



COMMUNITY CARBON EFFICIENT COOKING PROGRAMME – TANZANIA - 1



Project title	Community Carbon Efficient Cooking Programme - Tanzania-1
Project ID	2676
Monitoring period	01-November-2023 to 31-October-2024
Original date of issue	10-March-2025
Most recent date of issue	30-January-2026
Version	6.0
VCS Standard Version	4.7
Prepared by	Community Carbon

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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

A summary description of the technologies/ measures to be implemented by the project.

The project activity involves promotion and distribution of improved cooking stoves (ICS) in Tanzania. The purpose of the project is to support clean cooking interventions that moves end-user to reduce greenhouse gas (GHG) emissions from the burning of non-renewable charcoal for cooking in Tanzania.

Through this project, the distribution and installation of approximately 425,000 operational ICS will be undertaken for households in Tanzania during crediting period. The annual average emission reductions are estimated to be 975,864 tCO₂e and over a 7-years period of are approximately 6,831,045 tCO₂e.

The end user will sign or be informed about carbon credit waiver with the help of sales receipt cum warranty information in advance that the use of ICS generates carbon finance which in turn is used for subsidizing the price of ICS and for recovering project implementation costs.

All the carbon credits generated by the project “Community Carbon Efficient Cooking Programme - Tanzania-1” will be owned by Community Carbon.

In this grouped project, each ICS constitutes a single project activity instance which is in line with the definition stated in VCS Program Definitions version 4.5.

The relevant implementation dates (e.g., dates of construction, commissioning, and continued operation periods).

Installation of ICS

Date of first ICS installed	22-April-2022
No. of ICS Distributed (till 31 October, 2024)	224,789

Project Developers/Proponent: -

Community Carbon	Project Proponent
UpEnergy Group	Consultant
Sayari Safi Limited (local entity)	Consultant

Location of the project

The project activity will be implemented in Tanzania. The details of the project location are provided in Section 1.8.

The ICS will substitute the currently common cooking on inefficient traditional charcoal stoves. The ICS burns fuel more efficiently thereby improving thermal transfer to pots, hence saving fuel and lowering greenhouse gas emissions

Scenario existing prior to the implementation of project activity

Prior to the implementation of the project activity the existing scenario recorded is the use of traditional cookstoves and the use of non-renewable biomass by the target population to meet similar thermal energy needs and which also cause indoor air pollution (IAP) in absence of project activity.

An explanation of how the project is expected to generate GHG emission reductions or removals

The project activity will distribute improved cookstoves in the project area to support low-income households. The ICS will substitute the currently common cooking on open fire. The ICS burns wood more efficiently thereby improving thermal transfer to pots, hence saving fuel and lowering greenhouse gas emissions.

A brief description of the project activity instances implemented at the time of validation.

The first project activity was implemented on 22-April-2022 under this grouped project activity. 224,789 project activity instances (ICS) as a part of project activity have been implemented till 31-October-2024.

Total emission reductions achieved in this monitoring period:

During the Current Monitoring Period from 01-November-2023 to 31-October-2024 (First and last date included) the project activity has contributed 425,316 tCO_{2e} GHG reductions.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation/verification	22-April-2022 to 31-August-2022	Verified Carbon Standard (VCS) /Sustainable Development Verified Impact Standard (SDVista)	Carbon Check (India) Private Ltd.	0.3 year

Verification	01-September-2022 to 31-October-2023	Verified Carbon Standard (VCS) /Sustainable Development Verified Impact Standard (SDVista)	Earthood Services Private Limited	1.17 years
Verification	01-November-2023 to 31-October-2024	Verified Carbon Standard (VCS) /Sustainable Development Verified Impact Standard (SDVista)	SustainCert	1 year

1.3 Sectoral Scope and Project Type

Sectoral scope ¹	03 Energy Demand	
Project activity type	Type II Energy Efficiency Improved cookstoves Projects	

The project is a grouped project.

1.4 Project Proponent

Organization name	Community Carbon
Contact person	Kristian Ragnar Burning
Title	Director
Address	Port Louis, Mauritius
Telephone	-
Email	anantha@communityco2.org

1.5 Other Entities Involved in the Project

Organization name	UpEnergy Group
Role in the project	Consultant

¹ Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

Contact person	Anantha Karthik Rajagoplan
Title	Vice President of Carbon Programme
Address	19 Cybercity, 10th Floor, Raffles Tower Ebene, Mauritius
Telephone	-
Email	anantha@upenergygroup.com

Organization name	Sayari Safi Limited
Role in the project	Consultant
Contact person	Rehema Mbalamwezi
Title	Country Director
Address	P.O. Box 32619 Dar es salaam, Tanzania
Telephone	-
Email	rehema@upenergygroup.com

1.6 Project Start Date

Project start date	22-April-2022
Justification	The earliest date of commissioning date of a batch distributed for first project activity instance.

1.7 Project Crediting Period

Crediting period	☒ Seven years, twice renewable ☐ Ten years, fixed ☐ Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)
Start and end date of first or fixed crediting period	22-April-2022 to 21-April-2029

1.8 Project Location

The geographical boundary for projects located in Tanzania is delineated in the form of extreme geographic coordinates² of Tanzania as follows:

Latitude – 6°22'8.5" S (6.369° S)

Longitude – 34°53'19.8" E (34.8888° E)



Tanzania Map³

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	VM0050	VM0050 Energy Efficiency and Fuel-Switch Measures in Cookstoves, v1.0	1.0 ⁴

² <https://www.geodatos.net/en/coordinates/tanzania> (last accessed on 10-March-2025)

³ <https://dhsprogram.com/pubs/pdf/MIS31/MIS31.pdf> (last accessed on 10-March-2025)

⁴ <https://verra.org/wp-content/uploads/2024/10/VM0050-EE-and-Fuel-Switch-Measures-in-Cookstoves-v1.0.pdf> (last accessed on 10-March-2025)

Corrections & Clarifications	-	Correction and Clarifications to VM0050 Energy Efficiency and Fuel-Switch Measures in Cookstoves, v1.0	1.0 ⁵
Tool	Tool 30	TOOL 30 Calculation of the fraction of non-renewable biomass EB 108 Annex 11 v4.0	4.0 ⁶
Guideline	-	Sampling and surveys for CDM project activities and programmes of activities	9.0 ⁷
Tool	Tool VT0008	Tool VT0008 Additionality Assessment	1.0 ⁸

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

⁵ https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf (last accessed on 10-March-2025)

⁶ <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-30-v4.0.pdf> (last accessed on 10-March-2025)

⁷ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf (last accessed on 10-March-2025)

⁸ <https://verra.org/wp-content/uploads/2024/10/VT0008-Additionality-Assessment-v1.0.pdf> (last accessed on 10-March-2025)

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

Has the project proponent(s) or authorized representative posted a public statement on their website saying, "Carbon credits may be issued through the Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities]."

☐ Yes ☒ No

1.12 Sustainable Development Contributions

Project's contribution to Sustainable Development:

The contributions of proposed project activity towards sustainable development including the contributions to the nationally stated sustainable development priorities as per the updated NDC 2021⁹ are explained with indicators viz. social, economic, environmental, technological well-being, legislative and temporal as follows:

Environmental well-being:

- The project will help significantly reduce greenhouse gas emissions over its lifetime; this contributes to the nationally determined emission reduction target of 30-35% reduction on national BAU emissions by 2030.
- The project will help reduce the use of non-renewable biomass from forests, thus assist

⁹ https://unfccc.int/sites/default/files/NDC/2022-06/TANZANIA_NDC_SUBMISSION_30%20JULY%202021.pdf

in conserving existing forest stock and the protection of natural forest eco-systems and wildlife habitats. This contributes to the nationally determined contribution “enhancing participatory sustainable forest and wildlife management and protection”.

Social well-being:

- Considerably less time need to be spent collecting fuel for the family home thereby reducing the work burden on rural families and presenting alternative opportunities for economic development. This contributes to the nationally determined contributions “promoting measures to address negative impacts of climate change on young people, women, old and other groups facing inequality, including people with disabilities” and “enhancing gender equity in climate change adaptation actions”.
- The amount of indoor pollutants from the burning of biomass in the family home will be reduced. Less carbon dioxide, carbon monoxide and particulates will be emitted due to the decrease in total biomass burned and an increase in the temperature of combustion.
- The stove provides a safer method for combusting biomass for cooking, helping to reduce burn injuries, especially for children, in the family home.

Economic well-being:

- The project will help develop a section of the local economy, in the distribution, local assembly, maintenance and monitoring activities.
- Household expenditures on cooking fuel will be reduced through the use of the ICS.
- Saved household labor can be diverted to more productive economic activities.
- The project will create local employment opportunities in operational and management roles, as well as future assembly and/or manufacturing initiatives.

Technological well-being:

The project will promote improved cook stoves that result in reduced fuel consumption and emissions due to cooking and heating water in homes.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	1.1	Average savings realized due to decrease in expenditure on basic service such as cooking	Implemented activities to increase	The distribution of energy efficient stoves helped save \$0.36 per day per household during this monitoring period.	The distribution of energy efficient stoves help save \$0.36 per day per household for the given project activity.

3)	5.1	% of Female employees	Implemented activities to increase	This project activity promotes employment to women, thus helps eradicating gender-based discrimination and provides socio-economic parity. 68% of the total employees working as a part of the project activity are females. <table><tr><td>Female</td><td>58</td></tr><tr><td>Male</td><td>27</td></tr><tr><td>Total</td><td>85</td></tr></table> In Community Carbon, 182 days maternity leave has been provided to female employee. During current monitoring period, the employee list & Maternity policy is hereby submitting along with this submission to the assessment team.	Female	58	Male	27	Total	85	60% of the total employees working as a part of the project activity are females. 182 days maternity leave as per the Community Carbon Policy provided to female employee.
Female	58										
Male	27										
Total	85										

4)	5.4	Average time saving associated with cooking time	Implemented activities to increase	Contribute to reducing drudgery and reducing gender inequality, especially for women and children by saving time spent in cooking. The women can use the time saved for doing more productive activities or personal care. To collect information, the Monitoring Survey includes question related to that topic: Baseline Survey & Monitoring Survey- Approx 1.60 hrs/household/day cooking time has been saved from the project activity. The supporting evidence is hereby submitting along with this submission to the assessment team.	Approx 1.72 hrs/household/day cooking time has been saved from the project activity. The primary fuel collectors/cooks in households receiving improved cookstoves under the project activity are expected to report reduction time spent in cooking activities, thereby freeing up time for more productive activities during crediting period.
5)	5.5	Proportion of women serving in managerial/ leadership /ownership role	Implemented activities to increase	This project activity encourages participation of women in leadership / managerial role. 8 out of the 12 individuals (66.7%) operating at managerial positions for the given project activity are women. The Supporting evidence for the same is hereby submitting along with this submission to the assessment team	Approx 62% individuals operating at managerial positions for the given project activity are women in the project activity's lifetime.
6)	7.1	Number of households having access to improved cooking technology due to project activity	Implemented activities to increase	Increasing access to clean cooking technology by distributing a set of project stoves in 202,310 households.	Increase access to clean cooking technology with project stoves installations in 343,663 households under the project over its lifetime.

7)	8.5	Number of jobs created	Implemented activities to increase	A total of 25 new individuals were directly and indirectly employed under the project activity during the current monitoring period in Country for various activities related to project implementation, maintenance, and monitoring. A total of 85 employees were employed under project activity for current monitoring period. The Supporting evidence (employee list) is hereby submitting along with this submission to the assessment team.	285 direct and indirect jobs for marketing / sales and distribution / technical employees have been created due to this project activity during the crediting period. Contribute to generation of employment in informal sector by contracting locals with a target 10 employment for varying lengths of time over the project lifetime with a focus on hiring females.
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8)	8.b	Number of Trainings conducted in a year	Implemented activities to increase	The project activity provides training and skill development program for youth population, thus increasing their employability. A total of 7 trainings were held for the employees as a part of this monitoring period. <table><tr><th>Training Name</th><th>Date of Training</th></tr><tr><td>All Staff training</td><td>19-July-2024</td></tr><tr><td>Distribution Agents training</td><td>13-May-2024</td></tr><tr><td>End-User meeting</td><td>3-February-2024</td></tr><tr><td>Leadership training</td><td>30-August-2024</td></tr><tr><td>Monitoring training MP3</td><td>20-November-2024</td></tr><tr><td>Pilot Refresher's training</td><td>24-September-2024</td></tr><tr><td>Product training</td><td>6-August-2024</td></tr></table> The Supporting evidence (training photograph/attendance sheet) is hereby submitting along with this submission to the assessment team.	Training Name	Date of Training	All Staff training	19-July-2024	Distribution Agents training	13-May-2024	End-User meeting	3-February-2024	Leadership training	30-August-2024	Monitoring training MP3	20-November-2024	Pilot Refresher's training	24-September-2024	Product training	6-August-2024	Contribute to increasing vocational and relevant skills of local individuals (with a focus on targeting women and youth) by providing non-formal education and training on issues related to climate change, with specific skill building in operations and surveying activities related to stove distribution and its monitoring under VCS. A total of 12 trainings were held for the employees over the project lifetime.
Training Name	Date of Training																				
All Staff training	19-July-2024																				
Distribution Agents training	13-May-2024																				
End-User meeting	3-February-2024																				
Leadership training	30-August-2024																				
Monitoring training MP3	20-November-2024																				
Pilot Refresher's training	24-September-2024																				
Product training	6-August-2024																				
9)	12.2	Decrease in specific fuel consumption	Implemented activities to decrease	Project activity reduced the consumption of non-renewable biomass by 2.27 tonnes of eq. firewood/household/annum in the project area during the monitoring period.	Reduce the consumption of non-renewable biomass in participant households by 2 tonnes of eq. firewood/household/annum over the project lifetime.																

10)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	Total emission reduction in the current monitoring period is 425,316 tCO₂eq. Please refer ER Sheet for the cross check.	Total emission reduction over project lifetime is 639,149 tCO ₂ eq.
11)	15.1	Amount of Non-renewable biomass saved	Implemented activities to increase	The project has resulted of non-renewable biomass per annum leading to total savings of ~459,153 tons of biomass from 202,310 ICS installation. Please refer SDG sheet for reference.	Contribute a reduction of deforestation of 723,155 tons of biomass, during the project lifetime from forests surrounding the communities and reducing pressure on forest reserves.

1.13 Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder's make up has not changed since validation, nor new set of stakeholders were identified in the current monitoring period. The Project Proponent identified the primary stakeholders as individuals or groups that are potentially affected by the project. Also, these stakeholders were evaluated based on how deeply affected they may be by the Project, and those most impacted have been included in the stakeholder engagement. The Stakeholder Consultation meeting was held on 22-April-2022 with the participation of different stakeholder categories. There were 39 participants from various categories participated in the LSC meeting.

Stakeholder Identification	The Project Proponent identified the primary stakeholders as individuals or groups that are potentially affected by the project. Also, these stakeholders were evaluated based on how deeply affected they may be by the Project, and those most impacted have been included in the stakeholder engagement. Stakeholders can be defined as: Direct Stakeholders- these are group of people who are directly impacted by the project, such as end users, ICS manufacturers, training personnel, etc. Indirect Stakeholders- group of people who are indirectly involved such as women self- help groups etc.
Legal or customary tenure/access rights	The project activity involves distributing improved cookstoves to individual households in rural and semi-urban areas across various regions in Tanzania. It does not impact any legal or customary tenure/access rights. The target end users are the

	rightful owners of the improved cookstoves. A standard distribution carbon agreement will be provided to each household, specifying that the project participant (PP) retains ownership of the emission reductions generated by the improved stoves.
Stakeholder diversity and changes over time	There is no change expected in the make-up of stakeholders over time.
Expected changes in well-being	The expected changes in stakeholder well-being include: • Reduced indoor air pollution from energy-efficient improved cookstoves (ICS), leading to health benefits for beneficiaries. • Time savings in cooking and fuel procurement, allowing beneficiaries to engage in other productive or income-generating activities. • Cost savings due to lower fuel consumption required by the project ICS. Increased local employment opportunities in operations, management, implementation, and logistics related to the ICS project.
Location of stakeholders	The geographical boundary of the project is located in urban/rural regions of Tanzania. The project activity has no impact outside the project boundary.
Location of resources	The project involves the installation and distribution of new improved cookstoves (ICS) to participating households and does not utilize resources owned by the stakeholders.

2.1.2 Stakeholder Consultation and Ongoing Communication

Not applicable as the stakeholder's make up has not changed since validation, nor new set of stakeholders were identified in MP3. For ongoing communication with the stakeholders, PP has established a Grievance Expression book at the Community Carbon office in Tanzania (Community Carbon P.O. Box 32619 Dar es salaam, Tanzania), to facilitate the recording of feedback or complaints from stakeholders and end users regarding the project device. The register also documents the resolutions provided for each complaint. Additionally, PP also

maintains a toll-free communication channel (+255 800 750 303), for the end-users or other stakeholders to contact the project proponent for any support.

Ongoing consultation	Not applicable as the stakeholder's make up has not changed since validation, nor new set of stakeholders were identified in MP3. The details are mentioned above.
Date(s) of stakeholder consultation	
Communication of monitored results	
Consultation records	

2.1.3 Free, Prior, and Informed Consent

Consent	Not applicable as the stakeholder's make up has not changed since validation, nor new set of stakeholders were identified in MP3. The details are mentioned above.
Outcome of FPIC	

2.1.4 Grievance Redress Procedure

Grievance Expression book will be placed at the Community Carbon office in Tanzania. Stakeholders are free to voice their concerns via the Grievance Expression Book. By maintaining feedback book at the local office, it is ensured that stakeholders that don't have access to electronic media for expression concerns / grievances are also able to share their concerns / feedback. Additionally, the end users always have an option to revert the salesperson (representative distribution/retail partners etc.) in case of a feedback / complaints with the product post distribution.

The formal grievance redress procedure requires the grievance to be filled in the grievance register, available at the office and collected by the Community Carbon Field Coordinator. If literacy is a barrier, or other barriers exist such as distance to the office, a telephone call to the Community Carbon Direct office in Tanzania is recommended where the grievance will be captured and recorded in written form by a staff member at the office.

All grievances are to be assessed and an update is provided to the grievant.

Two options for procedure guide:

- (a) resolution is offered immediately according to the request made by the grievant;

- (b) resolution is more complex and requires additional consideration or extraordinary resources will lead to the grievant invited to a meeting to discuss options;

Our In-person grievance redressal mechanism ensures solving disputes or complaints, usually through face-to-face communication and interaction with the end users. When a grievance is raised in person by the end users, the customer care executive/distribution agent provides the requisite resolution & ensures that the end user is satisfied with the given resolution. The executive assesses the quantum of grievance & records it in the grievance register, if needed. Furthermore, Stakeholders can also raise their concerns via the toll-free communication channel (+255 800 750 303), for any maintenance and repair services.

Grievances received	Resolution and outcome
A total of 62 stove-related grievances were reported from end-users during this MP.	All grievances were resolved during the current monitoring period. Majority of the grievances were minor that required part replacements. A few issues were major and required stove replacements, leading to delays in resolution. During these instances, the affected stoves remained non-operational until the issues were fully resolved, as documented in the Grievance Register. Consequently, PP has excluded the corresponding breakdown days from the operational year calculation, thereby accounted in the ER computation.

2.1.5 Public Comments

There are no any comments received during 30 days public comment period. Hence no any further explanation required in this section.

Link to the project: <https://registry.verra.org/app/projectDetail/VCS/2676>

Summary of comments received	Actions taken
Not applicable	Not applicable

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

The Community Carbon management has vast experience in developing the carbon projects.

2.2.2 Risk assessment

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	No risk identified	The adoption of improved cookstoves (ICS) will enable households to reduce their fuel consumption, contributing to the mitigation of deforestation and soil erosion, thereby decreasing the risk of natural disasters. Additionally, these stoves will save cooking time and enhance health conditions by reducing indoor air pollution, ultimately improving the well-being of stakeholders.
Risks to stakeholder participation	No risk identified	The project activity involves distributing improved cookstoves within the project boundary at a subsidized rate, making them more affordable than the usual market price. This ensures that all stakeholders can participate without facing financial constraints.
Working conditions	No risk identified	The adoption of improved cookstoves (ICS) will enable households to reduce their fuel consumption, save their cooking time, and improve their health conditions by reducing indoor air pollution. This will enable the community members to engage in other productive and income-generating activities, thereby improving overall working conditions.
Safety of women and girls	No risk identified	The project activity focuses on distributing improved cookstoves to households within the project

		boundary, and does not pose any risk to the safety of women and girls.
Safety of minority and marginalized groups, including children	No risk identified	The project activity focuses on distributing improved cookstoves to households within the project boundary, and does not pose any risk to the safety of minority and marginalised groups, including children.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	No risk identified	The project activity focuses on distributing improved cookstoves within the project boundary, which will thereby reduce indoor air pollution. Hence, no risk is identified.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified ¹⁰	Mitigation or preventative measure(s) taken
Discrimination	No risk identified	Community Carbon is committed to providing the best possible climate for maximum development and goal achievement for all its employees and contractors. Community Carbon believes that discrimination in all its forms (gender, race, religion, sexual orientation, or other habits) and sexual harassment and assault have no place within the development sector and more specifically at Community carbon,

¹⁰ The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

		our employees, contractors, and third-party individuals, and within the projects we design and execute. Specifically, our project activities are designed to reduce or eliminate, where culturally possible, discrimination, sexual harassment, and sexual assault where it exists within the societies where we work.
Sexual harassment	No risk identified	Community Carbon is committed to providing the best possible climate for maximum development and goal achievement for all its employees and contractors. Community Carbon believes that discrimination in all its forms (gender, race, religion, sexual orientation, or other habits) and sexual harassment and assault have no place within the development sector and more specifically at Community carbon, our employees, contractors, and third-party individuals, and within the projects we design and execute. Community Carbon prohibits any form of discrimination, harassment, or assault, all being grounds for dismissal of employment, termination of the contract, an immediate discreet investigation of the reported incident, and where warranted, reports to the applicable authorities.
Gender equity in labor and work	No risk identified	The project proponent ensures fair and non-discriminatory compensation by providing equal pay for equal work. Additionally,

		Community Carbon seeks to mirror the percentage of women/men in the country in its in-country workforce, making all efforts to hire women candidates for all levels of positions.
Forced labor	No risk identified	The Project activity has equal opportunity for women, men, or any vulnerable/ marginalized community by taking inconsideration of the country law and regulations to contribute both in volunteer and working positions. Community Carbon also has a stipulated HR policy that takes into account participation by all forms of demographic. Further, the projects designed are implemented for equal participation by any gender, nationality, ethnicity, religion, and race.
Child labor	No risk identified	The project is carried out with the full consent of participating households, ensuring it is voluntary and free from forced labour. Community Carbon prioritizes hiring local community members that is locals residing in area of project implementation and offers new opportunities to project beneficiaries as Community Carbon expands operations and job openings arise.
Human trafficking	No risk identified	All individuals involved in the project, whether in volunteer or employment roles, are engaged in compliance with labour regulations, ensuring no involvement of child labour.

2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The project activity focuses on distributing improved cookstoves within the project boundary. The Project activity has equal opportunity for women, men, or any vulnerable/marginalized community by taking inconsideration of the country law and regulations to contribute both in volunteer and working positions. Community Carbon also has a stipulated HR policy that takes into account participation by all forms of demographic. Further, the projects designed are implemented for equal participation by any gender, nationality, ethnicity, religion, and race. The host country Tanzania is also a member of the ILO convention since 1962 and has been implementing various programs, in collaboration with the ILO tripartite constituents (government, workers' and employers' organizations). In order to ensure that all employees are aware of the prevailing work and employment rights, all employees are required to sign the policy handbook available on our human resources portal.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No risk identified	The project activity focuses on distributing improved cookstoves within the project boundary. It does not cause any harm to Indigenous people or cultural heritage in the project area.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
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No risk identified	The project activity only involves distribution of Improved Cookstoves to the household. So, the activity does not require any property right or concerned land rights. Community Carbon Sales team will distribute/install the ICS only at the property owner's invitation. After the delivery and payment, the distributed is the sole property of the owner. We will confirm that all property rights are recognized, respected, and supported.
No risk identified	The project is not located on a land/territory claimed by any indigenous people, vulnerable people and the project activity does not lead to removal or relocation of property rights holders from their lands or territories, and do not force rights holders to relocate activities important to their culture or livelihood.

2.3.5 Benefit Sharing

Not applicable, as the project activity focusses on distribution of improved charcoal stove to the end users thereby improving the end-user's health with reduced fuel consumption and reduced smoke /emissions. The end users have been informed at the time of ICS installation/distribution that the ICS are discounted on account of them generating carbon credits and also the fact that these credits belong to the project proponent. The end users are required to sign the carbon waiver form cum warranty card as required by the project proponent to surrender their rights to carbon credits generated by the project.

2.4 Ecosystem Health

Risk identified		Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	Not applicable, as the project activity is distribution of improved charcoal stove to the end users thereby improving the end user's health with reduced fuel consumption (reduced smoke) and reduced emissions.
Soil degradation and soil erosion	No risk identified	
Water consumption and stress	No risk identified	

2.4.1 Rare, Threatened, and Endangered species

Not applicable, as the project activity is distribution of improved charcoal stove to the end users thereby improving the end user's health with reduced fuel consumption (reduced smoke) and reduced emissions.

2.4.2 Introduction of species

Not applicable, as the project activity is distribution of improved charcoal stove to the end users thereby improving the end user's health with reduced fuel consumption (reduced smoke) and reduced emissions.

2.4.3 Ecosystem conversion

Not applicable, as the project activity is distribution of improved charcoal stove to the end users thereby improving the end user's health with reduced fuel consumption (reduced smoke) and reduced emissions.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The operation of the project activity(s) during this monitoring period, including any information on events that may impact the GHG emission reductions or removals and monitoring.

Till the end of the monitoring period, the project installed 224,789 a total of stoves. Two stove models (Smarthome Pro & Community Jiko Bora) were distributed in the project. The stove model & Vintage wise distribution of stoves for the current monitoring period is as follows:

Stove Distribution (Model & Year wise)			
Year	Smarthome Pro	Community Jiko Bora	Grand Total
2022	26,178	0	26,178
2023	94,997	23,211	118,208
2024 (till 31-October-2024)	0	80,403	80,403
Grand Total	121,175	103,614	224,789

Distribution monitoring period wise: -

Year	Smarthome Pro	Community Jiko Bora	Grand Total
MP1 (22-April-2022 to 31-August-2022)	2,759	0	2,759
MP2 (01-September-2022 to 31-October-2023)	118,377	20,217	138,594
MP3 (01-November-2023 to 31-October-2024)	72	83,364	83,436
Grand Total	121,208	103,581	224,789

Technical Specification of cookstoves during current monitoring period

The ICS deployed under this project is energy efficient which substantially reduces fuel consumption and emissions for conducting cooking and water heating tasks in homes. The ICS improve the efficiency of combustion and thermal transfer to the pot compared with a traditional pot support which provides a conducive environment for clean and efficient combustion of fuel. It substantially reduces fuel consumption compared with efficient stove.

No design changes have been made to the ICS stove design as of the current monitoring period, and thus, there are no resulting efficiency changes in either cookstove model.

Smarthome Pro	Community Jiko Bora
	

	Model	Smart Home Pro		Model	Community Jiko Bora
	Type of Stove	Domestic		Type of Stove	Domestic
	Dimension	(ø 28 * 26 H) cms		Dimension	(ø 28 * 26 H) cms
	Average Unit Weight, Kg	12		Average Unit Weight, Kg	11
	Thermal Efficiency, %	37.90		Thermal Efficiency, %	38
	Pot Type pot	Flat Bottom		Pot Type pot	Flat Bottom
	Fuel Type	Charcoal		Fuel Type	Charcoal
	Estimated Life Span	7 Years		Estimated Life Span	7 Years

VCS methodology VM0050, version 1.0 allows the use of a correction factor of 0.95 applied to the overall emissions reductions to account for any possible leakage. This factor has been applied to the emissions reductions presented in this report.

During the current monitoring period, no incident or event occurred, that could affect GHG emissions reduction and approved monitoring plan.

The model of stoves sold during this monitoring period were Smarthome Pro & Community Jiko Bora with a technical specification rated efficiency of 37.9% & 38%. As a part of stove maintenance and after sales services, Community Carbon has a dedicated toll-free number (+255 800 750 303)/site office no which can be used for any complaints or maintenance needed.

The relevant implementation dates (e.g., dates of construction, commissioning, and continued operation periods).

Monitoring Period

1 st Monitoring Period	22-April-2022 to 31-August-2022
2 nd Monitoring Period	01-September-2022 to 31-October-2023
3 rd Monitoring Period	01-November-2023 to 31-October-2024

Installation of ICS

Date of first ICS installed	22-April-2022
Date of last ICS installed	31-October-2024

No. of instances added/ICS installed during 3 rd MP	224,789
Proportion of operational stoves in this monitoring period	90.00 %
Total number of stoves operational in this monitoring period	202,310
Monitoring Survey Date	22-November-2024 to 09-January-2025

The followed approach by the PP ensures that the information collected post MP duration through the survey is representative as well as accurate for the MP under consideration. For example- if the stoves are reported as operational during the survey, then it is more representative of the functionality of the stoves throughout the MP for which ERs are being claimed. To support the definitiveness in this claim, PP has also implemented grievance redressal measures (please refer section 2.1 of the MR) to gather information on any negative feedback from end user, for example regarding non-operational status of the stoves during the MP.

3.2 Deviations

3.2.1 Methodology Deviations

The project did not apply any methodology deviations.

3.2.2 Project Description Deviations

PP has updated the applied methodology for this project activity from the “VMR0006: Methodology for installation of high efficiency firewood cookstove; Version: 1.1” to “VM0050: Energy Efficiency and Fuel-Switch Measures in Cookstoves, v1.0¹¹”. This constitutes a Project Description Deviation under VCS Standard v4.7 Section 3.21. The deviation has been prepared and applied in accordance with the “Procedure to Change Methodology through a Project Description Deviation, Version 4.0” and the VCS Standard v4.7. An updated Project Description (PD) reflecting this methodology change has been prepared and submitted along with this monitoring report.

The below table reflects the project description deviation requirements as per the VCS Standard v4.7 and its applicability for this project description.

S/N	Deviation Criteria	Project Applicability
1	Project proponents may apply project description deviations for switching	The project was initially registered under VMR0006 v1.2 and has transitioned to VM0050

¹¹ <https://verra.org/wp-content/uploads/2024/10/VM0050-EE-and-Fuel-Switch-Measures-in-Cookstoves-v1.0.pdf> (last accessed on 10-March-2025)

	to a different methodology. The project description shall be updated accordingly.	v1.0. The Project Description (PD) has been fully updated to reflect the methodology change in accordance with the Procedure to Change Methodology through a Project Description Deviation v4.0. The project conforms with all requirements and applicability conditions of VM0050 v1.0
2	Projects cannot claim additional GHG emission reductions or CO ₂ removals in previously verified monitoring periods as a result of a project description deviation.	The project activity has not claimed any additional GHG emission reductions in a previously verified monitoring period resulting from a project description deviation.
3	The deviation shall be assessed by a validation/verification body and the process, findings and conclusions shall be reported in the verification report. The assessment shall determine whether the deviation is appropriately described and justified, and whether the project remains in conformance with the VCS Program rules. The deviation shall also be reported on in all subsequent verification reports. Where the project description is updated, the updates shall be validated.	The deviation will be assessed by a validation/verification body, and the process, findings and conclusions shall be reported in the verification report. The assessment shall determine whether the deviation is appropriately justified and whether the project remains in full conformance with VCS Program Rules.
4	Project description deviations are not considered to be precedent setting.	The deviation applies only to this project and is not precedent-setting.
5	The validation/verification body assessing the project description deviation shall be accredited for the validation, recognizing that assessment of project description deviations is a validation activity, as further set out in the VCS Program Guide.	The validation/verification body assessing the project description deviation is SustainCERT SA, an accredited validation and verification body and recognise that assessment of project description deviations is a validation activity, as further set out in the VCS Program Guide.

3.3 Grouped Projects

The project is a grouped project.

New project activity instances included under this grouped project ensure that it meets the eligibility criteria below. A total of 224,789 new project activity instances were included under current monitoring period.

The below table provides explanation on how the new instances comply with the “Eligibility criteria for the inclusion of new project activity instances.

Sr.no	Criteria	How the new instances will comply	How the PI is complying and Evidences
1	Methodology Meet the applicability conditions set out in the methodology applied to the project.	All the current project activity instances and the new project activity instances ICS (Improved Cookstoves) added to this grouped project will meet the applicability conditions set out in Section 3.2 of the PD.	New project activity instances (Energy Efficient Cookstoves) meet the applicability conditions set out in Section 3.2 of the revised PD.
2	Technology Use the technologies or measures specified in the project description.	The current project activity instances and the new project activity instances added to this grouped project will consist of the distribution of efficient improved cookstoves (ICS) with a thermal efficiency of at least 25% efficiency as per water boiling test to household users cooking with non-renewable biomass in the baseline scenario. The project instances will involve replacement of conventional traditional cookstoves with ICS as defined in the PD. Stove types replaced and implemented is defined in the VCS PD, hence involve efficiency improvements in the thermal applications of non-renewable biomass appliances as per VM0050.	The project activity instances cookstoves have higher efficiency and better emission parameters compared to the baseline scenario. Evidence: Manufacturer's specification/distribution records.
3	Technology Apply the technologies or measures in the same manner as specified in the project description.	The current project activity instances and the new project activity instances added to this grouped project use Improved Cookstove to be distributed in the project and it will replace traditional cookstoves in household. All the project technologies distributed under the project will have a unique serial number and ID in order to curb double counting of the stoves under the project.	The new project instances under this project during the monitoring period are efficient improved cookstoves (ICS) as specified in the project description.

4	Baseline Scenario Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The current project activity instances and the new project activity instances added to this grouped project will be installed within Tanzania and new project activity instances shall be added subject to the same baseline scenario determined in Section 3.4 of the project description.	The project activity instances have the same baseline scenario as defined in section 3.4 of the PD document i.e., use of traditional charcoal cookstove for cooking in different regions of Tanzania. Evidence: A Baseline survey report which shall be shared with the VVB.
5	Additionality Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	The current project activity instances and the new project activity instances added to this grouped project shall comply with all the additionality conditions listed in section 3.5 of PD.	The project activity instances added to this GP comply with all the additionality conditions listed in section 3.5 of the revised PD. As per additionality demonstrated in the PD, the total planned distribution is for 425,000 instances. By the end of III MP, PP has distributed 224,789 number of instances and the remaining instances from the total planned distribution will be distributed in the upcoming monitoring periods. Evidence: Registered additionality sheet & End user interview related to carbon waiver form.
6	Project Boundary Occur within one of the designated geographic areas specified in the project description.	New project activity instances will be located within the geographic boundaries of Tanzania. The new Project Instances geographic location will be defined in the monitoring reports.	New project activity instances are located within the geographic boundaries of Tanzania. Evidence: Project database (Distribution records with end-user contact details)
7	Ownership Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective	End users receiving ICSs under the specific project instances contractually cede their rights to claim and own emission reductions under the VCS to the PP of the project.	A default distribution agreement for end users including the provision that emission reductions generated by the improved stove are owned by the PP will be provided for each household.

	start date of each project activity instance.		
8	Start date Have a start date that is the same as or later than the grouped project start date	Only project activity Instances having a start date that is the same as or later than the GP start date will be included in the GP. The start date of GP is the date of distribution of first unit as per section 1.6 of this document. And subsequent additions will have start date after GP start date only.	The start date of project is 22-April-2022 (start date of distribution of first ICS under the Grouped project) which is same as the start date of the Grouped Project.
9	Crediting period Only be eligible for crediting from the later of start date of the project activity or the start of the verification period in which they were added to the grouped project, through to the end of the project crediting period.	The current project activity instances and the new project activity instances added to this grouped project shall be eligible for crediting from its start date or the start of the verification period in which they were added to the grouped project, through to the end of the project crediting period (only).	The project is eligible for crediting from start date, which is 22-April-2022. Evidence: Distribution Database shared with VVB
10	Double Counting	The Improved Cookstove distributed under this project shall be uniquely identifiable based on the distribution records.	Each ICS installed under this grouped project activity shall have a unique, non-replicable serial number. This number along with corresponding end user details (i.e., name, geographical coordinates, address, unique serial number) shall form the unique identity of the stove distinguishing it from other stoves. No individual serial number can be repeated within the project, thus ensuring that each stove is counted only once in the proposed project. In addition, the project will be crosschecked against other projects in same host country on other relevant voluntary carbon schemes to ensure that the ICS is not included in any other project activity. Evidence – No Double Counting Declaration

10	Capacity Limits	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: a) Each project activity instance that exceeds one percent of the capacity limit shall be identified. b) Such instances shall be divided into clusters, whereby each cluster is comprised of any system of 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. c) 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.	No project activity instance shall exceed the applicable limit, which is 180 GWhth/y.
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3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes

☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	BC _{ex-ante,b,j}
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Data unit	tonnes
Description	Ex-ante annual average quantity of fuel used per baseline device type i
Source of data	Calculated through Baseline survey assessment & KPTs
Value applied	Option1 as per the methodology has been used to estimate this parameter. Charcoal - 4.77 tonnes/year/HH (Fuelwood equivalent)
Justification of choice of data or description of measurement methods and procedures applied	The KPTs have been used to calculate this value, as per the KPT protocol¹² under typical household and stove usage conditions, thereby capturing the typical HH fuel consumption. KPTs are done for 3 consecutive normal days (as in no weekend, festivals, gatherings, etc), thereby representing the typical / normal cooking pattern. For the Baseline KPTs, 45 Households which used charcoal has been selected from the 10 districts of Tanzania. The No of KPTs Samples is in line with CDM Standard “Sampling and surveys for CDM project activities and programmes of activities” Version 9.0¹³. The Sampling approach adopted by the PP has met the reliability requirement of 95/10 as per the CDM Standard “Sampling and surveys for CDM project activities and programmes of activities” Version 9.0.
Purpose of data	Calculation of baseline emissions
Comments	Parameter $BC_{ex-ante,b,j}$ once determined shall remain fixed ex-ante for the entire crediting period. Follow-up baseline surveys will be conducted at most every five years from the date of the last survey in control households that do not participate in the project. Where charcoal is used by baseline devices, a default wood to charcoal conversion factor of 6 Kg of firewood per kg of charcoal has been used. This is in line with the report by Ministry of Natural Resources and Tourism (MNRT), United Republic of Tanzania, “The Potential and Optimal Strategies for Charcoal Sub-Sector Development in Tanzania”, June 2019, Page 50.¹⁴ The baseline KPT conducted is in accordance with the KPT Protocol.

¹² <https://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/604-1.pdf> (last accessed on 10-March-2025)

¹³ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf (last accessed on 10-March-2025)

¹⁴ https://www.tfs.go.tz/uploads/MNRT_2019_National_Charcoal_Study.pdf (last accessed on 10-March-2025)

	Additionally, PP would like to quote the Tanzania Ministry of Energy's "National Clean Cooking Strategy 2024 - 2034"¹⁵, which states that "According to the Cooking Energy Action Plan 2022, approximately 10 to 12 tons of logs are burned to produce 1 ton of charcoal", as reported in page 7 of the report. This equates to approximately 10-12 tonnes of wood per tonne of charcoal, which is even higher than the value mentioned in above report. So, considering the above reports as reference, PD has adopted a wood to charcoal conversion factor of 6:1 for the project activity. Equation (2)
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Data / Parameter	$f_{NRB,y}$
Data unit	Fraction
Description	Fraction of woody biomass that is established to be non-renewable used by baseline device in year y
Source of data	Value obtained from survey methods using the CDM tool 30 version 4.0, and applying a discount of 26% as per methodology VM0050.
Value applied	0.673 $\{=0.91 * (1- 26\%)\}$
Justification of choice of data or description of measurement methods and procedures applied	This parameter is fixed ex-ante.
Purpose of data	Calculation of baseline and project emissions
Comments	The value of 0.91 has been calculated based on the CDM tool 30 version 4.0, as mentioned in the previous registered PD&MR document. A discount factor of 26% as been applied to 0.91 value as per the applied methodology. Equation (1) and (6)

Data / Parameter	EF_{b,i,CO_2} EF_{p,j,CO_2}
Data unit	t CO ₂ /TJ

¹⁵ [https://www.nishati.go.tz/uploads/documents/en-1717680135-NATIONAL%20CLEAN%20COOKING%20STRATEGY%20\(2024-2034\)%20FINAL.pdf](https://www.nishati.go.tz/uploads/documents/en-1717680135-NATIONAL%20CLEAN%20COOKING%20STRATEGY%20(2024-2034)%20FINAL.pdf) (last accessed on 10-December-2025)

Description	CO ₂ emission factor for fuel used by baseline device type i in the baseline scenario
	CO ₂ emission factor for fuel used by project device type j in the project scenario
Source of data	Use of default values from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	112
Justification of choice of data or description of measurement methods and procedures applied	IPCC Default Value
Purpose of data	Calculation of baseline and project emissions
Comments	Equations (1) and (6)

Data / Parameter	EF _{b,i,nonCO2}
	EF _{p,j,nonCO2}
Data unit	t CO ₂ e/TJ
Description	Non-CO ₂ emission factor for fuel used by baseline device type i in the baseline scenario
	Non-CO ₂ emission factor for fuel used by project device type j in the project scenario
Source of data	Use of default values from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	9.46
Justification of choice of data or description of measurement methods and procedures applied	IPCC Default Value
Purpose of data	Calculation of baseline and project emissions
Comments	Equations (1) and (6)

Data / Parameter	CF
Data unit	unitless

Description	Wood-to-charcoal conversion factor
Source of data	Report by Ministry of Natural Resources and Tourism (MNRT), United Republic of Tanzania, "The Potential and Optimal Strategies for Charcoal Sub-Sector Development in Tanzania", June 2019, Page 50 ¹⁶
Value applied	6 tonnes of dry wood input per tonne of charcoal output
Justification of choice of data or description of measurement methods and procedures applied	This has been determined in line with the Clarification 7 provided in the "Correction and Clarifications to VM0050 Energy Efficiency and Fuel Switch Measures in Cookstoves, v1.0¹⁷, which specifies: For the wood-to-charcoal conversion factor (CF), in addition to government-approved/endorsed national or regional values, the following source of data is accepted for claiming values of up to six tonnes of dry wood input per tonne of charcoal output: Published, peer-reviewed literature specific to the project region and context
Purpose of data	Calculation of baseline and project emissions
Comments	Additionally, PP would like to quote the Tanzania Ministry of Energy's "National Clean Cooking Strategy 2024 - 2034"¹⁸, which states that "According to the Cooking Energy Action Plan 2022, approximately 10 to 12 tons of logs are burned to produce 1 ton of charcoal", as reported in page 7 of the report. This equates to approximately 10-12 tonnes of wood per tonne of charcoal, which is even higher than the value mentioned in above report. So, considering the above reports as reference, PD has adopted a wood to charcoal conversion factor of 6:1 for the project activity. Equations (1) and (6)

Data / Parameter	$NCV_{b,i}$ $NCV_{p,j}$
Data unit	TJ/tonne
Description	Net calorific value of baseline fuel for baseline device type i Net calorific value of project fuel for project device type j

¹⁶ https://www.tfs.go.tz/uploads/MNRT_2019_National_Charcoal_Study.pdf (last accessed on 10-March-2025)

¹⁷ https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf (last accessed on 10-March-2025)

¹⁸ [https://www.nishati.go.tz/uploads/documents/en-1717680135-NATIONAL%20CLEAN%20COOKING%20STRATEGY%20\(2024-2034\)%20FINAL.pdf](https://www.nishati.go.tz/uploads/documents/en-1717680135-NATIONAL%20CLEAN%20COOKING%20STRATEGY%20(2024-2034)%20FINAL.pdf) (last accessed on 10-December-2025)

Source of data	Use of default values from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	0.0156
Justification of choice of data or description of measurement methods and procedures applied	IPCC Default value
Purpose of data	Calculation of baseline and project emissions
Comments	Equations (2), (4) and (6)

Data / Parameter	$\eta_{old,avg}$
Data unit	Fraction
Description	Weighted average efficiency of baseline devices that are replaced by project devices
Source of data	Calculated based on Baseline Water Boiling Test
Value applied	0.1782
Justification of choice of data or description of measurement methods and procedures applied	Water Boiling Test surveys in compliance with the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.
Purpose of data	Calculation of baseline emissions
Comments	The Baseline WBTs have been conducted to determine the parameter, and the same will be shared with the VVB. Equations (3)

Data / Parameter	H_{hi}
Data unit	Equivalent standard male adults
Description	Average household size of the target population using device type i
Source of data	Baseline survey
Value applied	3.48

Justification of choice of data or description of measurement methods and procedures applied	This parameter has been determined ex ante via the baseline survey based on the adult equivalent method in line with the Clarification 6 provided in the “Correction and Clarifications to VM0050 Energy Efficiency and Fuel Switch Measures in Cookstoves, v1.0¹⁹. <table border="1"> <thead> <tr> <th>Gender and age</th><th>Fraction of standard adult</th></tr> </thead> <tbody> <tr> <td>Child 0–14 years</td><td>0.5</td></tr> <tr> <td>Female over 14 years</td><td>0.8</td></tr> <tr> <td>Male 15–59 years</td><td>1.0</td></tr> <tr> <td>Male over 59 years</td><td>0.8</td></tr> </tbody> </table>	Gender and age	Fraction of standard adult	Child 0–14 years	0.5	Female over 14 years	0.8	Male 15–59 years	1.0	Male over 59 years	0.8
Gender and age	Fraction of standard adult										
Child 0–14 years	0.5										
Female over 14 years	0.8										
Male 15–59 years	1.0										
Male over 59 years	0.8										
Purpose of data	Estimation of average energy consumption when applying Option 1: Measurement campaign (Section 8.1.1)										
Comments	Equations - Input to $EC_{i,y}$, $BC_{b,i,y}$, and $BC_{p,j,k,y}$										

4.2 Data and Parameters Monitored

Data / Parameter	$N_{j,k,y}$
Data unit	Number
Description	Number of commissioned project devices of type j from batch k in year y
Source of data	Sales Database
Description of measurement methods and procedures to be applied	-
Frequency of monitoring/recording	Continuous
Value applied	224,789
Monitoring equipment	Distribution Records
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of baseline and project emissions
Calculation method	N/A

¹⁹ https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf (last accessed on 10-March-2025)

Comments	The number of project devices must be recorded in a database, distribution record, or similar to ensure transparency. Equation (1) and (6)
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Data / Parameter	$n_{j,k,y}$
Data unit	Fraction
Description	Proportion of commissioned project devices of type j from batch k that are still being used regularly in year y
Source of data	Monitoring survey ²⁰
Description of measurement methods and procedures to be applied	Option 2 (surveys) has been applied to determine this parameter. Sampling standard has been used for determining the sample size to achieve 95/10 confidence precision, according to the latest version of CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities. According to Clarification 2 of VM0050 v1.0 Corrections and Clarifications, for our project utilizing surveys, the usage rate is capped at 90% and all of the following customer support actions are implemented as outlined below: 1. The project activity involves the distribution of efficient improved charcoal cookstoves that will replace inefficient traditional charcoal stoves across the project boundary. In Tanzania, where nearly 95% of the population uses biomass fuels as their primary fuel for cooking as per National Bureau of statistics²¹, the proposed project activity promotes ICS as a practical and culturally accepted solution to replace traditional stoves. These stoves such as the "Community Jiko Bora" and "Smart Home Pro" models have been shown through field research and pilot studies to significantly reduce charcoal consumption, lower cooking times, and improve household air quality. With features like insulated combustion chambers and better airflow control, they meet the cooking needs of Tanzanian families preparing staples like Ugali, beans, and rice. User feedback from various on-field activities indicates strong

²⁰ Monitoring surveys for the current monitoring period were conducted from 22-November-2024 to 09-January-2025.

²¹ [http://nbs.go.tz/nbs/takwimu/census2012/Basic Demographic and Socio-Economic Profile PopularVersion-KeyFindings 2012 PHC EnglishVersion.pdf](http://nbs.go.tz/nbs/takwimu/census2012/Basic%20Demographic%20and%20Socio-Economic%20Profile%20PopularVersion-KeyFindings%202012%20PHC%20EnglishVersion.pdf)

	acceptance and willingness to continue use, citing cost savings and ease of use. Locally manufactured and widely available, these stoves not only support health and environmental goals by reducing emissions and deforestation but also create local jobs and align with Tanzania's climate commitments. - The project has implemented several support activities to assist the Tanzanian households in effectively operating and maintaining their ICS stoves. Awareness campaigns are organized to make end-users aware about the benefits of continued use of project stove. Materials such as flyers in local language are also distributed to provide guidance on operating the stoves, do's and don'ts related to the ICS usage, other safety measures, etc. Additionally, it also mentions the 5-year warranty period, and the toll-free number (+255 800 750 303) which can be contacted for repairs, replacements and any assistance with regards to ICS. These efforts are ongoing to support sustained ICS adoption and maintenance throughout the project duration. - The project has implemented a toll-free communications channel to support the target population in accessing assistance for their Improved Cookstoves (ICS). A dedicated toll-free number (+255 800 750 303) has been established and widely communicated to households, enabling them to contact the project proponent for maintenance, repair services, and other support needs. This channel is operational and accessible in Swahili, ensuring effective communication and ongoing support throughout the project duration.
Frequency of monitoring/recording	Option 2 (surveys): Annually
Value applied	0.90
Monitoring equipment	Not applicable as the usage rate has been determined through monitoring survey
QA/QC procedures to be applied	Thorough data analysis and Compliance with the Standard for sampling and surveys for project activities and programme of activities.
Purpose of data	Calculation of baseline and project emissions
Calculation method	N/A
Comments	To determine the proportion of commissioned project devices, PP has established specific criteria. During the monitoring survey, if any household provides a negative response to the following questions:

	1. Is the project cookstove in good condition?
	2. Are you using project stove daily?
	3. Is the stove warm to touch, ashes or embers inside, well-used for its vintage, etc.?
	Then the stove is considered non-operational and is not accounted for the ER computation. Column 'CV' of the "Monitoring Results" tab of ER calculation spreadsheet indicates the usage of the stoves.
	For the current MP, the proportion of commissioned project devices has been obtained as 0.922. However, the usage rate is capped at 0.90, in line with the Clarification 2 provided in the "Correction and Clarifications to VM0050 Energy Efficiency and Fuel Switch Measures in Cookstoves, v1.0" ²² . Refer to the tab "Sample Size Cal and Results" of ER calculation spreadsheet for calculation of $\eta_{j,k,y}$ parameter. Equation (1) and (6)

Data / Parameter	$\eta_{new,avg,y}$
Data unit	Fraction
Description	Weighted average efficiency of project devices in year y
Source of data	Monitoring
Description of measurement methods and procedures to be applied	For the project activity, efficiency of the device has been monitored using option 1, i.e., conducting water boiling test (WBT) annually with each monitoring period. Sampling standard has been used for determining the sample size of Water Boiling Test campaigns to achieve 95/10 confidence precision, according to the latest version of CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.
Frequency of monitoring/recording	Annually
Value applied	37.30%
Monitoring equipment	The WBT test has been conducted by third party laboratory.

²² https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf (last accessed on 10-March-2025)

QA/QC procedures to be applied	N/A
Purpose of data	Calculation of baseline and project emissions
Calculation method	WBT Tests have been conducted as per the latest available WBT protocol v4.2.3.
Comments	Equation (3)

Data / Parameter	$BC_{p,j,k,y}$
Data unit	tonnes
Description	Average quantity of fuel used by project device type j from batch k during year y
Source of data	Monitoring survey & KPT Assessment
Description of measurement methods and procedures to be applied	For the project activity, average quantity of fuel used by project device has been determined using option 1, i.e., Kitchen Performance Test (KPT). Sampling standard has been used, following the Kitchen Performance Test Protocol²³, for determining the sample size to achieve 95/10 confidence precision, according to the latest version of CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities. The sampling calculation achieved confidence and precision of 95/10 for the target parameter. The value has been scaled appropriately using the average household size to obtain the value of $BC_{p,j,k,y}$.
Frequency of monitoring/recording	Biennial or annual for Option 1
Value applied	2.076
Monitoring equipment	N/A

²³ <https://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/604-1.pdf> (last accessed on 10-March-2025)

QA/QC procedures to be applied	PP has compared the parameter with other literature studies as a QA/QC check. As per study “Environmental Impacts (ER CO₂) of an Improved Multi-Fuel Gasifier Forced Air Cookstove in the City of Kinshasa”²⁴, improved charcoal consumed around 1085g of charcoal per day as per CCT method and 1200g of charcoal per day as per KPT method. As per the KPT assessment, the average project fuel consumption is 2.076 tonnes of wood eq/HH/year, which is equivalent to 0.948 kg/day of charcoal. This value is consistent with the consumption value reported in the study.
Purpose of data	Calculation of baseline and project emissions
Calculation method	N/A
Comments	The kitchen performance test (KPT) has been used to calculate this value, as per the KPT protocol under typical household and stove usage conditions, thereby capturing the typical HH fuel consumption. KPTs are done for 3 consecutive normal days (as in no weekend, festivals, gatherings, etc), thereby representing the typical / normal cooking pattern. Equation (4) and (6) The Sampling calculations are demonstrated in “Sample Size Cal and Results” tab of ER Calculation Spreadsheet.

4.3 Monitoring Plan

The Monitoring Plan applied in this project involves several key elements that ensure that the PP have high-quality, unbiased, and reliable information regarding the performance of the project in terms of implementation and outcomes, and for the purposes of calculating Verified Carbon Units (VCUs) following VM0050 version 1.0 on the basis of the amount of non-renewable biomass saved by the ICS in the project activity.

The key elements are the following:

1. **User registers stove:** Project Proponent collected/received the necessary information required for the Registration process from the user. Means of collecting this

²⁴ <https://www.scirp.org/journal/paperinformation?paperid=85053> (last accessed on 16-July-2025)

information were through the use of ICTs. Project Implementers' staff double checks the accuracy of information provided, and request for field staff additional clarifications if needed;

2. **Data logged into database:** Registered data by the staff of the project proponent uploads in the database automatically. Project Proponent shall double check the information included on the database and check for duplications. Any duplicate information if investigated, checked for the errors, gets corrected or excluded from the database if it is a true duplicate entry.
3. **Spot-checking (ongoing):** Project Proponent field staff randomly select units included in the database and visit or contact the stove users to cross-check the information on the database with the factual evidence in the field. Any inconsistencies found (e.g., change in the address of a user) gets updated on the database, and in the case, ICS are found to be no longer in use, they got clearly marked as such and excluded from emission reductions calculations.
4. **Monitoring:** Project Proponent follows the requirements as per VCS-PD to collect the necessary information for a monitoring report.

Sample Plan:

The monitoring plan is designed to monitor the parameters listed in the section above in Section 4.2. The proportion of commissioned stoves, project fuel consumption and the weighted average thermal efficiency will be determined based on sampling procedures as outlined below. Community Carbon will be responsible for conducting the sampling surveys and maintaining a database with all operating stoves.

No monitoring for leakage through uses of biomass is required, as the leakage adjustment factor of 0.95 will be multiplied with overall emission reductions to account for leakage.

As per the Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities, version 04, the sampling plan is the following:

(a) Sampling Design

Due to the large number of ICS envisioned to be distributed as part of the project activity, it is not economically feasible to monitor each individual ICS unit distributed. Therefore, representative sampling will be undertaken as part of a project activity that is designed in line with the requirements of the "Sampling and surveys for CDM project activities and programme of activities", version 04. The Sampling was based on 95/10 confidence/precision.

(i) Objective and Reliability Requirements:

The objective is to obtain an unbiased and reliable estimate of the proportion or mean value of the following key variables over the course of the crediting period. As per Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities version 9.0, 90/10 confidence/precision to be adopted for small-scale project and 95/10 for large-scale project. Given that the size of the project is under the category of large projects, hence 95/10 confidence/precision shall be adopted for all parameters.

Monitored Parameters:

Sr. no	Parameter	Description of Parameter
1	$\eta_{j,k,y}$	Proportion of commissioned project devices of type j from batch k that are still being used regularly in year y
2	$BC_{p,j,k,y}$	Average quantity of fuel used by project device type j from batch k during year y
3	$\eta_{new,avg,y}$	Weighted average efficiency of project devices in year y

(ii) Target Populations:

The target population for the above three parameters is the total population of household received the project ICS within the existing project boundary.

(iii) Sampling Frame

It is expected that the geographical locations do not have influence on the parameters of interest that are $\eta_{j,k,y}$, $BC_{p,j,k,y}$ and $\eta_{new,avg,y}$. Therefore, these parameters can be assumed to be homogeneous regardless of how the end user group and distribution/installation location is defined since the end users shall always be households and geographical location is restricted to the project boundary. Since all stoves are of the same type, all stoves can be grouped into a homogeneous sampling frame.

1) Sampling frame for proportion of commissioned project devices of type j from batch k that are still being used regularly in year y ($\eta_{j,k,y}$)

The sample frame refers to all the information sources on the project database. There are two primary mechanisms for data collection: the Registration Process for newly distributed/installed ICS and the Monitoring Survey (which includes a household questionnaire and visual inspection

of ICSs) that will be used throughout the lifetime of the ICS. The detailed information collected from Registration Process is used to populate the Stoves Database and the Monitoring Survey follows “Sampling and Surveys for CDM Project Activities and Programme of Activities”, version 04.

As explained below (on section “Sampling Method”), to take the different characteristics of different project instances, i.e., stove vintages implemented and ICS models into consideration, Project instances shall be grouped together to create a Primary Sampling Unit, which is homogenous. As per EB 86 Annex 04, Appendix-2, paragraph 1, for the use of a single sampling plan covering a group of projects, provided the homogeneity of population can be demonstrated, or differences are taken into account in the sample size calculation, a 95/10 confidence/precision is applied for biennial sampling.

The first step is to identify the Primary Sampling Units. Primary sampling units are project instances, which have same ICS model. That is project with the same ICS model can therefore be grouped together and form a Primary Sampling Unit. In case project has two different ICS models being implemented – this will form two Primary Sampling Units. This is justified by the fact that stove might vary in terms of performance and it is important for the PP to collect and monitor accurate data for each stove model.

Furthermore, if a project includes stoves from multiple vintages, each vintage will be treated as a separate PSU. For instance, if a project from the 2023 vintage includes two different ICS models, each model will constitute its own PSU within that vintage.

For this parameter $n_{j,k,y}$, the ICS population was stratified based on stove vintage (2022, 2023 & 2024) as well as stove models (Smarthome Pro & Community Jiko Bora stoves).

2) Sampling frame for average quantity of fuel used by project device type j from batch k during year y ($BC_{p,j,k,y}$)

For the project activity, average quantity of fuel used by project device has been determined using option 1, i.e., Kitchen Performance Test (KPT). Sampling standard has been used, following the Kitchen Performance Test Protocol, for determining the sample size to achieve 95/10 confidence precision, according to the latest version of CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.

The sampling calculation achieved confidence and precision of 95/10 for the target parameter. The value has been scaled appropriately using the average household size to obtain the value of $BC_{p,j,k,y}$.

For this parameter $BC_{j,k,y}$, the ICS population was stratified based on stove vintage (2022, 2023 & 2024) as well as stove models (Smarthome Pro & Community Jiko Bora stoves).

3) Sampling frame for weighted average efficiency of project devices in year y ($\eta_{new,avg,y}$)

The thermal efficiency ($\eta_{new,avg,y}$) is a monitoring parameter and has been established using Option 1 in parameters table under section 9.2 of the applied methodology for the current monitoring period. Water Boiling Testing has been performed, achieving 95/10 confidence and precision levels as per the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities. WBT testing has also been performed by third party as below:

- a) Conduct a sample test on cook stoves with 3 tests conducted for each stove.
- b) The standard deviation of the test results indicated above is very small and 95/10 precision requirement is met. The efficiency determined is acceptable.

For this parameter $\eta_{new,avg,y}$, the ICS population was also stratified based on stove vintage (2022, 2023 & 2024) as well as stove models (Smarthome Pro & Community Jiko Bora stoves).

(iv) Sampling Method

The sampling method for monitored parameters $n_{j,k,y}$ and $BC_{p,j,k,y}$ is Simple Random Sampling and samples will be randomly selected from the primary sampling units as illustrated above. To ensure a random selection of ICS, random number generators shall be applied. Each ICS in the target population is uniquely identifiable by its unique ID number. Each ICS can thus be allocated a Sample Selection Number in each monitoring period, starting at 1 and increasing up to the total number of ICS in the Database for that pre-defined sampling frame. Applying the random number generators, the ICS can then be randomly chosen from the defined population up to the required sample size as calculated by the Project Proponent.

To determine the parameters, sampling will involve the following approaches (outcome in brackets):

$n_{j,k,y}$ - Visual inspection of the premises to see if ICS is operational and in use daily. Interview with end user if required to verify that ICS is still in use (Yes/No)

$BC_{p,j,k,y}$ - Average quantity of fuel used by project device type j from batch k during year y through KPT test.

Using the formulas in the section “Sample Size” below, the PP will randomly sample the required number of ICS from the primary sampling units.

Sample Size

The estimation of the proportion or mean value of the parameters investigated, the minimum sample size for each sample frame has been calculated based on 95/10 confidence/precision which will suffice for biennial sampling.

The procedure to determine the sample of households will ensure that they adequately represent the broader project population, minimizing sampling error. Using, a 95 per cent confidence level, and a 10 per cent margin of error, random samples will be selected from each Primary Sampling Unit.

There are two parameters for survey that are estimated through sampling: average quantity of fuel used by project device type j from batch k during year y ($BC_{p,j,k,y}$) and proportion of commissioned project devices of type j from batch k that are still being used regularly in year y ($n_{j,k,y}$).

Both can be sampled in a single survey with a random sample of households using the above-described confidence/precision levels depending on annual or biennial monitoring frequency.

Thus, both the sampling parameters considered based on ‘proportion value’, hence to estimate the sample size for parameters $n_{j,k,y}$ and $BC_{p,j,k,y}$, the following equation is used:

$$n \geq 1.962 N \times p (1-p) / (N -1) \times 0.1^2 \times p^2 + 1.96^2 \times p(1-p)$$

Where:

n = Sample size

N = Population size (Total number of households/ICS)

p = Expected proportion

1.96 = Represents the 95% confidence required

0.1 = Represents the 10% relative precision

During 3rd Monitoring period:

The total numbers of Household/ICS during 3rd Monitoring period are 224,789 ICS which has been the population size for the current monitoring period.

$N_{j,k,y}$ (Population size (Total number of households/ICS) – 224,789 (3rd MP)

Random Sample Monitoring Survey – 193 (3rd MP)

Random Sample Project fuel consumption $BC_{p,j,k,y}$ – 45 (3rd MP)

Random Sample WBT $\eta_{new,avg,y}$ – 37 (3rd MP)

Minimum Sample Size

If the sample size calculation returns a value of less than 30 samples, a minimum sample size of 30 shall be chosen when the parameter of interest is a proportion.

Quality Assurance/Quality Control

The Community Carbon apply measures to ensure the required confidence/precision for each sampled parameter is met, allowing for non-response and the possible removal of outliers from the sample, as part of a Quality Control/Quality Assurance system. The choice of measure applied to each parameter will depend on the cost of each data collection approach and logistics required. The Community carbon will determine the most effective measure for each parameter from the following list: -

Oversampling: Randomly draw a sample more than the calculated number (say 10%) and collect data from each.

Buffer Group: Randomly draw additional samples (say 10%) and collect data from only for minimum numbers of ICS as per sample size calculation. If this would not result in the required sample size data would be collected from the additional ICS that were selected in the sample.

Data archiving

Copies of the surveys is kept and the registration database have back up. Original stove purchase contracts or other means of acceptance by the users are stored in the main office for the Project Proponent. A back-up of the registration database also be stored on an electronic medium by the PP. All data monitored and required for verification and issuance are kept for two years after the end of the crediting period or the last issuance of VCUs for the project activity, whichever is later.

Personal Training

Separate training given to deal adequately with surveying techniques and reduce errors. The training includes implementing Water Boiling Test (WBT), efficiency of cookstove, frequency of survey that needs to be done.

Roles and Responsibilities of Project Proponent

- ✓ Development of VCS project Description using latest template.
- ✓ Registration of the project with VERRA.
- ✓ PP itself shall officially communicate with VERRA for project registration.
- ✓ Providing improved cookstove (ICS) to replace traditional cookstove.
- ✓ Getting the project validated/verified by a Validation and Verification Body (VVB)
- ✓ Carrying out annual surveys and monitoring
- ✓ Maintaining the project database and other documentation required by VERRA
- ✓ Preparing the Monitoring Reports for the Project Activity

Organizational Structure

Person	Role
PP database administrator	The database administrator is responsible for updating and maintaining all electronic databases. Required competencies include experience with data management systems (e.g., Excel, STATA, or ONA/ODK), minimum 2 years working experience in a similar field, and at minimum a Bachelor's degree from an institution of higher education.
Monitoring team	The monitoring team are assigned by the PP to conduct the user interviews and check the operational status of Cookstoves (ICS) in Households during the periodic sampling and reports the results to the database administrator. The skills and experience required for the data collection activities include: • Experience conducting surveys/tests • Experience conducting door-to-door surveys • Local language skills (especially important for input to questionnaire design and interviewing of end users) • English language skills • Cultural awareness • Numerical proficiency • Data entry skills

Internal audits are performed on a regular basis to ensure the consistency of monitored data. Prior to any verification, the PP have conducted a final check of the data and analyses project performance. All personnel involved in the Project Activity receive the desired training for field measurements. The Project Developer kept the records of trained personnel. PP ensure that only trained personnel carry out the monitoring activity.

Any non-conformities identified during the internal audit; a non-conformity report is prepared which consists of the root cause of the non-conformity. Once the non-conformity is reported, PP in consultation with Head, Personnel prepares the corrective action measures and implements the same. After the implementation of the corrective actions the Internal Audit team conducts an assessment on the non-conformity and if found ok, the Internal Audit closes the non-conformity.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline emissions are calculated by applying equations 1 and 2 as per the methodology:

$$BE_y = \sum_{i,j,k} EC_{i,y} \times N_{j,k,y} \times n_{j,k,y} \times (EF_{b,i,CO_2} \times f_{NRB,y} + EF_{b,i,nonCO_2}) \quad (1)$$

Where:

BE_y = Baseline emissions during year y (t CO₂e)

$EC_{i,y}$ = Average energy consumption of baseline device type i in year y (TJ)

$N_{j,k,y}$ = Number of commissioned project devices of type j from batch k in year y

$n_{j,k,y}$ = Proportion of commissioned project devices of type j from batch k that remain operating in year y (fraction)

EF_{b,i,CO_2} = CO₂ emission factor for fuel used by baseline device type i in the baseline scenario (t CO₂/TJ)

$f_{NRB,y}$ = Fraction of woody biomass that is established to be non-renewable used by baseline device in year y; this variable is not considered for fossil fuels (fraction)

$EF_{b,i,nonCO_2}$ = Non-CO₂ emission factor for fuel used by baseline device type i in the baseline scenario (t CO₂e/TJ)

i = Baseline device type and its respective fuel type

j = Project device type and its respective fuel type

Average Energy Consumption of Baseline Device ($EC_{i,y}$)

The average energy consumption of baseline device type i is calculated as follows:²⁵

$$EC_{i,y} = BC_{b,i,y} \times NCV_{b,i} \quad (2)$$

Where:

$BC_{b,i,y}$ = Fuel used per baseline device type i during year y (tonnes)²⁶

$NCV_{b,i}$ = Net calorific value of baseline fuel for baseline device type i (TJ/tonne)

The quantity of fuel that would be used in the baseline scenario will be determined by using Option 1: Measurement campaign as specified in section 8.1.1 of the applied methodology.

Cross-check of $EC_{i,y}$ to address stove stacking

Stove stacking (continued use of pre-project devices in project households) is addressed by comparing the quantity of baseline energy consumption determined by both options above ($EC_{i,y}$) to energy used in the project scenario ($EC_{p,y}$) using back-calculation. Where the results indicate that baseline consumption ($EC_{i,y}$) is higher than that indicated by back calculation from the project scenario ($EC_{est,y}$) then stove stacking is occurring (as $EC_{p,y}$ is unable to completely capture household energy consumption from cooking due to the presence/use of pre-project devices). The back-calculation results ($EC_{est,y}$) must be applied in Equation (1) as a conservative cap, except where project devices are electric cooking devices with efficiency of 70% or higher.

$$EC_{est,y} = EC_{p,y} \times \frac{\eta_{new,avg,y}}{\eta_{old,avg}} \quad (3)$$

Where:

$EC_{est,y}$ = Back-calculated energy consumption of the potential mix of devices and fuels in the baseline in year y (TJ)

$EC_{p,y}$ = Energy used in project scenario by project devices during year y (TJ)

$\eta_{new,avg,y}$ = Weighted average efficiency of project devices in year y (fraction)

$\eta_{old,avg}$ = Weighted average efficiency of baseline devices that are replaced by project devices (fraction)

$EC_{p,y}$ must be determined as follows, using the parameters determined as per Section 8.2.

²⁵ Where charcoal is used as the fuel by baseline and/or project devices, the average energy consumption (derived from the average quantity of charcoal fuel used) in the baseline and/or project scenario may be determined by using a wood to charcoal conversion factor (CF) instead of the fuel emission factor.

²⁶ This parameter corresponds to $BC_{ex-ante,b,i}$ for the first five years and where the follow-up baseline survey campaign shows that there are no significant changes in baseline fuel consumption. Otherwise, it corresponds to $BC_{b,i,y}$.

$$EC_{p,y} = \sum_{j,k} BC_{p,j,k,y} \times NCV_{p,j} \quad (4)$$

Where:

$BC_{p,j,k,y}$ = Average quantity of fuel used by project device type j from batch k during year y (tonnes)
 $NCV_{p,j}$ = Net calorific value of project fuel used in project device type j (TJ/tonne)

Baseline Emission calculations for the Project activity instances is given below:

Vintage 2023:

$BC_{b,i,y}$ = 4.77 tonnes wood eq/year/HH

$EC_{i,y}$ = $BC_{b,i,y} \times NCV_{b,i}$

$EC_{i,y}$ = 4.77×0.0156
= 0.0745 TJ/year/HH

Cross-check of $EC_{i,y}$ to address stove stacking

$BC_{p,j,k,y}$ = 2.076 tonnes wood eq/year/HH

$EC_{p,y}$ = $\sum_{j,k} BC_{p,j,k,y} \times NCV_{p,j}$

$EC_{p,y}$ = 2.076×0.0156
= 0.0324 TJ/year/HH

$\eta_{new,avg,y}$ = 37.30%

$\eta_{old,avg}$ = 17.82%

$EC_{est,y}$ = $EC_{p,y} \times \frac{\eta_{new,avg,y}}{\eta_{old,avg}}$

$EC_{est,y}$ = $0.0324 \times \frac{37.30\%}{17.82\%}$

$EC_{est,y}$ = 0.0678 TJ/year/HH

Since $EC_{i,y}$ is greater than $EC_{est,y}$, the applicable value for $EC_{i,y}$ in the equation (1) is 0.0678 TJ/year/HH.

BE_y = $\sum_{i,j,k} EC_{i,y} \times N_{j,k,y} \times n_{j,k,y} \times (EF_{b,i,CO_2} \times f_{NRB,y} + EF_{b,i,nonCO_2})$

BE_y = $0.0678 \times 144,386 \times 0.9 \times (112 \times 0.67 + 9.46) \times 0.16$ (Year equivalent fraction)
= 123,343 tCO_{2e}

Vintage 2024:

$BC_{b,i,y}$ = 4.77 tonnes wood eq/year/HH

$EC_{i,y}$ = $BC_{b,i,y} \times NCV_{b,i}$

$$\begin{aligned} EC_{i,y} &= 4.77 * 0.0156 \\ &= 0.0745 \text{ TJ/year/HH} \end{aligned}$$

Cross-check of $EC_{i,y}$ to address stove stacking

$$BC_{p,j,k,y} = 2.076 \text{ tonnes wood eq/year/HH}$$

$$\begin{aligned} EC_{p,y} &= \sum_{j,k} BC_{p,j,k,y} \times NCV_{p,j} \\ EC_{p,y} &= 2.076 * 0.0156 \\ &= 0.0324 \text{ TJ/year/HH} \end{aligned}$$

$$\eta_{new,avg,y} = 37.30\%$$

$$\eta_{old,avg} = 17.82\%$$

$$EC_{est,y} = EC_{p,y} \times \frac{\eta_{new,avg,y}}{\eta_{old,avg}}$$

$$EC_{est,y} = 0.0324 \times \frac{37.30\%}{17.82\%}$$

$$EC_{est,y} = 0.0678 \text{ TJ/year/HH}$$

Since $EC_{i,y}$ is greater than $EC_{est,y}$, the applicable value for $EC_{i,y}$ in the equation (1) is 0.0678 TJ/year/HH.

$$\begin{aligned} BE_y &= \sum_{i,j,k} EC_{i,y} \times N_{j,k,y} \times n_{j,k,y} \times (EF_{b,i,CO2} \times f_{NRB,y} + EF_{b,i,nonCO2}) \\ BE_y &= 0.0678 * 224,789 * 0.9 * (112 * 0.67 + 9.46) * 0.63 \text{ (Year equivalent fraction)} \\ &= 733,884 \text{ tCO}_2\text{e} \end{aligned}$$

5.2 Project Emissions

Project emissions are calculated as follows:

$$PE_y = PE_{energy,y} + PE_{others,y} \quad (5)$$

Where:

$$PE_y = \text{Project emissions during year } y \text{ (t CO}_2\text{e)}$$

$$PE_{energy,y} = \text{Project emissions from energy consumption of project devices in year } y \text{ (t CO}_2\text{e)}$$

$$PE_{others,y} = \text{Project emissions from other sources in year } y \text{ (t CO}_2\text{e)}$$

$PE_{energy,y}$ from Biomass, Fossil Fuels, or Bioethanol

Project emissions from energy consumption of project devices using biomass, fossil fuels, or bioethanol in year y are calculated as follows:

$$PE_{energy,y} = \sum_j \sum_k BC_{p,j,k,y} \times N_{j,k,y} \times NCV_{p,j} \times n_{j,k,y} \times (EF_{p,j,CO2} \times f_{NRB,y} + EF_{p,j,nonCO2}) \quad (6)$$

Where:

$EF_{p,j,CO2}$ = CO₂ emission factor for fuel used by project device type j in the project scenario (t CO₂/TJ)

$EF_{p,j,nonCO2}$ = Non-CO₂ emission factor for fuel used by project device type j (t CO₂e/TJ)

BC_{p,j,k,y} for Project Devices

Option 1: Kitchen Performance Test as mentioned in section 8.2.1.1 will be used to determine this parameter. The sampling calculation and the KPT tests were performed, following the Kitchen Performance Test Protocol and in compliance with the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.

For this project activity, during the current monitoring period, the project proponent has conducted random sampling and selected 193 units from a population of 224,789 ICS/Household for the usage monitoring surveys, and 45 units for KPT surveys which are a subset of the 193 usage monitoring surveys.

Project Emission calculations for the Project activity instances is given below:

Vintage 2023:

$BC_{p,j,k,y}$ = 2.076 tonnes wood eq/year/HH

$n_{j,k,y}$ = 0.90

$PE_{others,y}$ = 0 (Since there is no other project emissions associated with this project activity)

PE_y = $PE_{energy,y} + PE_{others,y}$

PE_y = $\sum_{i,j,k} BC_{p,j,k,y} \times N_{j,k,y} \times NCV_{p,j} \times n_{j,k,y} \times (EF_{p,j,CO2} \times f_{NRB,y} + EF_{p,j,nonCO2})$

PE_y = $2.076 * 144,386 * 0.0156 * 0.9 * (112 * 0.67 + 9.46) * 0.16$ (Year equivalent fraction)
= 58,925 tCO₂e

Vintage 2024:

$BC_{p,j,k,y}$ = 2.076 tonnes wood eq/year/HH

$n_{j,k,y}$ = 0.90

$PE_{others,y}$ = 0 (Since there is no other project emissions associated with this project activity)

PE_y = $PE_{energy,y} + PE_{others,y}$

PE_y = $\sum_{i,j,k} BC_{p,j,k,y} \times N_{j,k,y} \times NCV_{p,j} \times n_{j,k,y} \times (EF_{p,j,CO2} \times f_{NRB,y} + EF_{p,j,nonCO2})$

PE_y = $2.076 * 224,789 * 0.0156 * 0.9 * (112 * 0.67 + 9.46) * 0.63$ (Year equivalent fraction)
= 350,600 tCO₂e

5.3 Leakage Emissions

The project activity involves distribution of high efficiency improved cookstoves for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of non-renewable biomass. So, only option 1 applies for this project activity, thereby, applying an adjustment factor of 0.95 to the GHG emission reductions in Equation (7) below.

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Net GHG emission reductions are calculated as follows:

$$ER_y = (BE_y - PE_y) \times 0.95 - LE_{RB,y} \quad (7)$$

Where:

ER_y = Emission reductions during year y (t CO₂e)

$LE_{RB,y}$ = Leakage emissions associated with use of renewable biomass during year y (t CO₂e)

$LE_{RB,y} = 0$ for this project activity (Since, this project focusses on distribution of improved cookstoves within the project boundary, which will replace inefficient traditional charcoal stoves in the Tanzanian households.

The net GHG emission reduction calculations for the Project activity instances is given below:

Vintage 2023:

$$\begin{aligned} ER_y &= (123,343 - 58,925) \times 0.95 \\ &= 61,197 \text{ tCO}_2\text{e (Rounddown values)} \end{aligned}$$

Vintage 2024:

$$\begin{aligned} ER_y &= (733,884 - 350,600) \times 0.95 \\ &= 364,119 \text{ tCO}_2\text{e (Rounddown values)} \end{aligned}$$

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCUs (tCO ₂ e)	Removal VCUs (tCO ₂ e)	Total VCUs (tCO ₂ e)
01-Nov-2023 to 31-Dec-2023	123,343	58,925	-	61,197	-	61,197
01-Jan-2024 to 31-Oct-2024	733,884	350,600	-	364,119	-	364,119
Total	857,228	409,525	-	425,316	-	425,316

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Nov-2023 to 31-Dec-2023	73,627	61,197	-16.9%	Only 68% of the envisaged distribution happened till end of MP3.
01-Jan-2024 to 31-Oct-2024	739,823	364,119	-50.8%	
Total	813,451	425,316	-47.7%	

APPENDIX X: <TITLE OF APPENDIX>

Use appendices for supporting information. Delete this appendix (title and instructions) where no appendix is required.