



VALIDATION REPORT OF PROJECT TITLED “BETTER COOKING FOR A BETTER HEALTH IN RUSIZI DISTRICT - RWANDA”

Document Prepared by EPIC Sustainability Services Private Limited

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Report Title	Validation Report of project titled “Better cooking for a better health In Rusizi district - Rwanda”
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Prepared By	EPIC Sustainability Services Private Limited
Contact	41, Anugraha, 1st Cross, Sundarnagar, Near BEL Circle, Bangalore-560054, Karnataka, India. Email: info@epicsustainability.com, epicsustainability@gmail.com Website: http://www.epicsustainability.com
Approved by	R.B. Venkataramanaiah
Work carried out by	Bharath S (Lead Auditor)

Mr. Unnikannan R V (Auditor)

Summary:

EPIC Sustainability Services Pvt. Ltd. is contracted by Kiasi Energies to carry out VCS Validation for the Project titled “Better cooking for a better health In Rusizi district - Rwanda” (VCS ID: 4585)

This VCS Validation report summarizes the findings of the validation of project as per the sections mentioned in the VCS standard V4.5/^{1/}

The Proposed project involves the installation of more efficient fixed Improved Cooking Stoves (ICS) in the households of Rusizi district of Rwanda which helps the community to access clean cooking solution. The project is not a part of a grouped project or any other program.

The purpose of this project is to reduce the greenhouse gases emitted by the burning of the fuel, conserve the forests & woodlands and to improve the health conditions of ICS users. This project comes under sectoral scope 3 Type II which is an energy efficiency improvement project.

The methodology applied for this project is VCS Methodology VMR0006 “Methodology for Installation of High Efficiency Firewood Cookstoves”, Version 1.2/^{3/}

2CLs, 12CARs and no FARs.

No uncertainties are associated with the validation.

The proposed activity meets the relevant VCS requirements and the estimated GHG removal from the project is real, measurable, and permanent and the annual emission reduction from the project activity is estimated to be 155,987tCO₂e/annum.

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1 INTRODUCTION

1.1 Objective

The objective of the project is to conduct the VCS Validation of the Project titled “Better cooking for a better health In Rusizi district - Rwanda” (hereinafter referred to as project activity).

The purpose of the validation is to perform an independent, third-party assessment of whether the project activity confirms to the qualification criteria set in the VCS standard v4.5/^{1/} and to attain real, measurable, additional, and permanent emission reductions. The validation statement / opinion is a written assurance that the project complies with all the applicable VCS requirements and can generate the emission reductions stated over the project’s crediting period.

1.2 Scope and Criteria

The scope of validation includes an independent and objective review of the sections specified under the VCS standards to conduct the VCS Validation process. This includes the study of project description, the project baseline, proposed monitoring plan and other relevant documents which support the validation. Specifically, the objectives of the validation work involve -

- Validation of whether the project activity meets the requirements of VCS standard v4.5/^{1/} including applied conditions, baseline, additionality, proof of title and compliance with local laws, estimated emission removals.
- Assessment of whether the baseline and proposed monitoring plan are in conformance with the methodology applied from the VCS approved GHG program.
- Certification of the information presented is complete, consistent, transparent, and free of material error.

The Project Description v3.0 is reviewed as per VCS standard v4.5/^{1/} and the VCS program guide v4.3/^{2/} and the applied VCS methodology VMR0006: Energy Efficiency and Fuel Switch Measures in Thermal Applications v1.2/^{3/}. EPIC has performed the validation based on a risk-based approach focusing mainly on the significant risks to meet the qualification criteria and the ability to generate VCUs. The work carried out by EPIC is free from any conflict of interest.

The scope of the validation is the independent and objective review and estimated ex-ante determination of the monitored reductions in GHG emissions from the project activity. The validation of this project is carried out based on the initial VCS PD (v1.0) dated 25/05/2023 and supporting documents available with the validation team. These documents are reviewed against the requirements of the VCS standard v4.5/^{1/}, VCS Program guide v4.3/^{2/} The validation is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Reasonableness of Assumptions

In line with VCS standard v4.5/^{1/} requirements and as per ISO 14064-3:2019 Para A.5.1.3 a reasonable level of assurance has been followed for the validation of the project. Based on the desired level of accuracy EPIC has established an internal quality control process and assures that the information given in the initial PD v1.0 is materially correct and is a fair representation of the of the actual project details and is prepared in accordance with the VCS requirements and the applied CDM methodology¹ for information pertaining to additionality, GHG quantification, proposed monitoring, and reporting. The validation report is carried out as per this requirement and details are presented in the validation statement below.

1.4 Summary Description of the Project

The project “Better cooking for a better health In Rusizi district - Rwanda” is a Standalone Project activity registered under Verra. This project therefore applied VCS mechanism for its Validation process in accordance with VCS Standard V4.5/^{1/}.

The RDIS improved fixed (in-situ) stove (hereinafter referred to as project stove) is a type of cooking stove that has been designed and developed specifically for use in Rwanda. The stove is made from locally sourced materials like mud and is constructed using clay, mud, cow dung and cement. The Project aims at distributing 100,000 improved cookstoves (single pot in-situ stoves) in the households of Rusizi district of Rwanda. The project will replace three-stone stoves which are currently under use. The stoves will be distributed free of cost and the materials will be collected by the households. The ICS will result in reduced firewood consumption thereby helping to mitigate climate change. Overall objective of the project is to contribute for the reduction of greenhouse gases, save money and time from the purchase of wood, conservation of forests and woodlands as well as improved health conditions by reducing the indoor air pollution. It also benefits the local population with several other socio-economic matters addressed by the Sustainable Development Goals of the United Nations, such as improved health for the households, gender equality, reduced poverty etc.

The project stove was tested by a Ugandan registered laboratory CREEC (Centre for Research in Energy and Energy Conservation) using WBT 4.2.3 protocol/^{9/} and has thermal efficiency of 31.2% which is greater than the baseline stove (which has less than 10% thermal efficiency), and a specific fuel consumption of 0.0316 MJ/ (min L). The project stove uses a total of six mudbricks that will be made by households using mud and water as their in-kind contribution. The average size of the brick would be 25cm x 11cm x 8cm. During the installation process, the bricks are joined together using a mixture of mudbricks, cement, cow dung, grounded stones, and water. Insulation is settled around the stove to increase the stove's thermal efficiency, ensuring a reduction in heat loss. The stove has a top that allows the pot to sit higher, improving the flow of air into the combustion chamber and out through the top of the stove. It also has three valves at its upper part that support the pan or pot and, more importantly, permit the air to flow inside the stove while feeding the fuel into the combustion chamber, resulting in complete combustion of wood.

The scenario existing prior to the implementation of the project is the actual baseline scenario which is equal to the existing common practice by the ICS users i.e., in absence of the project activity the

¹ <https://cdm.unfccc.int/UserManagement/FileStorage/6TOUCX21D0BHNVRZFWMEKALY94GS7>

equivalent amount of thermal energy generated using firewood in three stone and other traditional open fires to meet the cooking energy demand.

The entities involved in the project activity are as follows,

KIASI Energies: Project proponent and the investor for the project activity. The project data is managed by the company and the owner of carbon credits. `

Rural Development Interdiocesan Service: Abbreviated as RDIS is a local NGO and coordinating entity for the project activity. The company is responsible for implementation, monitoring, and coordination. The following entities are

The estimates of total and annual average GHG emission reductions for the chosen crediting period are 15,59,878tCO_{2e} and 1,55,987tCO_{2e}/annum respectively. The project crediting period is of 10 years i.e., from 15/05/2023 to 14/05/2033.

2 VALIDATION PROCESS

2.1 Method and Criteria

The EPIC's Validation process consists of the following phases:

- The review of the project description and other documents
- Preparation of validation protocol like required list of documents, audit plan and questionnaires which helps in the audit process.
- On-site audit and interviews with project consultant, manufacturer, local distributor, local representatives, local stakeholder meeting attendees and cook stove beneficiaries.
- Issuance of findings from Desk review and on-site inspection.
- Resolution of outstanding issues and the issuance of final validation report and opinion

2.2 Document Review

To ensure transparency, a validation protocol is drafted for the project as per the VCS Standard v4.5/^{1/} and VCS Program guide v4.3/^{2/}. The protocol describes the process, findings, and recommendations from the validation and how the identified criteria ensure transparency. The validation protocol -

- organizes, details, and clarifies the requirements of a VCS project is expected to meet.
- ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The protocol consists of Appendix, where findings established during the validation process are classified as non-fulfilment of validation protocol criteria or where risks to the fulfilment of project objectives are

identified. Clarification request (CL), Corrective Action Request (CAR) and Forward Action Request (FAR) are issued where,

- there is an error which directly impacts the project results; or
- the validation protocol requirements are not met; or
- there is a risk that the project fails to be accepted as a VCS project or that emission reductions will not be certified; or
- There is a need for additional information to get clarity.

Name	Role	Components reviewed
Mr. Bharath S	Lead Auditor and Technical expert	Completeness check, desk review, on-site auditing, Interview with project representatives, issuance of findings, report preparation.
Mr. Unnikannan R V	Auditor	Completeness check, desk review, report preparation
Mr. R. Vijayaraghavan, Mr. Karthik Lakshman	Technical reviewer team	Independent Technical review
Mr. Robert Mugaju	Host Country Expert	Interview, issuance of findings

The VCS PD v1.0 (initial PD) submitted by the client and additional backgrounds documents related to the project design and baseline are reviewed as an initial step of the validation process. The PD is later revised to v6.0 as per the corrections made after the desk review and on-site visits. As a result of the review and findings, the validation team has raised 2CLs, 12CARs and no FARs.

In addition to that, a desk review is done to assess the following parameters:

1. Project details as per VCS PD template v4.2/^{15/}
2. Sectoral scope and project type
3. Details of the entities involved
4. Project start date and Location
5. Project crediting period
6. Project scale and estimated GHG reductions
7. Conditions prior to the Project initiation
8. Compliance with laws, Statutes, and other Regulatory frameworks
9. Sustainable development contributions
10. Efficiency and life span of the cookstove
11. Board decision regarding the Project activity
12. Monitoring plan and monitoring method

13. Other information related to leakage, methodology deviations and participation in other GHG programs.

2.3 Interviews

The initial VCS PD (v1.0)^{16/} submitted by the PP is reviewed along with the supporting documents like ER sheet, stove distribution database, beneficiary agreements and Monitoring plan. The roles and responsibilities of the respective implementors were studied and an onsite visit is carried out from 25/09/2023 to 27/09/2023.

The interview process is carried out at three stages namely,

- a) Interview of the personnel – carried out to understand the Project description, project implementation, monitoring procedures, roles & responsibilities in the project and application of methodology.
- b) Interview of the beneficiaries – carried out to understand the benefits from the project activity, usage of the baseline stove, usage of the project stove, sustainability benefits received, usage of fuel, beneficiary agreement and grievance mechanism.
- c) Interview of the LSC attendees – carried out to understand the aspects of LSC meeting like date of meeting, meeting agenda, process of meeting and outcome of the meeting.

The total number of cookstoves that will be distributed in the first instance of the project activity is found to be 25,000 units. The sampling approach is taken as per the CDM Sampling guidelines “Sampling and surveys for CDM project activities and programmes of activities” v4.0^{7/} to obtain samples to perform a site visit. Since the type of cookstoves distributed are homogeneous, simple random sampling approach is followed.

The validation team has adhered to the requirements given under section 6 (para 25) of the CDM sampling standard- “Standard: Sampling and surveys for CDM project activities and programmes of activities v09.0^{29/}”. It has hence verified by means of document review as to whether the project proponent

has implemented the sampling and surveys according to the sampling plan given as per the registered monitoring plan. This was further cross verified during the onsite visit. Therefore, the validation team confirms the following in project proponent’s samples:

- The required confidence/precision of 90/10 has been met.
- The selected sample is representative of the cookstove population.

Further, in accordance with the guidelines given under section 6 (para 30 and para 31) and ‘Table 2’ of “Standard: Sampling and surveys for CDM project activities and programmes of activities Version 09.0”, the sample size and acceptance number for the sampling activity was determined based on AQL & UQL and Producer & Consumer risks. Thus, the validation team using its professional judgement, checked the acceptability of data for each record in the project proponent’s sample records and chose a sample size (n) of 30 nos. from the project proponent’s set of records. This makes a total of 30 samples checked by the validation team for validation of the project activity. For such a sampling, the validation team has

used an AQL of 0.5%, UQL of 15%, producer risk of 5% and consumer risk of 10%, with an acceptance number (c) of 1.

By assuming 90% Confidence level and 10% precision, the households are selected randomly, and were found to be in all the five sectors of the specified project boundary of the project activity namely Gihundwe, Mururu, Nkanka, Nzahaha and Rwimbogo. The cookstove database excel sheet is taken and sampling option is used to find out random samples. Total of 30 households were selected for the interview process.

The list of Personnel, LSC attendees and beneficiaries interviewed are as follows,

a) List of Personnel interviewed

Name	Role and company	Interviewed parameters
Ingabire Clarisse	CEO, Anchor Eco	- Roles and responsibilities of the project team, coordinating team and implementation team - Criteria for selection of Project boundary - Criteria for selection of households - Baseline survey process - Project stove efficiency testing (WBT process) - Aspects of supply chain of cookstove like manufacturing, transportation, distribution, and construction - Implementation process - Monitoring parameters like data collection, data monitoring, periodic inspection, repair and replacement policy and grievance mechanism - Financial structure of the project activity
Jane Kabera	Project Manager, Anchor Eco	
Ntari Nawa	Executive Director, RDIS	
Vincent Minani	Project Manager, RDIS	
Hategekimana Zephania	Field Coordinator, RDIS	
Jackline	Enumerator for Gihundwe and Nkanka, RDIS	
Ndayishimiye Alype	Enumerator for Rwimbogo and Nzahaha, RDIS	
Nshimiyimana Emmanuel	Enumerator for Mururu, RDIS	

Summary of the interview: The project is funded by Kiasi Energies (who is the project proponent), implemented and monitored by Anchor Eco and RDIS along with the support of local government entities and communities. The observations from the interview are as follows,

- Nyungwe forest is the largest forest in Rwanda and most of the cooking wood is collected from this forest. As an initiative to protect the forest, the PP selected the project boundary as Rusizi district of Rwanda.
- The households are selected based on the following criteria,
 1. Lower income category
 2. Separate kitchen
 3. No other stove used other than three-stone stove
 4. Permanent resident (as the stove is in-situ type)
 5. Willing to use the stove
 6. Willing to coordinate during the construction of the stove
- The in-situ type of stove is selected to maintain a good lifetime of the stove and to avoid problems associated with the mobility of the stove.
- The baseline survey was conducted for a sample of hundred sample households using a questionnaire for the above-mentioned parameters for the selection of households.
- WBT was conducted by the RSB and CREEC in the kitchen of the households as the stove is of in-situ type. The WBT will be conducted annually to monitor the efficiency.
- MILT and BPS Ltd designs and manufacture the base of the cookstove. The factory is in Ruhango district of Rwanda, which is adjacent to Rusizi District, which is the Project boundary. The base of the cookstove is transported through the trucks to the local cell offices, which act as warehouses.
- The roles and responsibilities of different personnel are as follows,
 1. Executive Director of RDIS – Facilitate implementation, recruitment approval, funding approval, invoice for Kiasi Energies, MoU with Rusizi district government and other institutions, MoU with Energy Development corporation, Stove purchase order approval, overall staff monitoring.
 2. Project Manager – Planning and coordinating activities, preparation of requirements for funds, assess the carbon transfer from the reports prepared by field coordinators, coordinate with manufacturer and reporting.

3. Field coordinator – check the stove distribution, allocating and monitoring the serial number of the cookstoves, cookstove base storage, monitor and prepare the activities for the installation and implementation, daily report update.
 4. Enumerator – point of contact for the households for any kind of queries, conduct periodic check to know the cookstove condition, facilitate implementation and monitoring, daily report.
 5. Installers – carry out the installation of the cookstove and assist in case of any repairs. They are directly contacted by the beneficiaries, and they report to the Project Manager.
- The data of the beneficiaries are collected through “Kobocollect” mobile application and then it connected to the server. The data is managed by the PP and Project implementor.
 - The cookstove distribution cycle - The criteria for the distribution of Project stoves are defined by Anchor ECO, along with RDIS and they are shared with the Village representatives by Anchor ECO and RDIS. The Village representatives will announce the same in their respective community meetings. The shortlisted data will be provided to the cell office, which is a government entity, supporting the initiative. The Cell office distributes the shortlisted data with RDIS and Anchor ECO. Order is placed for the stove base from RDIS. The manufacturer ships the stove base to the respective cell offices. The cell office communicates with the respective Village representatives to announce the availability of the stove base. The village representatives will announce about the availability of the stove base in their community meeting. The shortlisted households will be informed to collect the stove base on the announced date by carrying their documents (proof) in the cell office. The households will collect the stove base from the cell office after the registration process with RDIS. Within a week the installers will visit the households and install the stove. Within a couple of days, the respective enumerator will visit the household with cookstove ID plate and Beneficiary agreement (Carbon Transfer Form)^{20/}. The enumerator will install the ID on the stove and get the signature from the beneficiary. The day the carbon transfer agreement is signed will be considered as the day of actual usage of the cookstove.

b) List of LSC Attendees interviewed

Name	Role and company	Interviewed parameters
Dr Anicet Kibirig	Mayor, Rusizi District	• date and place of the meeting • agenda of the meeting • duration of the meeting • discussions during the meeting
Nyiransabimana Berthe	Mother’s Union coordinator	
Urayeneza Peruth	NYC Secretary	
Nkundineza Rambert	RBA (Rwanda Broadcasting Agency)	

Jeanne d'Arc Niyonsaba	CNEF Coordinator, Rusizi district	feedback session
Mathias Habimana	REG/Rusizi district	
Theogene Mutarutinya	Rusizi district/JADF Permanant secretary Secretary	
Rev Boaz Ariho	Diocesan secretary, EAR Cyangugu Diocese	
Aphrodis Sindayiheba	ES sector, Rusizi District	
Miyonziza Eulogia	RDIS	
Vincent Minani	Project Manager, RDIS	

Summary of the interview: The LSC meeting was conducted on 20th of December 2022 in Rusizi district of Rwanda. Along with the above-mentioned attendees, up to 50 people participated in the meeting. The meeting started at 9:00 am in the morning up to the afternoon. The attendees were invited through email and invitation letters. The attendees are the representatives of different community and government organisations. The information is later transferred to the local people in their respective gatherings. The areas of discussion in the LSC meeting are as follows,

1. General description of the project activity
2. Benefits of the project activity
3. Project plan
4. Timeline of the project activity
5. Contribution to the SDGs
6. Key areas of focus

As the attendees are representatives of the local population, the challenges associated with the cooking practices of the people are explained and discussed in-line with the agenda of the project. Feedback forms are provided to the attendees, and they are collected by the Project team and measures are taken accordingly. LSC attendees contributed to the project activity by identifying the beneficiaries, spreading the project information to the people, setting up community gatherings for feedback from the project stove users, periodic checks, promotion of the project activity and facilitating the project implementation and monitoring team. Also, the information in the LSC meeting submitted by the PP is cross-checked during the on-site interview with the LSC attendees and are found to be correct.

c) List of Beneficiaries interviewed

Sl No	Name and cook stove ID	Location	Interviewed parameters
1.	Habiyaremye Jean Marie Vianney (K00330A)	Gahinga village, Gihundwe sector	- Name of the primary cook, Cookstove ID, contact number and ID proof of the beneficiaries - Mode of information about the project activity - Knowledge about the purpose of the project activity - Carbon Transfer Agreement - Number of family members - Duration of cookstove construction and actual date of usage - Materials procured by the households for construction of the cookstove - Continuous usage of the stove - Meals prepared per day and time taken per meal - Status of the baseline stove - Presence of any non-project stove - Kitchen condition before and after the usage of project stove - Fuel type and procurement method - Quantity of fuel used
2.	Mukangabo Anne Marie (Wife of the beneficiary Vimiliya Pricilla) (K00358A)	Gahinga village, Gihundwe sector	
3.	Nyiramafaranga Donathile (K00336A)	Gahinga village, Gihundwe sector	
4.	Uwizeyimana Theophile (K00170A)	Gafoka Village, Nkanka Sector	
5.	Nzigiye Valencia (K00166A)	Gafoka Village, Nkanka Sector	
6.	Nsabeyezu Innocent (K00167A)	Gafoka Village, Nkanka Sector	
7.	Nshimiyimana Albert (K00162A)	Gafoka Village, Nkanka Sector	
8.	Ngirinshuti Pascal (K00161A)	Gafoka Village, Nkanka Sector	
9.	Uwagirubuntu Jacques (K00750A)	Nyabihanga Village, Rwimbogo sector	
10.	Hahirwuyisenga Olivier (K00752A)	Nyabihanga Village, Rwimbogo sector	
11.	Niyigena Fidel (K00913A)	Kamabuye Village, Rwimbogo sector	
12.	Mukantwari Beatrice (K01446A)	Kamabuye Village, Rwimbogo sector	

13.	Ngendahimana Benoit (K00925A)	Kamabuye Village, Rwimbogo sector	- History of any repairs/replacements - Point of contact for grievances - concerns associated with the usage of project stove - Differences in pre-project and existing scenario - Health benefits from the project activity - Monetary benefits from the project activity - Other benefits associated with the usage of the project stove
14.	Ugirashebuja Martin (K00733A)	Rukoro Village, Nzahaha sector	
15.	Niyoniringiye Ezira (K00734A)	Rukoro Village, Nzahaha sector	
16.	Ntahomvukiye Justin (K00792A)	Rukoro Village, Nzahaha sector	
17.	Hitimana Juvenal (K00789A)	Rukoro Village, Nzahaha sector	
18.	Harerimana Theogene (K00743A)	Gatovu Village, Nzahaha sector	
19.	Mpakaniye Wesisilas (K00729A)	Gatovu Village, Nzahaha sector	
20.	Nyirabagisha Felecite (K00701A)	Gatovu Village, Nzahaha sector	
21.	Bizimana Emmanuel (K00746A)	Gatovu Village, Nzahaha sector	
22.	Musabyemariya Costasie (K01080A)	Mutimasi Village, Mururu sector	
23.	Vianney Kagiye (K01299A)	Mutimasi Village, Mururu sector	
24.	Jean Hategekimana (K01127A)	Mutimasi Village, Mururu sector	
25.	Nicalas Itegekwandane (K01277A)	Mutimasi Village, Mururu sector	
26.	Venuste Habimana (K01287A)	Mutimasi Village, Mururu sector	
27.	Fausta Mukankusi (K01288A)	Mutimasi Village, Mururu sector	
28.	Mukandutiye Eulerie (K01000A)	Butazigurwa Village, Mururu sector	
29.	Kandama Daphrose (K01096A)	Butazigurwa Village, Mururu sector	

30.	Therese (K01280A)	Mukashema	Bitongo Village, Mururu sector	
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Summary of the interview: The responses from the beneficiaries are collectively summarised below,

- The information about the project activity is received majorly from village representatives, community gatherings, radio announcements and word-of-mouth.
- The size of the family ranges between 3 to 11 members (Male, female, and children)
- The construction of stove was completed within 2 hours and the actual usage started after a week of completion.
- The cookstoves were distributed free of cost and the people are aware about the purpose of project activity and the Carbon Transfer Form.
- The households contributed to the construction by providing bricks built by the mixture of mud and water.
- One stove is distributed per household.
- Average number of meals per day is two and the time taken per meal ranges between 15 minutes to 90 minutes.
- The baseline stoves are dismantled.
- Few households rent bigger metal stoves during family gatherings/ special occasion which occur once or twice per year.
- The fuel used for cooking is found to be wood. Some households collect the wood from farms/ forest, and some purchase the wood.
- The enumerator/ village representative is the first point of contact in case of queries associated with the project activity.
- Since the stoves are young, there are no history of repairs or replacements.
- Enumerator/ village representative visit the households at least once a week to check the condition and usage of the cookstove.
- All the beneficiaries found improvements in their kitchen condition, health condition, and monetary aspects.
- Overall, the response for the Project activity was found to be positive.

2.4 Site Visits

The site visit is carried as per the guidelines specified in VCS standard v4.5/^{1/}. A desk review was conducted prior to the onsite visit using the preliminary documents provided by the PP. The audit team ensured that the level of assurance is obtained and unbiased audit is carried out. The assessment was carried on the following aspects,

- scope of the project
- desk review of initial PD (v1.0)/^{16/}, ER Sheet/^{18/}, Carbon transfer forms/^{20/}, cookstove specifications/^{21/}, WBT test results/^{23/} and Local stakeholder consultation meeting report/^{25/}.
- implementation and operation of the project activity as per the standards.
- investment decision, project funding and baseline assessment.
- applicability of VMR0006 v1.2/^{3/} methodology and demonstration of additionality.
- distribution, monitoring, and grievance mechanism.
- Sustainable development contributions

In addition to the above-mentioned assessments, Interviews with relevant personnel like the Project Owner, Project Implementation team, Executive Director of RDIS, Project Manager, Field Coordinators, Enumerators, and ICS beneficiaries to confirm that the operational and data collection procedures are implemented in accordance with the VCS standard guidelines.

2.5 Resolution of Findings

The objective of this phase of the validation is to mention the clarifications, corrective actions and any other outstanding issues which require explanation prior to audit team's conclusion on the project design.

The findings were issues based on the desk review and site visit observations. Clarifications are requested where there is a requirement of in-depth explanation from the PP. Corrective actions are suggested where there is an alignment with the standard is required.

The findings are resolved based on the relevant explanations and documental evidence provided by the PP. From the assessment, 02 CLs and 12 CARs are raised. The list of findings is compiled and summarised in the Appendix below.

2.5.1 Forward Action Requests

No FAR is raised during the validation process.

3 VALIDATION FINDINGS

3.1 Project Details

The VCS Project is a standalone project which aims at distribution of improved cookstoves in the rural households of Rusizi District of Rwanda. The Improved Cookstoves are built into the kitchen of

beneficiaries by the project proponent which replaces three-stone cook stoves which are predominantly used in the project location. The cookstoves are built free-of-cost and the materials required for the installation is procured by the households. The project activity aims at a total distribution of 100,000 cookstoves. Since the project stove is constructed in the kitchen of the beneficiaries, it will take up to 7 days to get dried and start the actual cooking process. (Include the information about the cookstove manufacturing)

As per the VCS Standards v4.5/^{1/}, Appendix 2, para A2.1, for a project that does not include afforestation and/or reforestation activities:

- a) The project must have an original project crediting period start date on or after 1 January 2016 with another GHG program; (or)
- b) Where the project has an original project crediting period start date from 1 January 2013 to 31 December 2015, the project must have issued credits during the period January 2016 to 5 March 2021 or must have a status of “issuance requested” on the relevant GHG program registry by 5 March 2021.

Justification: The project is not an AFOLU project, and the crediting period of the project activity is from 15/05/2023 to 14/05/2033, which is after 1 January 2016. Since the start date of the project activity is 15/05/2023 which is after 1st January 2016, the project is eligible under VCS Program.

Other information about the Project activity are as follows,

- Kiasi energy is the Project Proponent for the project activity.
- The stove 2023/B045 is the only model distributed in the project activity with a lifetime of 8 years.
- Ownership of the carbon credits is in the name of Kiasi energies and RDIS.
- Start date of the project is 15/05/2023, which is the date of actual usage of first cookstove (the actual distribution of stove base started during last week of April 2023, and the cookstove constructions were completed within a week. Many households started using the in-situ cookstoves from first week of May 2023. However, for conservative purpose the date is considered as 15 May 2023).
- The crediting period of the project activity is 10 years (Fixed) i.e., from 15/05/2023 to 14/05/2033.
- The Project is a small-scale activity. With the project stove’s thermal efficiency of 31.2%, the estimated GHG emission reductions are found to be 1,55,987tCO_{2e} per annum.
- The Project location is Rusizi District of Rwanda.
- Conditions prior to project initiation is found to be the usage of three-stone stove for cooking purpose.

Eligibility Criteria:

No.	Criterion	How the project activity instances comply	VVB assessment
1.	Both grouped and non-grouped projects can have multiple project activity instances.	This project falls <i>under Multiple Project Activity Instances (several cookstove installation) and is a non-grouped project.</i>	The project is categorized under Multiple Project Activity Instances, specifically focusing on cookstove installations, and is a non-grouped project. Each cookstove is considered as a project instance. The project correctly identifies its classification, aligning with the guidelines that allow both grouped and non-grouped projects to have multiple activity instances. This classification is appropriate and meets the requirements set forth in the guidelines. Thus, the applicability criteria is met.
2.	Inclusion of further project activity instances subsequent to initial validation of a non-grouped project is not permitted (see Sections 3.6.10 – 3.6.17 for information on grouped projects).	<i>This is not a grouped project.</i> <i>Project activity instances (stoves) will be installed in all households of the Rusizi district that wishes to participate in the project.</i>	The project is not a grouped project, and it adheres to the rule that no additional project activity instances can be added after initial validation. The project plan reflects a clear understanding of this restriction, ensuring that no further instances will be introduced post-validation. Thus, the criteria is met.
3.	The baseline determination and additionality	<i>Baseline determination and additionality demonstration are combined for all instances.</i>	The project combines baseline determination and additionality demonstration

	demonstration for all project activity instances in a project shall be combined (e.g., multiple wind turbines shall be assessed in combination rather than individually).		for all instances, as required. This unified approach ensures that the assessment is comprehensive and consistent across all activity instances. By following this methodology, the project adheres to the guidelines and ensures that all instances are evaluated together rather than individually. Thus, the criterion is met.
4.	Where a project includes multiple project activity instances from multiple project activities, the project activity instances from each project activity shall be assessed in accordance with Sections 3.6.1 – 3.6.3	<i>Each instance represents a stove. All instances have the same activity. This section is not applicable.</i>	Since all instances in this project involve the same activity stove installations there is no need for separate assessments for different activities. The project accurately identifies that this section is not applicable, as there are no multiple activities to assess separately. Thus, the criterion is met.
5.	The project proponent shall include in a singular project all project activity instances within ten kilometers of another instance of the same project activity and with the same project proponent (i.e., instances of the same project activity may not be spread across more than one project if they are within	<i>All instances are in Rusizi district. All instances are part of the same project.</i>	The project ensures that all activity instances are located within the Rusizi district, and thus fall within a single project. This meets the requirement that all instances within ten kilometers of each other must be included in the same project. The project's adherence to this rule confirms that it is correctly grouping its instances and

	ten kilometers of each other).		maintaining proper geographic cohesion, as required by the guidelines.
6.	Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit. Further, no single cluster of project activity instances shall exceed the capacity limit, determined as follows: 1) Each project activity instance that exceeds one percent of the capacity limit shall be identified. 2) Such instances shall be divided into clusters, whereby each cluster is comprised any system of such instances such that each instance is within one kilometer of at least one other instance in the cluster. Instances that are not within one kilometer of any other instance shall not be assigned to clusters. 3) None of the clusters shall exceed the capacity limit and no further project activity instances shall be added to the project that would cause any of the clusters to exceed the capacity limit.	<i>No capacity Limit applies, as per the methodology VMR0006 v1.2,</i>	There is no capacity limit that applies under the methodology VMR0006 v1.2, thus this criterion is met.

Leakage emissions – As per the applied Methodology (VMR0006, v1.2)^{3/}, Projects must apply an adjustment factor to account for leakage related to the non-renewable woody biomass saved by the

project activity. The procedures from the latest version of AMS-II.G (v13.0)^{4/}. must be applied, and the value is fixed at validation. Thus, the project adopts a net gross adjustment factor of 95% to account for leakage, as proposed by the methodology VMR0006 (v1.2).

The Project Activity does not violate any of the Host Country's relevant local, regional, and national laws, statutes, and regulatory frameworks. The project is a voluntary effort by the project proponent. The Rwanda environmental laws and regulations like Rwanda's Energy Sector Strategy Plan/^{10/}, Rwanda Energy Policy/^{11/}, Rwanda's Biomass Energy Strategy/^{12/} and 7-Years Government Programme: National Strategy for Transformation (NST1) 2017 – 2024/^{13/} were reviewed by the Validation team and observed that the purpose of the project activity is aligned with the purpose of Rwanda's national energy plan. However, there are no laws and regulations governing the use of improved cookstoves in Rwanda for households.

The Project is not registered under any GHG programs like CDM, GS, GCC, ICR etc and this has is verified by cross-checking the project title, reference number, project location and Project proponent in the respective websites. Also, a declaration regarding non-registration of the project in other GHG programs is submitted by the PP to the Validation team.

Regarding the Scope 3 emissions, a declaration from the cookstove manufacturer/^{27/} i.e., MILT and BPS is submitted regarding the supply chain emissions. It is verified and accepted by the Validation team.

The project activity is not involved in any other emissions trading programs. A declaration/^{26/} for the same is submitted by the PP in the company letterhead and is verified and accepted by the Validation team. Also, no other forms of environmental credit sought or received and eligible to be sought or received from the project activity.

A declaration from the cookstove manufacturer i.e., MILT and BPS is submitted to the PP which confirms that there is no potential risk of Scope 3 emissions double claiming.

Ownership of the carbon credits: As per the agreement signed with EDCL, the ownership of the stoves transfers to the beneficiaries upon the payment of an "end fee." However, in the current project, where stoves are provided free of cost, the absence of an end fee requires us to consider an alternative transfer mechanism. The project proponent has determined that ownership of the stoves transfers to the beneficiaries immediately upon installation. This approach aligns with the project's objective of providing stoves as a benefit to the household, ensuring clarity on the ownership of the physical asset. Since the stoves belong to the households, it follows logically that the emission reductions resulting from the use of the stoves are also owned by the households. This aligns with the principle that the entity controlling the activity that leads to emission reductions holds the right to those reductions. To formalize the transfer of rights over the carbon credits, each beneficiary is required to sign a Carbon Transfer Form. This form legally transfers the carbon credit rights to Kiasi Energies, the Project Proponent (PP), in exchange for the free provision and installation of the stoves. This transfer is essential for Kiasi Energies to claim the carbon credits generated by the project.

The project activity contributes to the following Sustainable Development Goals (SDG)

- SDG 1: **No Poverty** by distributing the stove free of cost.
- SDG 3: **Good Health and Well-being** - by reducing the indoor air pollution as the project activity distributes more efficient stoves which emit less smoke compared to the baseline stoves.

- **SDG 5: Gender equality** – by reducing the time spent on collection of firewood and saving the cooking time, the project activity increases the scope for carrying out other productive works for the women community. Also, majority of people employed in the project activity are women.
- **SDG 7: Affordable and Clean Energy** – by promoting improved cook stoves which is more fuel efficient compared to the baseline stoves.
- **SDG 8: Decent Work and Economic Growth** – by creating job opportunities like field officers, enumerators etc for local people as a part of the project activity.
- **SDG 13: Climate Action** – by reducing the CO₂ emissions.

The Validation team concludes that the information in the submitted project description (v3.0)^{17/} is accurate, complete, and provides an understanding of the nature of the project.

3.2 Safeguards

3.2.1 No Net Harm

The project brings positive impacts by contributing positively to the environment and people and no negative potential environmental and socio-economic impacts are identified by the project activity. This is verified by the validation team. The project activity will contribute to the reduction in GHG emission due to reduction in use of non-renewable biomass and it can ensure natural recovery of forests and/or reforestation. The project activity will lead to reduction in indoor air pollutants from wood smoke and avoid smoke related health disorders.

3.2.2 Local Stakeholder Consultation

The Local Stakeholder Consultation meeting was conducted on 20th of December 2022 in Rusizi district of Rwanda (which is the Project boundary). The participants included the Mayor, National women council members, The Secretary of National Youth Council, Delegate of Rwanda Energy Group, Anglican Diocese staff, Executive Secretaries of Nine Sectors in Rusizi districts, Rwanda environment Management Authority members. The Invitation letters were written in English and local language i.e, Kinyarwanda. Also, the invitations were shared via letter and phone. During the local stakeholder consultation, discussions were held on the potential risks, costs, and benefits associated with the project. Project representatives emphasized the importance of ongoing communication between stakeholders and project representatives, allowing for continuous feedback and grievance reporting. The meeting included a question-and-answer session, and stakeholders were asked to fill out feedback forms at the end.

The agenda of the meeting is as follows,

1. Opening of the meeting.
2. Introduction.
3. Project explanation in non-technical terms, target areas, developer, key project information.
4. Discussion of the risks, costs, and benefits, as well as mitigation measures of the project.
5. Sustainability of the project, its potential impact, and monitoring strategies.

6. Group discussion (The Continuous Input Mechanism).
7. Feedback forms/Evaluation of the meeting.
8. Closing meeting.

The feedback from the Local Stakeholders and the overall response were found to be positive. There was no significant feedback, which contributed to changes in the project design.

Ongoing communication:

The yearly awareness initiatives seem effective in keeping the population informed about the project's progress, benefits, and impacts. The involvement of local leaders enhances the outreach and ensures that the message reaches the wider community. The integration of local leaders and district officials in the stove distribution process strengthens the project's implementation. Their role as intermediaries between the population and the project team is crucial for smooth operations and effective communication. Regular community meetings at the village level, where enumerators educate villagers on stove usage, indicate a well-structured approach to ensuring the community is informed and trained on the project's impact. The yearly requirement to report to REMA (Rwandan DNA) shows compliance with regulatory obligations, ensuring transparency and accountability. Making monitoring reports available on demand at the district office demonstrates transparency and provides stakeholders with the opportunity to stay informed about the project's progress.

Households' Representation:

The vertical structure of Rwandan society, where sector leaders, district officials, and various representatives (youth, women, religion) are involved, ensures that local populations are well-represented. The inclusion of various representatives in the LSC allows for diverse perspectives to be considered, ensuring that the project aligns with the needs and expectations of the local community. Village and cell leaders effectively relay information to local inhabitants, facilitating coordination and ensuring that households are adequately informed and involved in the project.

The ongoing communication with stakeholders and the representation of households within the project appear to be well-structured and effective. The involvement of local leaders and district officials ensures that the project is closely aligned with the needs of the community, while regular meetings and reporting practices promote transparency and accountability. The vertical organizational structure in Rwanda supports a clear flow of information and feedback between the project team and the local population.

Overall, the communication strategies and household representation mechanisms in place are robust, contributing to the project's successful implementation and sustainability. However, continuous monitoring and potential adjustments may be necessary to address any emerging challenges and ensure ongoing stakeholder engagement.

3.2.3 Environmental Impact

No negative environmental impacts are identified in the Project activity as it does not involve in any environmental degradation related activities.

3.2.4 Public Comments

This project was open for public comment from 22/08/2023 to 21/09/2023. There were no public comments received.

3.2.5 AFOLU-Specific Safeguards

This section is not applicable as the project is not an AFOLU project.

3.2.6 Title and Reference

The Project activity uses VCS methodology VMR0006 – “Methodology for Installation of High Efficiency Firewood Cookstoves” v1.2^{3/}, which is the latest version. In conjunction, it uses AMS II G “Energy efficiency measures in thermal applications of non-renewable biomass” v13.0^{4/} and its associated tools like Water Boiling Test Protocol 4.2.3^{9/}, CDM Guidelines: “Sampling and surveys of CDM project activities and programmes of activities” v4.0^{7/}, CDM TOOL 30 “Calculation of the Fraction of Non-Renewable Biomass” v4.0^{5/} and CDM Tool 33 “Default values for common parameters” v2.0^{6/}.

The Validation team confirms that the Project uses latest version of methodology and associated tools available at the time of Validation.

3.2.7 Applicability

The applicability criteria for the Project are assessed as per the guidelines specified in the VMR0006 v1.2^{3/} and are as follows,

As per the section 4 of the applied methodology (VMR0006 v1.2),

Applicability conditions	Project Justification	Validation opinion
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This methodology applies to project activities that introduce energy efficiency and fuel switch measures in thermal applications (including cookstoves, ovens, and dryers) that: 1) Increase thermal efficiency to reduce the consumption of non-renewable biomass; or 2) Switch from fossil fuel (coal or kerosene) to renewable biomass in new or existing improved thermal energy generation units	The project involves distribution of domestic fuel-efficient cookstoves to households, thus increasing thermal efficiency of cooking devices. The project does not expect switch from fossil fuel. (further conditions do not apply)	From the desk review, on-site visit and interview with the households, the validation team confirmed that the project activity aims at distribution of the cookstove for those households which are using three-stone stove in the baseline scenario thereby reducing the wood consumed for cooking. Thus, the applicability condition is satisfied.
This methodology is applicable to both 'Projects' and 'Large Projects' under the following conditions: 1) All applicability conditions of the latest version of AMS II.G. must be met. 2) The project activities must be implemented in households, community-based kitchens, institutions (e.g., schools), or small and medium-sized enterprises (SMEs).	1) See below in this table for eligibility conditions of AMS II.G. 2) The project activities are implemented in households.	1. The applicability conditions of the latest version of the AMS.II.G has been assessed in the below table. 2. The cookstoves are implemented in the households which was confirmed during the onsite observation.

For fuel switch activities, the following additional conditions must be met: 3) Projects must exclusively use renewable biomass and meet the following additional conditions: (a) If biomass residues are used, they have been left for decay or burned without energy recovery before the implementation of the project activity. (b) If biomass residues from a production process are used, the implementation of the project does not result in an increase of the processing capacity of raw input or any other substantial changes (e.g., product change) in this process. (c) If biomass from dedicated plantations is used, the applicability conditions of TOOL16 “Project and leakage emissions from biomass” must be satisfied. 2 Refer to EB 23 Annex 18 for definition of renewable biomass VMRO006, v1.2 6 4) The renewable biomass sources must be documented in the project description and monitoring periods, including origin, quantities, and pre-project conditions. If the biomass is sourced from a third-party, proof of purchase must be provided (e.g., contractual agreements or purchase receipts). 5) More than one type of biomass may be used (e.g., briquettes and wood chips).	The project does not involve any fuel switch activities. This condition is therefore not applicable.	The project activity is an installation of the cookstoves in the households, thus there is no involvement of any fuel switch activities.
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Also, all the applicability conditions of the latest version of AMS II.G. must be met.

As per section 2.2 of AMS II G, v13.0/4/,

Applicability conditions	Project Justification	Validation opinion
The methodology is applicable to the introduction of single pot or multi pot portable or in-situ	According to the manufacturer’s specifications, the stoves of the project:	From the desk review and on-site visits, the validation team confirms that the project stove is a single pot, in-situ type

cookstoves with rated efficiency of at least 25 per cent.	- are Single pot - are Fixed (in-situ) cookstoves - exclusively use woody biomass - have an initial thermal efficiency of 31.2 % the first year	cookstove and designed to use the woody biomass as cooking fuel. The validation team verified the cookstove testing certificate certified by CREEC/^{23/} by conducting WBT that the thermal efficiency of the project stove is 31.2 per cent i.e., greater than 25 per cent as per the applicability condition. Thus, the applicability condition is satisfied.
The aggregate energy savings of a single project activity shall not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input.	Specific fuel consumption of 0.032 MJ/(min.L) Baseline Energy consumption (MJ) = 100 000 (cookstoves) * 120 min (daily usage) * 365 (days) * 0.032 MJ/(min.L) = 1.4016 * 10⁸ MJ / (3.6 * 10⁶) < 40 GWh To conclude: Energy savings can't exceed baseline consumption, which is far from 180 GWh thermal per year.	From the justification provided by the PP, the validation team cross checked the specified values, and it is found to be correct. The aggregate energy savings of a single project activity do not exceed the equivalent of 60 GWh per year or 180 GWh thermal per year in fuel input. Thus, the applicability condition is satisfied.
Non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports, or statistics.	In Rwanda, there is a significant reliance on non-renewable biomass, primarily firewood, which accounts for a minimum of 86% of the country's energy consumption. Wood fuel is particularly essential in rural areas, where 98% of households depend on it as their primary cooking fuel. However, this high demand for biomass has resulted in the loss of approximately 64% of forests	The data from chapter IV of Rwanda State of Environment and Outlook/^{14/} report² is cross-checked by the validation team and the justification provided by the PP in the section 3.2 of the VCS PD (v6.0)/^{17/} is found to be accurate. Thus, the applicability condition is satisfied.

² <https://www.rema.gov.rw/soe/chap6.php>

	between 1960 and 2007, according to the Forest department's statistics. Moreover, Global Forest Watch reported a 7.6% reduction in tree cover, equivalent to 37.7kha lost between 2001 and 2020. Appendix 1 contains further information.	
For cases where the biomass is sourced from renewable sources, the project participants should use a corresponding Type I methodology.	Biomass is not sourced from renewable biomass sources. Calculation of fNRB, confirms this.	From the site visit and desk review of the fNRB calculation sheet/ ¹⁹ /, the validation team confirmed that the biomass is not sourced from renewable biomass sources. Thus, the applicability condition is satisfied.
The PDD shall explain the proposed method for distribution of project devices including the method to avoid double counting of emission reductions such as unique identifications of product and end-user locations (e.g., programme logo).	Each of the 100,000 improved cookstoves to be distributed will be identified through a unique ID. This ID, engraved on a metallic plate, will be fixed next to the stoves in the beneficiaries' kitchen. A Project database will list the stoves installed, their ID, precise location (coordinates), the beneficiary's name, address, contact and the distribution date. This will ensure that no double-counting occurs, and the project's environmental impact is accurately assessed.	From the on-site visit and interview with the PP and the implementation team, the validation team confirmed that each cookstove is identified with a unique ID and it is clamped on/ near the cookstove for physical identification. Also, the GPS data of each stove ID is recorded in the "Kobocollect" application along with the personal details like name, address, date of distribution and contact number which can be accessed anytime. Thus, the applicability condition is satisfied.

The PDD shall also explain how the proposed procedures prevent double counting of emission reductions, for example to avoid that project stove manufacturers, wholesale providers or others claim credit for emission reductions from the project devices	Kiasi Energies will ask each beneficiary to sign a Carbon Transfer Form, to ensure that the carbon rights are the property of Kiasi Energies. Furthermore, it has been made clear to the manufacturer that he would not be able to claim to carbon rights.	From the desk review of Carbon Transferred Form/^{20/} samples and on-site visit, the validation team confirmed that the beneficiaries agreed to transfer the complete carbon rights to the PP. The declaration is provided by the cookstove manufacturer for not claiming the carbon credits for the project activity. Also, the PP submitted a declaration/^{26/} for not claiming the carbon credits in any other GHG programs apart from the VCS standard. These documents are verified and accepted by the validation team. Thus, the applicability condition is satisfied.
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As per section 2.2 of Tool 30, v04.0/^{5/}

Applicability conditions	Project Justification	Validation opinion
This tool may be used by: (a) DNAs to submit region- or country-specific default f_{NRB} values, following the procedures for development, revision, clarification, and update of standardized baselines (SB procedures); or (b) project participants to calculate project- or PoA-specific f_{NRB} values.	We, as project developers, have used this tool to calculate the f_{NRB} for area of the project.	The detailed f_{NRB} calculation sheet/^{19/} is submitted to the VVB, and it is verified and accepted by the Validation team. Thus, the applicability condition is satisfied.

As per section 2.2 of Tool 33, v02.0/^{6/}

Applicability conditions	Project Justification	Validation opinion
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This tool shall be applied in conjunction with the methodologies which refer to this tool to source the default values to estimate the baseline emissions (e.g. from the use of diesel for off-grid power generation, from the use of kerosene for lighting, from the use of woody biomass for cooking).	The methodology VMR0006 v1.2, used for this project, stated CDM TOOL 33 as a source in section “1. Sources” p4.	As per the applied methodology VMR0006 v1.2/^{3/}, the usage of CDM Tool 33 is specified under the section 1 and thus the justification provided by the PP is accepted by the validation team. Thus, the applicability condition is satisfied.
The default values as contained in section 5 of this tool are valid up to 10 March 2025. Notwithstanding the provisions on the validity of new, revised, and previous versions of methodologies and methodological tools in the “Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools”, there will be no grace period for the application of this tool and the validity of the default values after this date, including in cases where further default values are added to this tool through revisions of this tool before this date.	This project started in May 2023, therefore during the period of validity of this TOOL33. The latest values will be used to estimate default parameters for monitoring.	The default value used from the latest version of the TOOL 33 i.e., v02.0/^{6/} is valid at the time of Validation. Thus, the applicability condition is satisfied.

Standard: Sampling and surveys for CDM project activities and programmes of activities Version 09.0

Applicability conditions	Project Justification	Validation opinion
This standard is applicable to CDM project participants, coordinating/managing entities and designated operational entities (DOEs).	Kiasi Energies is a project participant and a managing entity. We will use this standard during surveys sampling.	The CDM allows the project proponent to use the sampling standard. Thus, it is accepted to use the CDM sampling standard v9.0.

This document specifies the reliability requirements and describes appropriate sampling methods and what is expected to be provided in a sampling plan. The general requirements shall be applicable to both small-scale and large-scale CDM project activities and PoAs, with any requirements specified in the applied methodologies taking precedence. This document also provides sampling-related requirements pertaining to validation and verification, including the sampling approach to be undertaken by the validating/verifying DOEs. A definition of essential sampling terminology is contained in section 3 below.	This project is large scale. We will provide a sampling plan in the monitoring section.	The project is a large scale, as the PP will use sampling plan for the monitoring of the project activity. Thus it is accepted to use the sampling standard.
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The validation team conducted desk review and on-site interviews and conclude that the project activity satisfies all the applicability conditions specified in the applied methodology and tools i.e., VMR0006 v1.2, AMS II G v13.0, Tool 30 v04.0 and Tool 33 v02.0.

3.2.8 Project Boundary

As per the section 5 of applied methodology VMR0006 (v1.2)^{3/}, the project boundary must be determined by the procedures provided in the latest version of AMS II G (v13.0)^{4/}.

As per AMS II G v13.0, the project boundary is defined as the physical, geographical site of the efficient devices that utilize biomass. The project boundary is found to be Rusizi district of Rwanda. This is verified by conducting the on-site visit, interviews with the beneficiaries and by desk review of beneficiary agreement, local stakeholders feedback form and Photographic evidence provided by the PP.

The GHG Sources included or excluded in the project boundary are as follows,

Source		Gas	Included?	Justification/Explanation	Validation Opinion
Baseline	Emission from use of non-renewable biomass	CO ₂	Yes	Major Source	CO ₂ is the main source of emission from the woody biomass used for cooking purpose from the Baseline stoves.

Source	Gas	Included?	Justification/Explanation	Validation Opinion
	CH ₄	Yes	Major Source	Non- CO ₂ emissions are not significant compared to CO ₂ emissions.
	N ₂ O	Yes	Major Source	Non- CO ₂ emissions are not significant compared to CO ₂ emissions.
Project	CO ₂	Yes	Major Source	CO ₂ is the main source of emission from the woody biomass used for cooking purpose from the Baseline stoves.
	CH ₄	Yes	Major Source	Non- CO ₂ emissions are not significant compared to CO ₂ emissions.
	N ₂ O	Yes	Major Source	Non- CO ₂ emissions are not significant compared to CO ₂ emissions.

The project proponent has identified all possible GHG emissions occurring within the project boundary because of the implementation of the project. The PP has also depicted the same appropriately under section 3.3 of VCS PD v6.0^{17/}, following the criteria mentioned in VCS methodology VMR0006, v1.2^{3/}.

3.2.9 Baseline Scenario

The baseline scenario is the continuous usage of non-renewable biomass in the project boundary to meet the requirement of cooking needs, as provided by the project devices.

The baseline scenario is defined in the Project description and is verified by conducting site visit, interviews with the beneficiaries of the project and by reviewing the baseline survey results. The summary of the interview received by the validation team are as follows,

- The criteria for eligibility of households for the project activity is defined by the PP and is forwarded to the Cell office, which is a grass-root level government body which supports the initiative. The cell office communicates the criteria in a public meeting. The eligible households are requested to enrol themselves in the respective cell offices by providing the details. This data is shared with the PP.
- The basic criteria defined for the eligibility for the enrolment are – usage of three stone stoves, permanent resident of the project area, Lower income category, presence of separate kitchen, Willingness to use the stove, Willingness to coordinate during the construction of the stove by providing the bricks used for construction.
- The households were using traditional stoves like three-stone stoves prior to the Project activity.

- The common fuel used for cooking is wood.
- Wood is procured from the nearby forests / farms or sometimes it is purchased from the locally available shops.
- On an average the beneficiaries used to cook two/three meals per day.
- The average cooking time per meal is found to be 90 minutes to 120 minutes using the baseline stove.
- The information about the project activity is received by the beneficiaries from local community gatherings, radio announcements and by word-of-mouth.
- The beneficiary details such as name, contact number, ID proof, GPS coordinates, signature etc are gathered in the “Kobocollect” application. The consolidated data is collected and maintained by the PP and the Implementation team.

Baseline fuel:

The woodfuel consumption data for cooking purposes in the Rusizi district of Rwanda. The data, derived from the "Policy and Market Review for Modern Energy Cooking in Rwanda" (June 2021) and the Project's Kitchen Performance Tests (KPT), is essential for understanding the baseline energy use in the region. the woodfuel consumption data for cooking purposes in the Rusizi district of Rwanda. The data, derived from the "Policy and Market Review for Modern Energy Cooking in Rwanda" (June 2021) and the CASE Project's Kitchen Performance Tests (KPT), is essential for understanding the baseline energy use in the region. The study also highlights that charcoal is more expensive than firewood, which can often be collected for free, explaining its limited use in rural areas. Moreover, some households use a combination of charcoal and firewood, but firewood remains the dominant fuel source.

The Project conducted Kitchen Performance Tests (KPT) in Rusizi district from November 22nd to 25th, 2022, which provided specific data on woodfuel consumption. According to the KPT results, households in Rusizi district use an average of 3.6 tons of woodfuel per year for cooking purposes.

The data provided by the Project and the Policy and Market Review is valid and reliable for understanding the baseline woodfuel consumption in Rusizi district. The methodology used in the Kitchen Performance Tests is appropriate, and the results are consistent with broader regional trends. This validation confirms that the average household in Rusizi district consumes approximately 3.6 tons of woodfuel annually for cooking purposes. This data will be instrumental in guiding future interventions aimed at improving energy efficiency and reducing reliance on traditional biomass fuels in the region.

The project's design effectively prioritizes households cooking with 3-stone fires, which aligns well with its objective of replacing this traditional and inefficient cooking method. Given that the majority of Rusizi district households rely on firewood (approximately 95%), the project activity ensures high relevance and impact, particularly in reducing reliance on non-renewable biomass. Households with access to more advanced cooking solutions, such as gas or electric stoves (Level 4), are appropriately excluded from the project as they are unlikely to benefit from the intervention. This segmentation allows resources to be allocated where they are most needed, targeting those without access to clean or improved cooking technologies.

By focusing on households that exclusively use 3-stone fires and collecting baseline data on fuel use and stove type, the project establishes a strong foundation for measuring impact. This includes a Kitchen Performance Test (KPT) and annual surveys to monitor fuel usage and stove adoption. The continuous monitoring of fuel types used daily ensures that changes over time are effectively captured.

Households already using any improved cookstove (ICS) are excluded from this project, as they already benefit from some level of efficiency in cooking. This maintains a focus on households currently dependent on the least efficient options, maximizing potential for emissions reductions and fuel savings.

The baseline considered by the PP for the project activity is appropriate and is verified by the Validation team.

3.2.10 Additionality

The applied methodology VMR0006 v1.2/³/ uses activity method and project method to assess additionality. According to section 3.14.1 of VCS Standard v4.5/¹/, “The project shall demonstrate regulatory surplus at validation. Regulatory surplus means that project activities are not mandated by any law, statute, or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute, or other regulatory framework.”

Step 1: Regulatory Surplus

The Rwanda's Energy Sector Strategy Plan promotes the efficient technologies which reduce the usage of wood consumption by households. As per the above report (Rwanda's Energy Sector Strategy Plan)¹⁰, the main consumer of the country's biomass is the households. But there is no legal mandate from the host country for the distribution of improved cookstoves in the project boundary. The Project activity is a voluntary initiative taken by the PP and thus it satisfies the criteria specified by the methodology VMR0006 v1.2/³/.

Step 2: Positive List

As per the section 7, step 2 of VMR0006 v1.2/³/ methodology, in addition to the applicability criteria specified, the project should satisfy the following conditions to fall under positive list category,

- The project activity installs or distributes the project devices at zero cost to the end-user and has no other source of revenue other than carbon credits.
- The project activity is not implemented as part of a government scheme or supported by multilateral funds.

From the assessment of validation team, it was found that the cookstoves are distributed free of cost for the households and this is confirmed during the site visit, interviews with the PP and the interview with the cookstove beneficiaries. The Project activity is voluntary and not a part of any government schemes or supported by multinational funds.

Since the project activity satisfies the above conditions specified in the methodology, it falls under the category of positive list.

3.2.11 Quantification of GHG Emission Reductions and Removals

Section 8 of the methodology VMR0006 v1.2^{3/} provides the understanding about the GHG emission reductions. The assessment of the quantification methods for GHG emission reductions and removals generated by the project are as follows,

Baseline emissions

This methodology does not determine baseline emissions. It directly quantifies emission reductions based on the reduced consumption of non-renewable biomass or fossil fuels. The approach is the same as under AMS-II.G. As per the section 5.3, para 23 of AMS II G (v13.0)^{4/}, it is assumed that in the absence of the project activity, the baseline scenario would be the projected use of non-renewable biomass to meet similar thermal energy needs as those provided by the project devices.

Leakage Emissions

As per the section 8.3 of the applied methodology VMR0006 v1.2^{3/}, the projects must apply an adjustment factor to account for leakage related to the non-renewable woody biomass saved by the project activity. The procedures from the latest version of AMS-II. G (v13.0)^{4/} must be applied.

As per the section 5.4 of AMS II G (v13.0)^{4/}, net to gross adjustment factor of 0.95 to account for leakages is applied.

Project Emissions

This methodology quantifies emission reductions based on the reduced consumption of non-renewable biomass or fossil fuels. The approach for non-renewable biomass is the same as under AMS-II. G v13.0^{4/}.

Emission Reductions

As per the section 8.4 of applied methodology VMR0006 (v1.2)^{3/}, the project activities that are replacing baseline devices using non-renewable biomass must apply the equations of latest version of AMS-II.G. (except Equations 1, 2 and 3) to determine net GHG emission reductions.

Thus,

$$ER_y = \sum_i \sum_j B_{y,savings,i,j} \times N_{0,i,j} \times n_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times (EF_{wf,CO2} + EF_{wf,non\ CO2}) \times Adj_{LE} \times (1 - u_d)$$

Where,

ER_y = Emission reductions in year y (tCO_{2e})

$B_{y,savings,i,j}$ = Quantity of woody biomass that is saved per project device i and batch j in year y (tonnes).

$N_{0,i,j}$ = Number of project devices of type i and batch j commissioned (number)

$n_{y,i,j}$ = Proportion of commissioned project devices of type i and batch j ($N_{0,i,j}$) that remain operating in year y (fraction)

μ_y = Adjustment to account for any continued use of pre-project devices during the year y

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

$NCV_{biomass}$ = Net calorific value of the non-renewable woody biomass that is substituted or reduced (TJ/tonne)

EF_{wf,CO_2} = CO₂ emission factor for non-renewable woody biomass (tCO₂/TJ)

$EF_{wf,non-CO_2}$ = Non-CO₂ emission factor for non-renewable woody biomass (tCO₂e/TJ)

Adj_{LE} = Adjustment factor to account for leakage related to the non-renewable woody biomass saved by the project activity (fraction)

u_d = Uncertainty deduction for f_{nr} (%)

The value of $B_{y,savings,i,j}$ must be determined by applying the procedures and requirements of AMS-II.G v13.0.

The assessment of the individual parameters are as follows.

SI No	Parameter	Assessment by the Validation team															
1.	$\eta_{old,i,j}$	The efficiency of the pre-project devices being replaced by project devices. The default value of 0.15 for baseline stove is taken as per the guidelines from Data/parameter table 9 specified in the AMS II G (v13.0) ^{/4/} methodology (which refers to Tool 33 (v4.0) ^{/6/}).															
2.	$\eta_{new,i,y}$	Efficiency of the project device i and batch j. The value of the project stove during the first year is determined using the WBT test conducted by CREEC which is in accordance to requirements mentioned in Data/Parameter table 14 of AMS-II.G. version 13.0^{/4/}. The values of the parameter $\eta_{new,i,y}$ for the successive years are calculated as per the guidelines specified in para 37 (a) of AMS II G (v13.0)^{/4/}. The initial efficiency of the project stove is 31.2 per cent, as per the efficiency testing certificate issued by CREEC^{/23/} and the values of $\eta_{new,i,y}$ for the successive years are as follows, <table border="1"> <thead> <tr> <th>Year</th><th>Initial efficiency of the year</th><th>Final efficiency of the year</th></tr> </thead> <tbody> <tr> <td>1</td><td>31.20%</td><td>30.43%</td></tr> <tr> <td>2</td><td>30.42%</td><td>29.65%</td></tr> <tr> <td>3</td><td>29.65%</td><td>28.88%</td></tr> <tr> <td>4</td><td>28.87%</td><td>28.10%</td></tr> </tbody> </table>	Year	Initial efficiency of the year	Final efficiency of the year	1	31.20%	30.43%	2	30.42%	29.65%	3	29.65%	28.88%	4	28.87%	28.10%
Year	Initial efficiency of the year	Final efficiency of the year															
1	31.20%	30.43%															
2	30.42%	29.65%															
3	29.65%	28.88%															
4	28.87%	28.10%															

		<table> <tr> <td>5</td><td>28.10%</td><td>27.33%</td></tr> <tr> <td>6</td><td>27.32%</td><td>26.55%</td></tr> <tr> <td>7</td><td>26.55%</td><td>25.78%</td></tr> <tr> <td>8</td><td>25.77%</td><td>25.00%</td></tr> </table> The detailed calculation is submitted by the PP in the ER sheet/^{18/} and is verified and accepted by the Validation team.	5	28.10%	27.33%	6	27.32%	26.55%	7	26.55%	25.78%	8	25.77%	25.00%
5	28.10%	27.33%												
6	27.32%	26.55%												
7	26.55%	25.78%												
8	25.77%	25.00%												
3.	B _{old,i,j}	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate thermal energy equivalent to that provided by the project device type i and batch j (tons/year). It is calculated using the equation $B_{old,i,j} = \frac{B_{old,HH}}{N_{d,HH}}$												
4.	B _{old,HH}	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate thermal energy equivalent to that provided by the project devices (tons/household/year) The validation team has reviewed the baseline survey methodology and assumptions used in the Rusizi district project and confirms its adherence to recognized standards. The project employed the Kitchen Performance Test (KPT) v4.0, aligned with the Clean Cooking Alliance, to measure wood consumption across 120 households over a 3-day period. This involved weighing wood piles to derive daily and yearly fuelwood consumption averages, with outliers and households with atypically high beneficiary numbers excluded to ensure accuracy. This method aligns with the CDM's latest sampling guidelines, considering similar cooking conditions across all households, which use the three-stone fire method. Although only 100 samples were required, 120 were surveyed across various locations to ensure representation. The data, which was extrapolated for a longer than one year monitoring period under AMS-II.G v13.0 methodology, does not meet the 90/10 confidence threshold due to household variations. However, to address this, the project references established data from the Gold Standard certified "PoA GS5047 African Improved Cookstoves and Clean Water Program" in the nearby Nyungwe district which is accepted by AMS-II.G. v13.0. The validated specific fuel consumption (Pby) from this program, later updated in 2019 to 0.01031 t/day per household, which is 0.01031*365=3.76t of fuelwood/HH/year. By taking the conservative value of 3.6 r/HH/year, the project achieves an evidence- based, cautious baseline. The validation team concludes that the project's approach aligns with the AMS-II.G. and CDM standards, approving 3.6 t/HH/year as a reliable and conservative baseline for baseline for fuelwood consumption. According to Section 9.1 of VMR0006 v1.2, parameters determined through sampling must meet a 90% confidence level and 10% relative precision unless a												

		deviation is properly justified. Similarly, AMS-II.G. v13.0 allows for the use of data from other credible programs (e.g., Gold Standard projects) when local data does not meet these statistical criteria—provided that the external values are methodologically sound, appropriate for the context, and derived in accordance with approved CDM survey and sampling guidelines. The project-specific KPT survey conducted in Rusizi district involved 120 households and followed the KPT v4.0 protocol. However, the results did not meet the 90/10 confidence threshold due to high variability in household characteristics, including size, income, and cooking practices. As such, while informative, the results could not be relied upon as the sole basis for establishing Bold,HH. To address this, the PP referenced the most recent available data from GS PoA GS5047, a neighboring district project that employed the same baseline cooking technology (three-stone fires) and operated under similar socio-environmental conditions. Upon review, it is confirmed that the GS5047 project applied a KPT methodology in accordance with the most recent version of the CDM's "Standard for Sampling and Surveys for CDM project activities and PoAs." The sampling approach included stratification, randomized selection, and sufficient sample sizes to meet statistical thresholds. The KPTs conducted for GS5047 were validated by an accredited VVB and accepted by Gold Standard, with results demonstrating a 90% confidence level and a relative precision of $\leq 10\%$. This is documented in the 2019 monitoring report for GS5047. Furthermore, the survey covered diverse locations within Nyungwe district, ensuring representativeness, and relied on weighing methods as required by KPT v4.0. The specific fuelwood consumption reported from the GS5047 monitoring was 0.01031 t/day/HH, equivalent to 3.76 t/year/HH. Despite this, the PP adopted a more conservative value of 3.6 t/year/HH for this project. This decision reflects a cautious approach consistent with good practice and program expectations for conservativeness. Based on our reassessment, it is concluded that the referenced GS5047 data meets the 90/10 confidence requirement as stipulated in VMR0006 and was derived using a sampling methodology compliant with CDM guidelines. Its application to this project is appropriate, given the geographic proximity, technological similarity, and validated methodology. Therefore, the use of 3.6 t/year/HH as the $B_{old,HH}$ parameter is methodologically sound, conservative, and fully compliant with AMS-II.G. v13.0 and VMR0006 v1.2.
5.	$N_{d,HH}$	Number of project devices per household (number) Since one project stove is distributed (base is distributed and in-situ stove is constructed) per household, the value is taken as 1. This is confirmed by the validation team during the site visit and interviews with the beneficiaries.

6.	$B_{y,savings,i,j}$	The quantity of woody biomass that is saved per project device i and batch j in year y (tonnes). The value is calculated using the equation below (which is taken from AMS II G v13.0^{4/} as per the guidelines from applied methodology VMR0006 v1.2^{3/}), $B_{y,savings,i,j} = B_{old,i,j} * (1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}})$ Therefore, <table> <tr> <th>Year</th> <th>$B_{old,i,j} = B_{old,HH}$ (t/HH/year)</th> <th>$\eta_{old,i,j}$</th> <th>$\eta_{new,i,y}$</th> <th>$B_{y,savings,i,j}$ (t/HH/year)</th> </tr> <tr><td>1</td><td>3.6</td><td>0.15</td><td>31.20%</td><td>1.82</td></tr> <tr><td>2</td><td>3.6</td><td>0.15</td><td>30.42%</td><td>1.78</td></tr> <tr><td>3</td><td>3.6</td><td>0.15</td><td>29.65%</td><td>1.73</td></tr> <tr><td>4</td><td>3.6</td><td>0.15</td><td>28.87%</td><td>1.68</td></tr> <tr><td>5</td><td>3.6</td><td>0.15</td><td>28.10%</td><td>1.62</td></tr> <tr><td>6</td><td>3.6</td><td>0.15</td><td>27.32%</td><td>1.56</td></tr> <tr><td>7</td><td>3.6</td><td>0.15</td><td>26.55%</td><td>1.50</td></tr> <tr><td>8</td><td>3.6</td><td>0.15</td><td>25.77%</td><td>1.44</td></tr> </table>	Year	$B_{old,i,j} = B_{old,HH}$ (t/HH/year)	$\eta_{old,i,j}$	$\eta_{new,i,y}$	$B_{y,savings,i,j}$ (t/HH/year)	1	3.6	0.15	31.20%	1.82	2	3.6	0.15	30.42%	1.78	3	3.6	0.15	29.65%	1.73	4	3.6	0.15	28.87%	1.68	5	3.6	0.15	28.10%	1.62	6	3.6	0.15	27.32%	1.56	7	3.6	0.15	26.55%	1.50	8	3.6	0.15	25.77%	1.44
Year	$B_{old,i,j} = B_{old,HH}$ (t/HH/year)	$\eta_{old,i,j}$	$\eta_{new,i,y}$	$B_{y,savings,i,j}$ (t/HH/year)																																											
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7	3.6	0.15	26.55%	1.50																																											
8	3.6	0.15	25.77%	1.44																																											
7.	$N_{o,i,j}$	Number of project devices of type i and batch j commissioned. Each cookstove is considered as a batch and the number of batches will be equal to the total number of stoves distributed. Estimated distribution of the cookstoves are as follows, <table> <tr> <th>Year</th> <th>Number of stoves</th> </tr> <tr><td>1</td><td>25000</td></tr> <tr><td>2</td><td>50000</td></tr> <tr><td>3</td><td>75000</td></tr> <tr><td>4</td><td>100000</td></tr> <tr><td>5</td><td>100000</td></tr> <tr><td>6</td><td>100000</td></tr> <tr><td>7</td><td>100000</td></tr> </table>	Year	Number of stoves	1	25000	2	50000	3	75000	4	100000	5	100000	6	100000	7	100000																													
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8	100000							
9	75000							
10	50000							
8.	$n_{y,i,j}$	To determine the value, proportion of operational stoves obtained from the monitoring survey is multiplied by the total commissioned stoves. Annual loss of 5 per cent is considered for the calculation. However, the stoves are distributed recently and are operational, the value of parameter is considered as 1. The actual proportion of commissioned stoves will be assessed during the verification process. The damaged stoves will be replaced during the monitoring period after thorough inspection, and it will be replaced voluntarily at the end of technical lifetime of the stove i.e.,87 years. However, in case of any minor damages, the stove will be repaired.						
9.	μ_y	Adjustment to account for any continued use of pre-project devices during the year y. From the site-visit and interviews with the beneficiaries the validation team found that all the pre-project devices are decommissioned and thus, the value is taken as 1.						
10.	$f_{NRB,y}$	The value is calculated using Tool 30 (v4.0)^{5/} and is found to be 91.7%. Validation team cross-checked the sources and values used for calculation and is found to be correct. The detailed calculation of f_{NRB} is shown below.						
11.	$NCV_{biomass}$	Default value of 0.0156 TJ/tonne is taken as per the IPCC default for wood fuel. This value is fixed ex-ante. (Reference: Table 1.2 of 2006 IPCC³ Guidelines for National Greenhouse Gas Inventories https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf)^{8/}						
12.	$EF_{wf,CO2}$	Default value of 112 tCO₂/TJ is taken as per the IPCC default for wood fuel. This value is fixed ex-ante. (Reference: Table 1.4 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf)^{8/}						
13.	$EF_{wf,non-CO2}$	Default value of 9.46 tCO₂/TJ is taken as per the IPCC default for wood fuel. This value is fixed ex-ante.						

³ The latest publication of the IPCC data is 2019 refinement, in which there is no changes in the values used in the project activity, thus IPCC 2006 is sourced.

		(Reference: Table 2.5, Chapter 2, 2006 IPCC Guidelines for National Greenhouse Gas Inventories https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf) ^{8/}
14.	Adj _{LE}	The value is taken as 0.95 as per the section 5.4, para 41 of AMS II G v13.0 ^{4/} methodology.
15.	u _d	As per the section 9.1 of the applied methodology VMR0006 (v1.2) ^{3/} , if the f _{NRB} is calculated as per the Tool 30, the value of u _d should be taken as 26% or 0.26.

Calculation of f_{NRB}:

As per CDM Tool 30 (v4.0)^{5/} “Calculation of the fraction of non-renewable biomass”,

$$f_{NRB} = NRB / (NRB + RB)$$

where,

NRB = Quantity of non-renewable biomass consumed in the applicable area in the relevant period (tonnes)

RB = Quantity of renewable biomass that is available on a sustainable basis in the applicable area in the relevant period (tonnes)

$$NRB = H - RB,$$

where,

H = Total consumption of woody biomass in the applicable area in the relevant period (tonnes),

$$H = HW * N + CE + NE$$

where,

HW = Average consumption of wood fuel per household, including fuelwood and charcoal, in the applicable area in the relevant period (tonnes/household)

CE = Commercial woody biomass consumption for energy applications (e.g. commercial, industrial, or institutional uses of woody biomass in ovens, boilers etc.) that are extracted from forests or other land areas in the applicable area in the relevant period (tonnes)

NE = Commercial woody biomass consumption for non-energy applications (e.g. construction, furniture) that are extracted from forests or other land areas in the applicable area in the relevant period (tonnes)

N = Number of households consuming wood fuel within the applicable area in the relevant period (number) and,

$$RB = [MAI_{forest,i} * (F_{forest,i} - P_{forest,i})] + [MAI_{other,i} * (F_{other,i} - P_{other,i})]$$

where,

$MAI_{forest,i}$ = Mean Annual Increment of woody biomass growth per hectare in sub-category i of forest areas in the relevant period (tonnes/ha/year)

$F_{forest,i}$ = Extent of forest in sub-category i in the relevant period (ha)

$P_{forest,i}$ = Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest areas (in sub-category i) in the relevant period (ha)

$MAI_{other,i}$ = Mean Annual Increment of woody biomass growth per hectare in sub-category i of other land areas in the relevant period (tonnes/ha/year)

$F_{other,i}$ = Extent of other land in sub-category i in the relevant period (ha)

$P_{other,i}$ = Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within other land areas (in sub-category i) in the relevant period (ha)

Calculation,

Parameter	Calculation
HW	Calculated by the sum of wood consumption by the households and charcoal consumption by the household (this is obtained by charcoal consumption of household multiplied by the conversion factor of charcoal to wood) $HW = 1.92 \times 365/1000$ $HW = 0.70 \text{ t/yr/person}$
N	Calculated as population of project area divided by average number of people per household. $N = 14,000,000$
H	Calculated by the sum of fuel consumption for households and fuel consumption for other purpose. The fuel consumption of for households is calculated as the product of total households in the project area and the total fuel consumption per household. The detailed calculation is submitted by the PP in a separate excel sheet. $H = 10,215,100 \text{ t/year}$
CE+NE	Calculated as the total wood consumption of the project boundary in 2012 (recent data available), which is adjusted to the estimation for 2023. From this value, the household's fuel wood consumption is subtracted to get the wood consumption for commerce and public services. $CE+NE = 403,900 \text{ t/year}$

MAI _{forest,i}	Calculated as the product of proportion of natural forest area (from all types) and the average wood density of the trees in the region, which is equal to 2.3 t/ha/year
MAI _{other,i}	Calculated as the product of proportion of non-forest area (from all types) and the average wood density of the trees in the region, which is equal to 1.6 t/ha/year
F _{forest,i}	Calculated by subtracting the value of forest land from the total land and the value is found to be 1,30,850 ha
F _{other,i}	Calculated by subtracting the value of non-forest land from the total land and the value is found to be 593,844 ha
P _{forest,i}	The value is taken from the “State of protected and conserved areas report series no.1” and the value is found to be 3,400 ha
P _{other,i}	The value is taken from the “State of protected and conserved areas report series no.1” and the value is found to be 2,54,300 ha
RB	Calculated using the above equation as, $RB = \{2.3 \times (1,30,850 - 3400)\} + \{1.6 \times (593,844 - 2,54,300)\}$ $RB = 837,721 \text{ t/yr}$
NRB	Calculated as the difference between Total consumption of woody biomass in the applicable area in the relevant period and Quantity of renewable biomass that is available on a sustainable basis in the applicable area in the relevant period. $NRB = 10,215,100 - 837,721$ $NRB = 9,377,379 \text{ t/yr}$
fNRB	Calculated as fraction of Quantity of non-renewable biomass consumed in the applicable area in the relevant period to the total non-renewable biomass consumed in the applicable area. $fNRB = 9,377,379 / (9,377,379 + 837,721)$ $fNRB = 91.7\% \text{ or } 0.917.$

A detailed fNRB calculation sheet is submitted by the PP.

Assessment of fNRB as per Tool 30 v4.0

As per the para 6 of Tool 30,

“Project participants and DNAs may choose between the following two options to determine the value of fNRB:

(a) Use the default value as provided in TOOL33; 2 or

(b) Calculate fNRB by determining the share of renewable and non-renewable woody biomass in the total quantity of woody biomass consumption for the country/region or the project area (hereinafter referred as the applicable area) following the procedure and requirements in the paragraphs below. The project participants shall compare and analyse the calculated values against the values for fNRB reported in relevant scientific literature and justify any differences. This analysis shall be included in the appropriate section of the PDD.

Validation opinion:

- CDM default values for fNRB in Rwanda: 98%⁴
- New CDM values under proposal for fNRB in Rwanda: 59%⁵ (yet to be approved by CDM)
- FNRB in Rwanda at 98%. (*Source: Enea Consulting: Domestic biogas diffusion in Rwanda (2016) evaluates*)
- Value calculated: **91.7%** with an applied uncertainty of 26% (as per the applied methodology VMR0006 v1.2)

The calculated fNRB value is between the existing CDM default value and proposed CDM default value as mentioned above. Also, the uncertainty value of 26% is applied to the fNRB as per the applied methodology. Therefore, the fNRB value becomes $0.917 * (1 - 0.26) = 0.66$ or 66%, which is near to the proposed default fNRB value.

The fNRB is calculated by taking the national average. But the forest cover in the region of project boundary (Rusizi district) is more compared to that of Rwanda. The pictorial representation is shown below,

⁴ <https://cdm.unfccc.int/DNA/fNRB/index.html>

⁵ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20231012184345703/MP92_EA07_Information%20Note_fNRB%20values_collated.pdf

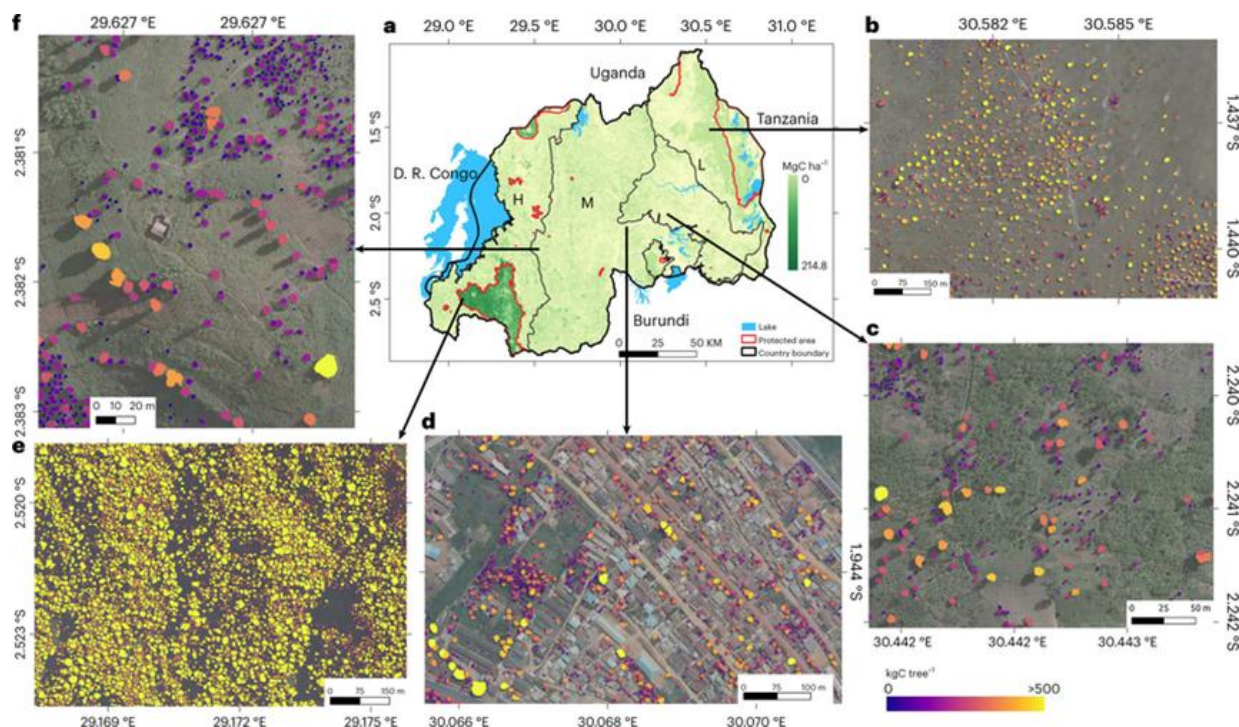


Figure: Repartition of forests area in Rwanda⁶

As shown in the figure, most of the remaining forests are in the Western Province, and specifically in Rusizi. Although afforestation happened in Rusizi, “Agricultural expansion is, by far, the leading land-use change in this Province associated with nearly all deforestation cases.” However, crops do not replace natural forests, according to the Rwanda Forest Cover Mapping issued by the government in November 2019⁷.

Although calculated nationally, the fNRB value is conservatively representative for Rusizi District for the following reasons:

- **Forest Cover:** Rusizi contains a significant proportion of Rwanda’s remaining natural forests. Over 57% of Rwanda’s tree cover loss since 2000 has occurred in the Western Province, where Rusizi is located. Most of the remaining forests are concentrated in this region.
- **Deforestation Rate:** The deforestation rate in Rusizi is higher than the national average, suggesting a higher rate of biomass extraction and degradation.
- **Protected Status:** The Rusizi Lake area is classified by the IUCN as a Category II protected area, indicative of valuable, vulnerable ecosystems under stress from unsustainable biomass use.
- **Rural Energy Dependence:** Rusizi is a rural district with a high dependency on woodfuel, often sourced unsustainably.

⁶ <https://www.researchgate.net/publication/366522014/figure/fig3/AS:11431281113658048@1674014051590/Aboveground-carbon-stocks-at-tree-level-in-Rwanda-a-Spatial-distribution-of-the.png>

⁷ https://www.environment.gov.rw/fileadmin/user_upload/Moe/Publications/Reports/Forest_cover_report_2019.pdf

- Population Pressure: High population growth in the region is likely to further increase demand on limited forest resources, reinforcing the conservative nature of the applied national fNRB value.

These region-specific factors justify the application of the national fNRB as conservative and potentially an underestimation of the true non-renewable share in Rusizi District.

As per the para 13 of Tool 30,

“If the fNRB value is estimated at the national level, as a cross check, project proponent shall compare the value of estimated NRB with the product of i) total average above ground biomass tonnage of the area of forest areas deforested in recent past (tonnes/ha), and ii) most recent available observed annual rate of deforestation (ha/year). If the estimated NRB value is more than 10% above the value calculated as per the product of biomass and deforestation rate, justification shall be provided for the higher value for NRB”.

Validation Opinion:

The values provided are:

- Estimated NRB (national): 9,377,379 t/year
- AGB: 146 t/ha
- Annual deforestation rate (national): 3,040 ha/year
- Benchmark NRB: $3,040 \text{ ha/year} \times 146 \text{ t/ha} = 443,840 \text{ t/year}$

The calculated NRB exceeds this benchmark by a significant margin (>10%). Justifications for the calculations, as documented in the PD, include:

- The cross-check benchmark captures only deforestation, whereas TOOL30 considers both deforestation and degradation. The value mentioned is significant in Rwanda, especially due to selective logging and fuelwood collection, which often does not register as forest loss.
- The subsistence-driven fuelwood consumption pattern in Rwanda is not fully reflected by deforestation data.
- According to “The Global Footprint of Traditional Woodfuels,” Rwanda is among the countries with the highest rates of non-renewable biomass use, particularly in rural districts like Rusizi.

The validation team confirms that the PP’s approach complies with the requirements of Paragraphs 6 and 13 of TOOL30 and has provided robust, evidence-based justifications for both the selected fNRB value and the NRB estimate.

The justification for the discrepancy stated above has been provided by the PP in the PD v6.0 which includes the explanations, highlighting that national NRB estimates do not fully reflect local conditions in Rusizi, where factors such as high biomass density, intense pressure on biomass resources due to firewood demand, and local climate impacts (e.g., droughts) contribute to the higher NRB. Additionally, population growth and potential data lag may lead to underestimations of current pressures on biomass,

supporting the need for higher NRB value in Rusizi. The provided justifications are in compliance with the TOOL 30 requirements and substantiate the calculated NRB variance.

The validation team has reviewed the fNRB calculation and its underlying assumptions as per Paragraph 6 of TOOL30 v4.0, specifically focusing on the application of the national-level fNRB value to the project activity implemented in Rusizi District. PP calculated an fNRB value of 91.7% at the national level for Rwanda, due to the lack of robust sub-national data. In accordance with the applied methodology VMR0006 v1.2, a 26% uncertainty deduction is conservatively applied to the value, resulting in an adjusted fNRB of 66%. This adjusted value aligns closely with the proposed CDM default (59%) and falls within the broader range of recognized literature values (e.g., CDM default of 98%).

The validation team finds that the justification for using the national fNRB value of 91.7% (adjusted to 66%) is both methodologically sound and conservative in the context of the Rusizi District. The calculation complies with the requirements of Paragraph 6 of TOOL30, and the supporting narrative appropriately reflects the specific conditions of the project region. Accordingly, the validation team concludes that the approach used for fNRB determination is compliant with TOOL30 v4.0 and the applied methodology, and that the application of the national fNRB value to the Rusizi District represents a conservative and justified approach for estimating emissions reductions.

Calculation of ER:

The ER is calculated using the formula specified above and the values are found to be as follows,

Year	Number of active stoves	$B_{y,savings,i,j}$ (t/HH/year)	Emission reductions (tCO ₂)
1	25,000	1.82	55,664
2	50,000	1.78	1,09,912
3	75000	1.73	1,62,670
4	100000	1.68	2,13,854
5	100000	1.62	2,07,712
6	100000	1.56	2,01,225
7	100000	1.50	1,94,364
8	75000	1.44	1,87,094
9	50000	0	1,37,573
10	25000	0	89,811
Total ERs (tCO ₂)			15,59,878
Annual estimated ER (tCO ₂)			1,55,987

The detailed calculation of ER is submitted by the PP in ER sheet/^{18/}. The values are verified by the validation team.

Stove maintenance and calculation method:

The project's approach to maintaining stoves and replacing them after their lifespan of 8 years, or in case of breakage, aligns with paragraph 39. The differentiation between replacing stoves (which resets the efficiency decrease) and repairing them (which continues the efficiency trajectory) is clearly stated. This method ensures that the efficiency calculations are adjusted accurately during each monitoring period based on the actual operational stoves. This demonstrates a robust mechanism to maintain the project's efficiency over time, complying with the requirements.

The project's stoves have been classified as Tier 5 ("Best") by the Rwanda Standard Board (RSB) under the ISO 19867-1 (2018) standard, which attests to their high durability. Additionally, the project has implemented a systematic approach for tracking stove repairs, including recording the date, type of repair, and personnel involved. This traceability is essential for monitoring and verifying that the stoves continue to meet the performance standards throughout their operational life, thereby complying with paragraph 40 of the methodology.

The project activity demonstrates compliance to the relevant standards and procedures required by AMS II.G. v13.0. The strategy for stove replacement, maintenance, and repair, coupled with the high durability rating and proper documentation process, supports the project's credibility and integrity. Based on the provided information, the project is well-positioned to meet the validation criteria under the specified methodology.

Conclusion:

The Validation team has assessed the values used in the PD (v6.0)/^{17/} and they are considered reasonable and to the context of the project. The list of documents reviewed and referred are listed in the Appendix 3 of this report.

The methodology and any referenced tools have been applied correctly to calculate baseline emissions, project emissions, leakage and net GHG emission reductions and removals.

3.2.12 Methodology Deviations

There is no methodology deviation applied to the project.

3.2.13 Monitoring Plan

As per the section 9 of VMR0006 methodology v1.2/^{3/}, the monitoring procedures of the latest version of AMS II G v13.0/¹⁴ is applicable.

The parameters which are available at the validation (ex-ante), and which are monitored (ex-post) are assessed as follows,

Parameters monitored available at the time of validation (ex-ante):

Data / Parameter	NCV _{biomass}
Data unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted or reduced
Source of data	Default value from IPCC
Value applied	0.0156 TJ/t
Justification by the PP	Default value from IPCC is used in methodology VMR0006 v1.2/ ^{3/} and AMS-II. G v13.0/ ^{4/} .
Validation Opinion	The validation team cross-checked chapter 1 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories/^{8/} (Table 1.2) and found that the value used is correct. Reference: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf

Data / Parameter	EF _{wf,CO2}
Data unit	tCO ₂ /TJ
Description	CO ₂ emission factor for the use of wood fuel in baseline scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
Value applied	112 tCO ₂ /TJ
Justification by the PP	Default as per applied approved methodology VMR0006, v1.2/ ^{3/}
Validation Opinion	The validation team cross-checked chapter 2 of 2006 IPCC Guidelines for National Greenhouse Gas Inventories/^{8/} Volume 2 Energy, Chapter 2 Stationary Combustion and found that the value used is correct. Reference: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf

Data / Parameter	EF _{wf,non-CO2}
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Data unit	tCO ₂ /TJ
Description	Non-CO ₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO ₂ /TJ)
Source of data	IPCC Default emissions factor
Value applied	9.46 tCO ₂ /TJ
Justification by the PP	Default as per applied approved methodology VMR0006, v1.2 ^{3/}
Validation Opinion	The validation team cross-checked chapter 2 of 2006 IPCC default for wood fuel and the value is . (Reference: Table 2.5, Chapter 2, 2006 IPCC Guidelines for National Greenhouse Gas Inventories https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf)

Data / Parameter	f _{NRB}
Data unit	Fraction
Description	Fraction of woody biomass that can be established as non- renewable biomass
Source of data	UNFCCC index for Fraction of non-renewable biomass
Value applied	91.7% or 0.917
Justification by the PP	Calculated with CDM TOOL 30. Appendix 1 of the PD provides comparison and analysis of calculated value as required by TOOL30 v4.0.
Validation Opinion	The value of f _{NRB} is calculated as per the latest version of Tool 30 (v4.0) ^{5/} and detailed calculation is submitted by the PP. The value is verified and accepted by the validation team.

Data / Parameter	$\eta_{old,i,j}$
Data unit	Fraction
Description	Efficiency of baseline cookstove

Source of data	Methodology default value
Value applied	0.15
Justification by the PP	A default value of 0.15 shall be used if baseline device is a three stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney.
Validation Opinion	The default value of 0.15 for baseline stove is taken as per the guidelines from Data/ parameter table 9 specified in the AMS II G (v13.0) ^{/4/} methodology (which refers to Tool 33 (v4.0) ^{/6/}). The value is verified and accepted by the validation team.

Data / Parameter	Adj _{LE}
Data unit	-
Description	Discount factor to account for leakage
Source of data	as per described in version AMS-II. G v13.0 chapter 5.4
Value applied	0.95
Justification by the PP	Default Value
Validation Opinion	The value considered is as per the section 5.4, para 41 of AMS II G v13.0 ^{/4/} and the value are verified and accepted by the validation team.

Data / Parameter	U _d
Data unit	percentage
Description	Uncertainty on f _{NRB}
Source of data	Estimated based on uncertainty requirements : The following uncertainty deduction must be applied, depending on the procedure for f _{NRB,y} used from AMS-II.G v13.0.: 1) If the default value for f _{NRB,y} from TOOL33 is applied: U _d = 0) If f _{NRB,y} is calculated as per TOOL30: U _d = 26% 3) If f _{NRB,y} from an approved standardized baseline is applied: U _d = 26%
Value applied	26%

Justification by the PP	$f_{NRB,y}$ was calculated with TOOL 30, therefore this uncertainty shall be applied.
Validation Opinion	As per the section 9.1 under parameter table of u_d , option 2 of applied methodology VMR0006 v1.2/ ^{3/} , the value of uncertainty deduction should be taken as 26% in case the f_{NRB} is calculated using Tool 30. The PP calculated the f_{NRB} using the latest version of Tool 30 i.e., v4.0/ ^{5/} and thus the applied value is correct and accepted by the validation team.

Data / Parameter	$B_{old,i,j}$
Data unit	tons/year
Description	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate thermal energy equivalent to that provided by the project device type i and batch j
Source of data	Calculated with equation 3 from $B_{old,HH}$ and $N_{d,HH}$
Value applied	3.6t/HH/year
Justification by the PP	The value is fixed ex ante for the entire crediting period.
Validation Opinion	This is calculated based on the values of $B_{old,HH}$ and $N_{d,HH}$. The value of $B_{old,HH}$ is calculated by conducting the baseline KPT survey and the value of $N_{d,HH}$ is found to be 1 as only one project stove is distributed and constructed per house. Thus, the value of $B_{old,i,j}$ is equal to $B_{old,HH}$ and is found to be 3.6t/HH/year. The validation team cross-checked the baseline KPT survey report/ ^{22/} for the value of $B_{old,HH}$. Through on-site visits and interviews with the households, the validation team confirmed that only one project device (stove base) is distributed and constructed per household. Thus, the value of $B_{old,i,j}$ is verified and accepted by the validation team.

Data / Parameter	$B_{old,HH}$
Data unit	tons/HH/year
Description	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate thermal energy equivalent to that provided by the project devices (tons/household/year)

Source of data	Baseline Survey of Local Usage as per option b. in section 8.4 of VMR0006 v1.2.
Value applied	3.6t/HH/year
Justification by the PP	This value was determined during the baseline survey through a Kitchen Performance Test (KPT v4.0 as defined by Clean Cooking Alliance) through the baseline survey.
Validation Opinion	The value of 3.6 tons per household per year has been derived from a baseline survey conducted in the Rusizi district. This survey was executed through a Kitchen Performance Test (KPT v4.0) as outlined by the Clean Cooking Alliance. The use of a well-recognized and established method like the KPT v4.0 adds credibility to the data collection process. The baseline survey was conducted on 120 households, which is a reasonable sample size for such studies, ensuring that the data is representative of the local usage patterns. The method followed aligns with option b. in section 8.4 of VMR0006 v1.2, demonstrating adherence to the relevant methodological guidelines. This is important to ensure the robustness and accuracy of the baseline data. The value of 3.6 tons/household/year for the parameter $B_{old,HH}$ is well justified and based on reliable data collected through a standardized and recognized testing method (KPT v4.0). The sample size and methodological adherence support the accuracy and relevance of this data. Therefore, the parameter can be validated as a robust input for calculating emission reductions over the crediting period. The fixed ex ante approach is also suitable, ensuring consistent and verifiable outcomes throughout the project's lifespan. The validation team cross-checked the baseline KPT survey report^{/22/} conducted by the PP, and it is confirmed by interviewing the households during the site visit where KPT is conducted. The value is found to be correct and accepted by the validation team.

Data / Parameter	$N_{d,HH}$
Data unit	Number
Description	Number of project devices per household
Source of data	Distribution database
Value applied	1

Justification by the PP	only 1 improved cookstove is distributed per HH
Validation Opinion	The validation team conducted on-site visits and interviews with the beneficiaries and found that only one project device (stove base) is distributed and constructed per household. Thus, the value is correct and accepted by the validation team.

Data and Parameters Monitored (ex-post):

Data / Parameter	$n_{y,i,j}$
Data unit	Number
Description	Proportion of commissioned project devices of type i and batch j ($N_{o,i,j}$) that remain operating in year y
Source of data	Monitoring surveys
Justification by the PP	Based on a representative sample. A simplified approach proposed in option (b) under Section 8.4 of the VMR0006 v1.2 methodology will be used for determining the minimum sample size.
Monitoring frequency	At least once in every two years
Values applied	1
Monitoring method	Annual monitoring questionnaire surveys (Kitchen Survey and Usage Survey)
Purpose of the data	Calculation of emission reductions
Calculation method	Proportion of operational stoves obtained from the survey is multiplied by the total commissioned stoves to arrive at this value
Validation Opinion	By cross-checking the cookstove distribution database/ ^{28/} and conducting interviews with the implementation team, the validation team found that target distribution of project device (stove base) is found to be 25000 stoves per year, and this will be consistently done for a span of 4 years. Also, the stoves are operational since the stoves are installed in the recent times and it was used by the households during the site visit.
Data / Parameter	$\eta_{new,i,j}$

Data unit	Fraction																		
Description	Efficiency of the device of each type i and batch j implemented as part of the project activity																		
Source of data	Certification by a national standards body or an appropriate certifying agent recognized by that body and calculated using linear decrease as requested by methodology VMR0006 v1.2.																		
Justification by the PP	Efficiency is calculated using linear decrease from the initial value of 31.2%, as requested by methodology AMS-II.G. v13.0 (37.) Independent stove efficiency test performed by the Centre for Research in Energy and Energy Conservation (CREEC) and from Rwanda Board of Standard to determine the initial efficiency of the stoves (31.2%) Calculation for the following years: as per AMS-II.G. v13.0 (37. Option (a)), $\eta_{new,i,j} = \eta_{new,i-1,j} - (\eta_{new,i,j}, y=0 - \eta_f)/(8-1)$ η_f is the efficiency required by the standard during the last day of the last year of the stoves' lifetime (25%) This method of calculation was also used to account for intra year decrease of efficiency. To be conservative, we will use the final efficiency of the year rather than an average to calculate emission reductions. Results are presented in Appendix 4.																		
Monitoring frequency	annual																		
Values applied	$\eta_{new,i,j} = 31.2\%$ (efficiency of the project device at the first year, as per the stove testing certificate) <table border="1"> <thead> <tr> <th>Year</th><th>$\eta_{new,i,j}$</th></tr> </thead> <tbody> <tr><td>1</td><td>30.43%</td></tr> <tr><td>2</td><td>29.65%</td></tr> <tr><td>3</td><td>28.88%</td></tr> <tr><td>4</td><td>28.10%</td></tr> <tr><td>5</td><td>27.33%</td></tr> <tr><td>6</td><td>26.55%</td></tr> <tr><td>7</td><td>25.78%</td></tr> <tr><td>8</td><td>25.00%</td></tr> </tbody> </table>	Year	$\eta_{new,i,j}$	1	30.43%	2	29.65%	3	28.88%	4	28.10%	5	27.33%	6	26.55%	7	25.78%	8	25.00%
Year	$\eta_{new,i,j}$																		
1	30.43%																		
2	29.65%																		
3	28.88%																		
4	28.10%																		
5	27.33%																		
6	26.55%																		
7	25.78%																		
8	25.00%																		
Monitoring method	WBT equipment: thermometer, pot																		
Purpose of the data	Calculation of emission reductions																		

Calculation method	As per AMS-II.G. v13.0 (37. Option (a)), $\eta_{new,i,j} = (\eta_{new,i,j}, y=0 - \eta_f)/(7-1)$
Validation Opinion	The efficiency of the project device at the first year of the project activity is verified by the validation team by cross-checking the WBT test certificate conducted by CREEC/ ^{23/} and also the WBT test certificate by RSB/ ^{24/} (for reference). The value is found to be 31.2 per cent(initially) and 30.43 per cent(at the end of the year) and the same value is considered for calculation. Further, for the successive years, the decrease in efficiency is calculated as per the guidelines specified in section 5.3, para 37(a) of the latest version of AMS II G (v13.0) ^{4/} and the values are correct and is accepted by the validation team.

Data / Parameter	μ_y
Data unit	Fraction
Description	Adjustment to account for any continued use of pre-project devices during the year y
Source of data	Monitoring
Justification by the PP	If equation 2 under option 3 (WBT) is used combined with direct measurement of Biomass (which has been done during the baseline surveys carried out), then μ_y may be assumed as 1.0. For subsequent years, the value of 1.0 may be applied, only if it can be demonstrated through either measurement campaign or questionnaire survey for a sample of households established according to the sampling standard that pre-project devices are not used in parallel with the project devices during the monitoring period. This is required even in cases where pre-project devices were demonstrated to be decommissioned ex-ante in order to ensure that such devices and alike have not been reintroduced.
Monitoring frequency	At least once every 2 years
Values applied	1
Monitoring method	Usage survey and kitchen survey
Purpose of the data	Calculation of emission reductions
Calculation method	-

Validation Opinion	From the on-site visit conducted by the validation team, it was observed that the pre-project devices were decommissioned after the distribution and construction of the project device. From the samples taken for the on-site interview as per the sampling guidelines of CDM, all the households were not using the pre-project device. Thus, the value of 1 is accepted by the validation team. However, as a part of monitoring, this parameter will be monitored by conducting a usage survey.
Data / Parameter	$N_{o,i,j}$
Data unit	Number
Description	Number of project devices of type i and batch j commissioned
Source of data	TDR: carbon transfer form will give the date of commissioning for each stove
Justification by the PP	-
Monitoring frequency	At least once every two years
Values applied	For ex-ante emission reduction calculation, it is assumed that the project will distribute: 25 000 stoves in year 1 25 000 stoves in year 2 25 000 stoves in year 3 25 000 stoves in year 4
Monitoring method	Database of the project activity
Purpose of the data	Calculation of emission reductions
Calculation method	Weekly number of CTFs collected. 1 Week = 1 batch. CTFs will give the exact number of stoves distributed per batch
Validation Opinion	A batch is defined by the PP as one week and 500 project devices (stove base) are targeted for distribution. The achieved number of cookstoves will be monitored by the PP until the target is achieved. From the site visit, the validation team found that an application called "Kobocollect" is used to register a household and it is automatically updated in the database. This database is used to monitor the parameter. The validation team checked the method of data collection along with the cookstove distribution database ^{28/} and confirmed the monitoring of the cookstove distribution. However, the exact number of cookstoves distributed will be verified during the successive verification process.

Data / Parameter	Life Span
Data unit	Years
Description	The operating lifetime of the project device
Source of data	Manufacturer specifications
Value applied	8
Justification by the PP	With maintenance, the life span of the stoves is 8 to 10 years, as per manufacturer specifications. To be conservative, we will consider the lifespan to be of 8 years. At the end of the lifespan or in case of breakage, the stoves will either be replaced by a new stove with exact same properties or will be replaced. Kiasi's project comply with paragraph 39 of the methodology AMS II.G. v13.0. As per the national standard RSB (Rwanda Standard Board), our stove is Tier 5 ("Best") in terms of durability. RSB test was carried out in accordance with norm ISO 19867-1 (2018). Additionally, the staff repairing a stove is required to keep trace by filling a form including date, reparation carried out, personnel name. Therefore, Kiasi's project comply with paragraph 40 of the methodology AMS II.G. v13.0.
Validation Opinion	The validation team verified the lifetime of the project device issued by the manufacturer and certified by the Rwanda Board of Standard. The specified value is found to be correct and accepted by the validation team.

Data / Parameter	$N_{d,HH}$
Data unit	Number
Description	Number of project devices per household
Source of data	Kitchen Performance Test and Usage surveys.
Value applied	1
Justification by the PP	Kiasi Energy will only distribute 1 stove per household. If a large family requires a second stove, Kiasi might add another identical cooking device, but only 1 unique ID number will be given to the HHs for the 2 stoves, to avoid double counting or false ERs accounting.

Validation Opinion	The validation team verified the method used for tracking the number of project devices. The combination of limiting devices to one per household, using unique IDs, and confirming annually through surveys ensures the accuracy and reliability of the data. While explicit QA/QC procedures are not listed, the measures taken to prevent double counting suggests a better approach to data integrity.
Data / Parameter	Date of Commissioning
Data unit	Date
Description	Date on which each stove distributed and installed was commissioned.
Source of data	TDR: carbon transfer form will give the date of commissioning for each stove, along with unique ID number, GPS coordinates, and beneficiary information
Value applied	For calculation, the exact date of commissioning will be used to evaluate ER. It will vary from one stove to another.
Justification by the PP	CTFs are dated from the date of installation of the ICS. Kiasi and RDIS hold a database that includes: - Each device distributed. - Indication to identify the stove: unique ID number, GPS coordinates. - The information of the beneficiaries: name, address, phone number when available This database will be referred to for evaluation of the precise number of devices commissioned. Additionally, please note CTFs are signed only when the stove is commissioned (1 week after installation to allow for the material to dry)
Validation Opinion	The method to record and manage the “date of commissioning” is robust and effective. The use of carbon transfer forms, combined with a comprehensive and regularly maintained database, ensures that the data is accurate, reliable and suitable for calculating emission reductions. The procedures in place provide confidence that the commissioning dates will be correctly recorded and used in the evaluation of the ER calculations.

The validation team assessed the monitoring parameters (ex-ante and ex-post) using standard audit techniques like desk review, site visit and interviews, and found that,

- The parameters considered are as per the applied methodology (VMR0006 v1.2)^{3/}
- The method used for the calculation/ monitoring of the parameters are in-line with the requirements of the applied methodology (VMR0006 v1.2)^{3/}

- The default values and calculated values are found to be correct and verified by the validation team.

Therefore, the validation team concludes that the monitoring plan is adhering to the requirements of the applied methodology and any referenced tools.

3.3 Non-Permanence Risk Analysis

This section is not applicable as the proposed project is a non- AFOLU project activity.

4 VALIDATION OPINION

Kiasi Energies contracted EPIC Sustainability Services Private Limited to undertake VCS validation for the project titled “Better cooking for a better health In Rusizi district - Rwanda” bearing VCS ID: 4585. This validation report provides the opinion of the validation team regarding the proposed project activity which undergone validation process as per the VCS standard v4.5/^{1/} and VCS Program Guide v4.3/^{2/}.

The project proponent has provided the supporting documents in addition to the PD v6.0/^{17/} which helped the validation team to execute an effective and impartial validation of the project activity. The project activity meets the applicability conditions set out in the applied methodology VMR0006 v1.2/^{3/} and applies the measures appropriately as specified in the PD v6.0/^{17/}. Additionality is demonstrated using activity method by following both Regulatory Surplus and Positive List criteria.

Kiasi Energies is the project proponent who has funded the entire project and has full ownership of the project and the carbon credits generated thereby. The other entities involved are Anchor Eco, RDIS and Cell offices (localised government bodies supporting the project activity). The project has a fixed crediting period of 10 years from 15/05/2023 to 14/05/2033.

The GHG statement is the responsibility of the project proponent that the project conforms with the validation criteria for projects set out in VCS standard v4.5/^{1/}, with reasonable level of assurance. The validation team has found that the data and information provided in support of GHG statement assertion were projected in nature. It is also confirmed that the project proponent has used reasonable assumptions during the estimation of baseline scenarios and the ex-ante parameters considered during the quantification of GHG emissions were justified and supports the estimated GHG emission reduction by the project activity. Thus, the project activity is likely to achieve the GHG statement assertion. It is hereby declared that the validation team conducted the validation of the GHG statement in accordance with ISO 14064-3; 2019, with reasonable level of assurance.

Validated GHG emission reductions and removals in the above period:

Year	Estimated GHG emission reductions or removals (tCO2e)
Year 1 (15/05/2023 to 14/05/2024)	55,663

Year 2 (15/05/2024 to 14/05/2025)	109,912
Year 3 (15/05/2025 to 14/05/2026)	162,669
Year 4 (15/05/2026 to 14/05/2027)	213,853
Year 5 (15/05/2027 to 14/05/2028)	207,711
Year 6 (15/05/2028 to 14/05/2029)	201,224
Year 7 (15/05/2029 to 14/05/2030)	194,363
Year 8 (15/05/2030 to 14/05/2031)	187,094
Year 9 (15/05/2031 to 14/05/2032)	137,572
Year 10 (15/05/2032 to 14/05/2033)	89,811
Total estimated ERs	1,559,878
Total number of crediting years	10 years
Average annual ERs	155,987

APPENDIX 1: VALIDATION FINDINGS

CL ID	01	Section no.	3.2.10	Date: 28/09/2023
Description of CAR				
In the step 1 of demonstration of additionality, it is stated that “the project is aligned with Rwanda's Energy Sector Strategy Plan, which aims to promote efficient technologies and reduce the reliance on firewood”. PP to clarify on the measures taken to ensure that the credits generated by the project activity are not claimed by any other national or international level GHG initiatives by the host country.				
Project participant response				Date: 25/10/2023
<i>Ongoing process. Non-objection letter to be obtained from REMA, the DNA authority. This request has been sent and should take a few weeks/months to obtain.</i>				
Documentation provided by project participant				
Declaration.pdf				
DOE assessment				Date: 05/11/2023
A declaration is submitted by the PP regarding non-claiming of the credits generated by the project in any GHG programs other than VCS. This is verified and accepted by the validation team and CL 01 is closed.				

CL ID	02	Section no.	-	Date: 28/09/2023
Description of CAR				
During the site visit it was found that the cookstove ID is engraved on a metal plate and it was clamped on the surface of the project stove. In some households, the plates were detached from the surface, and it was clamped on the wall. PP to clarify on how the cookstove IDs and beneficiaries are identified and monitored in the future.				
Project participant response				Date: 25/10/2023
<i>Even if the metal plate with the cookstove ID is initially clamped on the stove's surface, there is still an effective method for tracking and monitoring the households. This is achieved by recording GPS coordinates, beneficiary names, contact numbers, and location details (sector, cell, and village) in a comprehensive database. This data allows for accurate and reliable tracking of households and their cookstoves, even if the physical location of the metal plate changes, such as being detached and clamped on a wall. The database serves as a valuable resource for maintaining accountability in the identification and monitoring of beneficiaries.</i>				

Documentation provided by project participant	
N/A	
DOE assessment	Date: 05/11/2023
The validation team cross-verified the justification provided by the PP by checking the tool used to collect the above information from a beneficiary. “Kobocollect” application is used to collect the beneficiary data during the enrolling stage and the data is available on-line with the PP in the database. Since the GPS coordinates are recorded, the household can be identified in case the physical ID is not available. The justification is verified and accepted by the validation team and the CL 02 is closed.	

CAR ID	01	Section no.	3.2.7	Date: 28/09/2023
Description of CAR				
The applicability conditions specified in section 3.2 of the PD are pertaining to the previous version of applied methodology i.e, VMR0006, v1.1. PP to revise assessment of applicability condition as per the applied version of methodology i.e VMR0006, v1.2.				
Project participant response				Date: 25/10/2023
<i>There has been some confusion on the v1.1 and v1.2 of the VMR0006 methodology.</i> <i>In the new version of the PD, the applicability conditions analysis has been updated as per version v1.2 of the methodology VMR0006.</i>				
Documentation provided by project participant				
20231010_PDD_CookstoveProject_Kiasi_V3.0				
DOE assessment				Date: 05/11/2023
The revised PD complying with the applied version of methodology (VMR0006 v1.2) is submitted by the PP and is verified and accepted by the validation team. CAR 01 is closed.				

CAR ID	02	Section no.	3.1	Date: 28/09/2023
Description of CAR				
PP to include the information regarding the manufacturing of the cookstove such as the name of the manufacturer and place of manufacturing.				
Project participant response				Date: 25/10/2023

Name of the company: Muhanga Improved Local Technologies DS/SHYOGWE District: Muhanga Sector: Shyogwe Address: c/o The Anglican Church - Shyogwe Muhanga, Rwanda Information on the manufacturer, MILtec have been added to the PD v2.	
Documentation provided by project participant	
MILtec : MILtec_flier.pdf	
DOE assessment	Date: 05/11/2023
The detail of the manufacturer is added under section 1.11 of the revised PD and the document related to the manufacturer is submitted to the validation team. CAR 02 is closed.	

CAR ID	03	Section no.		Date: 28/09/2023
Description of CAR				
In section 4.4 of the PD, the loss rate of the cookstove is taken as 5%. However, the loss rate should be applied for the previous year, and not from the first year. PP to re-check and revise the number of operating cookstoves for the consecutive year by considering the reference from the number of stoves from the previous year.				
Project participant response				Date: 25/10/2023
Considered in the new ER calculation sheet, forwarded to EPIC alongside this document				
Documentation provided by project participant				
Cf document: Kiasi_ERCalculation_VCS4585				
DOE assessment				Date: 05/11/2023
The revised ER calculation sheet is submitted by the PP and is verified by the Validation team. CAR 03 is closed.				

CAR ID	04	Section no.		Date: 28/09/2023
Description of CAR				

In the section 4.4 of the PD, the equations used for the calculation of emission reduction should be as per the guidelines specified in the section 8.4 of the applied methodology VMR0006, v1.2.	
Project participant response	Date: 25/10/2023
<i>There has been some confusion on the v1.1 and v1.2 of the VMR0006 methodology.</i> <i>In the new version of the PD, the calculation for the ER has been updated as per version v1.2 of the methodology VMR0006.</i>	
Documentation provided by project participant	
20231010_PDD_CookstoveProject_Kiasi_V3.0	
DOE assessment	Date: 05/11/2023
The calculations are revised as per the guidelines from the latest version of the applied methodology VMR0006 v1.2 and are verified and accepted by the validation team. CAR 04 is closed.	

CAR ID	05	Section no.		Date: 28/09/2023
Description of CAR				
In section 5.1 of the PD, the table of the parameter NCV _{woodfuel} is incomplete. PP to complete the information.				
Project participant response				Date: 25/10/2023
<i>This has been updated in the newest version of the PD.</i>				
Documentation provided by project participant				
20231010_PDD_CookstoveProject_Kiasi_V3.0				
DOE assessment				Date: 05/11/2023
The information is updated in the revised PD submitted by the PP. The CAR 05 is closed.				

CAR ID	06	Section no.		Date: 28/09/2023
Description of CAR				
In section 5.1 of the PD, the value of fNRB is taken from a similar project. The value of fNRB should be calculated. PP to apply the relevant tool to calculate the fNRB value and update the same in the PD and ER calculation sheet.				

Project participant response	Date: 25/10/2023
According to the methodologies VMR0006 v1.2 and AMS-II. G v13.0, the fNRB should be calculated using the CDM Tool 30. This calculation has been done and considered in the new version of ER calculation.	
Documentation provided by project participant	
calculation of fNRB with the CDM Tool 30: 20231018_fNRB_CALCULATION_Rwanda	
DOE assessment	Date: 05/11/2023
Detailed fNRB calculation is submitted by the PP as per the requirements of the applied methodology VMR0006 v1.2 and is verified and accepted by the validation team. CAR 06 is closed.	

CAR ID	07	Section no.		Date: 28/09/2023
Description of CAR				
The equations used for calculation of emission reduction in section 4.4 of the PD are as per the methodology VMR0006 v1.1. However, the applied methodology is VMR0006 v1.2. PP to apply the equations from the applied version of the methodology and define the parameters accordingly.				
Project participant response				Date: 25/10/2023
There has been some confusion on the v1.1 and v1.2 of the VMR0006 methodology.				
In the new version of the PD, the calculation for the ER has been updated as per version v1.2 of the methodology VMR0006.				
Documentation provided by project participant				
20231010_PDD_CookstoveProject_Kiasi_V2				
DOE assessment				Date: 05/11/2023
The information is updated in the revised PD submitted by the PP. The CAR 07 is closed.				

CAR ID	08	Section no.	1.4	Date: 28/09/2023
Description of CAR				

From the on-site visit and desk review it was found that the WBT to determine the Thermal Efficiency of the Project stove is conducted by two different entities i.e,

- a) National quality Testing Laboratories Division, Rwanda Standards Board
- b) Centre for Research in Energy and Energy Conservation (CREEC)

PP to elaborate on how the WBT is conducted for an in-situ stove and provide justification for conducting the WBT test with two different bodies and add the details in section 1.11 of the PD.

Project participant response

Date: 25/10/2023

The Water Boiling Test (WBT) was conducted to determine the Thermal Efficiency of the Project stove. This test was performed by two different entities, because:

- a) **National Quality Testing Laboratories Division, Rwanda Standards Board (RSB-):** RSB-NQTL is a nationally recognized and accredited testing body responsible for ensuring quality and standards in Rwanda. Their participation in the WBT is mandatory to ensure compliance with national quality standards, providing an official stamp of approval for the project stove's performance.

However, this test was furnished by another developer, and dated from a couple of years back. We wanted to launch a new set of tests, in the project location (Rusizi) to back these results.

- b) **Centre for Research in Energy and Energy Conservation (CREEC):** CREEC's involvement in the WBT was driven by its specialized expertise in energy research and conservation. Their contribution adds an additional layer of technical evaluation, enhancing the overall assessment of the stove's thermal efficiency. CREEC's inclusion was initiated with the endorsement of Kiasi.

Documentation provided by project participant

WBT test reports from RBS and CREEC.

DOE assessment

Date: 05/11/2023

The PP submitted the WBT test reports by CREEC and RBS. The WBT test is conducted by RSB for approval purposes as the project boundary falls under the scope of RSB. However, for calculation purposes, the results obtained from the WBT conducted by CREEC are considered. The information is updated in the revised PD and is validated and accepted by the validation team. CAR 08 is closed.

CAR ID	09	Section no.	1.4	Date: 28/09/2023
Description of CAR				

PP to add the information on - The details of manufacturer of the cookstove - Supply chain of the cookstove In the section 1.11 of the PD	
Project participant response	Date: 25/10/2023
<i>The stove supply chain process involves:</i> <i>Stove Manufacturing: Stoves are manufactured based on batch requests, taking approximately three weeks to prepare.</i> <i>Counting and Verification of Stoves: The stoves are counted and verified to match the requested batch before transportation.</i> <i>Delivery of Stoves to the Cell Offices in Rusizi: Stoves are transported to the Rusizi project area and distributed to beneficiaries by field coordinators with the help of local leaders. Beneficiaries sign reception forms for tracking.</i> <i>Stove Installation: the installers are hired to fix the stoves in kitchens, and they are left to dry for four days before usage.</i> <i>Engraving the Unique ID in the Kitchen: A unique ID is affixed in the kitchen to prevent duplication and aid in household identification.</i> <i>Filling of CTFs: Once the stove is operational, the beneficiary signs a CTF, granting rights to carbon credits generated by the Canarumwe improved cook stove</i>	
Documentation provided by project participant	
20231010_PDD_CookstoveProject_Kiasi_V3.0	
DOE assessment	Date: 05/11/2023
The information about the cookstove manufacturer and supply chain is updated in section 1.11 of the PD and is validated and accepted by the validation team. CAR 09 is closed	

CAR ID	10	Section no.	3.1	Date: 28/09/2023
Description of CAR				
PP to revise the start date of the Project activity based on the actual usage of the Project stove and, PP to submit the respective Carbon Transfer Agreement of the first beneficiary as a proof for start date.				
Project participant response				Date: 25/10/2023

<i>Start date of the Project activity is considered as the 15/05/2023. It was corrected in the new version of the PD.</i> <i>First CTFs attached.</i>	
Documentation provided by project participant	
<i>First carbon transfer form signed on the 15th of May 2023, attached to the additional documents email.</i>	
DOE assessment	Date: 05/11/2023
The carbon transfer form of the first beneficiary is shared by the PP and the date is found to be 15/05/2023 and the information is updated in the revised version of PD. The CAR 10 is closed.	

CAR ID	11	Section no.	3.2.2	Date: 28/09/2023
Description of CAR				
From the site visit and interview with PP and Local Stakeholder Consultation attendees, it was found that only local representatives and leaders were the part of the LSC meeting. PP to elaborate on why the households were not included in the LSC meeting. Also, PP to add the information on the ongoing communication with Local Stakeholders as per the section 3.18 of the VCS Standard v4.5.				
Project participant response				Date: 25/10/2023
<i>The exclusion of households from the Local Stakeholder Consultation (LSC) meeting was a deliberate decision because local representatives effectively represent the community's interests and maintain regular communication with households. This approach streamlines decision-making and planning, and the LSC includes diverse representation from women, youth, church leaders, and local leaders, ensuring a broad spectrum of community perspectives are considered in the decision-making process.</i> <i>Furthermore, it's important to note that there is a regular weekly meeting held every Tuesday, where household members actively participate and receive information. This established communication channel allows for the direct engagement of households and ensures that their input and feedback are regularly considered.</i>				
Documentation provided by project participant				
<i>Document: CTFs of HH visited by auditor (1) -1.pdf</i>				

DOE assessment			Date: 05/11/2023	
The LSC was focused on those people who were representing the local communities and government bodies. The information about the project activity is communicated with the households through weekly meetings conducted by those communities. Also, the households are regularly interacted for feedback and grievances regarding the project activity. The justification provided by the PP is accepted by the validation team. CAR 11 is closed.				
CAR ID	12	Section no.	-	Date: 28/09/2023
Description of CAR				
PP to submit the beneficiary agreements of the households visited during the site visit.				
Project participant response			Date: 25/10/2023	
<i>Sent along with these findings</i>				
Documentation provided by project participant				
<i>Document: CTFs of HH visited by auditor (1) -1.pdf</i>				
DOE assessment			Date: 05/11/2023	
The Carbon Transfer Agreement of the interviewed beneficiaries is submitted by the PP. The CAR 12 is closed.				

FAR ID		Section no.		Date:
Description of FAR				
Project participant response			Date:	
Documentation provided by project participant				
DOE assessment			Date:	

APPENDIX 2: ABBREVIATIONS

Abbreviation	Expansion
VCS	Verified Carbon Standard
CDM	Clean Development Mechanism
UNFCCC	United Nations Framework Convention on Climate Change
IPCC	Intergovernmental Panel on Climate Change
GS	Sold Standard
GCC	Global Carbon Council
ICR	International Carbon Registry
ISO	International Statistical Organization
CREEC	Centre for Research in Energy and Energy Conservation
RDIS	Rural Development Interdiocesan Service
MILT	Muhanga Improved Local Technologies
BPS	Best Products and Services
DNA	Designated National Authority
SDG	Sustainable Development Goals
MoU	Memorandum of Understanding
GHG	Greenhouse Gases
ICS	Improved Cookstove
WBT	Water Boiling Test
PP	Project Proponent

PD	Project Description
ER	Emission Reductions
LSC	Local Stakeholder Consultation
SMEs	Small and Medium Enterprises
GPS	Global Positioning System
HH	Households
CO ₂	Carbon dioxide
CH ₄	Methane
N ₂ O	Nitrous oxide
MWh	Mega-watt hour
GWh	Giga-watt hour
MJ	Mega Joule
TJ	Tera Joule

APPENDIX 3: REFERENCES

SI No	Author	Document/ Title	Reference number in the report	Provider
1.	Verra	VCS Standard v4.5 https://verra.org/wp-content/uploads/2023/08/VCS-Standard-v4.5.pdf	1	Publicly Available
2.	Verra	VCS Program Guide v4.3 https://verra.org/wp-content/uploads/2022/12/VCS-Program-Guide-v4.3-FINAL.pdf	2	Publicly Available

3.	Verra	VCS Methodology VMR0006: “Methodology for Installation of High Efficiency Firewood Cookstoves”, Version 1.2 https://verra.org/methodologies/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/	3	Publicly Available
4.	CDM	CDM Methodology AMS II G: “Energy efficiency measures in thermal applications of non-renewable biomass” v13.0 https://cdm.unfccc.int/methodologies/DB/GNFWB3Y6GM4WPXFRR2SXKS9XR908IO	4	Publicly Available
5.	CDM	CDM Tool 30: Calculation of the fraction of non-renewable biomass v4.0 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v1.pdf/history_view	5	Publicly Available
6.	CDM	CDM Tool 33: Default values for common parameters v2.0 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-33-v1.pdf/history_view	6	Publicly Available
7.	CDM	CDM Sampling guidelines “Sampling and surveys for CDM project activities and programs of activities” v4.0 https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf	7	Publicly Available
8.	IPCC	2006 IPCC Guidelines for National Greenhouse Gas Inventories https://www.ipcc-nggip.iges.or.jp/public/2006gl/	8	Publicly Available

9.	Clean cooking Alliance	WBT 4.2.3 protocol https://cleancooking.org/binary-data/DOCUMENT/file/000/000/399-1.pdf	9	Publicly Available
10.	Ministry of Infrastructure	Rwanda's Energy Sector Strategy Plan https://www.reg.rw/fileadmin/user_upload/Final_ESSP.pdf	10	Publicly Available
11.	Ministry of Energy	Rwanda Energy Policy https://www.reg.rw/fileadmin/user_upload/Rwanda_energy_policy-21612.pdf	11	Publicly Available
12.	EUEI	Rwanda's Biomass Energy Strategy https://cleancooking.org/wp-content/uploads/2021/07/35-1.pdf	12	Publicly Available
13.	FAO	7-Years Government Programme: National Strategy for Transformation (NST1) 2017 – 2024 https://www.fao.org/faolex/results/details/en/c/LEX-FAOC206814/#:~:text=The%20National%20Strategy%20for%20Transformation,social%20transformation%20and%20transformational%20governance.	13	Publicly Available
14.	REMA	Rwanda State of Environment and Outlook report https://www.rema.gov.rw/soe/chap6.php	14	Publicly Available
15.	Verra	VCS PD Template v4.2	15	Publicly Available
16.	PP	VCS PD v1.0 (initial PD)	16	PP
17.	PP	VCS PD v6.0 (final PD)	17	PP
18.	PP	ER calculation sheet	18	PP
19.	PP	fNRB calculation sheet	19	PP
20.	PP	Carbon Transfer Forms (Beneficiary agreements)	20	PP
21.	MILT and BPS	Cookstove Specifications	21	PP

22.	PP	Baseline KPT report	22	PP
23.	CREEC	WBT test results by CREEC	23	PP
24.	RSB	WBT test results by RSB	24	PP
25.	PP	LSC meeting report	25	PP
26.	PP	Declaration of PP on double counting	26	PP
27.	MILT and BPS	Declaration from stove base manufacturer for scope 3 emissions	27	PP
28.	PP	Cookstove distribution database	28	PP
29.	UNFCCC	Standard: Sampling and surveys for CDM project activities and programmes of activities v09.0	29	Publicly available