



**Verified Carbon
Standard**

COMMUNITY CARBON EFFICIENT COOKING PROGRAMME – TANZANIA – 1



**Community
Carbon**

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Project ID	2676
Crediting period	22-April-2022 to 21-April-2029
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Prepared by	Community Carbon

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1 PROJECT DETAILS

1.1 Summary Description 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. The annual average emission reductions are estimated to be 975,864 CO₂e 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.

Each stove is considered as a single project activity instance.

Location of the project

The project activity will be implemented in Tanzania. The details of the project location are provided in Section 1.12.

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 as 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 estimate of annual average and total reductions and removals

The first project activity was implemented on 22-April-2022 under this grouped project activity. The annual average emission reductions for 425,000 operational ICS are estimated to be 975,864 tCO₂e and over a 7-years period of are approximately 6,831,045 tCO₂e.

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 scope¹	03 Energy Demand
Project activity type	Type II Energy Efficiency Improved cookstoves Projects

The project is a grouped project.

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>

1.4 Project Eligibility

1.4.1 General eligibility

Grouped Project and Project Activity Instances

The GP falls within the scope of the VCS Program as it is in line with the VCS Standard v 4. 7 section 2.1.1. The Grouped project includes reduction of Carbon Dioxide emissions which is one of the seven Kyoto Protocol greenhouse gases included under the scope of VCS program. And the Grouped Project is supported by a methodology approved under the VCS Program through the methodology development and review process. The project does not involve use of Ozone Depleting Substances, Jurisdictional or nested REDD+ programs and does not use a VCS methodology.

Further, the project has not generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction.

The project does not fall under the category of excluded projects in Table 1 of section 2.1.3 of the VCS Standard v4.7 and is therefore eligible under the scope of the VCS Program:

Table 1: Excluded Project Activities under VCS

Excluded Activity	Applicability
Grid-connected electricity generation using hydroelectric power plants.	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of electricity.
Grid-connected electricity generation activities using hydroelectric power plants.	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of electricity.
Grid-connected electricity generation activities using wind, geothermal, or solar photovoltaic (PV) power plants.	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of electricity.
Activities recovering waste heat for combined cycle electricity generation, or to heat/cool via cogeneration or trigeneration.	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of heat for producing electricity.
Activities generating electricity and/or thermal energy for industrial use from the combustion of non-renewable biomass, agro-residue, or forest residue biomass.	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of heat for producing electricity.

Excluded Activity	Applicability
Activities generating electricity and/or thermal energy using fossil fuels, and activities that involve switching from a higher to a lower carbon content fossil fuel.	N/A: The GP activities do not include the generation of electricity and/or thermal energy using fossil fuels, and activities that involve switching from a higher to a lower carbon content fossil fuel.
Activities replacing electric lighting with more energy-efficient electric lighting, such as the replacement of incandescent electrical bulbs with compact fluorescent lights (CFLs) or light emitting diodes (LEDs).	N/A: The GP activities do not include the replacement of electric lighting with more energy efficient lighting.
Activities installing and/or replacing electricity transmission lines and/or energy efficient transformers.	N/A: The GP activities do not include the installation and/or replacement of electricity transmission lines and/or energy efficient transformers.
Activities that reduce hydrofluorocarbon-23 (HFC-23) emissions.	N/A: The GP reduces GHG emissions (Carbon, Dioxide (CO ₂), Methane (CH ₄), Nitrous Oxide (N ₂ O), Carbon Monoxide (CO)) due to energy efficiency measures by introducing improved cookstoves.

Table 2: Demonstration of Project's eligibility under VCS program

Applicability condition	Project compliance
To list a project as under validation, the following shall be submitted to Verra: - A project description - Proof of contracting of the validation - A listing representation	N/A: The project is already registered and has issued VCUs, currently undergoing a methodology change through a Project Description Deviation.
The validation/verification body shall ensure that the project is listed on the project pipeline with a status of under validation before the opening meeting with the project proponent, such opening meeting representing the beginning of the validation process. Further, validation shall not begin until the 30-day public comment period has begun, and the validation/verification body shall not complete validation until after the 30-day public comment period has ended.	N/A: The project is already registered and has issued VCUs, currently undergoing a methodology change through a Project Description Deviation. As per the VCS "Procedure to Change Methodology through a Project Description Deviation", the project will undergo the assessment by VVB.

Methodology eligibility: Project shall apply methodologies eligible under the VCS Program. Methodologies shall be applied in full, including the full application of any tools or modules referred to by a methodology,	The project is applying “VM0050 Energy Efficiency and Fuel-Switch Measures in Cookstoves, v1.0” methodology, which is active and eligible under the VCS program. Methodology will be applied in full without any deviations.
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1.4.2 AFOLU project eligibility

As the project activity is not an AFOLU project, thus, this section is not applicable.

1.4.3 Transfer project eligibility

As the project activity is not a transfer project and has been developed and implemented under the VCS Program from its inception, adhering to all relevant VCS requirements, thus, this section is not applicable. The project activity has not been registered, nor is it seeking registration under any other GHG program.

1.5 Project Design

- ☐ Single location or installation
- ☐ Multiple locations or project activity instances (but not a grouped project)
- ☒ Grouped project

1.5.1 Grouped project design

For the inclusion of new project instances (PIs), the project proponent shall ensure that it meets the eligibility criteria set out in clause 3.6.16 to 3.6.18 of the VCS Standard v4.7.

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 PD.
2	Technology	The current project activity instances and the new project activity instances	The project activity instances cookstoves have higher

	Use the technologies or measures specified in the project description.	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.	efficiency of around 38% and better emission parameters compared to the baseline scenario. Source: 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 are efficient improved cookstoves (ICS) as specified in this document. Source: Manufacturer's specification/distribution records.
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. Source: Baseline survey report.
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 3rd monitoring period, PP has distributed 224,789 number of project activity instances and the remaining instances from

			the total planned distribution will be distributed in the upcoming monitoring periods. Source: 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 shall be located within the geographic boundaries of Tanzania. Source: 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 start date of each project activity instance.	End users receiving ICS 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. Source: Carbon Waiver forms
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 through to the end of the project crediting period (only).	The project is eligible for crediting from start date, which is 22-April-2022. Source: Distribution Database shared with VVB
10	Double Counting	The Improved Cookstove distributed under this project shall be uniquely	Each ICS installed under this grouped project activity shall

		identifiable based on the distribution records.	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. Source – 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.	No project activity instance shall exceed the applicable limit.

		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.	
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1.6 Project Proponent

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

1.7 Other Entities Involved in the Project

Organization name	UpEnergy Group
Role in the project	Consultant
Contact person	Anantha Karthik Rajagopalan
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	Jacqueline Ngulla

Title	Country Director
Address	P.O. Box 32619 Dar es salaam, Tanzania
Telephone	-
Email	jacqueline@upenergygroup.com

1.8 Ownership

The project ownership is with Community Carbon.

A voluntary and irrevocable carbon agreement signed by the end user (cookstove user) conferring project ownership to the project proponent shall be the evidence of project ownership.

Each ICS shall have a unique serial number linking it to the project activity instances and shall be necessary to establish the fact that the ICS belongs to this VCS programme. End users will be informed at the time of ICS installation/distribution that the ICS will be discounted on account of them generating carbon credits and also the fact that these credits belong to project proponent. The end user will be 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.

1.9 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.

1.10 Project Crediting Period

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

1.11 Project Scale and Estimated GHG Emission Reductions or Removals

- ☐ < 300,000 tCO₂e/year (project)
- ☒ ≥ 300,000 tCO₂e/year (large project)

Calendar year of crediting period	Estimated GHG emission reductions or removals (tCO ₂ e)
22-April-2022 to 31-December-2022	90,716
01-January-2023 to 31-December-2023	477,987
01-January-2024 to 31-December-2024	963,216
01-January-2025 to 31-December-2025	1,231,178
01-January-2026 to 31-December-2026	1,231,178
01-January-2027 to 31-December-2027	1,231,178
01-January-2028 to 31-December-2028	1,231,178
01-January-2029 to 21-April-2029	374,413
Total estimated ERRs during the first or fixed crediting period	6,831,045
Total number of years	07
Average annual ERRs	975,864

1.12 Description of the Project Activity

The project involves distribution of fuel-efficient improved cook stoves (ICS) to replace the baseline traditional cook stoves in households.

The ICS to be deployed under this project is energy efficient which substantially reduces fuel consumption and emissions for conducting cooking 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 charcoal. It substantially reduces charcoal fuel consumption compared with a less efficient. The project technology under the (improved cookstoves) proposed grouped project has an average lifespan of 7 years.

The ICS' distributed and/or will be distributed/implemented under the proposed grouped project are flexible in terms of their designs and models, however, PP will continuously be focused on design improvements to benefit the end users in all aspects including, faster/efficient cooking,

safety from shoot/smoke emission, less fuel consumption and thus money savings etc. This will be assessed and implemented by the PP with the local manufacturer/assembling partners/suppliers. As such the project is not limited to the distribution of a specific ICS model or type throughout the crediting period, however, all ICS' must comply with the eligibility criteria as stipulated in section 1.5.1 of this Project Description. Regardless of new insights into ICS' design improvement, any ICS model included in the Project will remain valid in terms of generating carbon offsets and other co-benefits as mentioned above throughout the lifetime of the project period until the PP is unable to move with monitoring and verification of the grouped project due to unforeseen events i.e. carbon market situation.

Technical Specifications of Smart Home Pro and Community Jiko Bora Cookstoves as follows:

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

Project Developers/Representatives:

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

Data collection of ICS end-user:

Project proponent must gather the necessary information to identify households using its ICS during the course of the project. To facilitate this process, each ICS will be assigned a unique serial number. This number will be recorded during the registration process together with the following information (as appropriate and as available):

- ✓ Name of ICS user or head of the household
- ✓ Address/ Village name of ICS household
- ✓ Stove model Distributed
- ✓ Date of distribution/installation
- ✓ ICS serial number
- ✓ Retailer/distributor/Manufacturer information

The information collected will be stored in the electronic database excel sheet which will serve as project database for project monitoring and sampling purposes. The traditional cook stoves were operational and this was the scenario prior to the implementation of project.

The project participant will either distribute/replace the ICS after the end of lifetime of each model or will not claim the ERs after the end of lifetime.

The project has the following target of intended distributions:

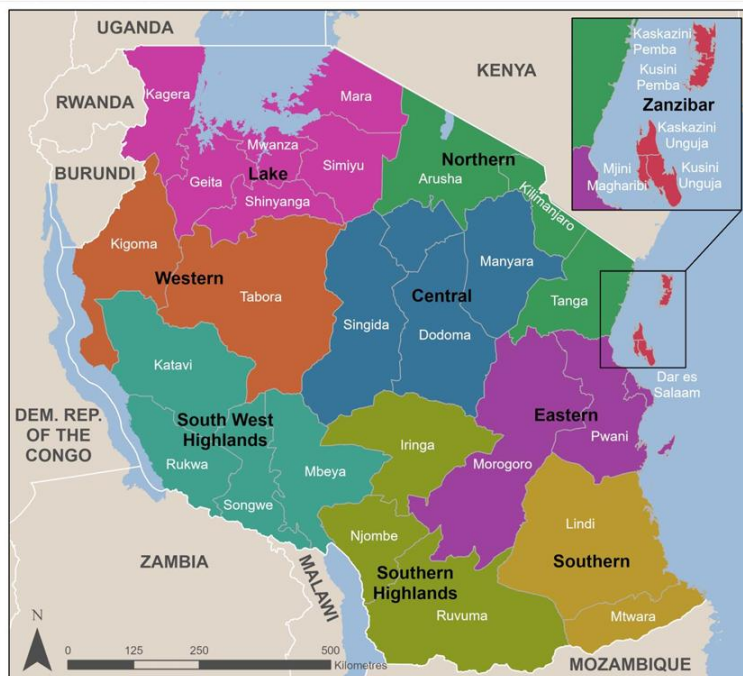
Year	ICS
Year 1	90,000
Year 2	150,000
Year 3	185,000

1.13 Project Location

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

Latitude – 6°22'8.5" S (6.369° S)

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



Tanzania Map²

1.14 Conditions Prior to Project Initiation

Prior to the implementation of the project activity the existing scenario recorded as 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. Majority of people in the host country still use traditional cookstoves for cooking purposes. The continued use of traditional cookstoves also contributes to increased indoor air pollution levels and related health risks. The current scenario is the same as the conditions prior to project initiation, i.e., continuation to use traditional cookstoves to meet thermal energy demand for cooking.

² <https://dhsprogram.com/pubs/pdf/PR144/PPR144.pdf> (last accessed on 06-March-2025)

This situation is consistent with the Baseline Scenario presented in Section 3.4, which documents the continued use of traditional cookstoves fueled by non-renewable biomass based on baseline survey results and national statistics confirming the predominance of biomass-based cooking technologies in the project area.

1.15 Compliance with Laws, Statutes and Other Regulatory Frameworks

There are no mandatory laws or regulations in the host country for the use of improved cookstoves in Tanzania households. The project is a voluntary effort by the project proponent. A review is made on Tanzania environmental laws and regulations as below:³

- 1) Environmental Management Act, 2004
- 2) Environmental Management (Environmental Impact Assessment and Audit) Regulations, 2005, as amended 2018
- 3) Tanzania's Updated Nationally Determined Contribution (2021)⁴
 - 1) Environmental Management (Control and Management of Carbon Trading) Regulations, 2022⁵
 - 4) National Clean Cooking Strategy 2024–2034⁶

Tanzania's Updated Nationally Determined Contribution (2021) identifies clean cooking as a key mitigation and development priority, supporting efforts to reduce reliance on non-renewable biomass. The Environmental Management Regulations 2022 aims to provide control and management of carbon trading projects in the United Republic of Tanzania. This regulation does not impose any mandatory requirements for improved cookstove adoption and thus, the project activity remains voluntary. Further, the Government of Tanzania has introduced the National Clean Cooking Strategy 2024–2034, which outlines national objectives to expand access to clean cooking solutions, promote efficiency improvements, and reduce health and environmental

³ <https://www.elaw.org/eialaw/tanzania> (last accessed on 06-March-2025)

⁴ https://unfccc.int/sites/default/files/NDC/2022-06/TANZANIA_NDC_SUBMISSION_30%20JULY%202021.pdf?utm_source=chatgpt.com (last accessed on 05-December-2025)

⁵ <https://www.ncmc.go.tz/wp-content/uploads/2022/11/the-Environmental-Management-Control-and-Management-of-Carbon-Trading-Regulations-2022-i.pdf> (last accessed on 05-December-2025)

⁶ [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 05-December-2025)

impacts from traditional biomass use. These policy instruments provide supportive national direction for clean cooking, but they do not impose any mandatory household adoption requirements. There is no specific concern made on improved cookstoves project from the above law and regulation. Accordingly, the project remains a voluntary activity while aligning with national policy goals.

1.16 Double Counting and Participation under Other GHG Programs

1.16.1 No Double Issuance

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

☐ Yes ☒ No

1.16.2 Registration in Other GHG Programs

Has the project registered under any other GHG programs?

☐ Yes ☒ No

Is the project active under the other program?

☐ Yes ☒ No

1.16.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ No

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

1.17.1 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

1.17.2 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

1.17.3 Supply Chain (Scope 3) Emissions

Do the project activities specified in Section 0 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 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

1.18 Sustainable Development Contributions

Project's contribution to Sustainable Development:

The contributions of proposed project activity towards sustainable development 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.
- The project will help reduce the use of non-renewable biomass from forests, thus assist in conserving existing forest stock and the protection of natural forest eco-systems and wildlife habitats.

Social well-being:

- Considerably less time needed to be spent on cooking for the family home thereby reducing the work burden on rural families and presenting alternative opportunities for economic development.
- 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: Summary of Project SDG Contributions

Goal No	SDG Target	Estimated Project Contribution by the End of Project Lifetime	Monitoring Indicator	Unit	Net Impact on SDG Indicator
1	1.1	The distribution of energy efficient stoves help save 0.40 \$ per day per HH for the given project activity	Average savings realized due to decrease in expenditure on basic service such as cooking	\$ / day / HH	Increase
5	5.1	This project activity promotes employment to women, thus helps eradicating gender-based discrimination and provides socio-economic parity	% of Female employees	%	Increase
	5.4	In the poorest communities, the burden of collecting and / or purchasing fuel often falls on women and children. By reducing cooking time, the program provides women in project households with more time to invest in other productive economic development activities	Average time saving associated with cooking time	hours / day / HH	Increase
	5.5	This project activity encourages participation of women in leadership / managerial role	Number of women serving in managerial/ leadership /ownership role	Number	Increase
7	7.1	The project activity involves promotion and distribution of 425,000 improved cooking stoves (ICS) in the household Nigeria	Number of households having access to improved cooking technology due to project activity	Number of households	Increase
8	8.b	The project activity provides training and skill development program for youth population, thus increasing the employability	Number of Trainings conducted in a year	Number	Increase

Goal No	SDG Target	Estimated Project Contribution by the End of Project Lifetime	Monitoring Indicator	Unit	Net Impact on SDG Indicator
	8.5	The project activity generates employment for marketing / sales and distribution / technical employees	Number of jobs created	Number	Increase
12	12.2	Reduce the consumption of non-renewable biomass in participant households by as much as 2.56 tonnes of eq.firewood / annum / HH, depending on stove model	Decrease in specific fuel consumption	tonnes of eq.firewood / annum / HH	Decrease
13	13.0	6,831,045 tCO ₂ e of greenhouse gas emissions will be avoided over a 7-year period	Amount of GHG emissions avoided	tCO ₂ e/annum	Increase
15	15.1	The Project will reduce 6,142,975 tonnes of Non-renewable biomass over a 7-year period in participant households and will contribute towards reducing deforestation	Amount of Non-renewable biomass saved	tonnes of eq.firewood / annum	Increase

1.19 Additional Information Relevant to the Project

1.19.1 Leakage Management

There is no leakage for this project activity and the project activity is already including 0.95 as a discount factor.

1.19.2 Commercially Sensitive Information

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

1.19.3 Further Information

The Project Proponent has obtained all the relevant approvals required for the establishment and operation of the project activity.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

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

Date of stakeholder consultation	22-April-2022
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Stakeholder engagement process	PP is implementing improved cookstove projects in Tanzania and seeking registration under VERRA. Through the distribution and installation of energy efficient cookstoves, the project aims to reduce Tanzania's population dependency on non-renewable biomass used for cooking, such as charcoal, improve the surrounding environment from further degradation. The process of engaging stakeholders in a culturally appropriate manner involved several steps. Stakeholders were invited to provide feedback via multiple methods including, e-mail/phone invitations were sent from Community Carbon on 23-March-2022 to 48 people from organizations around the country including government, NGOs, stove manufacturers, project developers, and private and public-sector entities involved with cookstoves and/or sustainable energy. The invitations were also sent by newspaper advertisements. Prior to consultation, Community Carbon had provided with the following documents in the language that allows local stakeholders to understand and engage with the project. - Non-Technical summary with relevant information - Summary of the economic, social and environmental impacts of the project - Contact details of the Community Carbon to get for getting technical and project related information of the project - Email id of Community Carbon was provided to the stakeholders who are not able to join the consultation meeting The Local stakeholder Consultation meetings was done on the 22-April-2022 with the participation of different stakeholder categories. There were 39 participants from various categories participated in the LSC meeting.
Consultation outcome	During the Local Stakeholder Consultation meeting, the Key Project Information was presented to the local stakeholders (both in English and Swahili). The sustainable development indicators and the monitoring of the indicators were clearly explained, and the Blind Assessment and Consultation Feedback Forms were given to them. Additionally, a copy of the presentation was also shared with them in order to help them provide feedback to Community Carbon in

adapting the design and implementation of project activity in order to maximize benefits for end-users.

Brief summary of the meeting:

- Meeting was called to order at 10am by meeting and chaired by Community Carbon.
- Associate started by welcoming all the stakeholders that managed to be present for the consultation, after members introduced themselves.
- Brief introduction on Community Carbon as a company, the carbon credits system, products that are on the market and company presence on the globe.
- Discussion on Smart home stove in depth and showed the stove parts and explained the different stove parts on the stove to the stakeholders.

Overall, both stakeholders and beneficiaries unanimously acknowledged the benefits of the improved cookstove design and features and there was a considerable amount of positive feedback.

Ongoing communication

The mechanism for ongoing communication with stakeholders is as follows:

	Method Chosen (include all known details e.g. location of book, phone, number, identity of mediator)	Justification of Choice (best practice)
Continuous Input / Grievance Expression Process Book (mandatory)	Continuous input / Grievance Expression process book is available at the following office: Community Carbon P.O. Box 32619 Dar es salaam, Tanzania	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.
	Telephone access - toll free number(optional)	+255 800 750 303	
	Internet/email access (optional)	anantha@communityco2.org	
	Nominated Independent Mediator (optional)		
	Other		
PP will ensure that regular monitoring is carried out by field staff and/or project managers in order to gather feedback from the local stakeholders. During the implementation of project activity, any stakeholders' concerns (both positive or negative) will be taken due care by the project proponent and necessary actions would be taken to resolve their queries.			
Stakeholder input	Assessment of comments from all consultations above:		
	Gender of Stakeholder	Stakeholder comment	Was comment taken into account (Yes/ No)?
			Explanation (Why? How?)
	Male	What is Community Carbon Marketing strategy?	Yes
	Female	Prices of our products	Yes
			The company is yet to decide on how the products will be marketed.
			ICS will be sold for 10,000 TSHs
	Male	The products seem to have a strong chance of succeeding in	Yes
Our products provide a wide range of benefits to its users and the environment.			

		urban areas.		
	Male	Have the products been certified by the Tanzania Standard Authority?	Yes	No. Plans are underway to get all our products certified before being sold to our target beneficiaries.
	Female	Access to Clean Cooking Technologies to low-income families.	Yes	Target Beneficiaries are the low- income groups in rural and urban areas.

2.1.3 Free Prior and Informed Consent

Obtaining consent	Local Stakeholder Consultation was conducted in the project boundary, during which the Project Proponent invited the primary stakeholders that might get 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 included all categories of stakeholders, i.e., direct as well as indirect stakeholders. During the Local Stakeholder Consultation meeting, there were no negative comments received. As of the current monitoring period, there are no ongoing or unresolved conflicts related to the project.
Outcome of FPIC	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 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. 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.

2.1.4 Grievance Redress Procedure

Development process	Stakeholders register grievances through the Continuous Input/Grievance Expression Process Book, 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.
Grievance redress procedure	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.

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>

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 across several Sub-Saharan African countries under both Gold Standard and VERRA registries.

2.2.2 Risk Assessment

	Risks 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 ⁷	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, our employees, contractors, and third-party individuals, and within the projects

⁷ 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.

		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.
Equal pay for equal 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.
Gender equity in labor and work	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.

Forced 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.
Child labor	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.
Human trafficking	No risk identified	The project proponent ensures a transparent and ethical recruitment process, guaranteeing that all staff are hired voluntarily and are not victims of human trafficking.

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
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

	Risks identified	Mitigation or preventative measure(s) taken
Impacts on biodiversity and ecosystems	No risk identified	
Soil degradation and soil erosion	No risk identified	
Water consumption and stress	No risk identified	

2.4.1 Rare, Threatened, and Endangered Species

Is the project located in or adjacent to habitats for rare, threatened, or endangered species?

☐ Yes ☒ No

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 APPLICATION OF METHODOLOGY

3.1 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 ⁸
Corrections & Clarifications	-	Correction and Clarifications to VM0050 Energy Efficiency and Fuel-Switch Measures in Cookstoves, v1.0	1.0 ⁹
Tool	Tool 30	TOOL 30 Calculation of the fraction of non-renewable biomass EB 108 Annex 11 v4.0	4.0 ¹⁰
Guideline	-	Sampling and surveys for CDM project activities and programmes of activities	9.0 ¹¹
Tool	Tool VT0008	Tool VT0008 Additionality Assessment	1.0 ¹²

3.2 Applicability of Methodology

Methodology ID	Applicability condition	Justification of compliance
VM0050	1) The project activity corresponds to:	The proposed instances will distribute more efficient improved charcoal cookstoves for

⁸ <https://verra.org/wp-content/uploads/2024/10/VM0050-EE-and-Fuel-Switch-Measures-in-Cookstoves-v1.0.pdf>

⁹ https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf

¹⁰ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v4.0.pdf>

¹¹ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stn05.pdf

¹² <https://verra.org/wp-content/uploads/2024/10/VT0008-Additionality-Assessment-v1.0.pdf>

Methodology ID	Applicability condition	Justification of compliance
	a) Replacement of non-renewable biomass (e.g., firewood, charcoal) fired cookstoves with any of the following: i) More efficient project devices that use the same fuel as in the baseline; ii) Efficient project devices fired by renewable biomass or bioethanol; iii) Efficient project devices fired by liquefied petroleum gas (LPG); or iv) Electric-powered project devices. b) Replacement of solid or liquid fossil fuel (e.g., coal, kerosene) fired cookstoves with any of the following: i) Efficient project devices fired by renewable biomass or bioethanol; ii) Efficient project devices fired by LPG; or iii) Electric-powered project devices.	thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of non-renewable biomass. The ICS to be distributed under the project activity are Smart Home Pro and Community Carbon Jiko Bora stoves. All ICS in this project will replace existing only traditional charcoal stoves. Further, the project activity will utilize non-renewable biomass under project scenario. This criterion will be checked from data recorded on the baseline stove used prior to ICS installation. Evidence – Distribution Records. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	2) Project devices are used in households, communities, institutions, or small or medium enterprises (SMEs), collectively referred to in this methodology as the “target population.”	The proposed instances involve distribution of ICS in households. Evidence – End user carbon agreement The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	3) Where renewable biomass is used, it is exclusively renewable	Not applicable. The proposed instances will distribute high efficiency improved cook stove

Methodology ID	Applicability condition	Justification of compliance
	and qualifies as one of the following: a) A by-product, residue, or waste stream from agriculture, forestry, and related industries; b) Originating from dedicated plantations that comply with all relevant applicability conditions in the most recent version of CDM TOOL16.	for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of only non-renewable biomass. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	4) Where biomass residues are used, they would have been left to decay or burned without energy recovery before implementation of the project activity, and their use does not involve a decrease in carbon pools – in particular of dead wood, litter, or soil organic carbon – on the land areas from which the biomass residues originate.	Not applicable. The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of only non-renewable biomass. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	5) Where biomass residues from a production process are used, project implementation does not result in an increase in the processing capacity of raw input or any other substantial changes (e.g., product change) in this process.	Not applicable. The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of only non-renewable biomass. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	6) Where more than one type of renewable biomass is used, each of the biomass types used complies with the applicability conditions.	Not applicable. The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional charcoal cookstove

Methodology ID	Applicability condition	Justification of compliance
		leading to saving of only non-renewable biomass. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	7) Where project activities introduce renewable biomass as charcoal, it is renewable charcoal produced by efficient charcoal production processes (e.g., retort sedentary kilns, improved sedentary kilns, Casamance kilns). Methane produced during the charcoaling process is captured and destroyed or combusted for energy purposes.	Not applicable. The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of only non-renewable biomass. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	8) Project devices using renewable biomass (fuel-switch) or non-renewable biomass (improved efficiency) are single-pot, multi-pot portable, or in-situ cookstoves with an initial thermal efficiency of at least 25%.	Improved Cookstoves planned to be distributed under this project are SmartHome Pro stove that have an efficiency of 37.9% and Community Jiko Bora that have an efficiency of 38% as per the manufacturer's specifications. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	9) Project devices using LPG or bioethanol are single-pot, multi-pot portable, or in-situ cookstoves with an initial thermal efficiency of at least 30%.	Not applicable. The proposed instances involve distribution of improved charcoal cookstoves within the project boundary. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),

Methodology ID	Applicability condition	Justification of compliance
VM0050	10) Electric project devices meet the maximum risk factor score of 15 on the Cookstove Durability Protocol and have the following minimum thermal efficiency: a) Hot plates and electric hobs: 40% b) Induction stoves and other electric stoves: 70%	Not applicable. The proposed instances involve distribution of improved charcoal cookstoves within the project boundary. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	11) Project devices using LPG comply with all of the following conditions: a) The baseline fuel either includes non-renewable biomass or is a more carbon-intensive fossil fuel (demonstrated by the baseline survey, see Section 6.2); b) The project has a provision for metering LPG supplied to each consumer at the LPG filling station, in order to determine household LPG consumption; and c) The project does not seek to issue any carbon credits for periods after 31 December 2045.	Not applicable. The proposed instances involve distribution of improved charcoal cookstoves within the project boundary. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	12) Electric project devices use the following electricity sources: a) Decentralized renewable energy systems: Decentralized energy systems using fossil fuels are not eligible, except for backup generators that supply less than 1% of the annual electricity of the	Not applicable. The proposed instances involve distribution of improved charcoal cookstoves within the project boundary. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),

Methodology ID	Applicability condition	Justification of compliance
	decentralized renewable energy system. b) Self-generated renewable electricity (with a maximum of 20% electricity from non-renewable sources for backup); or c) National or regional electricity grid.	
VM0050	13) The project proponent designs incentive mechanisms to reduce the use of inefficient baseline devices and practices that can be replaced by the project devices and describes these mechanisms in the project description.	The project activity promotes the full adoption of Improved Cookstoves (ICS) distributed to individual households. To incentivize the replacement of inefficient baseline stoves with project stoves throughout the crediting period, the project proponent implements an incentive scheme. This includes providing a full-year extended warranty in addition to the 5 years initial warranty in exchange for the disposal of a household's traditional stove, verified at the time of ICS distribution. To ensure ongoing replacement and use of project stoves, the project conducts regular monitoring to confirm the continued non-use of inefficient baseline stoves and provides customer support to address any issues with ICS adoption during the crediting period. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	14) Where a project device has ended its technical life, the project proponent either replaces it with a comparable or better project device or retrofits its essential components to continue meeting the minimum service level	When the project device has ended its technical life, the project proponent either replaces the stove or shall not claim credits in-line with the methodology, The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently

Methodology ID	Applicability condition	Justification of compliance
	requirements (i.e., thermal energy generation), otherwise no further emission reductions may be claimed for the project device.	under 3 rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	15) Project proponents implement a method for the distribution and identification of project devices that avoids double counting of emission reductions by other mitigation actions and includes unique product identification on the stove itself at the time of distribution/sale (e.g., program logo, alpha/numeric ID, and end-user location, such as geographic coordinates, complete address information).	Each ICS in the project activity will be identified by a unique combination of customer name and geographical location, as well as a serial number. The serial number will be a unique number which will allow for a clear distinction between the 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 has been cross-checked against other CDM project activity operating in the country using the UNFCCC, the Gold Standard, and other relevant voluntary carbon schemes to ensure that the ICS is not included in any other CDM project activity or voluntary project activity. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	16) The project complies with any national, sub-national, or local regulations or guidance for the installation, commercialization, distribution, and use of improved cookstoves and/or fuel supply and use for the target population. National, regional, and local regulatory frameworks for the provision of the type of thermal energy services provided by the	There are no mandatory laws or regulations in the host country for the use of improved cookstoves in Tanzania households at the time of project implementation. The project is a voluntary effort by the project proponent. A review is made on Tanzania environmental laws and regulations as below¹³: 1) Environmental Management Act, 2004 2) Environmental Management (Environmental Impact Assessment and Audit) Regulations, 2005, as amended 2018

¹³ <https://www.elaw.org/eialaw/tanzania> (last accessed on 06-March-2025)

Methodology ID	Applicability condition	Justification of compliance
	project activity must be documented.	There is no specific concern made on improved cookstoves project from the above law and regulation. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	17) Where project activities reduce emissions from non-renewable biomass, including firewood and charcoal, the risk of double counting is assessed on a national basis by evaluating at validation and crediting period renewal whether there are REDD+ projects or jurisdictional REDD+ programs whose project boundary overlaps with the expected fuel source area of the project. The project proponent must report on the findings of this assessment for informational purposes in the project description.	Since the project activity involves reducing emissions from non-renewable biomass i.e., charcoal, an assessment was conducted to identify any overlapping of project boundary with REDD+ projects that are currently active or have been implemented within the project boundary to date. Till the 3rd monitoring period (01-November-2023 to 31-October-2024), approximately 0.07% of the total ICS distribution were overlapping with prospective REDD projects listed in the VERRA registry. The assessment of project boundary overlapping has been shared with VVB. The project activity is already approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	Clarification 1) As a cross-check, baseline fuel consumption results must be compared with data from reputable sources, including government publications, peer-reviewed literature, third-party studies, or official data and statistics. The sources must be relevant to the context of the	The baseline fuel consumption results have been compared with data from reputable sources. As per the <u>International Growth Centre study 2017</u>¹⁴, the baseline consumption of charcoal was found to be 19 kg/household/week, which is equivalent to 5.93 tonnes wood eqv/household/year (considering 6:1 wood to charcoal conversion factor). This is higher than baseline fuel

¹⁴ <https://www.theigc.org/sites/default/files/2018/06/Alem-et-al-2017-Working-paper.pdf> (last accessed on 19-May-2025)

Methodology ID	Applicability condition	Justification of compliance
	project activity, reflecting baseline cookstove types, types of users, and cooking practices. Where used for cross-checks, these sources must reflect data collected no more than five years ago.	consumption as reported for the proposed project activity, which is 4.77 tonnes wood eqv/household/year. This demonstrates that our baseline fuel consumption for the project is more conservative in comparison to the study conducted by <u>International Growth Centre</u>. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	For projects using direct measurement techniques (such as stove use monitors or electricity meters), usage rates are not capped. For projects employing surveys, the usage rate is capped at 90% where all of the following customer support actions are undertaken across the entire target population and demonstrated at verification: 1) Selection of technologies and fuels that fully meet the cooking needs of the target population, demonstrated by citing robust research or conducting an investigation of cooking practices and attitudes 2) Implementation of support activities to assist the target population in effectively operating and maintaining their cookstoves. These may include providing	According to Clarification 2 of VM0050 v1.0 Corrections and Clarifications, the project activity shall adopt SUMs or usage survey based monitoring during the course of verification. While utilizing survey-based monitoring, the usage rate will be capped at 90% and all of the following customer support actions shall be 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 statistics¹⁵, 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

¹⁵ [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)

Methodology ID	Applicability condition	Justification of compliance
	materials (print, in-person, or video) on how to operate the cookstove to prepare common local foods, how to troubleshoot common operational issues, and how to make minor repairs (including obtaining necessary replacement parts). All such communications and materials must be provided in local language(s) commonly used in the project area. 3) Provision of a commonly used, toll-free communications channel through which the target population can contact the project proponent to access support (e.g., maintenance and repair services) For projects employing surveys and that do not implement all of these customer support actions across the entire target population, the usage rate is capped at 75%.	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 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. 2. The project activity 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.

Methodology ID	Applicability condition	Justification of compliance
		3. 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. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	For usage rate monitoring, the project proponent must collect photographic evidence in the following manner: Take photographs of the stove(s), its components, and the cooking areas. The physical condition of the stove(s) and the cooking areas will help determine stove functionality and use.	The project activity shall capture photographs of the project stove ICS, its components, and the cooking areas as part of the monitoring surveys during verification stage. These photographs shall be shared with VVB as evidence to help determine stove functionality and use. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	The project stove efficiency ($\eta_{\text{new,avg,y}}$) must be determined using one of the following methods (options 1–3 prescribed in the methodology) and the corresponding documentation must be provided:	The project activity shall determine the stove efficiency ($\eta_{\text{new,avg,y}}$) of the Improved Cookstoves (ICS) using either of the options 1 and 2, as prescribed in the methodology. Corresponding documentation shall be provided during verification to comply with the methodology's requirements.

Methodology ID	Applicability condition	Justification of compliance
	1) Water Boiling Test campaigns achieving 90/10 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 2) Manufacturer-certified value that is determined via the Water Boiling Test, with the test results made available for validation by a VVB 3) Certification from the host country's national standards body or certifying agency based on the Water Boiling Test For all three options, cookstove efficiency must be determined based on the Water Boiling Test following the most recent version of the Water Boiling Test Protocol or equivalent national standard/protocol. While carrying out the tests, the low and high power (not simmer) efficiencies must be used to calculate the average thermal efficiency.	The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	The following requirements must be applied in addition to the Controlled Cooking Test Protocol when conducting Controlled Cooking Tests (CCTs): 1) A minimum of 15 CCTs by five different cooks (three repeats per cook) must be conducted per cookstove model.	The project activity involves the distribution of Improved Cookstoves (ICS) to households, thus this clause is not applicable to this project activity. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),

Methodology ID	Applicability condition	Justification of compliance										
	2) The CCTs must be alternated between the baseline and project cookstoves to limit potential bias caused by increased cook efficiency over repeats. For artisanal cookstoves, at least three randomly selected samples of each cookstove model must be tested.											
VM0050	The following values of equivalent standard male adults must be applied when determining the parameters Hh_i and $Hh_{j,k}$ (instead of the references provided in Section 9.1 of VM0050, v1.0, parameter table for Hh_i and $Hh_{j,k}$): <table><tr><th>Gender and age</th><th>Fraction of standard adult</th></tr><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></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	The project activity shall apply the specified values of equivalent standard male adults when determining the parameters Hh_i and $Hh_{j,k}$. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
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											
VM0050	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	The project activity shall apply a wood-to-charcoal conversion factor (CF) in accordance with the methodology's requirements. The CF value used shall be sourced from published, peer-reviewed literature specific to the project region and context, supporting a value of up to six tonnes of dry wood input per tonne of charcoal output. The relevant documentation										

Methodology ID	Applicability condition	Justification of compliance
	wood input per tonne of charcoal output: Published, peer-reviewed literature specific to the project region and context	for the applied CF value shall be provided to demonstrate compliance. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	Footnote 35 must be read as follows: ³⁵ The project proponent may rephrase the question keeping in mind the objective (i.e., whether or not the project cookstove is in good condition). Where the project cookstove is not in good condition, the project proponent must exclude such stoves from the project database for the whole crediting year and subsequent years. The project proponent may include such stoves again on replacing them with new cookstoves of similar efficiency.	The project activity shall adhere to the requirements outlined in footnote 35 of the methodology. During monitoring, the project proponent shall assess whether or not the project stove is in good condition, based on appropriately phrased questions as part of the monitoring survey questionnaire. Any project stove, if found not in good condition, shall be replaced with new cookstoves of similar efficiency. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),
VM0050	The third paragraph on page 14 should be read as follows: The initial baseline survey must be performed prior to validation. The project proponent may employ local third-party agencies to carry out the baseline survey. Follow-up baseline surveys must be conducted at most every five years from the date of the last survey in control households that do not participate in the project. The project proponent may conduct additional surveys at any time,	The project activity shall comply with the revised baseline survey requirements outlined in the third paragraph on page 14 of the methodology. An initial baseline survey was conducted prior to validation, and follow-up baseline surveys shall be performed at most every five years from the date of the last survey in control households that do not participate in the project. Additional surveys may be conducted as needed, including at crediting period renewal. The project activity is already VCS approved till MP2 and VCUs issued by VERRA. It is currently under 3rd monitoring period (01-November-2023 to 31-October-2024),

Methodology ID	Applicability condition	Justification of compliance
	including at crediting period renewal.	

3.3 Project Boundary

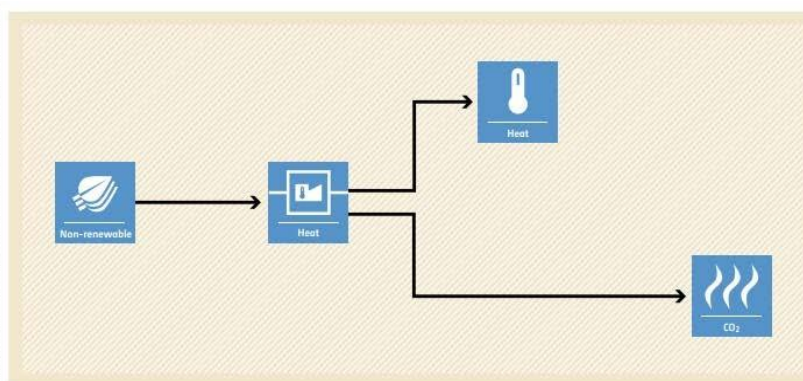
The project boundary for the current project activity encompasses the Improved Cookstoves (ICS) distributed to households, the baseline devices (traditional cookstoves), and the geographical site where they are located, which is the entire country of Tanzania. Both the baseline and project devices are situated within this defined project boundary. Additionally, the fuels used for both baseline and project activities are sourced exclusively from locations within Tanzania, ensuring compliance with the methodology's requirements for the project boundary.

Source		Gas	Included?	Justification/Explanation
Baseline	Source 1 Emission of non-renewable biomass	CO ₂	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		CH ₄	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		N ₂ O	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		Other	No	No other source identified
Project	Source 1 Emission of non-renewable biomass	CO ₂	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		CH ₄	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		N ₂ O	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		Other	No	No other source identified

A representation of the baseline boundary and project boundary are given as below: -

BASELINE SCENARIO

Continuation of the current situation, i.e. use of nonrenewable biomass as fuel for the existing, less-efficient thermal applications.



PROJECT SCENARIO Installation of more-efficient thermal energy generation units utilizing non-renewable biomass and/or complete replacement of existing less-efficient thermal applications and/or retrofitting of existing thermal energy generating appliances reduces GHG emissions by saving nonrenewable biomass.

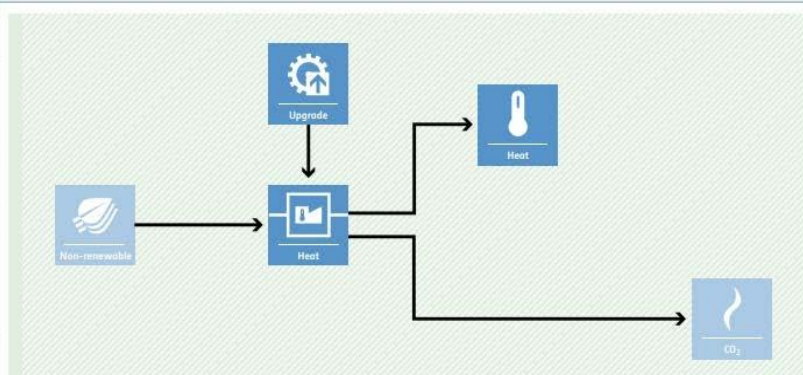


Figure 3: Baseline & Project scenario

3.4 Baseline Scenario

The baseline scenario for this project activity has been determined in accordance with the steps outlined in Section 6.1 of the VM0050 methodology, as detailed below.

Step 1: Identify Alternative Baseline Scenarios

The following alternative baseline scenarios have been identified based on cookstove unit type, thermal energy service, fuel type and source, and associated greenhouse gas (GHG) sources. These alternatives provide comparable thermal energy outputs for cooking to the target population:

- 1) Continued use of traditional cookstoves with non-renewable biomass (firewood and charcoal): This represents the predominant baseline practice, involving inefficient cookstoves that emit GHGs such as CO₂ and CH₄ from the combustion of firewood and charcoal.

- 2) Use of cookstoves with fossil fuels (e.g., kerosene, coal): This includes cookstoves using solid or liquid fossil fuels, emitting GHGs such as CO₂, with potential use by a small subset of households.
- 3) The project activity itself (distribution of improved cookstoves) without being registered as a project activity under a GHG program: This considers the adoption of improved cookstoves (ICS) without carbon finance, emitting fewer GHGs due to higher efficiency.

Baseline Assessment by PP¹⁶

UpEnergy Group/Community Carbon has conducted a baseline assessment for this project activity by interviewing 110 households covering 10 districts of 7 regions in Tanzania. Out of the total baseline users (110 households) approximately 34% were using charcoal as their primary source of fuel for cooking, 61% were using firewood as their primary source of cooking and 4.5% were using other fuel sources for cooking.

The baseline fuel consumption tests, based on KPTs were carried out targeting primary charcoal users using traditional stoves which is target baseline households planned for distribution.

The baseline scenario (traditional charcoal stove) can also be verified from the ICS distribution receipt at the time of distribution of the project device (ICS), which captures the baseline cooking technology & this can serve as a confirmation that, a registered user was using the traditional charcoal stove before adopting the project stove.

PP would like to state that, the current manufacturing of ICS is indigenous in nature, thereby encouraging the local economy & employment.

Public source

As per the National Bureau of statistics¹⁷, it is estimated that about 8.7 million households in Tanzania and most public institutions cook with firewood and/or charcoal on traditional cookstoves. This means that nearly 95% of the population uses biomass energy as their primary fuel for cooking. The inefficient use of charcoal or firewood has many environmental, health and socio-economic negative impacts that need to be addressed.

¹⁶ Baseline assessment by PP submitted to the VCS VVB during prior validation stage under previous methodology. A Baseline Reassessment is not required as per Correction 1 of "Corrections and Clarifications to VM0050 Energy Efficiency and Fuel Switch Measures in Cookstoves, V1.0", follow-up baseline surveys must be conducted at most every five years from the last survey date. As the initial baseline survey was conducted in April, 2022, so a baseline reassessment is not needed at this point. Also, as per footnote 3 in section 2.1.3 of the "Procedure to Change Methodology through a Project Description Deviation", a baseline reassessment is not required for the project activity, which involves distribution of improved cookstoves across the project boundary.

¹⁷ [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)

As per the DHS report, exposure to smoke inside the home, from cooking with solid fuels in Tanzania, has potentially harmful health effects. More than 9 in 10 households in Tanzania (94%) use some type of solid fuel for cooking, mostly wood (66%), and charcoal (27%). Use of wood has decreased and charcoal increased in the previous five years; the 2010 TDHS reported 74% of households using wood and 21% using charcoal. Exposure to cooking smoke is greater when cooking takes place inside the house rather than in a separate building or outdoors. In Tanzania, cooking takes place inside the house in about one-third of households (33%). Additionally, in 16% of households someone smokes inside the house daily.¹⁸

Fuel gathering consumes 0.9 hours per household daily for women and children, limiting other productive activities (e.g., income generation) and taking children away from school.¹⁹ In less secure environments, women and children are at risk of injury and violence during fuel gathering.

96% of the target population for this project activity instances usage traditional biomass stoves which have less thermal efficiency, emitting smoke and unhealthy environment inside the kitchen in both rural and urban segments.²⁰

Given the mix of technologies and fuels, the baseline is defined conservatively, focusing on the predominant use of non-renewable biomass (firewood and charcoal) as identified in the survey and public data.

Step 2: Consider Existing and Forthcoming Government Policies and Legal Requirements

No mandatory legal or regulatory requirements in Tanzania were identified that would eliminate any of the alternative baseline scenarios. While policies promoting cleaner cooking technologies may exist, the continued reliance on traditional cookstoves by 95% of the population indicates that such regulations, if present, are not systematically enforced. This is supported by the high prevalence of biomass use documented in the National Bureau of Statistics (NBS) and DHS reports.

The NBS census results²¹ show that over 90% of households still depend on firewood or charcoal as their primary cooking fuel. Similarly, DHS data²² indicates that approximately 95% of rural households and a significant proportion of urban households continue to use biomass for

¹⁸ <https://dhsprogram.com/pubs/pdf/FR382/FR382.pdf>

¹⁹ <https://documents1.worldbank.org/curated/en/164241468178757464/pdf/98664-REVISED-WP-P146621-PUBLIC-Box393185B.pdf>

²⁰ <https://documents1.worldbank.org/curated/en/164241468178757464/pdf/98664-REVISED-WP-P146621-PUBLIC-Box393185B.pdf>

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)

²² <https://dhsprogram.com/pubs/pdf/FR382/FR382.pdf>

cooking. In addition, the National Clean Cooking Strategy 2024-2034²³ reports that around 90% of households nationwide rely on charcoal and firewood as their primary cooking energy source. These authoritative datasets confirm that biomass dependency is exceptionally high across the country, demonstrating that existing clean-cooking policies have not resulted in widespread enforcement or large-scale transition away from traditional fuels. Therefore, all alternative scenarios remain under consideration.

Step 3: Assess Financial, Institutional, and Information Barriers

The following realistic and credible barriers, based on the project context and geographic area (Tanzania), were assessed:

- **Financial Barriers:** Improved cookstoves have higher upfront costs compared to traditional stoves, which are often free or low-cost. Fossil fuels like kerosene are more expensive and less affordable than locally available biomass, especially in rural areas.
- **Institutional Barriers:** Limited distribution networks and lack of infrastructure hinder access to improved cookstoves or alternative fuels.
- **Information Barriers:** Low awareness of the benefits of improved cookstoves or fossil fuel alternatives, combined with cultural preferences for traditional cooking methods, restricts adoption.

In line with VT0008 Step 2a, these barriers were identified based on the practical realities of the project area, supported by baseline survey evidence and sector studies that confirm limitations in affordability, awareness, and distribution networks.

These barriers apply to:

- **The project activity without registration:** Adoption of ICS faces financial constraints, lack of distribution support, and limited awareness.
- **Use of fossil fuels:** High costs, limited availability in rural areas, and cultural preferences impede this scenario.

VT0008 Step 2b requires demonstrating that these barriers would prevent the project activity without carbon credit revenues. This applies here because the upfront cost of ICS is unaffordable for most households, distribution activities cannot be expanded without external financing, and awareness campaigns would not occur without carbon revenue support. Clean cooking markets continue to face significant affordability and financing constraints, and results-based finance mechanisms—including carbon finance—play a critical role in mobilising capital and enabling the

²³ [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)

scale-up of improved cookstove distribution and associated market outreach activities. These barriers collectively prevent implementation of the project in the absence of carbon finance²⁴.

VT0008 Step 2c requires demonstrating that at least one alternative does not face significant barriers. The continuation of traditional cookstoves using non-renewable biomass faces no financial, institutional, or information barriers—that scenario represents current practice and requires no investment or behavioural change. Therefore, this alternative remains feasible and is not prevented by the identified barriers.

VT0008 Step 2d requires demonstrating that carbon credit revenues are the decisive factor in overcoming barriers. In this project, carbon finance directly subsidizes the cost of ICS, supports distribution expansion, and funds community-level awareness programmes. Without these revenues, the project would not be financially viable, confirming that carbon credit revenues are decisive in overcoming the identified barriers.

The continued use of traditional cookstoves with non-renewable biomass faces no significant barriers, as it reflects the established practice among the target population.

Eliminating alternatives with barriers leaves the continued use of inefficient cookstoves with non-renewable biomass (charcoal) as the remaining baseline scenario.

Baseline Scenario

Following the methodology steps, the baseline scenario is defined as the target population's continued use of inefficient cookstoves fired with non-renewable biomass (charcoal) to meet thermal energy needs comparable to those provided by the project cookstoves. This is supported by:

- The baseline survey showing 95% of households (34% charcoal, 61% firewood) use non-renewable biomass.
- Public sources confirming 94–95% of Tanzanian households rely on solid fuels (wood and charcoal).
- Baseline fuel consumption tests (KPTs) targeting primary charcoal users with traditional stoves, with ICS distribution receipts verifying baseline technology.

²⁴ Modern Energy Cooking Services (MECS) & Energy4Impact (2021). Clean Cooking: Results-Based Financing as a Potential Scale-Up Tool for the Sector, October 2021, page no. 5. Available at: <https://mecs.org.uk/wp-content/uploads/2021/10/79864-MECS-Research-Report-Results-based-financing-RBF-6.pdf>

The project excludes households using fuels other than non-renewable biomass or fossil fuels, ensuring compliance with the methodology. The baseline reflects the inefficient stoves' low thermal efficiency, high smoke emissions, and associated environmental and health impacts, as noted in the DHS report and baseline assessment.

The control households are established and is detailed further in section 5.2 of the document under the parameter $BC_{b,i,y}$.

3.5 Additionality

3.5.1 Regulatory Surplus

Is the project located in an UNFCCC Annex 1 or Non-Annex 1 country?

☐ Annex 1 country ☒ Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

☐ Yes ☒ No

If the project is located inside a Non-Annex 1 country and the project activities are mandated by a law, statute, or other regulatory framework, are such laws, statutes, or regulatory frameworks systematically enforced?

☐ Yes ☒ No

3.5.2 Additionality Methods

As defined by VM0050 section 7, the activity method is used to demonstrate additionality.

Step 1: Regulatory Surplus

Justification:

The Government of Tanzania has introduced National Clean Cooking Strategy 2024-2034²⁵, which aims to achieve an 80% adoption rate of clean cooking technologies among Tanzanians by 2034. Clean cooking, as defined in the strategy, involves the use of energy sources and technologies that minimize toxic emissions while ensuring safety and efficiency. However, this ambitious target is not enforced by any law, so there is no obligation to distribute improve cookstoves in the host country. Hence the project activity is deemed to be a regulatory surplus.

²⁵ [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); Page No. 15 (last accessed on 06-March-2025)

Households may only participate voluntarily in this project. It is hereby confirmed that the proposed project is a voluntary coordinated action by Community Carbon.

Step 2: Positive list

The project activity must meet both of the following conditions to qualify for the positive list:

1. *The project activity introduces:*
 - a) *Efficient biomass-fired cookstoves that replace inefficient biomass-fired cookstoves;*
 - b) *Efficient, solely renewable biomass-fired cookstoves that replace fossil fuel-fired cookstoves; or*
 - c) *Electric cookstoves that replace inefficient biomass-fired or fossil fuel-fired cookstoves.*
2. *The project activity installs or distributes improved cookstoves at zero cost to the end user and has no revenue source²⁶ other than from the sale of verified carbon units (VCUs).*

Projects that pass the regulatory surplus test (Step 1) and are on the positive list (Step 2) are deemed additional and are not required to apply Step 3.

Justification: The project activity introduces efficient charcoal-fired cookstoves that will replace inefficient charcoal-fired cookstoves across Tanzanian households. The project activity does not provide ICS installation to households free of charge and is not included in government schemes or supported by multilateral funds. So, the project activity passes regulatory surplus test (Step 1), but is not on the positive list (Step 2). Thus, PP has demonstrated additionality through step 3 project method as detailed below.

Step 3: Project method

PP selects Investment Analysis²⁷ to demonstrate additionality under the Step 3, as per the most recent version of VT0008.

²⁶ Including revenues from selling of firewood, charcoal, LPG, bioethanol, or any commercial relationship with fuel providers

²⁷ <https://verra.org/wp-content/uploads/2024/10/VT0008-Additionality-Assessment-v1.0.pdf>

PP has adopted “Option 1: Investment Comparison Analysis” as an Investment analysis type as per VT0008 to demonstrate that the project activity is less financially attractive in the absence of carbon credits.

Investment Comparison Analysis

1. *Identify a financial indicator, such as internal rate of return (IRR), net present value (NPV), cost-benefit ratio, or levelized cost²⁸, suitable for the project type and decision-making context.*
2. *Calculate the financial indicator for all alternative scenarios.*
3. *Present a clear comparison of the financial indicator for all alternative scenarios and rank the alternative scenarios according to the financial indicator.*
4. *Demonstrate that the project activity would not be the most economically attractive scenario in the absence of carbon credit revenues.*
5. *Conduct a sensitivity analysis to demonstrate that the condition in (4) is met under reasonable variations in the critical assumptions.*

The PP selects NPV as the financial indicator for the Investment Comparison Analysis. The NPV is chosen since it is a direct assessment of the profitability and therefore a direct assessment of the financial and economic feasibility of the project.

The NPV is calculated in the absence of revenues from carbon finance to demonstrate that the project is not financially and economically viable in those conditions ($NPV \ll 0$). The NPV is calculated with the following main parameters: -

- ✓ An inflation rate of 4.4 %²⁹ (for conservativity purpose).

The NPV is elaborated with the following income and expense data to establish a conservative analysis (all revenues included but not all costs):

- Income sources
 - Included: stoves sales
 - Excluded: carbon revenues

²⁸ For example, levelized cost of electricity production in USD/kWh or delivered heat in USD/GJ

²⁹ <https://www.imf.org/en/Countries/TZA>

Parameter	Value (USD)	Source/documents/Reference
Stoves Sales cost (425,000 ICS)	312,678	Management Assumption/Sales Receipt

- Expenses sources:
 - Included: stove production/distribution/replacement, community services activities, selected part of direct operational costs (transport and warehousing, software etc....)
 - Excluded (for simplicity purpose, leading to a conservative NPV analysis): selected part of operational costs (salaries etc....), support costs: logistics, administration etc..., certification process costs.

Parameter	Value (USD)	Source/documents/Reference
Manufacturing Cost (ICS) - 4,25,000	5,056,126	Purchase Order
Transportation/Distribution Cost	717,181	Management Assumption/Vehicle Rental Invoice
Operation & maintenance Cost	1,199,646	Estimated O & M cost Data Sheet
Data Management & Software Development Cost	285,264	Quotation agreement

The NPV Sheet has also been submitted to the VCS VVB along with this submission.

The NPV calculated is equal to -6,535,903 USD, clearly demonstrating economic unfeasibility without inflows from carbon revenues. An NPV analysis considering all expense sources excluded for simplicity purpose would show a project further unfeasible from a financial and economic point of view. The NPV sheet has been submitted along with this submission to the assessment team.

A sensitivity analysis has also been carried out to understand and analyze the variations in the NPV with respect to the select key financial parameters viz., Cost of Manufacturing, ICS Distribution Cost and Inflation rate. These key financial parameters are selected for the sensitivity analysis considering the dynamics involved in market situation and economic conditions at the project location.

The key outcome of the sensitivity analysis is tabulated below,

Paramater/Variation	Project NPV in \$		
	10%	0%	-10%
Manufacturing Cost	-6,966,890	-6,535,903	-6,104,916

Inflation Rate	-6,589,497	-6,535,903	-6,482,870
ICS Distribution Cost	-6,491,010	-6,535,903	-6,580,796

As can be seen in the above table, the Project NPV is found to be negative in all iterations with respect to +/- 10% variations in the key financial parameters. This proves the project is additional in all scenarios and strongly indicates that the carbon revenue is vital for sustenance of the project.

Step 4: Common Practice Analysis

PP has followed the steps provided in VT0008 tool to demonstrate the Common Practice Analysis for the project activity.

Step 4a: Determining Procedure for Common Practice Analysis

The project activity belongs to category 2) Switch of technology with or without change in energy source (e.g., energy efficiency improvements, power generation based on renewable energy), hence PP applies Step 4b for the common practice analysis.

Step 4b: Common Practice Analysis for Measure Listed in Step 4a

- 1) The intended ICS distribution target at the time of project listing with the VCS is 425,000 units, so the +/- 50% range of projects selected for the analysis is 212,500 to 637,500 units.
- 2) None of the projects identified met all the criteria as mentioned in Step 5.5.2 (2) of the VT0008 tool as of the project's start date, resulting in no similar projects identified. Please refer to the Common Practice Analysis Tool submitted for reference.
- 3) N_{all} represents the number of similar projects not registered, submitted for registration, or undergoing validation under the VCS program based on the above listed projects. Since no similar projects were identified, $N_{all} = 0$.
- 4) N_{diff} represents the number of projects in N_{all} that differ by energy source, feedstock, investment climate, or other features. As $N_{all} = 0$, $N_{diff} = 0$.
- 5) Based on the above points, Factor F is calculated as follows:

$$F = (1 - N_{diff} / N_{all})$$

With $N_{diff} = 0$ and $N_{all} = 0$, $F = 1$ (or 100%).

The proposed project activity is considered a common practice where factor F is greater than 20% and $N_{all} - N_{diff}$ is greater than 3.17. Methodologies may establish a different threshold specific to the project activity. Since $F = 1$, so the proposed project activity is not a common practice as per the tool.

Additionality conclusion

The investment analysis was conducted with conservative hypothesis and clearly showed impracticability from an economical and financial point of view. Furthermore, the proposed project activity is not a common practice as determined above based on the recent version of tool VT0008. It is therefore concluded that the project activities are additional.

3.6 Methodology 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, v1.0³⁰”. PP has followed the procedures for the methodology change in line with the “Procedure to Change Methodology through a Project Description Deviation, version 4.0”.

4 QUANTIFICATION OF ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

4.1 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 (tCO₂e)

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

³⁰ <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)

$N_{j,k,y}$	= 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}	= CO ₂ emission factor for fuel used by baseline device type i in the baseline scenario (IPCC default for wood fuel, 112 t CO ₂ /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 (Country Specific Study based on CDM tool 30, and applying a discount of 26% for ex-ante estimation)
$EF_{b,i,nonCO_2}$	= Non-CO ₂ emission factor for fuel used by baseline device type i in the baseline scenario (IPCC default for wood fuel, 9.46 t CO ₂ e/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:³¹

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

Where:

$BC_{b,i,y}$ = Fuel used per baseline device type i during year y (tonnes)³²

$NCV_{b,i}$ = Net calorific value of baseline fuel for baseline device type i (IPCC default for wood fuel, 0.0156 TJ/tonne)

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

³¹ 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.

³² 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 $BC_{b,i,y}$.

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

Project proponents must address stove stacking (continued use of pre-project devices in project households) 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 4.2 of this document.

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

Where:

$BC_{p,j,k,y}$	= Average quantity of fuel used by project device type j from batch k during year y (tonnes or m ³)
$NCV_{p,j}$	= Net calorific value of project fuel used in project device type j (IPCC default for wood fuel, 0.0156TJ/tonne)

4.2 Project Emissions

Project emissions are calculated as follows as per the applied methodology:

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

Where:

PE_y = Project emissions during year y (t CO₂e)

$PE_{energy,y}$ = Project emissions from energy consumption of project devices in year y (t CO₂e)

$PE_{others,y}$ = Project emissions from other sources in year y (t CO₂e) For this project activity, $PE_{others,y}=0$, since the project activity involves distribution of improved cookstoves across the project boundary and does not involve any other project emission apart from the project stove ICS.

$PE_{energy,y}$ 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:

$$PE_{energy,y} = \sum_j \sum_k BC_{p,j,k,y} \times N_{j,k,y} \times NCV_{p,j} \times n_{j,k,y} \times (EF_{p,j,CO_2} \times f_{NRB,y} + EF_{p,j,nonCO_2}) \quad (6)$$

Where:

EF_{p,j,CO_2} = CO₂ emission factor for fuel used by project device type j in the project scenario (IPCC default for wood fuel, 112 t CO₂/TJ)

$EF_{p,j,nonCO_2}$ = Non-CO₂ emission factor for fuel used by project device type j (IPCC default for wood fuel, 9.46 t CO₂e/TJ)

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

Option 1: Kitchen Performance Test

A measurement campaign following the Kitchen Performance Test Protocol must be designed, carried out, and analyzed in compliance with the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities. The campaign must achieve a confidence and precision of 95/10 for the target parameter of average daily fuel consumption per adult equivalent. Only the results for project stove fuel consumption are used to calculate project emissions. The result must be scaled appropriately using the average household size ($Hh_{j,k}$) to obtain the value of $BC_{p,j,k,y}$. Where the project does not achieve the target precision in a monitoring period, the project proponent must apply an appropriate conservativeness deduction as per the most recent version of CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.

4.3 Leakage Emissions

Leakage emissions associated with reduced or avoided use of non-renewable biomass:

- a) Use of non-renewable biomass by other users and other types of GHG reversals³³
- b) Reuse outside the project boundaries of baseline devices that were replaced by project devices

An adjustment factor of 0.95 is applied to the GHG emission reductions in Equation (7) of this document (i.e., $0.95 \times (BE_y - PE_y)$).

This 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, option 1 applies for this project activity, thereby, applying an adjustment factor of 0.95 to the GHG emission reductions in Equation (7) below.

4.4 Estimated 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.

Vintage period	Estimated baseline emissions (tCO ₂ e)	Estimated project emissions (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated reduction VCU (tCO ₂ e)	Estimated removal VCU (tCO ₂ e)	Estimated total VCUs (tCO ₂ e)
22-April-2022 to 31-December-2022	178,155	82,664	0	90,716	0	90,716
01-January-2023 to 31-December-2023	938,702	435,558	0	477,987	0	477,987
01-January-2024 to 31-December-2024	1,891,626	877,714	0	963,216	0	963,216
01-January-2025 to 31-December-2025	2,417,868	1,121,891	0	1,231,178	0	1,231,178
01-January-2026 to 31-December-2026	2,417,868	1,121,891	0	1,231,178	0	1,231,178
01-January-2027 to 31-December-2027	2,417,868	1,121,891	0	1,231,178	0	1,231,178
01-January-2028 to 31-December-2028	2,417,868	1,121,891	0	1,231,178	0	1,231,178
1-January-2029 to 30-April-2029	735,297	341,178	0	374,413	0	374,413
Total	13,415,249	6,224,676	0	6,831,045	0	6,831,045

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	BC _{ex-ante,b,j}
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
Description of measurement methods and procedures applied	The KPTs have been used to calculate this value, as per the KPT protocol³⁴ 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 9.0³⁵. 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.
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 protocol³⁶ 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.

³⁴ <https://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/604-1.pdf> (last accessed on 10-March-2025)

³⁵ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf (last accessed on 10-March-2025)

³⁶ <https://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/604-1.pdf> (last accessed on 06-March-2025)

	The No of KPTs Samples is in line with CDM Standard “Sampling and surveys for CDM project activities and programmes of activities” Version 9.0³⁷. 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. This has been determined in line with the Correction 1 provided in the “Correction and Clarifications to VM0050 Energy Efficiency and Fuel Switch Measures in Cookstoves, v1.0³⁸, Where charcoal is used by baseline devices, a default wood to charcoal conversion factor of 6 Kg of firewood per kg of charcoal will be 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 50.³⁹ The baseline KPT conducted is in accordance with the KPT Protocol. Additionally, PP would like to quote the Tanzania Ministry of Energy's “National Clean Cooking Strategy 2024 - 2034”⁴⁰, 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. The value of 4.77 tonnes/year/HH (Fuelwood equivalent) has been obtained by considering the household size based on adult equivalent method. The calculations are demonstrated in “Baseline KPT results” sheet for reference. Equation (2)

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

³⁷ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf

³⁸ https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf

³⁹ https://www.tfs.go.tz/uploads/MNRT_2019_National_Charcoal_Study.pdf (last accessed on 06-March-2025)

⁴⁰ [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	One of the following sources shall be used: 1) The most recent national default value(s) published by UNFCCC 2) Calculated based on CDM TOOL30 and applying an uncertainty discount of 26%⁴¹ 3) Default value of the most recent version of CDM TOOL33
Value applied	For ex-ante estimation, value obtained using the CDM tool 30 version 4.0 has been used, and applying a discount of 26% in consistent with the methodology VM0050. $0.673 \{=0.91 * (1 - 26\%)\}$
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. Additionally, PP may use any one of the three approaches provided under 'Source of Data' during the Verification stage for the estimation of $f_{NRB,y}$ in line with methodology. Equation (1) and (6)

Data / Parameter	EF_{b,i,CO_2} EF_{p,j,CO_2}
Data unit	t CO₂/TJ
Description	CO₂ emission factor for fuel used by baseline device type i in the baseline scenario CO₂ emission factor for fuel used by project device type j in the project scenario
Source of data	The following data sources may be used, listed in descending order of preference: • Option 1: Project-specific value • Option 2: Regional or national default values

⁴¹ For example, if f_{NRB} calculated based on TOOL30 is 0.60, the f_{NRB} applied to emission reduction calculations is $0.60 \times (1 - 0.26) = 0.44$. The 26% uncertainty discount is derived from 100% uncertainty in f_{NRB} , assuming a normal distribution. The discount is calculated using a standard deviation of 61% ($100\%/1.6449$) and a one-sided 66.6% confidence interval ($61\% \times 0.4307 = 26\%$). A fixed uncertainty discount is applied across all projects using TOOL30.

	Option 3: Default value from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	For ex-ante estimation, default values from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories has been used. 112 t CO₂/TJ
Justification of choice of data or description of measurement methods and procedures applied	Parameter is fixed ex-ante.
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-CO₂ emission factor for fuel used by baseline device type i in the baseline scenario Non-CO₂ emission factor for fuel used by project device type j in the project scenario
Source of data	The following data sources may be used, listed in descending order of preference: - Option 1: Project-specific value - Option 2: Regional or national default values - Option 3: Default value from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	For ex-ante estimation, default values from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories has been used. 9.46 t CO₂/TJ
Justification of choice of data or description of measurement methods and procedures applied	Parameter is fixed ex-ante.
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 ⁴²
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, v1.0⁴³, 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	Equations (1) and (6) Additionally, PP would like to quote the Tanzania Ministry of Energy’s “National Clean Cooking Strategy 2024 - 2034”⁴⁴, 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.

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

⁴² https://www.tfs.go.tz/uploads/MNRT_2019_National_Charcoal_Study.pdf (last accessed on 12-March-2025)

⁴³ https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf

⁴⁴ [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 in 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, v1.0⁴⁵, <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										
Comments	Equations - Input to $EC_{i,y}$, $BC_{b,i,y}$, and $BC_{p,j,k,y}$										

5.2 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	ICS distribution during 1st Crediting period: <table border="1"> <tbody> <tr> <td>Year 1</td><td>90,000</td></tr> <tr> <td>Year 2</td><td>125,000</td></tr> <tr> <td>Year 3</td><td>185,000</td></tr> </tbody> </table>	Year 1	90,000	Year 2	125,000	Year 3	185,000
Year 1	90,000						
Year 2	125,000						
Year 3	185,000						

⁴⁵ https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf, last accessed on 12-03-2025

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
Comments	The number of project devices must be recorded in a database, distribution record, or similar to ensure transparency. Equation (1) and (6)

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
Description of measurement methods and procedures to be applied	For ex-ante estimation, option 2 (surveys) has been applied to determine this parameter. Sampling standard will be 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 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 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 activity 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 established a toll-free communication channel, enabling 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 1 (SUMs): Continuous Option 2 (surveys): Annually
Value applied	For ex-ante estimation, the value of 0.9 has been applied in line with the methodology cap as per Option 2 (usage).
Monitoring equipment	Option 1 (SUMs): Stove Use Monitors will be adopted. Option 2 (surveys): 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	-
Comments	Equation (1) and (6)

Data / Parameter	BC _{b,i,y}
Data unit	Tonnes
Description	Fuel used per baseline device type i during year y ⁴⁶
Source of data	Option1 as per the methodology (using Kitchen Performance Test) will be used to estimate this parameter.
Description of measurement methods and procedures to be applied	Option 1: Follow-up baseline surveys will be conducted every five years in control households that do not participate in the project, established prior to validation as statistically equivalent to the pre project conditions of project households regarding baseline fuel consumption. Sampling will be carried out in compliance with the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.
Frequency of monitoring/recording	Every five years
Value applied	For ex-ante estimation, this parameter corresponds to the value of 4.77 tonnes/year/HH (Fuelwood equivalent).
Monitoring equipment	-
QA/QC procedures to be applied	The campaign must achieve a confidence and precision of at least 90/10 for the target parameter of average daily fuel consumption per adult equivalent. Where the project does not achieve the target precision in a monitoring period, the project proponent must apply an appropriate conservativeness deduction as per Section 4 of 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
Calculation method	-
Comments	Equation (2) In line with the methodology requirements for establishing control households, PP confirms that all 110 households assessed during the validated baseline surveys have been designated as the control group.

⁴⁶ 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}.

	The follow-up baseline surveys shall be conducted in these control households every five years.
	These baseline households are appropriate to be considered as the control group, as they were non-participant households at the time of the survey (i.e., they had not received project ICS). Moreover, these are already validated baseline survey records and fully complies with requirements stated in section 6 of VM0050 v1.0, including all the requisite details as per the binding questionnaire of VM0050 v1.0. This is also further explained in point 1 above.
	To minimise the risk of control households receiving project stoves, the PP shall exclude these households from project distribution campaigns. However, PP cannot withhold their right to access of clean energy stoves. If some control households independently acquire an improved stove - whether from this project or another initiative, that will get captured during the following baseline reassessment campaign. Also, if certain households become untraceable or relocate at the time of baseline reassessment, new control households may be added to the control group as needed, to make the baseline reassessment statistically valid and representative. Alternatively, baseline reassessment shall be carried out only on the available and traceable control households that provide consent to participate.
	The value of 4.77 tonnes/year/HH (Fuelwood equivalent) has been obtained by considering the household size based on adult equivalent method. The calculations are demonstrated in “Baseline KPT results” sheet for reference.

Data / Parameter	$\eta_{\text{new,avg,y}}$
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 will be monitored using option 1, i.e., conducting water boiling test (WBT) annually with each monitoring period. Sampling standard will be 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	For ex-ante calculation, the value of 37.9%, which is as per the manufacturer technical specifications has been applied.

Monitoring equipment	-
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of baseline and project emissions
Calculation method	WBT tests will be conducted as per the latest available WBT Protocol.
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	Option 1, i.e., Kitchen Performance Test (KPT) will be used to determine the average quantity of fuel used by project device. Sampling standard will be used, following the Kitchen Performance Test Protocol⁴⁷, 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 will achieve a confidence and precision of 95/10 for the target parameter. The value will be scaled appropriately using the average household size to obtain the value of $BC_{p,j,k,y}$.
Frequency of monitoring/recording	Biennial
Value applied	For ex-ante estimation, following value has been used: 2.215
Monitoring equipment	N/A
QA/QC procedures to be applied	-
Purpose of data	Calculation of baseline and project emissions

⁴⁷ <https://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/604-1.pdf> (last accessed on 10-March-2025)

Calculation method	N/A
Comments	The kitchen performance test (KPT) will be 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)

5.3 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 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/MR to collect the necessary information for a monitoring report.

Baseline survey and baseline fuel consumption

UpEnergy Group/Community Carbon conducted the baseline assessment by involving 110 selected households from 10 District covering 7 regions of Tanzania including urban and rural households.

Region	District/Area
Mwanza	Nyamagana
	Ilemela
Kilimanjaro	Same
Morogoro	Morogoro
	Kilosa
Dodoma	Dodoma
Pwani/Coast	Chalinze
	Bwilingu
Dar es salaam	Ubungo
Tanga	Lushoto

Region	Urban/Rural	Respondents	Total per Region
Mwanza	Urban	11	19
	Rural	8	
Kilimanjaro	Rural	4	4
Morogoro	Urban	4	21
	Rural	17	
Dodoma	Urban	12	12

Pwani/Coast	Rural	15	21
	Rural	6	
Dar es salaam	Urban	10	10
Tanga	Rural	23	23
	Total	110	110

As evident from the above table the rural population considered in the baseline assessment is 66.36% which is comparable with the rural population in Tanzania; According to the World Bank, the rural population in Tanzania was 64.77% of the total population in 2020⁴⁸.

The baseline KPTs were conducted for 45 households which use the charcoal as primary fuel across the above mentioned 10 districts of Tanzania. The No of KPTs sample is in line with CDM Standard “Sampling and surveys for CDM project activities and programmes of activities” Version 9.0⁴⁹.

The average fuel consumption values established from the baseline KPTs was 4.4 tonnes/year/ICS (Fuelwood equivalent).

Sample Plan:

The monitoring plan is designed to monitor the parameters listed in the section above in Section 5.2. 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

⁴⁸ <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=TZ> , last accessed on 12-03-2025

⁴⁹ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf , last accessed on 12-03-2025

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.

(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.

During the crediting period, a diverse range of ICS (Improved Cookstoves) will be incorporated into a grouped project activity. In this case, the Project Proponent (PP) will utilize a heterogeneous sampling approach or a stratified sampling method.

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

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 annual 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 project 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 Primary sampling unit. For instance, if a project from the 2023 vintage includes two different ICS models, each model will constitute its own primary sampling unit within that vintage.

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 will be determined using option 1, i.e., Kitchen Performance Test (KPT). Sampling standard will be 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 value will be scaled appropriately using the average household size to obtain the value of $BC_{p,j,k,y}$.

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 will be established using either Option 1 or option 2 as per the applied methodology. Water Boiling Testing will be 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.

(iv) Sampling Method

The sampling method for monitored parameters $\eta_{j,k,y}$, $BC_{p,j,k,y}$ and $\eta_{new,avg,y}$ 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.

$\eta_{new,avg,y}$ - Efficiency of the device of each type i and batch j implemented through WBT 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.

(v) 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 annual 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 three parameters for survey that are estimated through sampling: average quantity of fuel used by project device type j from batch k during year y ($BC_{p,j,k,y}$), proportion of commissioned project devices of type j from batch k that are still being used regularly in year y ($n_{j,k,y}$) and weighted average efficiency of project devices in year y ($\eta_{new,avg,y}$).

All three 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, all three sampling parameters considered based on ‘proportion value’, hence to estimate the sample size for parameters $n_{j,k,y}$, $BC_{p,j,k,y}$ and $\eta_{new,avg,y}$, 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

APPENDIX X: <TITLE OF APPENDIX>

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