk and issues to the internationally proclaimed human rights are expected from this project. The PoA and CME both respect human rights and are not complicit in violence or human rights abuses. No mitigation measure required. The validation team confirms that PoA fulfils the GS requirement outlined in the para 3.1.1 of the GS4GG safeguarding principles requirements version 1.2 /B08/.
	2. The Project shall not discriminate with regards to participation and inclusion	The PoA does not discriminate with regards to participation and inclusion	The PoA involves dissemination of improved cookstove which users are free to choose. There is no discrimination against any person or group regarding the possibility to buy a stove. No mitigation measure required. The validation team confirms that PoA fulfils the GS requirement outlined in the para 3.1.2 of the GS4GG safeguarding principles requirements version 1.2 /B08/.
Principle 2. Gender Equality	1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women (a) Sexual harassment and/or any forms of violence against women – address the multiple risks of gender-based violence, including sexual exploitation or human trafficking.	Not relevant	This is not relevant for the project activity.
	(b) Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls.	Not relevant	This is not relevant for the project activity.

	(c) Restriction of women's rights or access to resources (natural or economic).	Not relevant	This is not relevant for the project activity.
	(d) Recognise women's ownership rights regardless of marital status – adopt project measures where possible to support to women's access to inherit and own land, homes, and other assets or natural resources.	Not relevant	This is not relevant for the project activity.
	2. Projects shall apply the principles of non-discrimination, equal treatment, and equal pay for equal work: (a) Where appropriate for the implementation of a PoA/VPA, paid, volunteer work or community contributions will be organised to provide the conditions for equitable participation of men and women in the identified tasks/activities.	Not relevant	This is not relevant for the project activity.
	(b) Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status.	Not relevant	This is not relevant for the project activity.
	(c) Ensure that these conditions do not limit the access of women or men, as the case may be, to PoA/VPA participation and benefits.	Not relevant	This is not relevant for the project activity.
	3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks	No gender risks are envisaged in the PoA.	The PoA involves dissemination of improved cookstove which users are free to choose. There are no gender risks envisaged during the dissemination of cookstoves. No mitigation measure required. The validation team confirms that PoA fulfils the GS requirement outlined in the para 3.2.3 of the GS4GG safeguarding principles requirements version 1.2 /B08/.
	4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)	Not relevant	This is not relevant for the project activity.

Principle 3. Community Health, Safety and Working Conditions	The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	The PoA reduces exposure to indoor air pollutants and smoke levels, further reducing incidence of respiratory illness compared to cooking on traditional biomass stoves using solid biomass fuel.	The improved cookstove will help to improve the air quality by reducing air pollution and thus avoids community exposure to increased health risks. The validation team confirms that PoA fulfils the GS requirement outlined in the para 3.3.1 of the GS4GG safeguarding principles requirements version 1.2 /B08/.
Principle 4.1 Sites of Cultural and Historical Heritage	Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?	Not relevant	This is not relevant for the project activity.
Principle 4.2 Forced Eviction and Displacement	Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	Not relevant	This is not relevant for the project activity.
Principle 4.3 Land Tenure and Other Rights	Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	Not relevant	This is not relevant for the project activity.
Principle 4.4 Indigenous People	Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	Since this is a cookstove distribution project, there is no risk to land/territory claimed by indigenous peoples. Cookstoves will be distributed to all willing customers within the project boundary.	This is not relevant for the project activity.
Principle 5. Corruption	The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	The CME does not promote / or is complicit in direct or indirect corruption.	The PoA does not in any way promote or complicity corruption. The validation team confirms that PoA fulfils the GS requirement outlined in the para 3.5.1 of the GS4GG safeguarding principles requirements version 1.2 /B08/.
Principle 6.1 Labour Rights	1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions	The PoA does not involve any forced labour and the PP ensures that all employment is in compliance with local labour regulations and laws.	The PoA does not involve any kind of forced labour or compulsory labour. The validation team confirms that PoA fulfils the GS certification requirement outlined in the para 3.6.1 of the GS4GG safeguarding principles requirements version 1.2 /B08/.

	2. Workers shall be able to establish and join labour organisations	The CME puts no constraints / limitation on employees to form a union.	The CME does not limit any of the employees to form unions or join labour organizations. The validation team confirms that PoA fulfils the GS certification requirement outlined in the para 3.6.1 of the GS4GG safeguarding principles requirements version 1.2 /B08/.
	3. Working agreements with all individual workers shall be documented and implemented and include: a. Working hours (must not exceed 48 hours per week on a regular basis), AND b. Duties and tasks, AND c. Remuneration (must include provision for payment of overtime), AND d. Modalities on health insurance, AND e. Modalities on termination of the contract with provision for voluntary resignation by employee, AND f. Provision for annual leave of not less than 10 days per year, not including sick and casual leave.	The CME's policies and employment contracts are compliant with the requirement	The PoA does not involve any kind of forced labour or compulsory labour. The CME has submitted HR Policy & Employee Handbook and also Employee in this respect. The validation team confirms that PoA fulfils the GS requirement outlined in the para 3.6.1 (b) of the GS4GG safeguarding principles requirements version 1.2 /B08/.
	4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion)	The CME does not promote / or is complicit in child labour	The PoA does not involve any kind of child labour and the CME shall take adequate steps to ensure the age verification process is thoroughly carried out while recruitment. The validation team confirms that PoA fulfils the GS requirement outlined in the para 3.6.2 of the GS4GG safeguarding principles requirements version 1.2 /B08/.
	5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures	Not relevant	This is not relevant for the project activity.

Principle 6.2 Negative Economic Consequences	Does the project cause negative economic consequences during and after project implementation?	No negative economic consequences are deemed applicable	No negative economic consequences are deemed applicable. This is not relevant for the project activity.
Principle 7.1 Emissions	Will the Project increase greenhouse gas emissions over the Baseline Scenario?	The PoA reduces GHG emissions relative to baseline scenario	The project involves dissemination of improved cookstove which will reduce GHG emissions compared to the baseline scenario. This is not relevant for the project activity.
Principle 7.2 Energy Supply	Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	The project will reduce fuel resource consumption instead	The improved cookstove does not use energy from local grid or power supply. The cook stove requires fuel wood as an energy source. The project will reduce fuel resource consumption. The validation team confirms that PoA fulfils the GS requirement outlined in the para 3.7.2 of the GS4GG safeguarding principles requirements version 1.2 /B08/
Principle 8.1 Impact on Natural Water Patterns/Flows	Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	Not applicable	This is not relevant for the project activity.
Principle 8.2 Erosion and/or Water Body Instability	Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	The PoA shall result in reduction in demand of biomass fuel in the region putting less pressure of forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling.	The project involves dissemination of improved cookstove and does not in any way cause additional erosion and/or water body instability or disrupt the natural pattern of erosion. The PoA shall result in reduction in demand of biomass fuel in the region putting less pressure of forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling. The validation team confirms that PoA fulfils the GS requirement outlined in the GS4GG safeguarding principles requirements version 1.2 /B08/.
Principle 9.1 Landscape Modification and Soil	Does the Project involve the use of land and soil for production of crops or other products?	Not applicable	This is not relevant for the project activity.
Principle 9.2 Vulnerability to	Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides,	Not applicable	This is not relevant for the project activity.

Natural Disaster	erosion, flooding, drought or other extreme climatic conditions?		
Principle 9.3 Genetic Resources	Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	Not applicable	This is not relevant for the project activity.
Principle 9.4 Release of pollutants	Could the Project potentially result in the release of pollutants to the environment?	The PoA reduces indoor air pollution relative to baseline scenario	The project involves dissemination of improved cookstove which will reduce indoor air pollution compared to the baseline scenario. This is not relevant for the project activity.
Principle 9.5 Hazardous and Non-hazardous Waste	Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	Not applicable	This is not relevant for the project activity.
Principle 9.6 Pesticides & Fertilisers	Will the Project involve the application of pesticides and/or fertilisers?	Not applicable	Not applicable
Principle 9.7 Harvesting of Forests	Will the Project involve the harvesting of forests?	The PoA does not involve harvesting of forests. The PoA shall result in reduction in demand of biomass fuel in the region putting less pressure of forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling.	The PoA involves in the reduction of fuel wood consumption therefore it will positively support the forest resources. The validation team confirms that PoA fulfils the GS requirement outlined in the GS4GG safeguarding principles requirements version 1.2 /B08/.
Principle 9.8 Food	Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	Not applicable	This is not relevant for the project activity.
Principle 9.9 Animal husbandry	Will the Project involve animal husbandry?	Not applicable	This is not relevant for the project activity.

Principle 9.10 High Conservation Value Areas and Critical Habitats	Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	Not applicable	This is not relevant for the project activity.
Principle 9.11 Endangered Species	Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	Not applicable	This is not relevant for the project activity.

APPENDIX 8: Gold Standard Verification Protocol

CCIPL's Checklist question	Ref.	MoV[3]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Sustainability Monitoring					
1.1 Have all non-neutral indicators been monitored as per the sustainability monitoring plan?	/1/	DR,	Yes, all the non-neutral indicators have been monitored as per the sustainability monitoring plan.	OK	OK
1.2 Have the methods to monitor data changed? And are they suitable to the project scale and type?	/1/	DR	Methods to monitor data have not changed as compared with the monitoring plan in the registered passport and monitoring plan.	OK	OK

[3] MoV = Means of Verification, DR = Document Review, I = Interview, www = internet search.

CCIPL's Checklist question	Ref.	MoV[3]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1.3 Has the way of monitoring been followed? With the inclusion of dates and parameters?	/1/	DR	The sustainability monitoring plan has been followed as per described in the Passport.	OK	OK
1.4 Have mitigation measures been put in place to prevent the risk of the violation of the safe guarding principle of "Do No Harm" assessment or to neutralise a Sustainable Development Indicator that is being monitored?	/1/	DR	The mitigation measures have been put in place that has been put in records as a proof of the same. Several supporting documents as listed under Appendix 3 have been provided. Also, the on-site interview of the households and interviews of the trained personals of PP were performed during an on-site interview.	OK	OK
1.5 Has all the data in the Sustainability development matrix been verified and cross checked against available sources of project data? Has it been described how sustainable development would be affected if a variance occurred?	/1/	DR and on-site interview	Yes, all data in the sustainability development matrix have been verified and cross checked from the supporting documents and during on-site audit.	OK	OK
2. Other					
2.1 Are there any issues from the previous validation/verification? (ie FARs, requests / approvals for RMP)	/1/ /B03/	DR	No	OK	OK
2.2 Has the project ever received any requests for reviews or incompletes from the UNFCCC or GS Secretariat?	/1/ /B03/	DR	No there are no request for reviews or incomplete for the project.	OK	OK
2.3 The evaluation of the status of mitigation and compensation measures has been verified.	/1/ /B03/	DR	Yes, the status of mitigation and compensation measures has been verified.	OK	OK