



# EASTERN DRC COOKSTOVE PROJECT – SOUTH KIVU



Earthood Services Private Limited.

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|---------------|--------------------------------------------|
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### Summary:

Earthood Services Private Limited (hereafter referred to as Earthood) has been contracted by AERA group to conduct the verification of the registered project activity (VCS 2636) – Eastern DRC Cookstove Project – South Kivu which involves the distribution of fuel efficient improved cookstoves used by households located within the Eastern regions of DRC – specifically the Sud-Kivu Province, thereby replacing the prevailing inefficient three-stone cooking fire or traditional charcoal cookstoves that are predominantly used across the specified region. The improved cookstoves provides an efficient use of thermal energy produced through the combustion of biomass, thus leading to a more efficient thermal energy transfer to the cooking pot. This results in a reduction of biomass consumption as well as green gas emission. The project is a voluntary initiative as the host country's laws do not mandate the distribution of improved cookstoves (ICS) to the local communities.

Earthood has performed the verification of the project activity (VCS 2636) – Eastern DRC Cookstove Project – South Kivu on the basis of rules and requirements defined by VCS Standard v4.5 /6/ for the project activities. The review of the PD/1/, VCS MR/3/ ER sheet /4/, supporting documentation and subsequent follow-up actions i.e. onsite audit conducted by the VVB, where end users were interviewed, have provided Earthood with sufficient evidence to determine the fulfilment of stated criteria. The project correctly applies the approved baseline and monitoring methodology VMR0006: Methodology for Installation of High Efficiency Firewood Cookstoves, version 1.1./8/

This is the second monitoring under VCS and the monitoring period covered under this verification is from 01-January 2022 to 31-December-2022.

This assignment is an independent and objective review for determination of the monitored reductions in GHG emissions. The verification includes the implementation and operation of the project as reported in the PDD/01/ & monitoring report /3/. The verification process is undertaken by VVB that involves the following:

- The desk review of documents and evidence submitted by the project participant in context of the VCS criteria along with reference CDM rules and guidelines issued by CDM EB,
- Undertaking physical site visit, interview, or interactions with the representative of the project participant,
- Reporting audit findings with respect to clarification and non-conformities and the closure of the findings as appropriate.
- Preparing a draft verification report of VCS program complying with the VCS requirements

A risk-based approach has been followed to perform this verification. During verification 03 Corrective Action request (CARs), 00 Forward Action request (FARs) and 02 Clarification request (CLs) were raised and successfully closed.

The VCS MR/3/, emissions reduction calculations/4/, and accompanying documents provided are all in compliance with VCS criteria/6,7/. The verification was completed with a reasonable level of assurance and no uncertainties were found related with the project activity verification.

In Summary, it is Earthood's opinion that the project activity "Eastern DRC Cookstove Project – South Kivu" as described in the Monitoring Report v1.7/3/ dated 08/12/2023 complies with the applied methodology VMR0006 v1.1./8/ The monitoring plan adequately provides for the ex-post monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is Earthood's opinion that the OBEN EAC S.A shall be able to implement the monitoring plan and adhere to the requirements of the VCS standard./6/

Earthood confirms that the project is implemented in accordance with the registered VCS PD and the applied baseline and monitoring methodology. The project implementation is in line with the information provided in the final Monitoring Report/3/. The monitoring procedures are inline with the monitoring methodology and the emission reductions achieved during the current monitoring period are calculated without material misstatements. VVB's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated. Based on the information evaluated we confirm that the emission reductions from the grouped project activity, "Eastern Cookstove Project – South Kivu" during the period 01/01/2022 – 31/12/2022 amounts to 422,148 tCO<sub>2</sub>e.

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# 1 INTRODUCTION

## 1.1 Objective

AERA Group SAS has contracted Earthood Services Private Limited (VVB) for verification services of the VCS Project “Eastern DRC Cookstove Project- South Kivu” (Project ID 2636) located within the Eastern regions of the Democratic Republic of Congo – specifically the Sud Kivu Province to carry out the verification of the project against the relevant requirements of VCS Standard v4.5./6/. The verification team has reviewed the GHG data collected for the monitoring period 01-January-2022 to 31-December-2022 covered in this verification under the crediting period 10-June-2020 to 09-June-2027.

The purpose of the verification is to review the monitoring results and verify that monitoring methodology was implemented according to the registered monitoring plan and monitoring data, used to confirm the reductions in anthropogenic emissions by sources is sufficient, definitive, and presented in a concise and transparent manner. In order to establish that the grouped project activity has been implemented in line with registered design and conservative assumptions, as documented, the monitoring plan, monitoring report, and the project's compliance with applicable VCS, and host party requirements are specifically verified. This verification is a thorough and independent assessment of the registered project activity against the applicable VCS requirements by the VVB. The verification process shall determine whether registered project activity complies with the requirement of the latest VCS guidelines, applicability conditions of the monitoring methodology, relevant host country regulations and guidance issued by the VCS Board.

## 1.2 Scope and Criteria

The scope of this verification is to assess the claims and assumptions made in the VCS monitoring report/03/ against the VCS criteria, including but not limited to, VCS standard V4.5 /06/ applied methodology/08/ and other relevant rules and requirements established for VCS project activities.

- To verify the project implementation and operation with respect to the registered VCS PD.
- To verify the implemented monitoring plan with the registered VCS PD 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 registered 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 is not meant to provide any consulting towards the project participants. However, stated requested for clarification and/or correction actions requested may have provided inputs for improvement of the project design. The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

### 1.3 Level of Assurance

☒ Reasonable level of assurance

☐ limited level of assurance

The verification process entails a thorough and independent review of the VCS PD, MR and additional supportive evidence including the baseline and monitoring methodology, subsequent background information. Monitoring plan, follow-up interviews and documentation provided to the VVB against VCS criteria (VCS Program guide v4.4 and VCS Standard v4.5)

A draft verification report prepared by assessment team is reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by Earthood are duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable VCS requirements as appropriate. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of technical review team are independent of the verification team. The report approved by Technical Manager is endorsed by Managing Director, who is overall responsible to ensure quality, before final release. The further details of applicable procedures and responsibilities about Earthood Quality Management System (QMS) are available on its website ([www.earthood.in](http://www.earthood.in)).

Earthood's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considers necessary to give reasonable level of assurance that reported estimated GHG emission reductions are fairly stated.

The estimated and actual GHG emissions reductions were calculated correctly on the basis of the relevant applied methodology, VMR0006: Methodology for Installation of High Efficiency Firewood Cookstoves v1.1/08/. The assessment result has met a reasonable level of assurance in verification that GHG assertions are free of material errors, omissions and misrepresentations.

The document reviewed are included under Appendix 2 of this report.

## 1.4 Summary Description of the Project

The project activity aims to distribute Improved Cookstoves (ICS) to households in rural areas of the eastern Democratic Republic of Congo (DRC), particularly in the Sud-Kivu province within the diocese of Uvira through community-based organizations. This initiative involves replacing inefficient and high-emission stoves like three-stone fireplaces or traditional charcoal cookstoves with ICS in households, leading to reduced firewood consumption and emissions from burning. The project activity seeks to reduce greenhouse gas emissions, conserve forests for climate change mitigation in a sustainable manner, create job opportunities, and enhance the health of ICS end-users by improving indoor air quality and reducing the labor involved in cooking.

The first project instance has been implemented in Sud-Kivu and since the start date of the project activity i.e, 10-June-2020/20/ (the first ICS distribution date), 193,103 ICS have been distributed to end-users in the Sud-Kivu Province, this has been verified from the project database. During the current monitoring period spanning from 01-January-2022 to 31-December-2022, 115,038 cookstoves have been distributed to households/23/. VVB also confirmed from the PP that the distribution has been stopped in December 2022, and project developer now targets other regions of eastern DRC to expand the project. This was confirmed during the interview with PP during the onsite visit./9/

The technology deployed under the project activity is thermally efficient and in compliance with the applied methodology requirements, having an average lifespan of 8 years/19/. The type of stove distributed is referred to as the “Jiko Matawi” stove, a Tanzanian design that is made from moulded clay. The “Jiko Matawi” stove has been tested for a thermal efficiency of 32.1% as per Water Boiling Tests conducted and certified by third party report /24/ and has been already validated during the registration of the project which has been confirmed by the verification team during the desk review/05/. These ICS stoves are more efficient than traditional charcoal pots and three-stone fireplaces, as confirmed by the efficiency test report conducted in accordance with the prescribed methodology (VMR0006, version 1.1).

The project utilizes charcoal made from non-renewable biomass (firewood), as verified during on-site assessments by the project verification team. This charcoal is procured locally by users and is produced through the processing of firewood. The non-renewable component of the charcoal is factored into baseline emissions calculations. Households receive ICS at a 50% subsidy, with stoves being sold at \$5 while the total manufacturing and distribution cost is \$10 per stove./28/ To ensure compliance and accountability, individual households using ICS have signed a contractual agreements with the project participant, confirming the use of the cook stove and transferring the Verified Carbon Unit (VCU) right to the Project Participant. This has been verified by the Validation VVB along with the previous verification which has been crossed checked the verification team for the present monitoring period.

The on-site assessment was conducted on 11-August-2023/09/ to check the monitored information to be inline with the project description and it was confirmed that the current monitoring period from 01-January-2022 to 31-December-2022 (second verification period) involves a total of 115,038 ICS that were installed/ distributed resulting in an emission reduction of 422,148 tCO<sub>2</sub>.

The project is based on Sectoral Scope 3 – Energy Demand and applied the methodology- VMR0006 for Installation of High Efficiency Firewood Cookstoves v1.1.

Based on the assessment of the VCS MR/03/, ER sheet/04/, supporting evidence and the on-site audit, the assessment team can confirm that the project activity is fully functional and implemented as described in the registered VCS PD/01/ and applied methodology/08/.

CL#01 , CL#02, CAR#01 and CAR#05 was raised and resolved.

## 2 VERIFICATION PROCESS

The registered VCS project is undergoing second verification, the approach adopted to ensure the quality of emissions reductions is described in the following sections

### 2.1 Method and Criteria

The verification of the project consists of following steps:

#### **Desk review**

- Review of data and information provided in the VCS PD/01/ & MR/09/ and corresponding annexures.
- Cross check the information with the sources without limitations to the information provided by the project proponents.

#### **Follow up actions**

- On-site inspection to physically inspect the project design including, but not limited to, monitoring mechanism.
- Interview with relevant personnel and end-users responsible for information given in the MR.

#### **Reporting of findings**

- Resolution of findings
- Draft verification report

#### **Independent technical review**

The project documentation is reviewed by internal technical reviewer in order to independently confirm whether the applicable GHG program requirements were objectively met or not, in addition to whether internal procedures were followed while arriving at the verification opinion. The technical reviewer may accept or reject the verification opinion prepared by the assessment team and gives the reasons. The resolved findings may be opened at this stage or new findings may be identified that are required to be addressed by assessment team and/or project proponents, as appropriate. The technical reviewer is the decision maker on behalf of the Earthood Services Private Limited. A positive opinion is issued if all the findings have been satisfactorily resolved and in all other cases a negative opinion is issued unless the contract is terminated by either party before reaching the final opinion. Earthood keeps all documents and records in a secure and retrievable manner for at least two years after the end of the project crediting period.

### Sampling plan for verification of the project:

The Sampling and surveys for CDM project activities and programmes of activities (Version 9.0)/11/ states under paragraph 28 that “When the project participants or the coordinating/managing entity have applied a sampling approach, the VVB may apply acceptance sampling as described in the steps indicated in paragraphs 29–38 below as part of validation/verification activities”.

As per para 39 of the sampling standard version 9.0/11/, “A VVB may select a different sample size than the one indicated in paragraph 32 above either by choosing a different value for the consumer risk and producer risk (e.g., 20 per cent for the consumer risk) when applying acceptance sampling or by using another approach, if any of the following conditions apply:

- The estimated volume of annual GHG emission reductions of the project activity or the PoA being verified is equal to or less than 100,000 tCO<sub>2</sub>e.
- The security conditions in the project region prevents inspection of many samples (eg. conflict zones); or
- The project activity or the PoA is located in a least developed country or a host party with 10 or fewer registered CDM project activities at the end of the monitoring period being verified.”

The project activity is located in the Democratic Republic of Congo which is an LDC.

(<https://unfccc.int/topics/resilience/workstreams/national-adaptation-programmes-of-action/ldc-country-information>).

The verification team selected random sample of PP’s sampled records to check the acceptability (or otherwise) of the data for each such record with PP’s sample records and determined if the PP’s sample records meet the requirements. The parameters  $N_{y,i,j}$  (i.e. Number of ICS installed and operating till the end of the current monitoring period - “Number of project devices of type i and batch j operational during year y”),  $pop_y$  and the proportion of meals cooked with preproject devices will be monitored by the verification team during the site visit.

Sample Size:

| AQL | UQL | Producer Risk | Consumer Risk | Sample Size; Min | Acceptance No. |
|-----|-----|---------------|---------------|------------------|----------------|
|-----|-----|---------------|---------------|------------------|----------------|

|      |     |     |     |   |   |
|------|-----|-----|-----|---|---|
| 0.5% | 20% | 10% | 20% | 8 | 0 |
|------|-----|-----|-----|---|---|

The verification team covered a total of 8 samples and observed a few typographical errors related to erroneous reporting of data from the survey results presented to VVB. No discrepancies were observed by the verification team.

## 2.2 Document Review

This verification of the project is performed primarily as a document review of the MR/08/ and associated documents as stated in detail in appendix I of this document along with the onsite visit for the current monitoring team. The assessment team cross checked information provided in the VCS PD and MR from the current monitoring period along with information from sources with the team's sectoral or local expertise and, if necessary. Earthood conducted a desk review as under.

- a. A review of the data and information presented to verify their completeness.
- b. A review of the monitoring methodology including applicable tools and , where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.
- c. An evaluation of the data management and quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

## 2.3 Interviews

In accordance with VCS standard, version 4.5/06/, para 4.1.9 "A site visit that includes a visit to facilities and/or project areas shall be conducted at validation. Such a site visit shall be conducted at verification under the following circumstances:

- 1) The first verification of the project after validation
- 2) Verification of project baseline reassessments; and
- 3) Verifications that assess a project description deviation where the deviation impacts the applicability of the methodology, additionality or the appropriateness of the baseline scenario"

The Verification team during the Desk review found that the first verification/25/ of the project activity was done with the help of remote site visit and hence the assessment team has carried out onsite audit during this verification in order to verify the information included in the project documentation and to gain additional information regarding the compliance of the project with the registered monitoring plan and requirement of the applied methodology. /8/

The on-site inspection and interviews for the project location by the assessment team was conducted on 11/08/2023 and the end-users were interviewed/09/. During the on-site audit, the interviews of the field personnel were also conducted to verify the details regarding the survey techniques and the process involved in the monitoring survey data collection. The information for the same can be found below.

**Interviews with the representative of the project proponent and field Assistance:**

| S. No | Name            | Organization | Date of interview | Topic covered                                                                                                                                                                                                                                                                                                                                                                                                                                         | Team Member                         |
|-------|-----------------|--------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 1.    | Jokhanan        | AERA Group   | 11/08/2023        | <ul style="list-style-type: none"> <li>• Project Design and implementation status</li> <li>• Monitoring system,</li> <li>• Roles and responsibility</li> <li>• Procedure for monitoring data collection</li> <li>• Robustness and accuracy of data collection and transfer</li> <li>• QA/QC procedures &amp; training conducted</li> <li>• Criteria and compliance of new instances added during MP</li> <li>• Ongoing grievance mechanism</li> </ul> | Vishnu Panicker and Emmanuel Kasiho |
| 2.    | Sumiye Loic     | OBEN EAC     |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |
| 3.    | Henri Bisinwa   | CDPE         |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |
| 4.    | Debora Buhirwa  | CDPE         |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |
| 5.    | Masaro Hohorime | CDPE         |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |
| 6.    | Emmanuel        | CDPE         |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |
| 7.    | Baganda         | CDPE         |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |

## 2.4 Site Visits

As already discussed in the above section, physical site is done for the current verification in line with para 4.1.9 of the VCS standard, version 4.5/06/ An on-site was undertaken by the assessment team on 11/08/2023 to carry out the following:

- An assessment of the implementation and operation of the registered project activity as per registered VCS PD MR/03/.
- A review of information flows for generation, aggregation and reporting of the monitoring parameters.
- Interview with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the registered monitoring plan in the PD/01/.
- A cross check between information provided in the monitoring report and data from other sources such as monitoring survey forms, monitoring survey results spreadsheets, technical specifications, or similar data sources.
- A review of calculation and assumptions made in determining the GHG data and emission reduction.
- Relevant QA/QC procedure were checked to prevent, identify, and correct, any error in the reported monitoring parameters.

For cross-checking of the monitoring survey results, in line with standard for 'Sampling and Surveys for CDM Project Activities and Programmes of Activities' v09.0/11/, the assessment team has visited 08 beneficiaries in DRC. The interviews with the project beneficiaries have been conducted with help of Local expert to overcome the language barrier. The information of the end users interviewed, and the topics covered during the onsite audit are given in the table below.

| S.No. | Name of the end user | Stove ID      | Date of Interview | Topics covered                                                                                                | Team Member                         |
|-------|----------------------|---------------|-------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 1.    | Pili Maria           | OB-RDC 150428 | 11/08/2023        | Verification of the participants in monitoring survey and cross verification with the results provided by PP. | Vishnu Panicker and Emmanuel Kasiho |
| 2.    | Sophia Buci Bulumbu  | OB-RDC 076235 |                   |                                                                                                               |                                     |
| 3.    | Maurice M Bujubia    | OB-RDC 145954 |                   |                                                                                                               |                                     |
| 4.    | Regina Botoka        | OB-RDC 022835 |                   |                                                                                                               |                                     |
| 5.    | Laliya Godelini      | OB-RDC 022920 |                   |                                                                                                               |                                     |
| 6.    | Bahati Rukundo       | OB-RDC 084105 |                   |                                                                                                               |                                     |

|    |              |               |  |                                                                                                     |  |
|----|--------------|---------------|--|-----------------------------------------------------------------------------------------------------|--|
| 7. | Ada Aline    | OB-RDC 073966 |  | less smoke compared to the baseline device used.                                                    |  |
| 8. | Stina Riziki | OB-RDC 131880 |  | Training and Ongoing support provided by PP for operation of project ICS<br><br>Grievance mechanism |  |

## 2.5 Resolution of Findings

The verification protocols used for the assessment is designed in accordance with the latest version of latest VCS Program Documents. As an outcome of the verification process, the assessment team can raise different types of findings.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met. Where a non-conformance arises the validator/verifier raised a Corrective Action Request (CAR).

A CAR is issued, where:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions.
- The VCS requirements have not been met.
- There is a risk that emission reductions cannot be monitored or calculated.

Forward Action Request (FAR) is raised during validation/verification to highlight issues related to project implementation that require review during the first verification of the project activity. FARs does not relate to the VCS requirements for registration. No FAR is raised during the current monitoring period.

Irrespective of the nature of findings, all of these are given to PP in a separate finding document. In this document, the project proponent(s) is/are given the opportunity to respond to the findings. Based on the responses by PP along with relevant supporting documents/evidence the verification team determines whether the findings are resolved or not. The findings may also be raised at later stage e.g., during internal technical review process and these are also communicated/dealt in the same manner as described above. The draft verification report is also prepared during this period reflecting the status of the findings, if any, as appropriate.

In summary, the type and total number of findings that were raised are indicated below.

| Types of Findings | CAR | CL | FAR |
|-------------------|-----|----|-----|
| Total Findings    | 03  | 02 | 00  |

All the findings were raised during the verification of the project are included under Appendix III of this report.

### 2.5.1 Forward Action Requests

The project activity is undergoing second verification in VCS. No FAR was raised during the current monitoring period. There are also no open FARs from the registered PD & MR/03/ and previous validation report/05/ applicable for the current monitoring period.

Details of the same can be checked from Appendix III of this verification report.

## 2.6 Eligibility for Validation Activities

The project activity is undergoing second verification, no validation activity performed as part of verification, hence this section is not applicable.

# 3 VALIDATION FINDINGS.

## 3.1 Participation under Other GHG Programs

The project is registered only under VERRA (VCS ID – 2636)

<https://registry.verra.org/app/projectDetail/VCS/2636>

Verification team confirms that the project is not part of any other GHG program by cross checking different registries and also during the interview with the PP during the site visit.

## 3.2 Methodology Deviations

The project activity did not apply methodology deviations during the current monitoring period.

## 3.3 Project Description Deviations

The project did not apply any project description deviations during the current monitoring period.

## 3.4 Grouped Project

The project is not registered as a grouped project under VCS.

## 4 VERIFICATION FINDINGS

### 4.1 Project Implementation Status

The project activity involves distribution of energy efficient cookstoves for household cooking purpose in DRC. The project activity is operational in the Houses surveyed as confirmed during the on site audit and interviews with the end users and monitoring personnel. It was discussed with the PP during the interview that the follow-up surveys are also conducted after the monitoring survey to check the operability of the cookstoves distributed. The project boundary is in compliance with the registered VCS PD/01/

The project activity is implemented in the Sud-Kivu province of Eastern DRC and since the start date of the project activity, 10/06/2020 (First ICS distribution) until 31/12/2022, 193,103 ICS have been distributed to end users in the Sud Kivu province as confirmed from the project distribution database/23/.

The ICS distributed under the project are significantly reducing biomass consumption and greenhouse gas emissions. The assessment team confirmed from the site visit that the improved cookstoves are in working condition.

The project proponent of the project activity is O BEN EAC SA who owns the rights to carbon credits generated from the project activity.

The assessment team has interviewed the end-users during the on-site audit/09/ and confirmed that the project has been implemented and planned as mentioned in the VCS PD/01/, the records available and the monitoring survey/17/. The project has been implemented as per the VCD PD/01/ and no material discrepancy has been found between the project description and project implementation. The data and variables provided in the monitoring report are consistent with the approved PD/01/. PP has submitted a monitoring survey database/17/where 118 households were surveyed during the current monitoring period. The assessment team also checked the sample calculations as per the "Sampling and Survey for CDM Project Activities and Program Activities" Version 09.0/11/ and found to be consistent for the current monitoring period. It has been confirmed that the project has not received any other form of environmental credit. The project has been implemented as described in the revised VCS PD/01/ and no discrepancy was identified between the project implementation and the project description. VVB has applied acceptance sampling approach to check the applicability of PP's monitoring sampling results. It was cross- checked during the on- site visit that all the selected project ICS are in working condition and the consumption of fuelwood in the project stoves has reduced significantly as compared to the traditional 3- stone fire stoves.

The verification team also confirms through the on- site visit that PP has conducted regular spot checks to check the status of ICSs as mentioned in the MR/03/ and registered VCS PD/01/. Further, the procedures used by PP to address the concerns regarding the replacement of the part damaged or broken parts were checked and confirmed during the onsite visit/8/ through interviews with the beneficiaries. All the beneficiaries confirmed that they have been given training on how to use the stoves during the installation and are also aware of the procedures/contact details to the PP in case of any stove is damaged or broken. This is the second verification of the project and the total emission reductions achieved under this monitoring period i.e., from 01-January-2022 to 31-December-2022 is 422,148tCO<sub>2</sub>e. Therefore, the assessment team concludes the following:

- There are no material discrepancies between project implementation and the project description provided in the registered PD/01/ along with the actual monitoring system, and the monitoring plan set out in the project description/01/ and the applied methodology/08/.
- The monitoring plan is implemented inline with the registered monitoring plan and monitoring system (i.e., process and schedule for obtaining, recording, compiling, and analysing the monitored data and parameters) is appropriate.
- All the ex-ante parameters which are used in the calculations of the emission reductions are consistent with the VCS PD/01/.
- The GHG emission reductions or removals generated by the project have not included in another emission trading program or any other mechanisms that includes GHG allowance trading/40/.
- The project has not received or sought any other form of environmental credit or has become eligible to do so since validation/39/.
- The project activity is registered under VCS only.

**Ownership and other programs:**

The project ownership is with OBEN EAC S.A., Project proponent (PP). During the registration of ICS, the participating household signs a declaration to transfer the ownership rights of the carbon assets generated from this project to the project proponent, the same has been confirmed from the sample beneficiary agreement submitted by the PP. Thus, emission reductions generated by project will be solely claimed by the PP and this has been verified by the Verification team during the site visit.

### Sustainable Development Contributions:

As confirmed from the on-site audit, the project activity aligns with the United Nations Sustainable Development Goals by making a meaningful impact on sustainable development. This is achieved through various advantages, including the reduction in indoor air pollution, reduced travel time and distance for gathering fuelwood, and the preservation of forests by slowing down their degradation and deforestation rates. Consequently, this effort contributes to the reduction of greenhouse gas emissions in the environment. The verification team has reviewed the SDG contribution and confirmed the contributions to SDG has been verified by checking the monitoring survey and also the data base that has been given in the ER sheet. The samples taken for the onsite audit along with the interview with the PP also confirmed that the SDG contributions have been monitored by the PP. CAR#02 was raised and resolved.

Table – Sustainable development contributions

| Row | SDG | SDG Indicator                                                                         | Net Impact on SDG Indicator        | Current Project Contributions                  | Contributions Over Project Lifetime                                                                                                                                                                                                                                                                                       |
|-----|-----|---------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1)  | 1.4 | Number of users that experience money savings thanks to the use of the ICS            | Implemented activities to increase | 181,648 end-users during the monitoring period | The figure can be confirmed in accordance with the monitoring surveys results provided to the VVB. 94% of the total end-users monitored experienced monetary savings as a result of the improved cookstove which has been extrapolated for the total users of 193,103 amounts to the reported value of 181,648 end-users. |
| 2)  | 3.9 | Number of users that experience less fumes thanks to the better combustion of the ICS | Implemented activities to increase | 186,557 end-users during the monitoring period | This figure can be confirmed in accordance with the monitoring survey results provided to the VVB. 97% of the surveyed households experienced less smoke during cooking meals, which has been extrapolated for the total users of 193,103 amounts to the reported value of 186,557 end users.                             |

|    |      |                                                       |                                    |                                     |                                                                                                                                                                                                                                                                     |
|----|------|-------------------------------------------------------|------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3) | 7.1  | Number of Improved cookstoves distributed             | Implemented activities to increase | 115,038 end-users equipped with ICS | A total of 193,103 end-users equipped with ICS over project lifetime. For this period, 115,038 users have been equipped with ICDS. This is in accordance with the cookstove distribution database crosschecked by the VVB.                                          |
| 4) | 8.3  | Number of decent Job created                          | Implemented activities to increase | 0 jobs created                      | A total of 20 jobs created. The current MP projects are in line with the supportive evidence and the ER sheet provided by the PP.                                                                                                                                   |
| 5) | 13.2 | Tonnes of greenhouse gas emissions avoided or removed | Implemented activities to increase | 422,148 tCO <sub>2</sub> e          | 612,048 tCO <sub>2</sub> e during the project lifetime. This is in accordance with the emission reduction calculation presented in the ER sheet provided to the VVB. The calculation is in accordance with the applied methodology/8/and the registered VCS PDD./1/ |
| 6) | 15   | Quantity of wood saved.                               | Implemented activities to increase | 218,458 tonnes of wood              | 331,987 tonnes of wood has been saved till now during the crediting period. The value 218,458 tonnes has been verified by the verification team by checking the calculation in the ER sheet and found right.                                                        |

## 4.2 Safeguards

### 4.2.1 No Net Harm

Since the project activity involves distribution of improved cookstoves, it does not come under the purview of an Environmental Impact Assessment and does not involve any negative impact. The assessment team can confirm that the project activity does not cause any environmental or social harm.

### 4.2.2 Local Stakeholder Consultation

The project activity is undergoing its second verification, and the local stakeholder consultation was appropriately conducted prior to the validation process as a way of informing the stakeholders about the project design and maximize participation from the stakeholders. All the details of the local stakeholder consultation was validated by the validation VVB/05/. The LSC meeting was conducted on 8<sup>th</sup> July 2021 in the capital town of South Kivu in Uvira and a total of 21 local persons participated. The stakeholders were informed about the local stakeholder consultation by letters, phone calls and public announcement during the Sunday service. The invitations were made 1 month before the meeting. A legal representative of OBEN was present to outline the legal and international frameworks and contextualised the project activity in terms of the frameworks. The Matawi ICS was introduced to the stakeholders and the floor was opened for discussion and feedback. During the local stakeholder consultation meeting, all the major points raised by the stakeholders were addressed.

It was confirmed during the on-site audit/09/ that PP has a robust grievance mechanism and a proper ongoing communication with stakeholders and no negative feedback were received from the end users, for the current monitoring period, which was confirmed through the Grievance book maintained at the local office during the site visit. It was confirmed from the end users whether they knew how to contact the PP in case of any grievance and they confirmed having contact details of PP representatives.

## 4.3 AFOLU-Specific Safeguards

This project is a non-AFOLU project. Therefore, this section is not required.

## 4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The verification team has reviewed the monitoring plan and found that the monitoring of GHG emission reduction from the project activity was implemented in accordance with the registered PD/09/. The monitoring plan has been implemented as per the applied methodology and all the parameters in the monitoring plan have been sufficiently monitored as per the applied methodology, VMR0006: Methodology for Installation of High Efficiency Firewood Cookstoves v1.1.

### **Data and parameters fixed at the time of Validation**

| S.No                     | Parameter                                                                                                                                                                                               | Assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bold<br>(tonnes/year)    | 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 | A value of 4.531 tonnes of firewood equivalent per house household per year has been applied. The value has been sourced from a study conducted by CIRAD for the city of Bukavu/26/. The study highlights average number of persons per households, as well as average charcoal and firewood consumption per capita and per day, and this study was the most recent data that could be referred as source for the value of the parameter. <i>The value was fixed at the time of validation. It is found to be consistent with the PD/01/, MR/02/ and the ER sheet/04/. CAR#05 was raised and resolved.</i> |
| np                       | Efficiency of the project stove at the start of project activity                                                                                                                                        | The applied value is 0.321 which sourced from Manufacturer's specifications based on WBT results/16/. The value is found to be consistent with the VCS PD/01/, MR/03/ and ER sheet /04/                                                                                                                                                                                                                                                                                                                                                                                                                    |
| fNRB,y<br>(Percentage)   | Fraction of non-renewable biomass saved by the project activity                                                                                                                                         | PP has applied the value of 84.02% which was fixed ex-Ante at the time of validation. The value has been calculated by determining the share of renewable and non renewable woody biomass consumption for the country.<br><br>The verification team found the value applied to be consistent with the PD/1/, ER/4/ and MR/3/.                                                                                                                                                                                                                                                                              |
| NCVbiomass<br>(TJ/tonne) | Net calorific value of the non-renewable woody biomass that is substituted                                                                                                                              | A default value of 0.0156 has been fixed ex Ante in line with the applied methodology, VMR0006 v1.1. The value is found to be consistent with the VCS PD/01/, MR/03/and ER sheet/04/                                                                                                                                                                                                                                                                                                                                                                                                                       |
| EFwf,CO2<br>( tCO2/TJ)   | CO2 emission factor for the use of wood fuel in baseline scenario                                                                                                                                       | A default value of 112 has been applied in accordance with the applied methodology, VMR0006 v1.1. The value was fixed ex-Ante at the time of validation and is found to be consistent with the VCS PD/01/, MR/03/ and ER sheet/04/.                                                                                                                                                                                                                                                                                                                                                                        |

|                                                     |                                                                                   |                                                                                                                                                                                                              |
|-----------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EF <sub>wf,non CO2</sub><br>( tCO <sub>2</sub> /TJ) | Non-CO <sub>2</sub> emission factor for the use of wood fuel in baseline scenario | A default value of 26.23 has been applied in accordance with the applied methodology, VMR0006 v1.1. This value was fixed ex ante and was found to be consistent with the VCS PD/01/, MR/03/ and ER sheet/04/ |
|-----------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Data and parameters Monitored

| Monitored Parameter(s) |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter              | N <sub>y,i,j</sub> , Number of project devices of type i and batch j operating during year y                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Means of Verification  |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                        | Criteria/Requirements                                                                                                                                                                                                                                                                       | Assessment/Observation                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                        | Measuring/Reading/Recording Frequency                                                                                                                                                                                                                                                       | As per the applied methodology and registered PD, the parameter is to be recorded once every two years                                                                                                                                                                                                                                                                                                                                          |
|                        | Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes/ No)                                                                                                                                                                           | Yes.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                        | Monitoring Equipment                                                                                                                                                                                                                                                                        | Monitoring surveys                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                        | Monitored Value                                                                                                                                                                                                                                                                             | 122,129                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                        | Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification? | The frequency of monitoring the parameter is at least once every 2 years and the accuracy of the monitoring has been met as the survey has been conducted from 30/12/2022 to 10/01/2023 which is before June 2023 and the previous survey was conducted from 30/12/2021 to 05/01/2022. Since the frequency of monitoring/recording which is at least once every two years is being complied with and hence there is no delay in the monitoring. |

|  |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                     |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?                                                                                                                                                                                            | Not applicable for the parameter.                                                                                                                                                                                                                                                                                                                   |
|  | Calibration frequency/interval:                                                                                                                                                                                                                                                                                      | Not applicable for the parameter.                                                                                                                                                                                                                                                                                                                   |
|  | Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications? | Not applicable for the parameter as already stated.                                                                                                                                                                                                                                                                                                 |
|  | Is the calibration of measuring equipment carried out by an accredited person or institution?                                                                                                                                                                                                                        | Not applicable for the parameter as already stated.                                                                                                                                                                                                                                                                                                 |
|  | Is(are) calibration(s) valid for the whole reporting period?                                                                                                                                                                                                                                                         | Not applicable for the parameter as already stated.                                                                                                                                                                                                                                                                                                 |
|  | Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?                                                                                                                                                                                         | Not applicable for the parameter as already stated.                                                                                                                                                                                                                                                                                                 |
|  | How were the values in the monitoring report verified?                                                                                                                                                                                                                                                               | The values were obtained from the stove distribution database by multiplying the batch average of operational stoves with the total number of commissioned stoves. The total sample size for the current monitoring period was identified as 118 households. /17/ the value is checked from the records submitted for the current monitoring period |
|  | Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?                                                                                                                                                                            | Yes, the data management ensure correct transfer of data and reporting of emission reduction and all necessary QA/QC processes are in place.                                                                                                                                                                                                        |

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Findings   | CAR 03 was raised and resolved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Conclusion | <p>The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the registered PD and the applied methodology.</p> <p>The data has been verified from PP's monitoring survey submitted to the verification team. Further, it was cross- checked by applying acceptance sampling based on "Sampling and surveys for CDM project activities and programmes of activities", v9.0/11/ and determining 08 households as samples for interviews during the on- site visit.</p> |

|                       |                                                                                                                                                                                                                                                                                             |                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Parameter             | ηold , Efficiency of baseline stoves                                                                                                                                                                                                                                                        |                                                               |
| Means of Verification | Criteria/Requirements                                                                                                                                                                                                                                                                       | Assessment/Observation                                        |
|                       | Measuring/Reading/Recording Frequency                                                                                                                                                                                                                                                       | Once in two years as mentioned in the VCS- PD /01/ and MR/03/ |
|                       | Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes/ No)                                                                                                                                                                           | Yes                                                           |
|                       | Monitoring Equipment                                                                                                                                                                                                                                                                        | Not Applicable                                                |
|                       | Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification? | Not Applicable                                                |
|                       | Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?                                                                                                                                                                   | Not applicable                                                |
|                       | Calibration frequency/interval:                                                                                                                                                                                                                                                             | Not applicable                                                |

|  |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications? | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                       |
|  | Is the calibration of measuring equipment carried out by an accredited person or institution?                                                                                                                                                                                                                        | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                       |
|  | Is(are) calibration(s) valid for the whole reporting period?                                                                                                                                                                                                                                                         | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                       |
|  | Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?                                                                                                                                                                                         | Not applicable                                                                                                                                                                                                                                                                                                                                                                                                       |
|  | How were the values in the monitoring report verified?                                                                                                                                                                                                                                                               | <p>PP has applied the Methodology default value.</p> <p>Weighted average values regarding the type of stoves (0.1 for wood users and 0.2 for charcoal users). During the current monitoring period, on the 193,103 households equipped, 122,672 are charcoal users and 70,431 are firewood users. The weighted average is monitored to be 16% which is in line with the emission reduction calculation sheet/04/</p> |
|  | Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?                                                                                                                                                                            | Yes, the data management ensure correct transfer of data and reporting of emission reduction and all necessary QA/QC processes are in place.                                                                                                                                                                                                                                                                         |

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Findings   | CAR#04 was raised and resolved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Conclusion | <p>The parameter, “Efficiency of baseline stoves” has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the revised VCS PD/01/.</p> |

| Parameter             | $\eta_{new,y,i,j}$<br>Efficiency of the improved cookstove type i and batch                                                                                                                                                                                                                 |                                                                                              |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Means of Verification | Criteria/Requirements                                                                                                                                                                                                                                                                       | Assessment/Observation                                                                       |
|                       | Measuring/Reading/Recording Frequency                                                                                                                                                                                                                                                       | The parameter is measured and recorded during validation and thereafter calculated annually. |
|                       | Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes/ No)                                                                                                                                                                           | Yes                                                                                          |
|                       | Monitoring Equipment                                                                                                                                                                                                                                                                        | Not applicable.                                                                              |
|                       | Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification? | Not applicable                                                                               |
|                       | Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?                                                                                                                                                                   | Not applicable                                                                               |
|                       | Calibration frequency/interval:                                                                                                                                                                                                                                                             | Not applicable                                                                               |
|                       | Is the calibration interval in line with the monitoring plan and/or                                                                                                                                                                                                                         | Not applicable since no monitoring equipment used                                            |

|                    |                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |            |                    |       |       |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|------------|------------|--------------------|-------|-------|
|                    | methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications? |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |            |            |            |                    |       |       |
|                    | Is the calibration of measuring equipment carried out by an accredited person or institution?                                                                                                                                                    | Not applicable since no monitoring equipment used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |            |            |            |                    |       |       |
|                    | Is(are) calibration(s) valid for the whole reporting period?                                                                                                                                                                                     | Not applicable since no monitoring equipment used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |            |            |            |                    |       |       |
|                    | Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?                                                                                                                     | Not applicable since no monitoring equipment used                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |            |            |            |                    |       |       |
|                    | How were the values in the monitoring report verified?                                                                                                                                                                                           | <table><tr><td>Batch Efficiency</td><td>Batch 2020</td><td>Batch 2021</td><td>Batch 2022</td></tr><tr><td>Average efficiency</td><td>29.6%</td><td>30.8%</td><td>30.9%</td></tr></table> <p>Project Stoves are tested using WBTs which was conducted by CRUEA (Centre de Recherche Universitaire sur les Energies Alternatives) in the department of physics of the University of Burundi. for thermal efficiency. The parameter “Efficiency of the project design I and batch j implemented as part of the project activity” (<math>\eta_{new}</math>) is a monitoring parameter as per the registered VCS PD. The source of data for the above parameter is “representative sampling testing based on Water Boiling Tests”. The monitoring of the parameter has been conducted following the VCS PD. Each vintage representation for</p> | Batch Efficiency | Batch 2020 | Batch 2021 | Batch 2022 | Average efficiency | 29.6% | 30.8% |
| Batch Efficiency   | Batch 2020                                                                                                                                                                                                                                       | Batch 2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Batch 2022       |            |            |            |                    |       |       |
| Average efficiency | 29.6%                                                                                                                                                                                                                                            | 30.8%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 30.9%            |            |            |            |                    |       |       |

|            |                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                                                                                                                                                                                                                                                                                                | the WBT test was verified by the VVB by reviewing the WBT results. The WBTs have been conducted on both ICS using charcoal and ICS using firewood, the most conservative results (efficiency of ICS using firewood have been used) Sample size has been calculated to achieve 90/10 precision. VVB confirmed that even though the sample size required was 2 stoves and 3 stoves but after oversampling of 20%, 3 stoves have therefore been tested per batch and per type of fuel used. The values has been checked by the verification team. |
|            | Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?                                                                                                                                                      | Yes, the data management ensure correct transfer of data and reporting of emission reduction and all necessary QA/QC processes are in place.                                                                                                                                                                                                                                                                                                                                                                                                   |
| Findings   | No findings                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Conclusion | The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/01/. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                       |                                                                                                                   |                                                                                                                   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Parameter             | $\mu_y$ , Adjustment to account for any continued use of pre-project devices during the year y                    |                                                                                                                   |
| Means of Verification | Criteria/Requirements                                                                                             | Assessment/Observation                                                                                            |
|                       | Measuring/Reading/Recording Frequency                                                                             | The parameter is monitored at least once every two years. ICS Registration data and data from monitoring surveys. |
|                       | Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes/ No) | Yes, the frequency for monitoring is in accordance with the monitoring plan.                                      |

|  |                                                                                                                                                                                                                                                                                                                      |                                                                                                                      |                             |                             |                             |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|
|  | Monitoring Equipment                                                                                                                                                                                                                                                                                                 | Monitoring survey                                                                                                    |                             |                             |                             |
|  | Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?                          | Not applicable.                                                                                                      |                             |                             |                             |
|  | Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?                                                                                                                                                                                            | Not applicable.                                                                                                      |                             |                             |                             |
|  | Calibration frequency/interval:                                                                                                                                                                                                                                                                                      | Not applicable.                                                                                                      |                             |                             |                             |
|  | Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications? | Not applicable.                                                                                                      |                             |                             |                             |
|  | Is the calibration of measuring equipment carried out by an accredited person or institution?                                                                                                                                                                                                                        | Not applicable.                                                                                                      |                             |                             |                             |
|  | Is(are) calibration(s) valid for the whole reporting period?                                                                                                                                                                                                                                                         | Not applicable.                                                                                                      |                             |                             |                             |
|  | Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?                                                                                                                                                                                         | Not applicable.                                                                                                      |                             |                             |                             |
|  | How were the values in the monitoring report verified?                                                                                                                                                                                                                                                               | <i>Batch</i><br><br><i>1- μy</i> | <i>Batch</i><br><i>2020</i> | <i>Batch</i><br><i>2021</i> | <i>Batch</i><br><i>2022</i> |

|            |                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |       |       |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|
|            |                                                                                                                                                                                                                                                                                              | 1- $\mu y$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.28% | 8.77% | 2.25% |
|            |                                                                                                                                                                                                                                                                                              | <p>The parameter values were assessed during surveys and users were interviewed on whether they were still using the baseline stoves. 90/10 confidence/ margin of error was achieved for the sampling parameter irrespective of the annual/ biennial frequency as per paragraph 22 of Standard: Sampling and surveys for CDM project activities and programme of activities v9.0/11/. End-users were interviewed on site on the continued use of baseline devices. The values were cross verified from the monitoring survey sheet.</p> <p>The applied value was checked from the monitoring survey sheet in the Sample size calculation sheet/04/ and was found to be consistently mentioned in the MR/03/ and the ER sheet/04/. During the Onsite visit, it was also confirmed that the household visited with baseline device has also been recorded in the monitoring survey carried out by the PP.</p> |       |       |       |
|            | Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?                                                                                                                                                    | Yes, the data management ensure correct transfer of data and reporting of emission reduction and all necessary QA/QC processes are in place.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |       |       |
| Findings   | CAR 03 was raised and resolved.                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |       |       |
| Conclusion | The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |       |       |

|  |                                                                                                                                                                                                                                                                                                 |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | The verification team can confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the revised VCS PD/01/. |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Parameter             | Date of commissioning of batch j                                                                                                                                                                                                                                                            |                                                                                                      |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Means of Verification | Criteria/Requirements                                                                                                                                                                                                                                                                       | Assessment/Observation                                                                               |
|                       | Measuring/Reading/Recording Frequency                                                                                                                                                                                                                                                       | Fixed and recorded at the time of commissioning/distribution of the last project device in the batch |
|                       | Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes/ No)                                                                                                                                                                           | Yes                                                                                                  |
|                       | Monitoring Equipment                                                                                                                                                                                                                                                                        | Not applicable.                                                                                      |
|                       | Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification? | Not applicable                                                                                       |
|                       | Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?                                                                                                                                                                   | Not applicable                                                                                       |
|                       | Calibration frequency/interval:                                                                                                                                                                                                                                                             | Not applicable since no monitoring equipment used                                                    |

|          |                                                                                                                                                                                                                                                                                                                      |                                                   |            |            |            |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------|------------|------------|
|          | Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications? | Not applicable since no monitoring equipment used |            |            |            |
|          | Is the calibration of measuring equipment carried out by an accredited person or institution?                                                                                                                                                                                                                        | Not applicable since no monitoring equipment used |            |            |            |
|          | Is(are) calibration(s) valid for the whole reporting period?                                                                                                                                                                                                                                                         | Not applicable since no monitoring equipment used |            |            |            |
|          | Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?                                                                                                                                                                                         | Not applicable since no monitoring equipment used |            |            |            |
|          | How were the values in the monitoring report verified?                                                                                                                                                                                                                                                               | Batch Date                                        | Batch 2020 | Batch 2021 | Batch 2022 |
|          |                                                                                                                                                                                                                                                                                                                      | Date of commissioning                             | 10/06/2020 | 01/01/2021 | 01/01/2022 |
|          | The date of commissioning of each batch of stove distributed is sourced from the Project database                                                                                                                                                                                                                    |                                                   |            |            |            |
|          | Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?                                                                                                                                                                            | Yes.                                              |            |            |            |
| Findings | No findings                                                                                                                                                                                                                                                                                                          |                                                   |            |            |            |

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conclusion | <p>The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the VCS PD/01/.</p> |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                                                                                                                             |                                                |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Parameter             | Life Span, Number of years                                                                                                                                                                                                                                                                  |                                                |
| Means of Verification |                                                                                                                                                                                                                                                                                             |                                                |
|                       | Criteria/Requirements                                                                                                                                                                                                                                                                       | Assessment/Observation                         |
|                       | Measuring/Reading/Recording Frequency                                                                                                                                                                                                                                                       | Once at the time of project stove installation |
|                       | Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes/ No)                                                                                                                                                                           | Not applicable                                 |
|                       | Monitoring Equipment                                                                                                                                                                                                                                                                        | Not applicable for the parameter.              |
|                       | Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification? | Not applicable for the parameter.              |
|                       | Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?                                                                                                                                                                   | Not applicable                                 |
|                       | Calibration frequency/interval:                                                                                                                                                                                                                                                             | Not applicable.                                |
|                       | Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in                                                                                                         | Not applicable.                                |

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                          |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                          |
|            | Is the calibration of measuring equipment carried out by an accredited person or institution?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Not applicable.                                                                                                                                                                                          |
|            | Is(are) calibration(s) valid for the whole reporting period?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Not applicable.                                                                                                                                                                                          |
|            | Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Not applicable.                                                                                                                                                                                          |
|            | How were the values in the monitoring report verified?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The value monitored is 08 years.<br>The value used has been verified from the manufacturer's specifications/19/ of the improved cookstoves and from the registered VCS PD/01/ and validation report/05/. |
|            | Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Yes..                                                                                                                                                                                                    |
| Findings   | No findings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                          |
| Conclusion | <p>The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.</p> <p>The verification team is able to confirm that the project is implemented as per the registered PD and there is no discrepancy observed between the actual monitoring system and the monitoring plan set out in the project description and the applied methodology outlined in the revised VCS PD/1/.</p> |                                                                                                                                                                                                          |

**Sampling approach:**

By the end of current monitoring period, the project activity has installed 115,038 number of the ICS. For as defined in the registered PDD, the PP has applied sampling approach for measurement and determination of the parameter  $N_{y,i,j}$  (i.e. Number of ICS installed and operating till the end of the current monitoring period - "Number of project devices of type i and batch j operational during year y.),  $pop_{y,y}$  and the proportion of meals cooked with preproject devices. The sampling approach was checked and verified by the assessment team as below.

#### Determination of the Sample Size:

A sample size has been determined by the PP to meet reliability requirements. Parameter values have been estimated as per the requirements in AMS-II G. As per methodology para 48, "When biennial inspection is chosen a 95 per cent confidence interval and a 10 per cent margin of error shall be achieved for the sampling parameter. On the other hand, when the project proponent chooses to inspect annually, a 90 per cent confidence interval and a 10 per cent margin of error shall be achieved for the sampled parameters. In cases where survey results indicate that 90/10 precision or 95/10 precision are not achieved, the lower bound of the 90 per cent or 95 per cent confidence interval of the parameter value may be chosen as an alternative to repeating the survey efforts to achieve the 90/10 or 95/10 precision". An annual inspection has been conducted for this monitoring period and thus the sample size has been calculated to obtain a 90/10 confidence precision. The PP has drawn a sample of 118 households from the project database which was shared with O BEN SAS for monitoring. CAR#04 was raised and resolved.

The verification team has confirmed that the project meets the desired precision that has been mentioned in the monitoring plan. The reliability calculations for the operating (for Batch 2020, 2021 and 2022) have been summarized in the table below:

Batch 2020

| Parameter       | $Z_{\alpha/2}$ | N      | p  | Minimum sample size | Final sample size | Monitoring precision achieved |
|-----------------|----------------|--------|----|---------------------|-------------------|-------------------------------|
| pop household,y | 1.645          | 17,919 | 95 | 18                  | 40                | Yes                           |
| 1- $U_y$        | 1.645          | 17,919 | 95 | 18                  | 40                | Yes                           |

Batch 2021

| Parameter       | $Z_{\alpha/2}$ | N      | p  | Minimum sample size | Final sample size | Monitoring precision achieved |
|-----------------|----------------|--------|----|---------------------|-------------------|-------------------------------|
| pop household,y | 1.645          | 60,146 | 95 | 18                  | 38                | Yes                           |
| 1- $U_y$        | 1.645          | 60,146 | 95 | 18                  | 38                | Yes                           |

Batch 2022

| Parameter        |       | N        | p  | Minimum sample size | Final sample size | Monitoring precision achieved |
|------------------|-------|----------|----|---------------------|-------------------|-------------------------------|
| pop household,y  | 1.645 | 115,038  | 95 | 18                  | 40                | Yes                           |
| 1-U <sub>y</sub> | 1.645 | 115,0.38 | 95 | 18                  | 40                | Yes                           |

### Selection of Samples for Survey:

The PP has used the random selection technique for the selection of the samples. A random auto-number generator has been used and based on the same samples were selected.

The process for selection of random numbers, screenshots of the process /18/ and generated numbers are submitted by the PP and checked. The survey of the households was conducted with the help of the Kobo Toolbox, a tool for collection and storage of stove information, GPS coordinates, pictures of end-user agreements etc. Out of total beneficiaries 118 samples are randomly selected and further used for monitoring survey purpose.

The verification team has accessed the screenshots of random numbers /18/ generated during selection and matched it with the monitoring survey results/17/. It is found and concluded that the PP has used as robust and accurate mechanism for selection samples and all the samples selected for the survey are randomly selected.

### Verification of the Sampling survey by the Assessment team

The assessment team has checked and verified the ICS installation records as provided by the PP and total number of installed stoves are verified from the 1,15,038 stoves distributed. Thus, the PP has correctly considered the population size N in determination of sample size.

The registered PD mentions the 90/10 confidence/precision ration for sample determination and the same has been correctly applied. An annual inspection have been conducted for this monitoring period, the sample size has been calculated to obtain a 90/10 confidence precision.

The assessment team used the acceptance sampling approach and a sample size of 08 was determined, based on 0.5% Acceptable quality level and 20% unacceptable quality level with 10% of producer risk and 10% of consumer risk in line with para 30 and 31 of "Sampling and surveys for CDM projects activities and programmes of activities" version 09.0 respectively. Thus, the acceptance number taken by the assessment team is 0.

PP had arranged an onsite audit for the interviews of the samples. Assessment team interviewed all 08 samples, and the operational status of the stoves was checked. it was observed that all the stoves were operational and hence, no discrepant records were observed with the survey data of the PP. A trained team from PP's side conducted the survey which has been confirmed during on site audit via interviews of PP representatives. PP has also provided training certificates of 6 employees as sample which were checked by the verification team.

As confirmed during the onsite audit, the sampling was carried out based on the latest Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities, version 04. PP has opted for representative sampling due to the dissemination of large number of ICS under the project, which will involve grouping and sampling across project instances. The sampling has been done to obtain an unbiased and reliable estimate of the proportion (in the case of the parameter  $N_{y,i,j}$ , pop household,  $y$ ,  $\mu Y$ ). Verification team confirms that the best sampling frame for the population would be simple random sampling on the monitoring survey results produced by the PP.

Furthermore, the emission reductions have been calculated in accordance with the applied methodology VMR0006 version 1.1/08/ and VCS PD/01/. The PP has used the monitoring data and ex-ante fixed data including default values as mentioned in VCS PD and applied methodology/08/. The values used for calculation of GHG emission reductions have been thoroughly checked by the verification team and is found to be appropriate and correct.

### Baseline Emissions:

The approved methodology does not account for baseline emissions and project emissions separately but quantifies emission reductions as a function of the reduction in the amount of non-renewable biomass fuel consumption in the efficient project stoves as compared to baseline stoves.

Emissions reductions can be calculated as per methodology VMR0006 Version 1.1 using the following equations:

The improved cookstove is introduced as energy efficiency measure in the project, therefore equations 1 and 2 of the methodology will be applied to calculate the net GHG emission reductions.

$$ER_y = \sum_i \sum_j ER_{y,i,j} \quad (\text{Equation 1})$$

Where,

$i$  = Indices for the situation where more than one type/model of improved cookstove is introduced to replace three-stone fire.

$j$  = Indices for the situation where there is more than one batch of improved cookstove of type  $i$

$ER_y$  = Emission reductions during year  $y$  in t CO<sub>2</sub>e

$ER_{y,i,j}$  = Emission reductions by improved cookstove of type  $i$  and batch  $j$  during year  $y$  in t CO<sub>2</sub>e

$$ER_{y,i,j} = B_{y,savings,i,j} \times f_{NRB,y} \times NCV_{wood\ fuel} \times (EF_{wf,CO2} + EF_{wf,non\ CO2}) \times N_{y,i,j} \times 0.95 \quad (\text{Equation 2})$$

Where,

$B_{y,savings,i,j}$  = Quantity of woody biomass that is saved in tonnes per improved cook stove of type  $i$  and batch  $j$  during year  $y$

$f_{NRB,y}$  = Fraction of woody biomass that can be established as non-renewable biomass (fNRB)

$NCV_{wood\ fuel}$  = Net calorific value of the non-renewable woody biomass that is substituted or reduced (IPCC default for wood fuel, 0.0156 TJ/tonne)

$EF_{wf,CO2}$  = CO<sub>2</sub> emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO<sub>2</sub>/TJ)

$EF_{wf,non\ CO2}$  = Non-CO<sub>2</sub> emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO<sub>2</sub>/TJ)

$N_{y,i,j}$  = Number of improved cook stoves of type  $i$  and batch  $j$  operating during year  $y$

0.95 = Discount factor to account for leakages

Now, to calculate the  $B_{y,savings,i,j}$ , we will be using equation 4 of the applied methodology

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

Where,

$B_{y=1,new,i,survey}$  = Annual quantity of woody biomass used by improved cookstove in tonnes, determined in the first year of the implementation of the project through a sample survey.

$\eta_{old}$  = Efficiency of baseline cookstove. A default value of 0.10 has been used as the replaced is a three stone fire, with no improved combustion.

$\eta_{new,i,j}$  = Efficiency of the improved cookstove determined using WBT results.

### For Batch 2020,

By,savings,i,j = 2.03

Fnrby = 84 %

NCVwoodfuel = 0.0156

EFWF,CO2 = 112

EFwf,nonCO2 = 26.23

Ny,ij = 16,575

1-uy = 98.7% (Baseline device adjustment factor)

ERy =  $2.03 \times 84 \times 0.0156 \times (112+26.23) \times 16,575 \times 98.7 \times 0.95 = 57,195$

### For Batch 2021,

By,savings,i,j = 2.13

Fnrby = 84%

NCVwoodfuel = 0.0156

EFWF,CO2 = 112

EFwf,nonCO2 = 26.23

Ny,ij = 55,398

1 – uy = 91.2%

ERy =  $2.13 \times 84 \times 0.0156 \times (112+ 26.23) \times 55,398 \times 91.2 \times 0.95 = 185,190$

### For Batch 2022,

By,savings,i,j = 2.13

Fnrby = 84%

NCVwoodfuel = 0.0156

EFWF,CO2 = 112

EFwf,nonCO2 = 26.23

Ny,ij = 50,156

1-uy = 97.8%

ERy =  $2.13 \times 84 \times 0.0156 \times (112+26.23) \times 50,156 \times 97.8 \times 0.95 = 179,763$

All the values have been verified by the verification team for the calculation of ER by cross verifying the values with the calculation presented in the ER calculation sheet/4/.

Table – Total ER during current Monitoring Period

| Batch      | ERy (tCO2) |
|------------|------------|
| Batch 2020 | 57,195     |

|            |         |
|------------|---------|
| Batch 2021 | 185,190 |
| Batch 2023 | 179,763 |
| Total      | 422,148 |

### Project Emissions:

As per the applied methodology, VMR0006 v1.1, the PEy are considered to be 0.

### Leakage Emissions:

Leakage shall be considered as default 0.95 in accordance with Section 5.4 of the approved methodology

### Emission reductions for the current monitoring period:

| Year                                      | Baseline emissions or removals (tCO <sub>2</sub> e) | Project emissions or removals (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Net GHG emission reductions or removals (tCO <sub>2</sub> e) |
|-------------------------------------------|-----------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|
| 01-January-2022 to 31-December-2022(2022) | 422,148                                             | 0                                                  | 0                                      | 422,148                                                      |
| Total                                     | 422,148                                             | 0                                                  | 0                                      | 422,148                                                      |

## 4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The assessment team confirms that the calculation and data is authentic. The quality of supporting documents submitted for verification are adequate. The assessment team has checked the quality and maintenance of the supporting documents during the onsite visit to confirm the authenticity of the documents and to check the appropriate calculations. The assessment team confirms that the proper evidence is available for the entire monitoring period and the same is verifiable and the data collection system meets the requirement of the monitoring plan and the applied methodology according to the assessment carried out.

The assessment team confirms the quality of evidence to determine the GHG reductions are satisfactory and the detailed information regarding the roles and responsibilities have been provided in the monitoring report.

## 4.6 Non-Permanence Risk Analysis

Not applicable for the project activity.

# 5 VERIFICATION OPINION

Earthood Services Private Limited (Earthood) was contracted by AERA group and has performed the independent verification of the emission reductions for the VCS project activity (VCS ID- 2636) “Eastern DRC Cookstove Project – South Kivu” for the monitoring period 01/01/2022 to 31/12/2022 as reported in MR version 1.5 dated 13/10/2023.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity. Earthood commenced the verification based on the baseline, monitoring methodology VMR0006 version 1.1 and, the monitoring plan mentioned in the registered VCS PD.

Earthood’s verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emission reductions reported for the project activity for the period 01/01/2022 to 31/12/2022 are fairly stated in the Monitoring report version 1.7 dated 08/12/2023. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology VMR0006., Version 1.1 and the VCS standard, version 4.3 and ISO 14064-3.

Verification period: From 01-January-2022 to 31-December-2022

Verified GHG emission reductions and removals in the above verification period, broken down by calendar year:

| Year                             | Baseline emissions or removals (tCO <sub>2</sub> e) | Project emissions or removals (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Net GHG emission reductions or removals (tCO <sub>2</sub> e) |
|----------------------------------|-----------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|
| 01-January-2022—31-December-2022 | 422,148                                             | 0                                                  | 0                                      | 422,148                                                      |
| Total                            | 422,148                                             | 0                                                  | 0                                      | 422,148                                                      |

| Year                    | Ex-ante emissions reductions /removals | Achieved emissions reductions /removals | Percent difference | Justification for the difference                                                                                                                                                         |
|-------------------------|----------------------------------------|-----------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01/01/2022 – 31/12/2022 | 481,206                                | 422,148                                 | -12.34%            | Less usage of the ICS distributed during this monitoring period as compared to ex-ante scenario of full use equivalent for 12 months have led to the decrease in the emission reduction. |

Approved by



Dr.Kaviraj Singh

Managing Director

Earthood Services Private Limited

Date:23-12-2023

Place: Gurugram, Haryana

# APPENDIX 1: DOCUMENT REFERENCES

| S. No. | Title of Document                                                                                                                                                                                                                                                                             | Version              | Provider |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------|
| 1.     | Registered PD for the project activity<br>Available at Verra registry for project activity page                                                                                                                                                                                               | 1.8                  | Others   |
| 2      | Initial Monitoring report submitted for verification                                                                                                                                                                                                                                          | 1.0                  | PP       |
| 3      | Final Monitoring Report verified for certification                                                                                                                                                                                                                                            | 1.5                  | PP       |
| 3.1    | Revised Monitoring report                                                                                                                                                                                                                                                                     | 1.7                  | PP       |
| 4      | Emission Reductions calculation sheet                                                                                                                                                                                                                                                         | -                    | PP       |
| 5      | Validation report for the project activity                                                                                                                                                                                                                                                    | 2.0                  | Others   |
| 6      | VCS Standard                                                                                                                                                                                                                                                                                  | 4.5                  | Others   |
| 7      | VCS Program Guide                                                                                                                                                                                                                                                                             | 4.4                  | Others   |
| 8      | Approved methodology VMR0006<br><a href="https://verra.org/methodology/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/">https://verra.org/methodology/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/</a>                           | 1.1                  | Others   |
| 9      | Onsite visit and interviews conducted by assessment team                                                                                                                                                                                                                                      | -                    | VVB      |
| 10     | Declaration/Confirmation from PP regarding not having created or sought any other form of environmental credits for the same period                                                                                                                                                           | -                    | PP       |
| 11     | Sampling and surveys for CDM project activities and programmes of activities<br><a href="https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf">https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf</a> | 09.0<br>EB50,<br>A30 | Others   |
| 12     | Training certificates                                                                                                                                                                                                                                                                         | -                    | PP       |
| 13     | Baseline report                                                                                                                                                                                                                                                                               | -                    | PP       |
| 14     | Survey photographic evidence                                                                                                                                                                                                                                                                  | -                    | PP       |
| 15     | End user agreements                                                                                                                                                                                                                                                                           | -                    | PP       |
| 16     | WBT reports performed and given by CRUEA                                                                                                                                                                                                                                                      | -                    | Others   |

|     |                                                                                                                                                                                                                                                           |            |        |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|
| 17  | Monitoring Survey results for the samples selected by the PP                                                                                                                                                                                              | -          | PP     |
| 18  | Process flow for random selection of Sample including screenshots of the selection process                                                                                                                                                                | -          | PP     |
| 19  | Manufacturers / Technical specification of the ICS from CRUEA lab                                                                                                                                                                                         | -          | PP     |
| 20  | Uvira proof of start date                                                                                                                                                                                                                                 | -          | PP     |
| 21  | Records for Beneficiary during the monitoring period                                                                                                                                                                                                      | -          | PP     |
| 22  | Stakeholder feedback record:<br>1. Recordings<br>2. SFR report<br>3. List of Participants                                                                                                                                                                 | -          | PP     |
| 23  | Project Database                                                                                                                                                                                                                                          | -          | PP     |
| 24  | CREEC reports                                                                                                                                                                                                                                             | Dated 2019 | Others |
| 25  | Verification report of last Monitoring period                                                                                                                                                                                                             | 07/10/2022 | Others |
| 26  | CIRAD Report<br><a href="https://agritrop.cirad.fr/600193/1/2021111111_Rapport_Conso_mation_Bukavu_Vf.pdf">https://agritrop.cirad.fr/600193/1/2021111111_Rapport_Conso_mation_Bukavu_Vf.pdf</a>                                                           | June 2020  | Others |
| 27  | <a href="https://assets.publishing.service.gov.uk/media/57a08985ed915d3cfd0002b8/WP30_governance-Democratic-Republic-Congo.pdf">https://assets.publishing.service.gov.uk/media/57a08985ed915d3cfd0002b8/WP30_governance-Democratic-Republic-Congo.pdf</a> | 2015       | Others |
| 28. | Minutes of Public Consultation                                                                                                                                                                                                                            | 08/07/2021 |        |

## APPENDIX 2: ABBREVIATIONS

| Abbreviations   | Full texts                                                      |
|-----------------|-----------------------------------------------------------------|
| BEF             | Baseline Emission Factor                                        |
| CO <sub>2</sub> | Carbon dioxide                                                  |
| CDM             | Clean Development Mechanism                                     |
| CDPE            | Centre Diocésain pour la Protection de l'Environnement          |
| CMS             | Central Monitoring System                                       |
| CL              | Clarification Request                                           |
| CMP             | Conference of Parties Serving as Meeting of Parties             |
| CRUEA           | Centre de Recherche Universitaire sur les Energies Alternatives |
| CAR             | Corrective Action Request                                       |
| EB              | Executive Board                                                 |
| FAR             | Forward Action Request                                          |
| GHG             | Green House Gas                                                 |
| ICS             | Improved cookstoves                                             |
| MR              | Monitoring Report                                               |
| O&M             | Operation and Maintenance                                       |
| PD              | Project Description                                             |
| PP              | Project Proponent                                               |
| SFR             | Stakeholder Feedback Round                                      |
| QA/QC           | Quality Assurance and Quality Control                           |
| UNFCCC          | United Nations Framework Convention on Climate Change           |
| VCS PD          | VCS Project Description                                         |
| VCS             | Verified Carbon Standard                                        |
| VCSA            | Verified Carbon Standard Association                            |
| VCUs            | Verified Carbon Units                                           |
| WBT             | Water Boiling Test                                              |

## APPENDIX 3: FINDINGS OVERVIEW

**Table 1. CL from this validation**

| CL ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 01 | Section no. | 1.4 | Date : 26/08/2023        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|-----|--------------------------|
| <b>Description of CL</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |             |     |                          |
| <p><b>Issue:</b> The “Contributions over project lifetime” for SDG 1, 3, 8, 13 and 15 mentioned under Table 1, Sustainable Development Contributions in the MR, could not be substantiated from the Emission Reduction sheet. Further, the Current project contribution value for SDG 1 and 3 could also not be verified from the SDG impact tab of the ER sheet.</p> <p><b>Action item:</b> PP is requested to provide traceable values of the above-mentioned sustainable development goals in the ER sheet for their substantiation. PP shall also provide supportive evidence to comprehensively verify the sustainable development contributions made by the project activity as stated in the monitoring report.</p> |    |             |     |                          |
| <b>Project participant response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |             |     | <b>Date : 31/08/2023</b> |
| <i>The SDGs tab have been revised to include all the supporting evidence.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |             |     |                          |
| <b>Documentation provided by project participant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    |             |     |                          |
| <i>Revised ER sheet</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |             |     |                          |
| <b>DOE assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    |             |     | <b>Date: 13/09/2023</b>  |
| <p>The revised ER sheet was assessed by the verification team and it was found that current project contribution values and contributions over project lifetime values for all SDGs have been correctly stated and are consistent with the MR v.1.2. All information presented is found to be appropriate and complete. Therefore, the finding is closed.</p> <p>CL 01 is closed.</p>                                                                                                                                                                                                                                                                                                                                      |    |             |     |                          |

| CL ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 02 | Section no. | 1.4 | Date : 26/08/2023        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|-----|--------------------------|
| <b>Description of CL</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    |             |     |                          |
| <p><b>Issue:</b> Section 5.4, “Net GHG Emission Reductions and Removals” mentions that, ‘A study conducted by DFS in collaboration with the Ministry of Environment, Nature Conservation and Tourism of DRC concluded that in 2012, the average consumption of charcoal per person was 118kg of charcoal per year in the project area.’ However, the reference link provided in the footnote of the MR as evidence for the claim, is not reachable (<a href="https://www.dfs-online.de/assets/Uploads/News/1.-COD-GIZ-PBF-WSK-Note-Synthse-PBFSK.pdf">https://www.dfs-online.de/assets/Uploads/News/1.-COD-GIZ-PBF-WSK-Note-Synthse-PBFSK.pdf</a>)</p> <p><b>Action item:</b> PP shall provide a workable link in order to verify and substantiate the provided statement.</p> |    |             |     |                          |
| <b>Project participant response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |    |             |     | <b>Date : 31/08/2023</b> |
| VVB To kindly note that the link has been removed as no more working. However, VVB to note that this link was assessed by prior VVB during first monitoring period.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |    |             |     |                          |
| <b>Documentation provided by project participant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |             |     |                          |
| <i>Revised Monitoring report</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |             |     |                          |
| <b>DOE assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |             |     | <b>Date: 13/09/2023</b>  |

The verification team carried out an assessment of the revised MR and the paragraph has been omitted from section 5.4, "Net GHG Emission Reductions and Removals". The information presented is found to be exact and complete. Therefore, the finding is closed.

CL 02 is closed.

**Table 2.CAR from this verification**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |                    |     |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|-----|--------------------------|
| <b>CAR ID</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 01 | <b>Section no.</b> | 1.4 | <b>Date :</b> 26/08/2023 |
| <b>Description of CAR</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |                    |     |                          |
| <b>Issue:</b> <ul style="list-style-type: none"> <li>Section 1.1, "Summary Description of the Implementation Status of the Project" does not mention information about the relevant implementation dates.</li> <li>Section 1.1 states that, "During the monitoring period spanning from 01/01/2022 to 31/12/2022, 115,038 cookstoves have been distributed to households" This is found to be inconsistent with ex post emission reduction sheet, tab 'VCUs calculation VMR006', cell 'E56' as well as the same section of the MR which states that '193,103 stoves have been distributed to end users in Sud-Kivu province. Further, 115,038 represents the value of the number of end-users equipped with improved cookstoves as per the ER sheet, tab "SDG Impacts", cell D18".</li> </ul> |    |                    |     |                          |
| <b>Action item:</b> <ul style="list-style-type: none"> <li>PP shall include all relevant implementation dates including dates of construction, commissioning and continued operation periods in the above-mentioned section.</li> <li>PP shall address the inconsistency with respect to the number of cookstoves distributed during the current monitoring period spanning from 01/01/2022 to 31/12/2022.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                         |    |                    |     |                          |
| <b>Program rule:</b> VCS Monitoring Report Template v4.2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |                    |     |                          |
| <b>Project participant response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |                    |     | <b>Date :</b> 31/08/2023 |
| Information on implementation dates is now included in the in section 1.1<br>The number of stoves distributed during the MP is 115,038. 193,103 correspond to all the cookstoves distributed since project start. VVB to review calculation sheet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |    |                    |     |                          |
| <b>Documentation provided by project participant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |                    |     |                          |
| Revised Monitoring report<br>Revised ER sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |    |                    |     |                          |
| <b>DOE assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |                    |     | <b>Date:</b> 13/09/2023  |
| Section 1.1, " Summary Description of the Implementation Status of the Project" states that " Since the start date of this monitoring period on 01 January 2022 until 31 December 2022 (second monitoring period), 193,103 stoves have been distributed to end-users in Sud-Kivu province. However this value corresponds to the number of stoves distributed during the total operational lifetime of the project activity. According to the ER sheet, tab "SK project database", cell O4, the number of stoves distributed during the current MP are 115,038. PP shall revise the statement.<br>Therefore, the finding remains open.                                                                                                                                                        |    |                    |     |                          |
| <b>Project participant response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |                    |     | <b>Date :</b> 22/09/2023 |
| The section 1.1 has been updated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |                    |     |                          |
| <b>Documentation provided by project participant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |                    |     |                          |

|                                                                                                                                                                                                                                                                                                               |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <i>Revised Monitoring report</i>                                                                                                                                                                                                                                                                              |                          |
| <b>DOE assessment</b>                                                                                                                                                                                                                                                                                         | <b>Date : 05/10/2023</b> |
| <p>The number of cookstoves distributed during the current MP from 01 January 2022 to 31 December 2022 have now been correctly stated in the monitoring report, section 1.1 “Summary Description of the Implementation Status of the Project”. Therefore, the finding is closed.</p> <p>CAR 01 is closed.</p> |                          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |                    |     |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------|-----|--------------------------|
| <b>CAR ID</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 02 | <b>Section no.</b> | 1.7 | <b>Date : 26/08/2023</b> |
| <b>Description of CAR</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |                    |     |                          |
| <p><b>Issue:</b></p> <ul style="list-style-type: none"> <li>Section 1.11, “Sustainable Development Contributions” of the MR mentions the value of the Current Project Contributions for SDG 7, “Number of cookstoves distributed” given under Table 1 to be 115,038. However, the given value corresponds to the value of number of end users equipped with improved cookstoves as per the ER sheet, tab ‘SDG Impacts’, cell D18. The table also mentions the Contributions Over Project Lifetime for SDG 7 to be 193,103. However, the given value corresponds to the number of ICS distributed during the current monitoring period spanning from 01/01/2022 to 31/12/2022, in accordance with the summary description of the implementation status of the project as provided in the MR.</li> <li>Table 1, “Sustainable Development Contributions” mentions the Current Project Contributions value for SDG 15 to be 213,513 tonnes of wood. However, the quantity of non-renewable biomass saved, as per the ER sheet, tab “SDG Impacts”, cell C31 is 2,18,467.</li> </ul> <p>Action item: PP is requested to address all the above-mentioned inconsistencies between the MR and the ER sheet pertaining to the project activity’s sustainable development contributions.</p> <p><b>Program rule:</b> VCS Monitoring Report Template v4.2</p> |    |                    |     |                          |
| <b>Project participant response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |                    |     | <b>Date : 31/08/2023</b> |
| <p>1) VVB to please review documents (MR and ER sheet). 193,103 is not the number of stoves distributed during this MP. It is the number of stoves distributed since project start date. Stoves distributed during this MP (2022) correspond to stoves of Batch 2022 as available in cell O4 of the tab “SK project Database”.</p> <p>2) The value for SDG15 have been updated</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |                    |     |                          |
| <b>Documentation provided by project participant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |                    |     |                          |
| <i>Revised monitoring report</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    |                    |     |                          |
| <b>DOE assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |                    |     | <b>Date: 13/09/2023</b>  |
| <p>Section 1.1 of the revised MR states that “and since the start date of this monitoring period on 01 January 2022 until 31 December 2022 (second monitoring period), 193,103 stoves have been distributed to end-users in Sud-Kivu province. This figure is inconsistent with the ER sheet, tab “SK project database”, cell O4 as well as the revised MR.</p> <p>Further, the value of SDG 15 mentioned in the footnote under Table 1: Sustainable Development Contributions is inconsistent from the value provided in the table, as well as the ER sheet, tab SDG Impacts, cell O31. PP shall revise.</p> <p>Therefore, the finding remains open.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |                    |     |                          |
| <b>Project participant response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |                    |     | <b>Date : 22/09/2023</b> |
| The number of stoves distributed during monitoring period as well as SDG 15 value have been updated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |                    |     |                          |

| Documentation provided by project participant                                                                                                                                                                         |                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Revised MR                                                                                                                                                                                                            |                  |
| DOE assessment                                                                                                                                                                                                        | Date :05/10/2023 |
| <p>The number of cookstoves distributed during the current monitoring period and the value of SDG 15 are now appropriately stated in the monitoring report. Thus, the finding is closed.</p> <p>CAR 02 is closed.</p> |                  |

| CAR ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 03 | Section no. | 4.4 | Date : 26/08/2023 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|-----|-------------------|
| Description of CAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |             |     |                   |
| <p><b>Issue:</b></p> <ol style="list-style-type: none"> <li>Section 4.2, "Data and Parameters Monitored" of the MR mentions the value of <math>N_{y,ij}</math> to be 193,103. However, the given value corresponds to the number of cookstoves distributed during the current monitoring period. The value of <math>N_{yi}</math> in accordance with the ER sheet, tab "VCUs calculation VRM006" cell D56 is given to be 1,22,129.</li> <li>Section 4.2 mentions the value of the parameter <math>\mu_y</math> to be 1.3% for Batch 2020, 9.2% for Batch 2021 and 2.3% for Batch 2022. However, as per the ER sheet, tab "VCUs calculation VMR006", the values for <math>\mu_y</math> for the 3 batches are given as follows: <ol style="list-style-type: none"> <li>Batch 2020 – 98.7% (Cell M34)</li> <li>Batch 2021 – 91.2% (Cell M41)</li> <li>Batch 2022 – 97.8% (Cell M47)</li> </ol> </li> <li>Section 4.3, "Monitoring Plan" mentions the value of p as 90 in table 1, 'Calculation of sample size of proportions (95/10 confidence/precision) for all batches. However, the value of p in accordance with the ER sheet, tab "Sample size" Cell F6 is given to be 95. PP shall address the inconsistency pertaining to the value of p between the ER sheet and the MR.</li> <li>In the ER sheet, tab "SDG Impacts", cell E18, it is stated that "As per Database, 115307 users have been equipped with the ICS during this period. However, cell D18 of the same tab, as well as the MR mention the value of end users to be 115038.</li> </ol> <p><b>Action item:</b> PP shall address the inconsistency pertaining to the values of the monitored parameters between the MR and the ER sheet.</p> <p><b>Program rule:</b> VCS Monitoring Report Template v4.2.</p> |    |             |     |                   |
| Project participant response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |    |             |     | Date : 31/08/2023 |
| <ol style="list-style-type: none"> <li>VVB to kindly note that 193,103 is the number of stoves distributed since project start date not during this MP. However, the value of <math>N_{yi}</math> has been revised in monitoring report</li> <li>The <math>\mu_y</math> values have been updated in the monitoring report</li> <li>The value of p has been updated in ER sheet to 90 as this in annual monitoring.</li> <li>The value in cell E18 have been updated</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |             |     |                   |
| Documentation provided by project participant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |             |     |                   |
| Revised ER sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |             |     |                   |
| Revised Monitoring report                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |             |     |                   |
| DOE assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |             |     | Date: 13/09/2023  |
| <p>The verification team assessed the revised MR and ER sheet. It was found that the values of monitored parameters <math>N_{y,ij}</math> and <math>\mu_y</math> are correctly mentioned in the documents. The value of P has been updated to 90 in the ER sheet and ER sheet tab SDG Impacts, cell E18 correctly mentions the value of the ICS distributed in the current monitoring period as 115308. Therefore, the finding is closed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |             |     |                   |

CAR 03 is closed.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    |             |     |                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|-----|-------------------|
| CAR ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 04 | Section no. | 1.1 | Date : 26/08/2023 |
| Description of CAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |             |     |                   |
| Issue:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |             |     |                   |
| <div>1. Under Section 4.2, "Data and parameters monitored", for parameter ' Efficiency of baseline stoves' PP is requested to check the value of the charcoal and firewood users. The total mentioned in the MR and also sum of cell E 21 and E22 in "VCUs calculation VMR006" tab gives a total of 1,92,983. Please clarify what does the rest 120 users use and address the inconsistency. The numbers mentioned were also found to be inconsistent with the Values in the "SK project database.</div> <div>2. Under Section 4.3 for the sampling method, it is mentioned that 110 samples have been taken for the baseline study. As per ER sheet, tab 'Monitoring Surveys MR2', a total of 118 samples have been listed. PP is requested to address the inconsistency.</div> <div>3. Under Section 4.3 for the sampling method, the expected proportion value mentioned does not align with the value mentioned in the "Sample size" tab. Please check and address the inconsistency. Kindly check for all the batches</div> |    |             |     |                   |
| Action item:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |             |     |                   |
| <div>• PP shall address all the inconsistencies in the MR in reference to the ER sheet and Baseline report.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |             |     |                   |
| Program rule: VCS Monitoring Report Template v4.2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |             |     |                   |
| Project participant response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |             |     | Date :23 /09/2023 |
| <div>1) This first inconsistency is due to the fact that all the fuel types were not properly translated, hence an error in the formula assessing the number of charcoal and wood users.</div> <div>2) The correct number of samples is 118 this is corrected.</div> <div>3) The expected proportion have been corrected.</div> <div>All the inconsistencies raised by VVB have been corrected.</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |    |             |     |                   |
| Documentation provided by project participant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |             |     |                   |
| Revised ER sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |    |             |     |                   |
| Revised MR Sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |    |             |     |                   |
| DOE assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |    |             |     | Date : 05/10/2023 |
| All inconsistencies in section 4.3 of the MR with respect to the ER sheet and the baseline report have now been corrected. Thus, the finding is closed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |    |             |     |                   |
| CAR 04 is closed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |             |     |                   |

| CAR ID                    | 05 | Section no. | 4.4 | Date | : 10/10/2023 |
|---------------------------|----|-------------|-----|------|--------------|
| <b>Description of CAR</b> |    |             |     |      |              |

**Issue:**

The following comments has been raised by the technical review team, Please address them:

1. It has been found that the KML files have not been provided. According to the template guideline for the section 1.7 "Project Location" of the MR, PP is requested to provide the separate KML file for the location of the project activity.
2. In section 3.1 of the MR, it has been mentioned that the *"During this monitoring period, 115,038 households were equipped with cookstoves, in the project boundaries "*. PP is requested to specify what model of the stove has been distributed?
3. For the parameter Bold, PP is requested to clarify why the value 4.531 is applied to all the households when the number of charcoal users is 122,672 and firewood user is 70,431. As per the report CIRAD for the city of Bukavu, yearly charcoal consumption is 0.735, and hence please explain why 4.53 is applied to all?

**Project participant response**
**Date : 10/10/2023**

- 1) VVB to kindly note that KML file for South-Kivu is now provided.
- 2) Only one model of cookstoves (mobile) is distributed for now in the project. This is now clearly mentioned in section 3.1
- 3) VVB to kindly note that the report states that on average 0.31kg of charcoal **and** 0.05kg of firewood is used per capita per day. Hence, the value of 4.5 ton per HH/year. This value is not specific to a particular type of user but applies to all biomass users. PP have corrected the parameter table to make it easier to understand.

**Documentation provided by project participant**

- 1) KML file for South Kivu
- 2) Revised monitoring report

**DOE assessment**
**Date : 12/10/2023**

The revised monitoring report provided by the PP was checked for the type of stove distributed. the KML file for South Kivu was assessed by the verification and deemed appropriate. It is now understood that the value of Bold is not specific to a particular type of user but applies to all biomass users. The information presented is complete and appropriate. Therefore, the finding is closed.

CAR 05 is closed.

**Table 3. FAR from this verification**

| FAR ID                                               | Section No. | Date : DD/MM/YYYY        |
|------------------------------------------------------|-------------|--------------------------|
| <b>Description of FAR</b>                            |             |                          |
| NOT APPLICABLE                                       |             |                          |
| <b>Project participant response</b>                  |             | <b>Date : DD/MM/YYYY</b> |
| <b>Documentation provided by project participant</b> |             |                          |
| <b>DOE assessment</b>                                |             | <b>Date: DD/MM/YYYY</b>  |

## APPENDIX 4: COMPETENCY STATEMENTS

| Competence Statement      |                                                                              |             |            |
|---------------------------|------------------------------------------------------------------------------|-------------|------------|
| <b>Name</b>               | Vishnu S Panicker                                                            |             |            |
| <b>Education</b>          | M.Sc (Sustainable Development and Environment Management)<br>B.Sc (Forestry) |             |            |
| <b>Experience</b>         | 1+ years                                                                     |             |            |
| <b>Field</b>              | Forestry and Environment                                                     |             |            |
| Approved Roles            |                                                                              |             |            |
| <b>Team Leader</b>        | Yes (VM)                                                                     |             |            |
| <b>Validator</b>          | Yes (VM)                                                                     |             |            |
| <b>Verifier</b>           | Yes (VM)                                                                     |             |            |
| <b>Local expert</b>       | Yes (India)                                                                  |             |            |
| <b>Financial Expert</b>   | NO                                                                           |             |            |
| <b>Technical Reviewer</b> | NO                                                                           |             |            |
| <b>TA Expert (X.X)</b>    | Yes (VM TA 1.2, 3.1)                                                         |             |            |
|                           |                                                                              |             |            |
| <b>Reviewed by</b>        | Shifali Guleria, Quality Manager                                             | <b>Date</b> | 09/06/2023 |
| <b>Approved by</b>        | Deepika Mahala, Technical Manager                                            | <b>Date</b> | 09/06/2023 |

| Competence Statement |                                                       |
|----------------------|-------------------------------------------------------|
| <b>Name</b>          | Mehr Munjal                                           |
| <b>Education</b>     | B.Sc. (Hons) – Bio-chemistry<br>M.Sc. – Biotechnology |

|                    |                                    |      |            |
|--------------------|------------------------------------|------|------------|
| Experience         | NA                                 |      |            |
| Field              | Biochemistry                       |      |            |
| Approved Roles     |                                    |      |            |
| Team Leader        | NO                                 |      |            |
| Validator          | NO                                 |      |            |
| Verifier           | NO                                 |      |            |
| Methodology Expert | NO                                 |      |            |
| Local expert       | NO                                 |      |            |
| Financial Expert   | NO                                 |      |            |
| Technical Reviewer | NO                                 |      |            |
| TA Expert (X.X)    | NO                                 |      |            |
| Trainee            | YES                                |      |            |
|                    |                                    |      |            |
| Reviewed by        | Shifali Guleria (Quality Manager)  | Date | 12/07/2023 |
| Approved by        | Deepika Mahala (Technical Manager) | Date | 12/07/2023 |

| Competence Statement |                                                                |
|----------------------|----------------------------------------------------------------|
| Name                 | Emmanuel Kasiho                                                |
| Education            | Master's in business administration<br>B.Sc. Civil Engineering |
| Experience           | 3+ years                                                       |
| Field                | Civil Engineering                                              |
| Approved Roles       |                                                                |
| Team Leader          | NO                                                             |
| Validator            | NO                                                             |
| Verifier             | NO                                                             |

|                           |                                    |             |            |
|---------------------------|------------------------------------|-------------|------------|
| <b>Methodology Expert</b> | NO                                 |             |            |
| <b>Local expert</b>       | YES (Democratic Republic of Congo) |             |            |
| <b>Financial Expert</b>   | NO                                 |             |            |
| <b>Technical Reviewer</b> | NO                                 |             |            |
| <b>TA Expert (X.X)</b>    | NO                                 |             |            |
|                           |                                    |             |            |
| <b>Reviewed by</b>        | Shifali Guleria (Quality Manager)  | <b>Date</b> | 26/07/2022 |
| <b>Approved by</b>        | Deepika Mahala (Technical Manager) | <b>Date</b> | 26/07/2022 |

| Competence Statement      |                                                                                                            |
|---------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Name</b>               | Deepika Mahala                                                                                             |
| <b>Country</b>            | India                                                                                                      |
| <b>Education</b>          | M. Sc. (Environment Management), GGSIP University<br>B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU |
| <b>Experience</b>         | 6 Years +                                                                                                  |
| <b>Field</b>              | Climate Change                                                                                             |
| Approved Roles            |                                                                                                            |
| <b>Team Leader</b>        | YES                                                                                                        |
| <b>Validator</b>          | YES                                                                                                        |
| <b>Verifier</b>           | YES                                                                                                        |
| <b>Methodology Expert</b> | ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G, AMS-II.C                                                 |
| <b>Local expert</b>       | YES (India, Bangladesh)                                                                                    |
| <b>Financial Expert</b>   | NO                                                                                                         |
| <b>Technical Reviewer</b> | YES                                                                                                        |
| <b>TA Expert</b>          | YES (TA 1.2 & TA 3.1)                                                                                      |
|                           |                                                                                                            |

|                    |                      |             |            |
|--------------------|----------------------|-------------|------------|
| <b>Reviewed by</b> | Shifali Guleria (QM) | <b>Date</b> | 28/04/2022 |
| <b>Approved by</b> | Kaviraj Singh (MD)   | <b>Date</b> | 28/04/2022 |