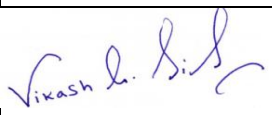
| Verification and certification report form for programme of activities | |
|---|---|
| **BASIC INFORMATION** | |
| **Title and UNFCCC reference number of the programme of activities (PoA)** | Up Energy Improved Cookstove Programme, Uganda<br>GS ID reference number - 10898 |
| **Version number(s) of the PoA-DD(s) to which this report applies** | Version 2.0; dated 15/07/2021 |
| **GS ID (s) of the VPAs** | 10900, 10901, 10902, 10903, 10904, 10905, 10906 |
| **Version number of the verification and certification report** | 02 |
| **Completion date of the verification and certification report** | 18/10/2023 |
| **Monitoring period number and duration of this morning period** | Third Monitoring Period (second PoA period)<br>01/07/2022 – 28/02/2023 (including both the days) |
| **Version number of the monitoring report to which this report applies** | Version 4.0 (Dated: 17/10/2023) |
| **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 12.0 |
| **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** |  <br>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 Cookstove Programme, Uganda – CPA No 002"; "Up Energy Improved Cookstove Programme, Uganda – CPA No 003"; "Up Energy Improved Cookstove Programme, Uganda – CPA No 004"; "Up Energy Improved Cookstoves Programme, Uganda - CPA No 005", "Up Energy Improved Cookstoves Programme, Uganda - CPA No 006", "Up Energy Improved Cookstoves Programme, Uganda - CPA No 007", "Up Energy Improved Cookstoves Programme, Uganda - CPA No 008".

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.

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 Voluntary 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. 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 01/07/2022 to 28/02/2023 (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 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 01/07/2022 to 28/02/2023 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 PoA (Version 2.0, dated 15/07/2021) /B04/, VPA 10900 to VPA 10906 (Version 4.0 dated 24/03/2022) as described in the VPA-DDs /B04/ and the monitoring report (version 4.0; dated 17/10/2023) /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. 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 222,521 $tCO_2e$ emission reductions during the Third monitoring period of the second crediting period.

CCIPL, as a VVB, is therefore pleased to issue a positive verification opinion expressed in the 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:

| Sr. 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 | Mane | Dinesh | CCIPL |
| 2. | Team Member | IR | Halder | Manas | CCIPL |
| 3. | Trainee Assessor | IR | Shirke | Rishika Sanjay | CCIPL |
| 3. | Local Expert | EI | Businge | Debrah | CCIPL |
| 4. | Technical Expert | IR | Seshan | Ranganathan | CCIPL |
| 6. | Approver | IR | Singh | Vikash Kumar | CCIPL |

## 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 reviewing 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,* | *The identified risk was mitigated by reviewing the management of access to the records. It was confirmed through interviews that the raw data is collected by the field personnel and then* |

[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 and also renewal of crediting period 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.

| | | | | |
|---|---|---|---|---|
| | | | *monitoring and sales database and baseline stove efficiency testing and other quality test records is controlled.* | *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 the VPA level are not random.* | *Cross-check the procedure to identify the sample size against the sampling guideline 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 2% of 222,521 $tCO_2e$ which is equal to 4,450 $tCO_2e$.

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 4,450 $tCO_2e$ 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 §9.6.3 (c) of the "GS Validation and Verification Standard" Version 01.0 /B01-a/ and based on the input of data from different sources checked through sampling of records during on-site visit interviews. 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 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 § 9.6 of the "GS Validation and Verification Standard" Version 01.0 /B01-a/ 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 and GS4GG), 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:** 20/06/2023 & 21/06/2023 | | | | |
|---|---|---|---|---|
| **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 number of stoves distributed under the VPAs. | VPA implementer's office | 20/06/2023 | Dinesh Mane, Rishika 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 | 20/06/2023 | Dinesh Mane, Rishika 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 | 21/06/2023 | Dinesh Mane, Rishika 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 | 20/06/2023 & 21/06/2023 | Dinesh Mane, Rishika Shirke and Debrah Busingye |

| | | | | |
|---|---|---|---|---|
| 5. | Discussion on OSV findings and Closing meeting. | VPA implementer's office | 21/06/2023 | Dinesh Mane, Rishika Shirke and Debrah Busingye |

## D.3. Interviews[2]

| No. | Interviewee | | | Date | Subject | Team member |
|---|---|---|---|---|---|---|
| | Last name | First name | Affiliation | | | |
| 1. | Karthik | Anantha | UpEnergy | 20/06/2023 (Remotely) | Project implementation and operation, monitoring procedure, data and information flow, Quality Assurance – Management and operating system, Monitoring records, MR and ER calculation | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 2. | Shetty | Nikhil | UpEnergy | 20/06/2023 (Remotely) | Project implementation and operation, monitoring procedure, data and information flow, Quality Assurance – Management and operating system, Monitoring records, MR and ER calculation | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 3. | C. K. | Kumarswamy | UpEnergy | 20/06/2023 (Remotely) | Project implementation and operation, monitoring procedure, data and information flow, Quality Assurance – Management and operating system, Monitoring records, MR and ER calculation | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 4. | Wanyaka | Andrew | UpEnergy | 20/06/2023 | Project implementation and operation, monitoring procedure, data and information flow, Quality Assurance – Management and operating system, Monitoring records, MR and ER calculation | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 5. | Anayo | Sheila | UpEnergy | 20/06/2023 | Project implementation and operation, monitoring procedure, data and information flow, Quality Assurance – Management and operating system, Monitoring records, MR and ER calculation | Dinesh Mane, Rishika Shirke and Debrah Busingye |

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

| | | | | | | |
|---|---|---|---|---|---|---|
| 6. | Segujja | Rashid | CIRCODU | 21/06/2023 | 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 | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 7. | Nyansheegu | Patricia | CIRCODU | 21/06/2023 | 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 | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 8. | M. | Salongo (Stove id: GPM238161) | End user | 20/06/2023 | On-site monitoring survey | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 9. | Namuyanja | Joyce (Stove id: GPM243274) | End user | 20/06/2023 | On-site monitoring survey | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 10. | - | Tina (Stove id: GPM243926) | End user | 20/06/2023 | On-site monitoring survey | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 11. | Dinah | Happy (Stove id: KULU32677) | End user | 20/06/2023 | On-site monitoring survey | Dinesh Mane, Rishika Shirke and |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | Debrah Busingye |
| 12. | Titus | Masinde D. (Stove id: GPM243971) | End user | 21/06/2023 | On-site monitoring survey | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 13. | - | Aisha (Stove id: GPM241183) | End user | 21/06/2023 | On-site monitoring survey | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 14. | Ikiring | Edith (Stove id: GPM242970) | End user | 21/06/2023 | On-site monitoring survey | Dinesh Mane, Rishika Shirke and Debrah Busingye |
| 15. | Solomon | Mama (Stove id: GPM240190) | End user | 21/06/2023 | On-site monitoring survey | Dinesh Mane, Rishika Shirke and Debrah Busingye |

## D.4. Sampling approach

>>

As assessed in above sections, emission reductions for the seven VPAs (GS 10900, 10901, 10902, 10903, 10904, 10905 and 10906) are being claimed for this monitoring period and the total population of the stoves under these seven VPAs are as below:

| Sl. No. | VPA Reference No. | Number of ICS Distributed |
|---|---|---|
| 1 | GS 10900 | 12,024 |
| 2 | GS 10901 | 12,426 |
| 3 | GS 10902 | 17,452 |
| 4 | GS 10903 | 32,179 |
| 5 | GS 10904 | 28,865 |
| 6 | GS 10905 | 26,999 |
| 7 | GS 10906 | 25,338 |
| **Total** | | **155,283** |

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

1. The thermal efficiency of the ICS distributed (%) ($\eta_{new,I,j}$)
2. Proportion of commissioned project devices of type i and batch j ($n_{y,I,j}$)
3. Adjustment to account for any continued use of pre-project devices during the year y ($\mu_y$)

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 PoA/ CPAs. For the thermal efficiency of the stoves ($\eta_{new,i,j}$) and the stove usage rate ($n_{y,i,j}$), 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 ($\mu_y$) 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 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 20/06/2023 and 21/06/2023.

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 has been raised. Refer appendix 4 for further details. |

| | |
|---|---|
| **Conclusion** | CME has used the GS4GG template Monitoring Report, version 1.1 /B03-1/. 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/.<br><br>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

No forward action requests from previous verifications.

## E.2. Programme of activities

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

| | |
|---|---|
| **Means of verification** | Document Review, Interview |
| **Findings** | - |
| **Conclusion** | CCIPL by means of on-site interviews and document review, assessed that all physical features (technology, project equipment, and monitoring equipment) of the included VPAs in the PoA /B04/ are in place and that the coordinating/managing entity has operated the PoA and the VPAs as per the PoA /B04/ and the VPAs /B04/.<br><br>There are no deviations or proposed or actual changes in the implementation or operation of the PoA and the included VPAs.<br><br>The verification team confirms actual operation of the VPAs and PoA implementation and operation in compliance with the PoA / CPAs /B04/ in order to confirm the compliance of § 17.4.8 of GS VVS, Version 01.0 /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 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.<br><br>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) /6/.<br><br>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. All ICS distributed under each VPA have a unique ID, and the ICS owners have transferred ownership of carbon credits to CME via end user agreement /15/. 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 scanned copies of sales receipts in |

| | |
|---|---|
| | accordance with the end user agreement and were further confirmed during the site visit through an end user interview.<br><br>CME carried out a monitoring survey to establish the drop off rate of cluster of stoves which are older than 5 years and compare with rate which has already been established for those which are 5 years and below 5 years. The rates differed by a margin of of more than -/+5%. Hence CME applied for above 5 years cluster of stoves their distinct drop off rate value and those below to applied their already established drop off rate value. The same is verified by VVB during current verification and found to be acceptable by reviewing the survey sheets and ER spreadsheet. FAR 01 were raised in this regard and closed successfully by CME.<br><br>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.<br><br>The responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan /B04/.<br><br>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.<br><br>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 § 17.4.8 of GS VVS, Version 01.0 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** | CAR 02, CAR 03 and CL 01 has been raised. 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<br>GS 10900<br>GS 10901<br>GS 10902<br>GS 10903<br>GS 10904<br>GS 10905<br>GS 10906 |
| **Applied Baseline and monitoring methodology:** | AMS-II.G, Version 12 |
| **Project Scale:** | Small scale |
| **Location of the project activity:** | Uganda |
| **Reported monitoring Period verified in this verification:** | 01/07/2022 to 28/02/2023 (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 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 as fuel. These ICSs are efficient in transferring heat from the fuel to the pot, thus saving charcoal 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 10900 | 12,024 |
| 2 | GS 10901 | 12,426 |
| 3 | GS 10902 | 17,452 |
| 4 | GS 10903 | 32,179 |
| 5 | GS 10904 | 28,865 |
| 6 | GS 10905 | 26,999 |
| 7 | GS 10906 | 25,338 |
| **Total** | | **155,283** |

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

| VPA | $GWh_{th}$ | | Comment |
|---|---|---|---|
| | <=5 years | >5 years | |
| GS 10900 | 90.68 | 35.65 | The VPAs are using micro-scale at unit level, and the annual thermal energy is calculated to be 0.015 GWhth per stove, which is much lower than the micro-scale threshold (less than 1.8 GWhth annual thermal energy savings). Thus, the VPAs are not required to meet the small-scale threshold for annual thermal energy savings of 180 GWhth for each VPA. |
| GS 10901 | 75.53 | 49.95 | |
| GS 10902 | 86.57 | 87.33 | |
| GS 10903 | 192.31 | 159.38 | |
| GS 10904 | 148.09 | 157.65 | |
| GS 10905 | 308.96 | 20.59 | |
| GS 10906 | 314.46 | 0.00 | |

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 VPAs /B04/. UpEnergy Uganda Ltd is also 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 VPAs /B04/.

CCIPL's verification team considers the project description of the project contained in the PoA and the 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 /B10/.<br><br>CME has got proposed Design Change approval from Gold Standard on 28/09/2023 to increase the life of the stoves from 5 years to 7 years; however, this does not impact any of the aspects mentioned in para 4.1.1 of Design Change Requirements v.1.1 and CCIPL's verification team confirms that the VPAs are implemented within the boundary of the PoA as described in the PoA-DD /B04/ and the implementation and operation of the project activity has been conducted in accordance with the description contained in the PoA and VPAs. Please refer to section E.3.2. below for further details.<br><br>The verification team took cognizance of § 338, § 339 and § 340 of the CDM VVS for PoAs, version 03 /B01/ and § 17.4.8 of the GS VVS version 1.0, 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 section 6.3 (b) of the GS VVS version 1.0 /B08/. |

### E.3.2. Changes to the project design

No design change envisaged during this verification.

### E.3.3. 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 VPAs is in accordance with the approved methodology applied by the project activity, i.e. AMS-II. G, version 12 /B02/.<br><br>The monitoring plan is in accordance with the approved methodology, AMS-II. G, version 12 /B02/, applied by the Voluntary project activities and as provided in the VPAs /B04/.<br><br>The verification took cognizance of § 341 to § 343 of CDM VVS for PoAs, Version 03.0 /B01/ and §17.4.9 of the GS VVS version 1.0 /B08/. |

### E.3.4. Compliance of monitoring activities with the registered monitoring plan

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

#### E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period

| | |
|---|---|
| **Means of verification** | Document Review, Interview |
| **Findings** | - |
| **Conclusion** | Verification team confirms that the Data and parameters fixed ex ante are in compliance with the VPAs /B04/ and the monitoring plan. Please refer Appendix 5 for detailed analysis of the ex-ante parameters.<br><br>The verification took cognizance of § 344 of CDM VVS for PoAs, Version 03.0 /B01/ and GS4GG Requirements /B08/. |

#### E.3.4.2. Data and parameters monitored

| | |
|---|---|
| **Means of verification** | Document Review, Interview |
| **Findings** | CL 02 has been raised. Refer appendix 4 for further details. |

| | |
|---|---|
| **Conclusion** | The Verification team confirms that the Data and parameters monitored are in compliance with the 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.<br><br>The verification took cognizance of § 344, § 345(b), §356 and §357 of CDM VVS for PoAs, Version 03.0 /B01/ and GS4GG Requirements /B08/. |

### E.3.4.3. Implementation of sampling plan

| | |
|---|---|
| **Means of verification** | Document Review, Interview |
| **Findings** | - |
| **Conclusion** | Monitoring surveys were conducted during the current monitoring period and the results are as follows:<br>The total population of the stoves under the seven VPAs considered for the monitoring period is 155,283. The monitoring parameters required to be monitored through the sampling plan are:<br>1. The thermal efficiency of the ICS distributed (%) ($\eta_{new,I,j}$)<br>2. Proportion of commissioned project devices of type i and batch j ($n_{y,I,j}$)<br>3. Adjustment to account for any continued use of pre-project devices during the year y ($\mu_y$)<br>Across VPA stratified sampling was applied for the seven 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 PoA /B04/ and VPAs /B04/.<br><br>For the thermal efficiency of the stoves ($\eta_{new,I,j}$) and the proportion of commissioned project devices ($n_{y,I,j}$), sampling frames were chosen for the respective models of stoves distributed and considered for monitoring separately whereas the adjustment to account for any continued use of pre-project devices during the year y ($\mu_y$), sampling frame was chosen for the vintage wise stove distributed.<br><br>FAR were raised in last verification performance review (refer appendix 4). In this regards CME had applied the requested changes in ER calculations appropriately as below. |

| **% Samples of stoves (Stoves older than 5 years)** | | **As mentioned in the FAR "at least 25% of samples have been taken from the stoves older than 5 years"** | |
|---|---|---|---|
| 29% | | | |
| **No. of sales more than 5 years of age** | **No. of samples monitored more than 5 years of age** | **Usage rate of stoves more than 5 years** | **Calculation of the usage rate based on stove age (more than 5 years)** |
| 56186 | 32 | 68.75% | |

| **No. of sales less than 5 years of age** | **No. of samples monitored more than 5 years of age** | **Usage rate of stoves less than 5 years** | **Calculation of stove usage rate based on stove age (Less than 5 years)** |
|---|---|---|---|
| 99097 | 78 | 92.31% | |

| | | |
|---|---|---|
| **Difference in the usage rate between stoves older than 5 years and younger than 5 years** | 24% | **As the difference in usage rate of stoves older than 5 years and younger than 5 year is more than 5%, as requested in the FAR the CME has** |

| | | |
|---|---|---|
| | | **applied distinct usage rate in the ER calculation, for both the age groups.** |

Based on the above calculations and as instructed in the FAR raised in the previous performance review, the distinct usage rate of stoves more than 5 years and less than 5 years was applied to the ER quantification. Hence FAR 01 is closed.

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** |
|---|---|
| $\eta_{new}$ (AES) | 2 |
| $\eta_{new}$ (Energy Empire) | 2 |
| $\eta_{new}$ (Lugwana) | 2 |
| $\eta_{new}$ (SHS) | 2 |
| $\eta_{new}$ (SHS-BOLD) | 2 |
| $\eta_{new}$ (SHS-GBE) | 2 |
| $\eta_{new}$ (SHS-ILF) | 2 |
| $\eta_{new}$ (SHS-PRO) | 3 |
| $\eta_{new}$ (SpendSmart) | 2 |
| $n_y$ (AES) | 2 |
| $n_y$ (Energy Empire) | 4 |
| $n_y$ (Lugwana) | 3 |
| $n_y$ (SHS) | 10 |
| $n_y$ (SHS-BOLD) | 5 |
| $n_y$ (SHS-GBE) | 11 |
| $n_y$ (SHS-ILF) | 5 |
| $n_y$ (SHS-PRO) | 17 |
| $n_y$ (SpendSmart) | 2 |
| $\mu_y$ (2016) | 2 |
| $\mu_y$ (2017) | 2 |
| $\mu_y$ (2018) | 3 |
| $\mu_y$ (2022) | 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 $\mu_y$ and $n_{y,l,j}$ data were collected following a specially designed survey form. For thermal efficiency of the stoves WBTs (Water Boiling Tests) were conducted. The monitoring survey and WBT were conducted in February to March 2022 meeting the annual/biennial monitoring frequency requirements as the CME has adopted an annual monitoring frequency and these were conducted from January to February 2021 for previous monitoring period.

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/ 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 PoA /B04/ mentions the option for Stratified Random Sampling procedure, it is acceptable to the verification team.<br><br>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 /2/.<br><br>The verification took cognizance of § 346 of CDM VVS for PoAs, Version 03.0 /B01/and GS4GG Requirements /B08/. |

### E.3.5. 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.<br><br>The verification took cognizance of section 10.2.6 of CDM VVS for PoAs, version 03 /B01/ and §17.4.11 of the GS VVS version 1.0 /B08/. |

### E.3.6. 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/, and §17.4.12 of the GS VVS version 1.0, 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 VPAs /B04/ and the methodology AMS-II.G, Version 12 /B02/.

### E.3.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

| | |
|---|---|
| **Means of verification** | Document Review, Interview |
| **Findings** | - |
| **Conclusion** | The equations for baseline emissions, as provided in the Monitoring report /1/ and confirmed with the VPAs /B04/ and the methodology AMS-II.G, Version 12 /B02/, are:<br><br>SDG 13: Climate Action<br>$ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y$ Eq (1)<br>Where,<br><br>$i$ — Indices for the situation where more than one type of project device is introduced to replace the pre-project devices<br>$j$ — Indices for the situation where there is more than one batch of project device $ERy$<br>$ER_y$ — Emission reductions during year y ($tCO_2e$)<br>$ER_{y,i,j}$ — Emission reductions by project device of type i and batch j during year y ($tCO_2e$)<br>$LE_y$ — Leakage emissions in the year y ($tCO_2e$)<br><br>Then, ERy,i,j $ERy,i,j$ is calculated as below: |

$$ER_{y,i,j} = B_{y,savings,i,j} \times N_{o,i,j} \times n_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\ fuel}$$

Eq (2)

Where,

| | |
|---|---|
| $ER_{y,i,j}$ | Emission reductions by project device of type i and batch j during year y ($tCO_2e$)) |
| $B_{y,savings,i,j}$ | Quantity of woody biomass that is saved per cookstove device of type i and batch j during year y (tonnes) |
| $N_{o,i,j}$ | Number of project devices of type i and batch j commissioned (number) |
| $n_{y,i,j}$ | Proportion of commissioned project devices of type i and batch j ($N0,i,j$ ) that remain operating in year y (fraction) |
| $\mu_y$ | Adjustment to account for any continued use of pre-project devices during the year y |
| $f_{NRB,y}$ | Fraction of woody biomass that can be established as non-renewable biomass (fraction or %) |
| $NCV_{Biomass}$ | Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried') |
| $EF_{projected\_fossil\ fuel}$ | Emission factor of fossil fuels projected to be used to substitute non-renewable woody biomass by similar consumers ($tCO_2e$/TJ) |

$$B_{y,savings,i,j} = B_{old,i,j} \times (1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}})$$

Eq (3)

Where,

| | |
|---|---|
| $B_{y,savings,i,j}$ | Quantity of woody biomass that is saved per cookstove device of type i and batch j during year y (tonnes) |
| $Nold,i,j$ | Efficiency of the old devices being replaced by project devices of type i and batch j (fraction) |
| $N_{nnew,i,j}$ | Efficiency of the project device i and batch j (fraction) |
| $B_{old,i,j}$ | Annual quantity of woody biomass that would have been used in the absence of the project activity to generate thermal energy equivalent to that provided by the project device type i and batch j (tonnes/year) |

$$B_{old,i,j} = B_{old,HH} = B_{old,p} \times N_{p,HH} \times LAF_y$$

Eq (4)

Where,

| | |
|---|---|
| $B_{old,i,j}$ | Annual quantity of woody biomass that would have been used in the absence of the project activity to generate thermal energy equivalent to that provided by the project device type i and batch j (tonnes/year) |
| $B_{old,HH}$ | Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices |
| $B_{old,p}$ | Annual quantity of woody biomass that would have been used per person in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices |
| $N_{p,HH}$ | Average number of persons per household |
| $LAF_y$ | Leakage adjustment factor |

From the above equation and the parameter values, emission reductions are calculated as:

| Specific-case VPA reference number | Emission Reductions ($tCO_2e$) |
|---|---|
| GS 10900 | 16,276 |
| GS 10901 | 16,166 |
| GS 10902 | 22,405 |
| GS 10903 | 45,311 |
| GS 10904 | 39,390 |
| GS 10905 | 42,458 |
| GS 10906 | 40,514 |
| **Total** | **222,521** |

The verification team confirms that the calculation of baseline emission and emission reductions is in accordance with the applied methodological equation and the 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.3.6.2. 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 VPAs /B04/ and GS4GG requirements/B08/. |

### E.3.6.3. 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 12) /B02/ was applied to the project activity to calculate Emission Reductions of this Monitoring Period.<br><br>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 VPAs /B04/. |

### E.3.6.4. 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 VPAs. The total number of ERs achieved during the monitoring period is 222,521 $tCO_2e$.<br><br>In summary, verification team confirms that actual emission reduction is lower than the estimate of the VPAs /B04/ for the current monitoring period.<br><br>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 ($tCO_2e$) | | |
|---|---|---|---|---|---|---|
| | | | | Amount achieved before 1 January 2013 | Amount achieved from 1 January 2013 | Amount achieved in the entire monitoring period |
| GS 10900 | 16,276 | - | - | 0 | 16,276 | 16,276 |
| GS 10901 | 16,166 | - | - | 0 | 16,166 | 16,166 |
| GS 10902 | 22,405 | - | - | 0 | 22,405 | 22,405 |
| GS 10903 | 45,311 | - | - | 0 | 45,311 | 45,311 |
| GS 10904 | 39,390 | - | - | 0 | 39,390 | 39,390 |
| GS 10905 | 42,458 | - | - | 0 | 42,458 | 42,458 |
| GS 10906 | 40,514 | - | - | 0 | 40,514 | 40,514 |
| **Total** | **222,521** | **0** | **0** | **0** | **222,521** | **222,521** |

### E.3.6.5. 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 10900 | 16,276 | 79,193 |
| GS 10901 | 16,166 | 79,193 |
| GS 10902 | 22,405 | 79,193 |
| GS 10903 | 45,311 | 79,193 |
| GS 10904 | 39,390 | 79,193 |
| GS 10905 | 42,458 | 79,193 |
| GS 10906 | 40,514 | 79,193 |
| **Total** | **222,521** | **554,354** |

### E.3.6.6. 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.3.7. Assessment of reported sustainable development co-benefits

| | |
|---|---|
| **Means of verification** | Document Review, Interview |
| **Findings** | CL 03 has been raised. Refer appendix 4 for further details. |
| **Conclusion** | The Verification team confirms that the data and parameters monitored related to sustainable development co-benefits are in compliance with the 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.<br><br>The verification took cognizance of § 344, § 345(c), §356 and §357 of CDM VVS for PoAs, Version 03.0 /B01/ and §17.4.12 of the GS VVS version 1.0 /B08/. |

## SECTION F. Internal quality control

>>

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

>>

Carbon Check (India) Private Ltd. has performed the third verification for the second crediting period 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 10900 to 10906.

The verification team assigned by the VVB concludes that the PoA (Version 2.0, dated 15/07/2021), VPAs GS 10900 to GS 10906 as described in the VPAs /B04/ and the Monitoring report (Version 04, dated 17/10/2023) /02/, meet all relevant GS4GG requirements /B08/ and requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M& P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS for programme of activities requirements version 03.0 /B01/ and GS4GG requirements /B08/.

Verification methodology and process:

The Verification team confirms the contractual relationship signed on 09/02/2023 between the VVB, Carbon Check (India) Private Ltd. and the Co-ordinating Managing Entity/ Project Participant, (UpEnergy Group) /16/. 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 PoA (Version 2.0, date 15/07/2021), the VPAs for GS 10900 to GS 10906 /B04/, including the monitoring plan and the corresponding validation report/s /B04/;
- Previous GS4GG verification and certification reports and the monitoring reports for the previous monitoring periods /B08/;
- 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 12);
- Review of any CMP and EB decisions, clarifications and guidance;
- On-site interviews (20/06/2023 and 21/06/2023)
- 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 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 222,521 $tCO_2e$ emission reductions during the Third monitoring period of second crediting period for GS 10900 to GS 10906.

Verified emission reductions:

| Specific-case VPA reference number | Emission Reductions ($tCO_2e$) |
|---|---|
| GS 10900 | 16,276 |
| GS 10901 | 16,166 |
| GS 10902 | 22,405 |
| GS 10903 | 45,311 |
| GS 10904 | 39,390 |
| GS 10905 | 42,458 |
| GS 10906 | 40,514 |
| **Total** | **222,521** |

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:

- PoA, Version 2.0 dated 15/07/2021 /B04/;
- VPAs included in the PoA and its monitoring plan for the monitoring period 01/07/2022 to 28/02/2023 (Both the days are included) /B04/.

- Approved CDM monitoring methodology AMS-II.G “Energy efficiency measures in thermal applications of non-renewable biomass”, Version 12 /B02/;
- Validation report /B04/ for the PoA and the VPA/s /B04/;
- Monitoring report Version 4.0 dated 17/10/2023 /B09/

This statement covers verification period from 01/07/2022 to 28/02/2023 (Both the days included).

The VVB had raised three (03) clarification requests and three (03) corrective action request which are successfully resolved by the CME. One FAR was raised during previous verification performance review by sustain cert. The same is closed during this verification. Refer Appendix 4 of report.

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 VPAs /B04/are fairly stated.

The VVB, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 222,521 $tCO_2e$ for the monitoring period from 01/07/2022 to 28/02/2023 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. |
| 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 |
| EF | Emission Factor |
| EI | External individual |
| FA | Final Approval |
| FAR | Forward Action Request |
| 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 |
| VER | Verified Emission Reduction |
| 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. Dinesh Mane**

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+) | ☐ CCB Expert |
| ☐ Financial Expert | ☒ 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**
27th July 2023

**Expiry Date**
26th July 2024

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

# Carbon Check (India) Private Limited

## Certificate of Competency

### Mr. Manas Halder

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+) | ☐ CCB Expert |
| ☐ Financial Expert | ☒ Local Expert for India and Bangladesh | | |

*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 January 2023**

**Expiry Date**

**31st December 2023**

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

# Carbon Check (India) Private Limited

## Certificate of Competency

## BUSINGYE DEBRAH

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+) | ☐ CCB Expert |
| ☐ Financial Expert | ☒ Local Expert for Uganda | | |

*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**
03rd May 2023

**Expiry Date**
02nd May 2024

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

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+) | ☐ CCB Expert |
| ☒ Financial Expert | ☒ 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 January 2023**

**Expiry Date**

**31st December 2023**

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

# Appendix 3. Documents reviewed or referenced

| No. | Author | Title | References to the document | Provider |
|---|---|---|---|---|
| 1 | UpEnergy | • Monitoring report for Third monitoring period<br>• Monitoring report for Third monitoring period | • Version 1.0, dated 05/05/2023<br>• Version 4.0, dated 17/10/2023 | CME |
| 2 | UpEnergy | • Emission reduction calculation spread sheets for the seven VPAs corresponding to /1/ including the Sales Database Summary of the cook stoves, WBT summary, Sample size calculation and Monitoring survey data<br>• Emission reduction calculation spread sheets for the seven 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 05/05/2023<br>• Version 4.0, dated 17/10/2023 | CME |
| 3 | UpEnergy | Stove specifications for AES, BME, Energy Empire, Lugwana, SHS, SHS-ILF, SHS BOLD, SHS-GBE, SHS-PRO and SpendSmart models used under the monitoring period<br>Report of stove tests performed by third-party testing laboratory (Centre for Research in Energy and Energy Conservation) dated 02/05/2018 | - | CME |
| 4 | UpEnergy | Total sales record containing:<br>• Model of project technology sold.<br>• Quantity of units sold,<br>• Stove serial number (unique ID).<br>• Date of installation/distribution. | - | CME |
| 5 | UpEnergy | Specific training records of CIRCODU / surveying personnel on the following aspect in March 2023:<br>• Conducting of the monitoring survey using the questionnaire.<br>• Checking of the quantity of fuel usage in each of the sampled households for the use of traditional stove.<br>• Handling and use of measuring instruments.<br>• Conducting water boiling tests using WBT Protocol version 4.2.3.<br>• 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 survey forms conducted between 03/09/2022 to 06/10/2022 | - | 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 test results and conducting methodology for the cook stoves in October 2022. | | CME |
| 11 | UpEnergy | Copy of agreement between the UpEnergy Group (CME) and UpEnergy Uganda Ltd (VPA implementer) | - | CME |
| 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 | CCIPL | Copy of engagement contract between CCIPL and Up Energy Group. dated 09/02/2023 | - | Others |
| 17 | UpEnergy | Employment record as evidence for SDG 8 in Dec 22 to Jan 23 | - | CME |
| B01 | UNFCCC | a) Validation and Verification Standard for PoAs, version 03<br>b) Project Standard for PoAs, version 03<br>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 12 "Energy efficiency measures in thermal applications of non-renewable biomass" | http://cdm.unfccc.int/ | |
| B03 | GS4GG | a) Template Monitoring Report, version 1.1<br>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 | www.goldstandard.org | Others |
| B05 | Web sites | Websites:<br>http://cdm.unfccc.int/<br>http://www.ipcc-nggip.iges.or.jp/<br>http://www.pciaonline.org/testing<br>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 | c) GS4GG "Principles & Requirements", version 1.2<br>d) GS4GG "Programme of Activity Requirements", version 1.2<br>e) GS4GG "Community Services Activity Requirements", version 1.2<br>f) GS4GG "GHG Emissions Reduction & Sequestration Product Requirements, version 2.0<br>g) GS4GG "Safeguarding Principles & Requirements", version 1.2<br>h) GS4GG "Validation and Verification Standard", version 1.0 | -- | Others |
| B09 | GS4GG | Monitoring Report and Verification Report of the previous monitoring period for the GS4GG PoA 10898 | www.goldstandard.org | Others |
| B10 | UNFCCC | 1. Validation and Verification Standard for PoAs, version 03<br>2. Project Standard for PoAs, version 03<br>Project Cycle Procedure for PoAs, version 03 | http://cdm.unfccc.int/ | Others |

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

**Table 1. Remaining FARs from previous verification sustain cert performance round**

| **FAR ID** | 01 | **Section no.** | MR and ER spreadsheet | **Date:** 17/10/2023 |
|---|---|---|---|---|
| **Description of FAR** | | | | |
| In the design change memo, it is stated that monitoring surveys done by the CME included at least 25% of samples taken from stoves older than 5 years, however, it has not been mentioned the drop off rate established for stove older than 5 years. CME shall carry out a survey to establish the drop off rate of cluster of stoves which are older than 5 years and compare with rate which has already been established for those which are 5 years and below. If the rates differ by a margin of -/+5%, then the stoves above 5 years will apply their distinct drop off rate value and those below to apply their already established drop off rate value. This requirement will be checked by the VVB in the next verification since the current verification was combined with design change. | | | | |
| **CME response** | | | | **Date:** 17/10/2023 |
| In order to incorporate the FAR raised in the previous performance review for the project, for the current monitoring period, the PD has sampled more than 25% of the stoves older than 5 years of age (29%). As recommended by the SustainCERT in the FAR, the PD has calculated the distinct usage rate for both the stoves more than 5 years of age and less than 5 years of age, from the usage survey conducted for the project. Since the difference in the usage between both the stove ages is more than 5%, in line with the SustainCERT' s recommendation, the PD has applied the distinct usage rate for both the stove ages in the ER calculation. Application of the distinct usage rate in the ER calculation has resulted in reduction of ERs when compared to the ERs calculated based on the overall usage rate. Please refer to the tab "" when the comparison of ERs on both the distinct and overall usage rate has been demonstrated. | | | | |
| **Documentation provided by CME** | | | | |
| Revised MR and ER spreadsheet | | | | |
| **VVB assessment** | | | | **Date:** 17/10/2023 |
| The changes made by CME during this verification is acceptable to verification team in this regard, hence FAR 01 is closed. | | | | |

**Table 2. CAR from this verification**

| **CAR ID** | 01 | **Section no.** | MR | **Date:** 24/06/2023 |
|---|---|---|---|---|
| **Description of CAR** | | | | |
| As per the template filling guideline CME to fulfil the same while completing the MR.<br>1. Do not modify or delete tables and their columns in this form. Add rows of the tables as needed. Add additional appendices as needed.<br>2. Figures above one thousand shall be formatted with a comma (for example 1,000,000), and decimals will be separated by a point (for example 1.35) | | | | |
| **CME response** | | | | **Date:** 29/09/2023 |
| 1.The CME would like to confirm that any changes done to the MR template have now been reverted back and now are inline with the template filling guidelines.<br><br>2.The clerical error of numbers above one thousand have been formatted with a comma and decimals have been separated by a point. The updated MR has been shared to the VVB with this response. | | | | |
| **Documentation provided by CME** | | | | |
| *Updated MR v.2* | | | | |
| **VVB assessment** | | | | **Date:** 29/09/2023 |
| CME has now completed the Monitoring Report in accordance with the template filing guidelines, therefore satisfying the GS MR template requirements.<br>CAR 01 is closed. | | | | |

| CAR ID | 02 | Section no. | MR | Date: 24/06/2023 |
|---|---|---|---|---|
| **Description of CAR** | | | | |
| The end date of the monitoring period in the KPI section of the monitoring report is inconsistent with the end date mentioned in the emission reduction spreadsheet.<br>Also, the start and end dates of the monitoring period in Table 2 'Product Vintages' of the monitoring report are inconsistent with the dates of the monitoring period given above in the KPI section. | | | | |
| **CME response** | | | | **Date:** 29/09/2023 |
| The end date of the monitoring period in the KPI section of the monitoring report has now been made consistent with the emission reduction sheet. Similarly, the start dates mentioned in the table 2 “Product vintages” of the monitoring report has been made consistent with the dates of the monitoring period given above in the KPI section. | | | | |
| **Documentation provided by CME** | | | | |
| *Updated MR v.2* | | | | |
| **VVB assessment** | | | | **Date:** 29/09/2023 |
| The start and end dates of the monitoring period are now updated in Table 2 'Product Vintages' of the monitoring report, and the dates are made consistent throughout the monitoring report.<br>CAR 02 is closed. | | | | |

| CAR ID | 03 | Section no. | MR | Date: 24/06/2023 |
|---|---|---|---|---|
| **Description of CAR** | | | | |
| As per the GS MR template filling guide, in section B.2.5 of the MR, CME needs to "Indicate any changes to the design of the project not included in B 2.1 or 2.4." | | | | |
| **CME response** | | | | **Date:** 29/09/2023 |
| The CME has now updated the section B.2.5 and has covered "Indicate any changes to the design of the project not included in B 2.1 or 2.4." as per the GS MR template filling guideline. The updated MR has been shared to the VVB along with this response. | | | | |
| **Documentation provided by CME** | | | | |
| *Updated MR v.2* | | | | |
| **VVB assessment** | | | | **Date:** 29/09/2023 |
| The correction made by the PP in updated MR section B.2.5 is found to be acceptable by verification team, hence this CAR 03 is closed | | | | |

**Table 3. CLs from this verification**

| CL ID | 01 | Section no. | MR | Date: 24/06/2023 |
|---|---|---|---|---|
| **Description of CL** | | | | |
| CME is requested to check and confirm the versions of the VPA-DDs applicable to the monitoring report for the given monitoring period.<br>Furthermore, the CME is requested to check and confirm the Monitoring Period Number for the current monitoring period, in the KPI section of the monitoring report. | | | | |
| **CME response** | | | | **Date:** 29/09/2023 |
| The CME has now checked and changed the version of the VPA-DDs and the monitoring period number. The updated MR has been shared with the DOE with this response. | | | | |
| **Documentation provided by CME** | | | | |
| | | | | |
| **VVB assessment** | | | | **Date:** 29/09/2023 |
| CME has now revised the versions of the VPA-DDs applicable for the given monitoring period.<br>Also, the Monitoring Period Number for the current monitoring period has been revised by the CME in the KPI section of the monitoring report.<br>CL 01 is closed. | | | | |

| CL ID | 02 | Section no. | MR | Date: 24/06/2023 |
|---|---|---|---|---|
| **Description of CL** | | | | |
| The emission reduction value in the monitoring report and the ER spread sheet are inconsistent including the values of the ex-post monitored parameters. | | | | |

| | |
|---|---|
| Under section D.2 of the monitoring report, the value mentioned for the data/parameter $\eta_{new,i,j}$ is inconsistent with the emission reduction sheet. | |
| **CME response** | **Date:** 29/09/2023 |
| The emission reduction value in the monitoring report and the ER spread sheet have now been made consistent including the values of the ex-post monitored parameters.<br>Also under section D.2 of the monitoring report, the value mentioned for the data/parameter $\eta_{new,i,j}$ has also been made consistent with the emission reduction sheet. | |
| **Documentation provided by CME** | |
| *Updated MR v.2* | |
| **VVB assessment** | **Date:** 29/09/2023 |
| The value mentioned for the data/parameter $\eta_{new,i,j}$ has now been updated under section D.2 of the monitoring report and made consistent with the value in emission reduction sheet.<br>CL 02 is closed. | |

| | | | | |
|---|---|---|---|---|
| **CL ID** | 03 | **Section no.** | MR | **Date:** 24/06/2023 |
| **Description of CL** | | | | |
| The SDG 15.2.1 is not mentioned in the VPA-DDs, however it is included under section E.1 of the monitoring report. Also, the 'Baseline Estimate' value for SDG 13 is not included in the table in section E.4 of the monitoring report. CME is requested to clarify on this. | | | | |
| **CME response** | | | | **Date:** 29/09/2023 |
| The CME has now removed the SDG 15.2.1 and now has made the claimed SDG in line with the VPA-DD. Also the CME confirms that the 'Baseline Estimate' for SDG 13 has been included in the table of Section E.4. The updated MR has been shared to the VVB with this response. | | | | |
| **Documentation provided by CME** | | | | |
| *Updated MR v.2* | | | | |
| **VVB assessment** | | | | **Date:** 29/09/2023 |
| Under section E.1 of the MR, the CME has now removed SDG 15.2.1 and revised the monitoring report in line with the VPA-DDs.<br>The CME has now included the 'Baseline Estimate' value for SDG 13 in the table under section E.4 of the revised MR.<br>CL 03 is closed. | | | | |

**Table 4. FARs from this verification**

Nil.

# Appendix 5. Data and parameters fixed ex ante

**SDG 13: Climate Change**

| | |
|---|---|
| Parameter | Annual quantity of woody biomass that would have been used per person in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices ($B_{old,p}$) |
| Data unit: | tonnes/person/year |
| Default values used: | 1.218 |
| Purpose of data | Baseline emissions calculation |
| Source and Verification of the source | The value of this parameter is fixed ex-ante /B04/. |

| | |
|---|---|
| Parameter | Average number of persons served per household prior to the project implementation ($N_{p,HH}$) |
| Data unit: | Number |
| Default values used: | 4.8 |
| Purpose of data | Baseline emissions calculation |
| Source and Verification of the source | The value of this parameter is fixed ex-ante /B04/. |

| | |
|---|---|
| Parameter | Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices ($B_{old,HH}$) |
| Data unit: | tonnes/household/year |
| Default values used: | 5.85 |
| Purpose of data | Baseline emissions calculation |
| Source and Verification of the source | The value of this parameter is fixed ex-ante /B04/. |

| | |
|---|---|
| Parameter | Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j ($B_{old,i,j}$) |
| Data unit: | tonnes/year |
| Default values used: | 5.85 |
| Purpose of data | Baseline emissions calculation |
| Source and Verification of the source | The value of this parameter is fixed ex-ante /B04/. $B_{old,i,j}$ = $B_{old,HH}$ as the VPAs are distributing only one ICS unit per household |

| | |
|---|---|
| Parameter | Efficiency of pre - project device ($\eta_{old,\ i,j}$) |
| Data unit: | Fraction |
| Default values used: | 0.1254 |
| Purpose of data | Baseline emissions calculation |
| Source and Verification of the source | The value of this parameter is fixed ex-ante /B04/. This parameter is being established ex-ante instead of determining it ex-post as end user data may not be available for all households. |

| | |
|---|---|
| Parameter | Net to Gross Leakage Adjustment factor ($LAF_y$) |
| 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 of the non-renewable biomass that is substituted ($NCV_{biomass}$) |

| | |
|---|---|
| Data unit: | TJ/tonne |
| Default values used: | 0.0156 |
| 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: | 73.2 |
| 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. ($f_{NRB,y}$) |
| Data unit: | Fraction |
| Default values used: | 0.88 |
| Purpose of data | Baseline emissions calculation |
| Source and Verification of the source | The value of this parameter is fixed ex-ante /B04/. |

**SDG-1: No Poverty:**

| | |
|---|---|
| Parameter | Average household savings due to decrease in expenditure on basic services such as cooking 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 5: Gender Equality**

| | |
|---|---|
| Parameter | Average time saving associated with cooking time and fuel collection in baseline ($HHTS_{Baseline}$) |
| Data unit: | hr/HH/day |
| 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/. |

| | |
|---|---|
| Parameter | Number of beneficiaries household under Baseline ($HHB_{Baseline}$) |
| 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 8: Decent Work and Economic Growth

| | |
|---|---|
| Parameter | Total number of employees by employment contract and employment type (Number of person (male and female) hired under Baseline) ($EECT_{Baseline}$) |
| 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 15: Life on Land

| | |
|---|---|
| Parameter | Average fuel consumption per HH in Baseline ($FC_{Baseline}$) |
| Data unit: | tonnes/year/HH |
| Default values used: | 5.85 |
| Purpose of data | Baseline emissions 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 Change**

| Monitoring Parameter Requirement | Assessment/ Observation by the VVB |
|---|---|
| Data / Parameter:<br>(as in monitoring plan of VPA-DD): | Proportion of commissioned project devices of type i and batch j ($n_{y,i,j}$) |
| Measuring frequency/Time Interval: | Annual/Biennial |
| Reporting frequency: | Annual/Biennial |
| Reported value: | Stoves more than 5 years of age – 0.6875<br>Stoves less than 5 years of age – 0.9231 |
| 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 usage survey records |
| 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:<br>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:<br>(as in monitoring plan of VPA-DD): | Efficiency of the project device of each type i and batch j implemented as part of the project activity ( $\eta_{new\ i,j}$) |

<table>
<tr><td>Measuring frequency/Time Interval:</td><td>Annual/Biennial</td></tr>
<tr><td>Reporting frequency:</td><td>Annually/ Biennially</td></tr>
<tr><td>Reported value:</td><td>
<table>
<tr><th>Stove Model</th><th>Average Thermal Efficiency</th></tr>
<tr><td>AES</td><td>20.94%</td></tr>
<tr><td>Energy Empire</td><td>30.26%</td></tr>
<tr><td>SHS-PRO</td><td>31.15%</td></tr>
<tr><td>Lugwana</td><td>21.43%</td></tr>
<tr><td>SHS</td><td>33.68%</td></tr>
<tr><td>SHS-BOLD</td><td>26.02%</td></tr>
<tr><td>SHS-GBE</td><td>35.74%</td></tr>
<tr><td>SHS-ILF</td><td>36.33%</td></tr>
<tr><td>SpendSmart</td><td>33.82%</td></tr>
<tr><td>Weighted Average</td><td>30.01%</td></tr>
</table>
<br>Weighted average efficiency with and without considering the date of stove deployment was calculated and the lower of the two values was considered for ER calculation. The considered value of the efficiency is 30.01%.
</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 September to October 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. All the monitoring equipment was either externally calibrated or were newly purchased at the time of use so measurements were done with the necessary guarantees and hence deemed acceptable /8/. The calibration is found to be valid covering current monitoring period.<br>QA/QC procedures stated in MR comply with VPA-DDs and the details of equipment used for conducting WBT is as follows:<br><br>
<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: 22.2+/- 1°C<br>Humidity: 51+/-1%</td></tr>
<tr><td>Calibration date</td><td>31/01/2022 and 24/01/2023</td></tr>
<tr><td>Validity of calibration</td><td>24/01/2024</td></tr>
</table>
<br>
<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<br>Humidity: 50+/-1%</td></tr>
<tr><td>Calibration date</td><td>31/01/2022 and 24/01/2023</td></tr>
</table>
</td></tr>
</table>

| | |
|---|---|
| | <table><tr><td>Validity of calibration</td><td>24/01/2024</td></tr></table><br><table><tr><td>Name of the equipment</td><td>Weighing scale</td></tr><tr><td>Model/Type</td><td>FKB 16KO.2A</td></tr><tr><td>Serial number</td><td>1310049</td></tr><tr><td>Ambient condition</td><td>Temp: 21.3°C<br>Humidity: 52.5%</td></tr><tr><td>Calibration date</td><td>31/01/2022 and 24/01/2023</td></tr><tr><td>Validity of calibration</td><td>24/01/2024</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:<br>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.<br><br>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.<br><br>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.<br>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:<br>(as in monitoring plan of VPA-DD): | Number of commissioned project devices of type i and batch j ($\mathbf{N_{0,i,j}}$) |
| Measuring frequency/Time Interval: | Continuous |
| Reporting frequency: | Yearly |
| Reported value: | <table><tr><th>VPA</th><th>Number of ICS Distributed</th></tr><tr><td>GS 10900</td><td>12,024</td></tr><tr><td>GS 10901</td><td>12,426</td></tr><tr><td>GS 10902</td><td>17,452</td></tr><tr><td>GS 10903</td><td>32,179</td></tr><tr><td>GS 10904</td><td>28,865</td></tr><tr><td>GS 10905</td><td>26,999</td></tr><tr><td>GS 10906</td><td>25,338</td></tr><tr><td>**Total**</td><td>**155,283**</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:<br>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:<br>(as in monitoring plan of VPA-DD): | Adjustment to account for any continued use of pre project devices during the year y ($\mu_y$) |
| Measuring frequency/Time Interval: | Annually/Biennially |
| Reporting frequency: | Annually/Biennially |
| Reported value: | 0.837 fraction |
| 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 usage survey records |
| 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:<br>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/2/ |
| 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.<br>The sampling surveys has been carried out in-house /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 | Data source |
|---|---|---|---|---|
| 13 Climate Action (mandatory) | Amount of GHGs emissions avoided or sequestered | 222,521 | $tCO_2e$ | The data is sourced from the ER calculation sheet for the monitoring period. |
| 1 No Poverty<br>1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day | 1.1.1 Proportion of population living below the international poverty line by sex, age, employment status and geographic location (urban/rural)<br><br>Indicator: Average household savings due to decrease in expenditure on basic service due to adoption of project technology/measures | 23,746 | UGX/month | No Claim |

| | | | | |
|---|---|---|---|---|
| 5 Gender Equality<br>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<br><br>Indicator: Average time saving associated with cooking time and fuel collection | 1.89 | hr/HH/day | No claim |
| 7 Affordable and Clean Energy<br>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<br><br>Indicator: % users reporting an operational ICS in project | 83.78% | % | The data is sourced from the monitoring survey of samples |
| 7 Affordable and Clean Energy<br>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<br><br>Indicator: Number of beneficiaries household under the project | 155,283 | Number | The data is sourced from the sales database |
| 8 Decent Work and Economic Growth<br>8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value | 8.5.1Average hourly earnings of female and male employees, by occupation, age and persons with disabilities<br><br>Indicator: Total number of Jobs | 72 | Number | The data is sourced from the employment records. |
| 15 Life on Land<br>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 | 15.1.1<br>Forest area as a proportion of total land area<br><br>Indicator: Total non-renewable wood fuel saved | 3.23 | Tonnes /HH/ year | The data is sourced from the monitoring survey of samples |

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 | 3. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women<br>(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. |
| | 1. Projects shall apply the principles of non-discrimination, equal treatment, and equal pay for equal work:<br>(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. |
| | 4. 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/ |
| | 5. (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 | 1. 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 | 1. 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 | 1. 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 | 1. 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 | 1. 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 | 1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects | The CME does not promotes / 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:<br>a. Working hours (must not exceed 48 hours per week on a regular basis), AND<br>b. Duties and tasks, AND<br>c. Remuneration (must include provision for payment of overtime), AND<br>d. Modalities on health insurance, AND<br>e. Modalities on termination of the contract with provision for voluntary resignation by employee, AND<br>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 | 1. 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 | 1. 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 | 1. 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.<br><br>The validation team confirms that PoA fulfils the GS requirement outlined in the GS4GG safeguarding principles requirements version 1.2 /B08/ |
| Principle 8.1 Impact on Natural Water Patterns/Flows | 1. 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 | 1. 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 | 1. 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 | 1. 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 | 1. 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 | 1. 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 | 1. 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 | 1. Will the Project involve the application of pesticides and/or fertilisers? | Not applicable | Not applicable |
| Principle 9.7 Harvesting of Forests | 1. 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 | 1. 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 | 1. Will the Project involve animal husbandry? | Not applicable | This is not relevant for the project activity. |

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|---|---|---|---|
| Principle 9.10 High Conservation Value Areas and Critical Habitats | 1. 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 | 1. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)?<br><br>AND/OR<br><br>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 |
| 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 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 | | | | | |

[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 |
|---|---|---|---|---|---|
| 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 |