



**Verified Carbon
Standard**

COMMUNITY CARBON EFFICIENT COOKING PROGRAMME - TANZANIA-1



**Community
Carbon**

Document Prepared by Community Carbon

Project Title	Community Carbon Efficient Cooking Programme - Tanzania-1
Version	6.0
Date of Issue	14-September-2023
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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 4,25,000 operational ICS will be undertaken for households in Tanzania. The annual average emission reductions are estimated to be 9,33,092 tCO₂e and over a 7-years period of are approximately 65,31,645 tCO₂e.

The end user will sign or 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 4.3.

Each stove is considered as a single project activity instance. The estimated annual GHG emission reduction for each project instance is 3.08 tCO₂e/stove/year.

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

Installation of ICS

Date of first ICS installed	22-April-2022
No. of ICS Distributed (till 31 August, 2022)	2,759

Project Developers/Proponent: -

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

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 open fire. 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.

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

The first project activity was implemented on 22-April-2022 under this grouped project activity. 2,759 project activity instances (ICS) as a part of project activity have been implemented till 31-August-2022.

Total emission reductions achieved in this monitoring period:

During the Current Monitoring Period from 22-April-2022 to 31-August-2022 (First and last date included) the project activity has contributed 1,193 tCO₂e GHG reductions.

<u>Audit Type</u>	<u>Period</u>	<u>Program</u>	<u>VVB Name</u>	<u>Number of years</u>
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 years
<u>Total</u>	22-April-2022 to 31-August-2022	Verified Carbon Standard (VCS)	Carbon Check (India) Private Ltd	0.3 years

		/Sustainable Development Verified Impact Standard (SDVista)		
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1.2 Sectoral Scope and Project Type

The project is categorized under type/category as below:

Applied Methodology – VMR0006: Methodology for installation of high efficiency firewood cookstove; Version: 1.1¹;

Sectoral Scope: 03 Energy Demand.

Project Type: Type II Energy Efficiency Improved cookstoves Projects

The project is a grouped project.

1.3 Project 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 4.4 section 2.1.1. The Grouped project includes reduction of Carbon Dioxide emissions which is one of the six Kyoto Protocol greenhouse gases included under the scope of VCS program. And the Grouped Project is supported by a methodology approved under an approved GHG Program by VCS. The project does not involve use of Ozone Depleting Substances, Jurisdictional or nested REDD+ programs and doesn't 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 the VCS Standard v4.4 and is therefore eligible under the scope of the VCS Program:

Excluded Activity	Applicability
Activities that reduce hydrofluorocarbon-23 (HFC-23) emissions	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves
Grid-connected electricity generation using hydro-power plants/units	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of electricity.

¹ <https://verra.org/methodologies/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/>

Grid-connected electricity generation using wind, geothermal, or solar power plants/units	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of electricity.
Utilization of recovered waste heat for, inter alia combined cycle electricity generation and the provision of heat for residential, commercial or industrial use	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.
Generation of electricity and/or thermal energy using biomass. This does not include efficiency improvements in thermal applications (e.g, cookstoves)	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.
Generation of electricity and/or thermal energy using fossil fuels, including activities that involve switching from a higher carbon content fuel to a lower carbon content fuel	N/A: The GP activities do not include the generation of electricity and/or thermal energy using fossil fuels, including activities that involve switching from a higher carbon content fuel to a lower carbon content fuel.
Replacement of electric lighting with more energy efficient electric lighting such as the replacement of incandescent electrical bulbs with CFLs or LEDs	N/A: The GP activities do not include the replacement of electric lighting with more energy efficient lighting.
Installation and/or replacement of 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.

Table 1 Excluded Project Activities under VCS

1.4 Project Design

The project is a grouped project.

Eligibility Criteria

For the inclusion of new project instances (PIs), the project proponent shall ensure that it meets the eligibility criteria set out in clause 3.5.15 and 3.5.16 of the VCS Standard v4.4.

No.	Eligibility criteria for the inclusion of new project activity instances	How the new instances will comply	How the PI is complying and Evidences
1	Meet the applicability conditions set out in the methodology applied to the project	New project activity instances ICS (Improved Cookstoves) will meet the applicability conditions set out in Section 3.2 of this document.	Please see section 3.2 of this document for details.
2	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.	The project activity instances are located in urban/rural regions of Tanzania. Evidence: a) Project database (sales record) with contact details of HHs.

3	Crediting Period Be eligible for crediting from the start date of the instance through to the end of the project crediting period (only).	Each project activity Instances within this GP 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. Evidence: Distribution Database shared with VVB
4	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 1.8 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. Evidence: Distribution database
5	Technology The specifications of technologies or measures including the level and type of service performance specifications including compliance with testing/certifications.	Project instances under this project will consist of the distribution of 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 cook-stoves with ICS as defined in the Joint VCS PD & MR. 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 VMR0006.	The project activity instances cookstoves have higher efficiency and better emission parameters compared to the baseline scenario. Evidence: Manufacturer's specification/distribution records.
6	VCUs ownership	End users receiving ICSs under the specific project instances contractually cede their rights to claim and own emission reductions under the VCS to the PP of the project.	A default distribution agreement for end users including the provision that emission reductions generated by the improved stove are owned by the PP will be provided for each household.
7	Baseline Scenario Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The new project activity instances 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 this Joint VCS PD & MR.	The project activity instances have the same baseline scenario as defined in section 3.4 of this document i.e., use of traditional charcoal cookstove for cooking in different regions of Tanzania. Evidence: A Baseline survey report which shall be shared with the VVB.

			This information will be stored during monitoring and in the database.
8	Additionality Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	The project activity instances added to this GP shall comply with all the additionality conditions listed in section 3.5 and should be clearly defined in the Joint VCS PD & MR.	The project activity instances is additional and is described in section 3.5 of this document. Evidence: End user interview and carbon title transfer form
9	Capacity Limit	Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit. Further, no single cluster of project activity instances shall exceed the capacity limit, determined as follows: 1) Each project activity instance that exceeds one percent of the capacity limit shall be identified. 2) Such instances shall be divided into clusters, whereby each cluster is comprised 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. 3) None of the clusters shall exceed the capacity limit and no further project activity instances shall be added to the project that would cause any of the clusters to exceed the capacity limit.	No project activity instance shall exceed the applicable limit, which is 180 GWhth/y.
10	Target Population	End user for each project activity instances is households (residential) cooking with non-renewable biomass on inefficient charcoal stoves. Each ICS will be assigned a unique serial number with name of ICS user, address, GPS of household, stove model, distribution date, etc.	Evidence: - End user registration certificate and stove installation database.
11	Double Counting	The Improved Cookstove distributed under this project shall be uniquely identifiable based on the distribution records.	Each ICS installed under this grouped project activity shall have a unique, non-replicable serial number. This number along with corresponding end user details (i.e., name, geographical coordinates, address, unique serial

			number) shall form the unique identity of the stove distinguishing it from other stoves. No individual serial number can be repeated within the project, thus ensuring that each stove is counted only once in the proposed project. In addition, the project will be crosschecked against other projects in same host country on other relevant voluntary carbon schemes to ensure that the ICS is not included in any other project activity. Evidence: - No Double Counting Declaration
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1.5 Project Proponent

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

1.6 Other Entities Involved in the Project

Organization name	UpEnergy Group
Role in the project	Consultant
Contact person	Anantha Karthik Rajagoplan
Title	Director Carbon Programme
Address	19 Cybercity, 10th Floor, Raffles Tower Ebene, Mauritius
Telephone	-

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

1.7 Ownership

The project ownership is with Community Carbon.

A voluntary and irrevocable 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.

1.8 Project Start Date

22-April-2022 (The earliest date of commissioning date of a batch distributed for first project activity instance).

1.9 Project Crediting Period

Project crediting period type: Renewable

Start date of first crediting period: 22-April-2022

End date of first crediting period: 21-April-2029

Total number of years: 7 years, 00 months.

The project activity adopts renewable crediting period of 7 years which can be renewed for maximum 2 times.

Being renewable crediting period, total crediting period of grouped project activity is 21 years.

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

- ☐ <20,000 tCO₂e/year
- ☐ 20,000 – 100,000 tCO₂e/year
- ☒ 100,001 – 1,000,000 tCO₂e/year
- ☐ >1,000,000 tCO₂e/year

Project Scale	
Project	
Large project	X

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1	276,843
Year 2	709,528
Year 3	1,206,324
Year 4	1,156,931
Year 5	1,108,291
Year 6	1,060,414
Year 7	1,013,314
Total estimated ERs	6,531,645
Total number of crediting years	07 Years
Average annual ERs	933,092

1.11 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 and water heating tasks in homes. The ICS improve the efficiency of combustion and thermal transfer to the pot compared with a traditional pot support which provides a conducive environment for clean and efficient combustion of 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 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 1.4 of this Joint PD MR. 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 Cook Stoves as follows: -

Model	Smart Home Pro
Type of Stove	Domestic
Dimension	(ø 28 * 26 H) cms
Average Unit Weight, Kg	12
Thermal Efficiency, %	37.90
Pot Type pot	Flat Bottom
Fuel Type	Charcoal
Estimated Life Span	7 Years
Average time to boil 5 liters of water	33.8 minutes



Project Developers/Representatives: -

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

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

1.12 Project Location

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

Latitude – 6°22'8.5" S (6.369° S)

Longitude – 34°53.329' E (34.8888° E)



² <https://www.geodatos.net/en/coordinates/tanzania>

Tanzania Map³

1.13 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.

1.14 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:⁴

- 1) Environmental Management Act, 2004
- 2) Environmental Management (Environmental Impact Assessment and Audit) Regulations, 2005, as amended 2018

There is no specific concern made on improved cookstoves project from the above law and regulation.

1.15 Participation under Other GHG Programs

1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

The project has not been registered, nor is it seeking registration under any other GHG program.

1.15.2 Projects Rejected by Other GHG Programs

The Project Participant hereby declares that any other GHG program has not rejected the project activity; an undertaking for the same has been submitted by the Project Participant.

1.16 Other Forms of Credit

1.16.1 Emissions Trading Programs and Other Binding Limits

This project is not part of any emissions trading program or any other mechanism that includes GHG allowance trading.

³ <https://dhsprogram.com/pubs/pdf/MIS31/MIS31.pdf>

⁴ <https://www.elaw.org/eialaw/tanzania>

1.16.2 Other Forms of Environmental Credit

The project has not sought or will receive another form of GHG-related environmental credit.

The project will seek SD Vista certification.

1.16.3 Supply Chain (Scope 3) Emissions

As per Section 3.23.9 of the VCS Standard, v4.4, the “producer(s) or retailer(s) of the impacted good or service are known but not involved in the project or do not have a website”. The Project Proponent has informed the manufacturer of the Smart Home Stoves in Tanzania that ICS will be distributed in Tanzania under this project activity instances. Also, intimated them about the project registration under VERRA for the generation of VCUs.

1.17 Sustainable Development Contributions

1.17.1 Sustainable Development Contributions Activity Description

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 need to be spent collecting fuel for the family home thereby reducing the work burden on rural families and presenting alternative opportunities for economic development.
- 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 labour 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.

1.17.2 Sustainable Development Contributions Activity Monitoring

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime						
1.	5.1	% of Female employees	Implemented activities to increase	This project activity promotes employment to women, thus helps eradicating gender-based discrimination and provides socio-economic parity. 58% of the total employees working as a part of the project activity are females. <table><tr><td>Female</td><td>65</td></tr><tr><td>Male</td><td>48</td></tr><tr><td>Total</td><td>113</td></tr></table> In Community Carbon, 182 days maternity leave has been provided to female employee. During current monitoring period, the employee list & Maternity policy is hereby submitting along with this submission to the assessment team.	Female	65	Male	48	Total	113	58% of the total employees working as a part of the project activity are females. 182 days maternity leave as per the Community Carbon Policy provided to female employee.
Female	65										
Male	48										
Total	113										

3.	5.4	Average time saving associated with cooking time	Implemented activities to decrease	Contribute to reducing drudgery and reducing gender inequality, especially for women and children by saving time spent in cooking. The women can use the time saved for doing more productive activities or personal care. To collect information, the Monitoring Survey includes question related to that topic: Baseline Survey & Monitoring Survey- How many hours do you cook in average per day? Average hrs in traditional stoves – 4.4 hrs Average hrs in ICS stoves- 2.2 hrs Approx 2 hrs/household/day cooking time has been saved from the project activity. The supporting evidence is hereby submitting along with this submission to the assessment team.	Approx 2 hrs/household/day cooking time has been saved from the project activity. The primary fuel collectors/cooks in households receiving improved cookstoves under the project activity are expected to report reduction time spent in cooking activities, thereby freeing up time for more productive activities during crediting period.
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4.	5.5	proportion of women serving in managerial/ leadership /ownership role	Implemented activities to increase	This project activity encourages participation of women in leadership / managerial role. 3 out of the 5 individuals operating at managerial positions for the given project activity are women. <table><tr><th>Sr.no</th><th>Name</th><th>Designation</th></tr><tr><td>1.</td><td>Rehema Mbalamwezi</td><td>Country Director</td></tr><tr><td>2.</td><td>Jacqueline Ngulla</td><td>Project Manager</td></tr><tr><td>3.</td><td>Modesta Kaboyoko</td><td>Finance Manager</td></tr></table> The Supporting evidence for the same is hereby submitting along with this submission to the assessment team	Sr.no	Name	Designation	1.	Rehema Mbalamwezi	Country Director	2.	Jacqueline Ngulla	Project Manager	3.	Modesta Kaboyoko	Finance Manager	3 out of the 5 individuals operating at managerial positions for the given project activity are women.
Sr.no	Name	Designation															
1.	Rehema Mbalamwezi	Country Director															
2.	Jacqueline Ngulla	Project Manager															
3.	Modesta Kaboyoko	Finance Manager															
5.	7.1	Number of households having access to improved cooking technology due to project activity	Implemented activities to increase	Increasing access to clean cooking technology by distributing a set of project stoves in 2,759 households.	Increase access to clean cooking technology with project stoves installations in approximately 425,000 households under the project lifecycle.												

6.	8.5	Number of jobs created	Implemented activities to increase	A total of 113 individuals were directly and indirectly employed under the project activity during the current monitoring period in Country for various activities related to project implementation, maintenance, and monitoring. The Supporting evidence (employee list) is hereby submitting along with this submission to the assessment team.	113 direct and indirect jobs for marketing / sales and distribution / technical employees have been created due to this project activity for the particular monitoring period. Contribute to generation of employment in informal sector by contracting locals with a target 10 employment for varying lengths of time over the project lifetime with a focus on hiring females.
7.	8.b	Number of Trainings conducted in a year	Implemented activities to increase	The project activity provides training and skill development program for youth population, thus increasing their employability. A total of 1 training was held for the employees as a part of this monitoring period. Training name – Carbon/Sales training Total No of attendance – 10 employees The Supporting evidence (training photograph/attendance sheet) is hereby submitting along with this submission to the assessment team.	Contribute to increasing vocational and relevant skills of local individuals (with a focus on targeting women and youth) by providing non-formal education and training on issues related to climate change, with specific skill building in operations and surveying activities related to stove distribution and its monitoring under VCS. 1 training/year were held for the employees during crediting period.

8.	12.2	Decrease in specific fuel consumption	Implemented activities to decrease	Project activity reduced the consumption of non-renewable biomass by 1.76 tonnes of eq. firewood/household/annum in the project area during monitoring period. Please refer SDG column sheet for reference.	Reduce the consumption of non-renewable biomass in participant households by 42%.
9.	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to decrease	Total emission reduction in the current monitoring period is 1,193 CO₂eq. Please refer ER Sheet for the cross check.	Contribute to GHG reduction through an estimated reduction of ~6,531,645 tCO ₂ e (425,000 ICS) for the seven-year period owing to the replacement of baseline stoves with project stoves.
10.	15.2	Amount of Non-renewable biomass saved	Implemented activities to decrease	The project has resulted of non-renewable biomass per annum leading to total savings of ~4,856 tons of biomass from 2,759 ICS installation. Please refer SDG sheet for reference.	Contribute an estimated reduction of deforestation of ~708,900 tons of biomass, during crediting period from forests surrounding the communities and reducing pressure on forest reserves.

1.18 Additional Information Relevant to the Project

Leakage Management

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

Commercially Sensitive Information

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

Further Information

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

2 SAFEGUARDS

2.1 No Net Harm

No potential negative environmental or socio-economic impacts have been identified for the project.

The project activity aims to distribute improved cookstove in the project area which will result in reduced consumption of natural resources. Also, the project activity will lead to reduced smoke/PM emission in the households, increased employment and overall emission reduction in the project area. The project technology is distributed at subsidized price and also reduces economic pressure from buying of fuel. Thus, no negative socio-economic impact is expected out of this.

All the raw material used for the technology have been procured sustainably and no negative impact on the natural resources is expected from this sourcing.

2.2 Local Stakeholder Consultation

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.

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

Stakeholder 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.
- During the 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.

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	The company is yet to decide on how the products will be marketed.
Female	Prices of our products	Yes	ICS will be sold for 10,000 TSHs
Male	The products seem to have a strong chance of succeeding in urban areas.	Yes	Our products provide a wide range of benefits to its users and the environment.
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.

The mechanism for on-going communication with local stakeholders:

	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 Community Carbon office in Tanzania. Stakeholders are free to voice their concern via the Grievance Expression Book. Maintaining feedback book at the local office it is ensured that stakeholders that don't have access to electronic media for expressing concerns / grievances are also able to share their concerns / feedback. Additionally, the end users always have an option to revert to the salesperson (representative distribution/retail partners etc.) in case of a feedback / complaints with the product or distribution.
Telephone access (optional)		
Internet/email access (optional)	anantha@communityco2.org	
Nominated Independent Mediator (optional)		
Other		

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.

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.

There are no feedback comments received during the current monitoring period.

2.3 Environmental Impact

No negative environmental impacts have been identified from the project and environmental impact assessment (EIA) is not required for the project. In fact, project activity supports positive environmental impacts.

2.4 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.terra.org/app/projectDetail/VCS/2676>

2.5 AFOLU-Specific Safeguards

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

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

Following approved baseline & monitoring methodology is applied.

Methodology: VMR0006-Methodology for Installation of High Efficiency Firewood Cookstoves.
Ver: 1.1.

<https://verra.org/wp-content/uploads/2021/07/VMR0006-Methodology-for-Installation-of-High-Efficiency-Firewood-Cookstoves-v1.1.pdf>

TOOL 01. Tool for the demonstration and assessment of additionality V07.0.0⁵

TOOL 30 Calculation of the fraction of non-renewable biomass EB 108 Annex 11 v4.0⁶

Standard - Sampling and surveys for CDM project activities and programmes of activities Version 9.0⁷

This methodology also refers the latest version of AMS II.G version 12 - Energy efficiency measures in thermal applications of non-renewable biomass.

<https://cdm.unfccc.int/methodologies/DB/GNFWB3Y6GM4WPXFRR2SXKS9XR908IO>

Sectoral Scope: 03

3.2 Applicability of Methodology

Applicability criterion	How the project complies
The project stove is a single pot or multi pot portable or an in-situ cookstove using only woody biomass; Additional requirement to demonstrate that the biomass used is solely renewable biomass in case project activities replacing baseline stoves using fossil fuel	The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional cookstove leading to saving of non-renewable biomass. The ICS to be distributed under the project activity is Smart Home Pro – Community Carbon stove. All ICS in this project will replace existing only traditional charcoal stoves; therefore, no greenfield installations are included. 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 – Baseline Scenario/Manufacture specification.
Project activities shall be implemented in domestic premises or in community-based kitchen	The proposed instances involve distribution of ICS in residential/institutional/ commercial. Evidence – End user agreement
The project stove shall have specified high power thermal efficiency of at least 25% per the manufacturer's specifications and shall exclusively use woody biomass and can be	Improved Cookstoves planned to be distributed under this project are SmartHome Pro stove that have an efficiency of 37.9% as per the manufacturer's specifications

⁵ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

⁶ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v4.0.pdf>

⁷ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf

single pot or multi-pot; in case of project stove replacing fossil fuel baseline stove, it shall exclusively use renewable biomass.	The proposed instances do not involve replacement of fossil fuel-based stoves.
Both 'Projects' and 'Large Projects' can use this methodology	Estimated average annual emission reductions for the grouped project activity are greater than 300,000 tonnes CO2e per year. Therefore, proposed project qualifies the "Large Projects" criteria.
Non-renewable biomass has been used in the project region since 31 December 1989, using survey methods or referring to published literature, official reports or statistics;	Non-renewable biomass has been used since 31 December 1989 in Tanzania as demonstrated at below.
For the specific case of biomass residues processed as a fuel (e.g., briquettes, wood chips), it shall be demonstrated that: (a) It is produced using exclusively renewable biomass (more than one type of biomass may be used). (b) The consumption of the fuel should be monitored during the crediting period and (c) Energy use for renewable biomass processing (e.g. shredding and compacting in the case of briquetting) may be considered as equivalent to the upstream emissions associated with the processing of the displaced fossil fuel and hence disregarded.	Not applicable. The project stove which is improved energy efficient technology is introduced to replace baseline stoves and reduce the use of non-renewable biomass for combustion.
The project design shall explain the proposed method for distribution of project devices including the method to avoid double counting of emission reductions such as unique identifications of product and end-user locations (e.g., programme logo).	Each ICS in this proposed instance 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 design shall also explain how the proposed procedures prevent double counting of emission reductions, for example to avoid that project stove manufacturers, wholesale providers or others claim credit for emission reductions from the project devices	The stove manufacturers/wholesale providers/end users shall sign an undertaking stating clearly that the PP or an entity authorized by it shall be the sole owner of the VCUs arising from the project

Table: Applicability of Methodology
Evidence that the non-renewable biomass has been in use since 1989

Non-renewable biomass has been in use since December 31, 1989 as evidenced by various FAO statistical data. The Global Forest Resources Assessment 2020⁸ (FAO) indicates that forest areas decline yearly, and that the total forest area declined from 1990 to 2020, as summarized in the following table:

Decline in forest area between 1990 – 2020

Area (1000 hectares)				
	1990	2000	2020	2020
Forest	57 390	53 670	49 950	45 745

Thus, it can be concluded that losses have been reported in forest areas from before 1989 thereby hinting that majority of fuel used across Tanzania comes from non-renewable sources.

TOOL01. Tool for the demonstration and assessment of additionality V07.0.0

Applicability criterion	How the project complies
The use of the “Tool for the demonstration and assessment of additionality” is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.	N/A
Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	The tool is mentioned in VMR0006 in “step 3 project method” and is therefore applicable.

Tool 30 Calculation of the fraction of non-renewable biomass EB 108 Annex 11 v4.0

Applicability criterion	How the project complies
This tool may be used by: (a) DNAs to submit region-or country-specific default f_{NRB} values, following the procedures for development, revision, clarification and update of standardized baselines (SB procedures); or (b) project participants to calculate project-or PoA-specific f_{NRB} values.	As a project participant, the use of this tool is permitted.

⁸ <https://www.fao.org/3/ca9825en/ca9825en.pdf> - Page 159

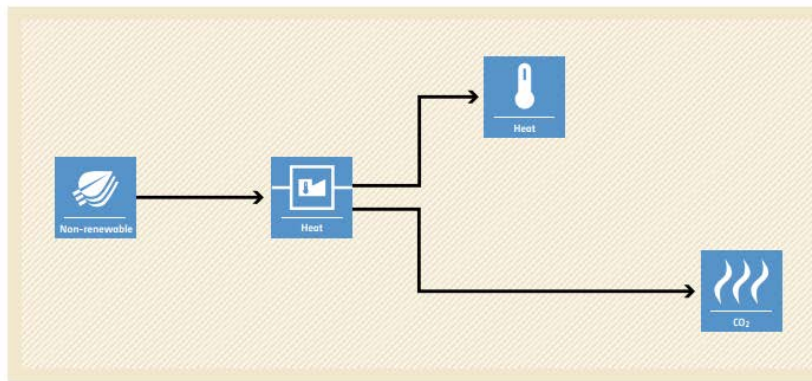
3.3 Project Boundary

Source		Gas	Included?	Justification/Explanation
Baseline	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	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.

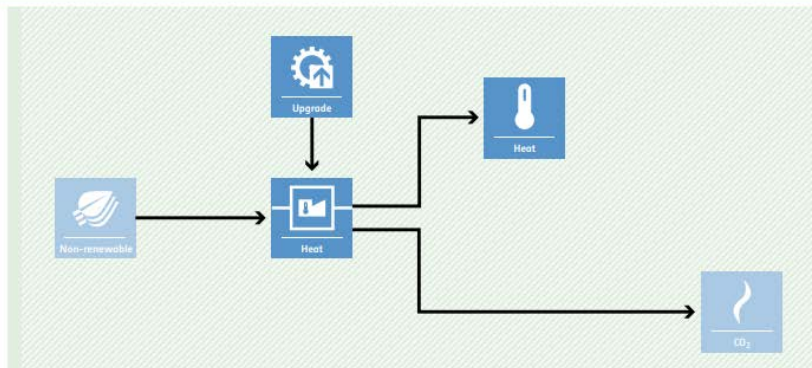


Figure 3: Baseline & Project scenario

3.4 Baseline Scenario

The baseline scenario is the use of non-renewable biomass and inefficient traditional cook stoves within the project boundary by the target population to meet similar thermal energy needs as provided by project cookstoves in absence of project activity.

Baseline Assessment by PP

As per the National Bureau of statistics⁹, it is estimated that about 9.3 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.

UpEnergy Group/Community Carbon has conducted a baseline assessment by interviewing 110 Households covering 10 districts of 7 regions in Tanzania. Out of the total baseline users (110 Households) approximately 34%¹⁰ 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.

However, at present the PP has developed local manufacturing capability for improved charcoal cookstove for this project where PP is intended to distribute charcoal-based ICS to replace charcoal-based traditional cookstoves. PP's intention is not to move traditional firewood stove users to improved charcoal stove users. The baseline fuel consumption (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.

⁹ http://tanzania.countrystat.org/fileadmin/user_upload/countrystat_fenix/congo/docs/Census%20General%20Report-2012PHC.pdf

¹⁰ Baseline assessment by PP submitted to the VCS VVB

Public source

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.¹¹

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.¹² 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 segments¹³.

3.5 Additionality

As defined by VMRO006 section 7, the activity method is used to demonstrate additionality.

Step 1: Regulatory Surplus

There is no mandated government programme or policy in host country of this project ensuring the distribution of domestic fuel efficient cookstoves. The project is not mandated by any law, statute or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute or other regulatory framework.

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 applicability conditions of this methodology represent the positive list. The project must

¹¹ <https://dhsprogram.com/pubs/pdf/SR233/SR233.pdf>

¹² <https://documents1.worldbank.org/curated/en/164241468178757464/pdf/98664-REVISED-WP-P146621-PUBLIC-Box393185B.pdf>

¹³ <https://documents1.worldbank.org/curated/en/164241468178757464/pdf/98664-REVISED-WP-P146621-PUBLIC-Box393185B.pdf>

demonstrate that it meets all of the applicability conditions of the methodology as well as the below condition.

1. Where the project activity installs or distributes stoves at zero cost to the end-user and has no other source of revenue other than the sale of GHG credits, the project activity shall be deemed additional.
2. Project activities that are implemented as part of government schemes or are supported by multilateral funds cannot be considered additional even if the stoves are distributed free of cost or at a highly subsidized rate and hence are not eligible to use this methodology

Justification(1/2): Since the project does not provide ICS installation to households free of charge and is not included in government schemes or supported by multilateral funds. PP has demonstrated additionality through step 3 project method as detailed below.

Step 3: Project method – Investment Analysis “CDM tool for the demonstration and assessment of additionality” V07.0.0¹⁴

VMR0006 requires to conduct an investment analysis to “Determine whether the proposed project activity is not:

(a) *The most economically or financially attractive; or*

(b) *Economically or financially feasible, without the revenue from the sale of verified emission reductions (VCUs).”*

The PP selects option (b) to demonstrate that the proposed project activity is not economically or financially feasible without the revenue from the sale of verified emission reductions (VCUs). Reference is made to applicable sections of the CDM tool for the demonstration and assessment of additionality V07.0.0 in italic.

4.3 Step 2: Investment analysis

31. *To conduct the investment analysis, use the following sub-steps :*

4.3.1 *Sub-step 2a: Determine appropriate analysis method*

32. *Determine whether to apply simple cost analysis, investment comparison analysis or benchmark analysis (Sub-step 2b). If the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income, then apply the simple cost analysis (Option I). Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III).*

¹⁴ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

Since the project activity for commercial approach generates revenues other than CDM related income, the PP can select either “option 2 Investment Comparison Analysis” or “option 3 Benchmark Analysis”.

4.3.3. Sub-step 2b: Option II. Apply investment comparison analysis

35. Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service (e.g. levelized cost of electricity production in \$/kWh or levelized cost of delivered heat in \$/GJ) most suitable for the project type and decision-making context.

The PP selects option 2, Investment Comparison Analysis with NPV as the financial indicator. 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. Since VMR0006 only requests the application of the Investment analysis (step 2), no identification and comparison with alternatives to the project activity is produced (step 1).

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 inflated discount rate of 4.4 %¹⁵ (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

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....)

¹⁵ <https://www.imf.org/en/Countries/TZA>

- 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 submitted to the VCS VVB along with this submission.

The NPV calculated is equal to -65,35,903 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.

Additionality conclusion

The investment analysis was conducted with conservative hypothesis and clearly showed impracticability from an economical and financial point of view. It is therefore concluded that the project activities are additional.

3.6 Methodology Deviations

The project activity has not taken any deviation in the applied approved methodology VMR0006.

4 IMPLEMENTATION STATUS

4.1 Implementation Status of the Project Activity

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

During the project activity instances, 2,759 ICS were distributed in the project area which includes 1st date of project technology sale from 22-April-2022 to end of 1st monitoring period date of 31-August-2022.

The model of stoves sold during this monitoring period were Smarthome Pro with a technical specificized efficiency of 37.9%. As a part of stove maintenance and after sales services, Community Carbon has a dedicated mail id/site office no which can be used for any complaints or maintenance needed.

VCS methodology VMR0006, version 1.1 allows the use of a correction factor of 0.95 applied to the overall emissions reductions to account for any possible leakage. This factor has been applied to the emissions reductions presented in this report.

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

The Implementation plans for the project activity instances: -

Year	No of ICS to be distribute under crediting period
Year 1	90,000
Year 2	1,50,000
Year 3	1,85,000
Total	4,25,000

5 ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The methodology does not account for baseline emissions separately, but instead quantifies net emission reductions achieved by the project. Please refer to Section 5.4.

5.2 Project Emissions

The methodology does not account for project emissions separately, but instead quantifies net emission reductions achieved by the project. Please refer to Section 5.4.

5.3 Leakage

Leakage shall be considered as default 0.95 in accordance with methodology.

5.4 Estimated Net GHG Emission Reductions and Removals

Net GHG emission reductions are calculated by applying Equations 1 and 2 for project activities replacing baseline stoves using non-renewable biomass (charcoal) and Equation 1 and 7 for project activities replacing baseline stoves using fossil fuel.

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

Where:

ER_y = Emission reductions during year y in t CO₂e

i = Indices for the situation where more than one type/model of improved cook stove is introduced to replace traditional charcoal stoves.

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

$ER_{y,i,j}$ = Emission reductions by improved cook stove of type i and batch j during year y in tCO₂e

$$ER_{y,i,j} = B_{y,savings,i,j} \times f_{NRB,y} \times NCV_{woodfuel} \times (EF_{wf,co2} + EF_{wf, non co2}) \times N_{y,i,j} \times 0.95$$

Equation (2)

Where:

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

$f_{NRB,y}$ = Fraction of woody biomass that can be established as non-renewable biomass (f_{NRB})¹⁶
(Calculation for f_{NRB} done by using CDM tool 30)

$NCV_{wood fuel}$ = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne)¹⁷

$EF_{wf, CO2}$ = CO₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO₂/TJ)¹⁸

¹⁶ Default values endorsed by designated national authorities and approved by the Board are available at <https://cdm.unfccc.int/DNA/fNRB/index.html>

¹⁷ AMS II.G. Version 12

¹⁸ 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Chapter 2 Stationary Combustion

$EF_{wf, non\ CO2}$ = non-CO2 emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO₂/TJ)¹⁹

$N_{y, i, j}$ = Number of project devices of type i and batch j operating during year y

0.95 = Discount factor to account for leakage

The quantify of woody biomass saved $B_{y, savings, i, j}$ due to implementation of improved cook stoves was estimated by following options set out in Equation 3.

$$B_{y, saving, i, j} = B_{old} \times \left(1 - \frac{\eta_{old}}{\eta_{new, i, j}}\right) \quad \text{Equation (3)}$$

Where:

B_{old} = Annual quantity of woody biomass that would have been used in the absence of the project activity (in tonnes per device) to generate useful thermal energy equivalent to that provided by the improved cook stove. The value of Bold can be sourced from historical data or baseline surveys. A default wood to charcoal conversion factor of 6 kg of firewood per kg of charcoal may be used in line with paragraph 35 of AMS II.G, version 12. Alternatively, default value of 0.5 t/capita/year may be used.

η_{old} = Efficiency of baseline cookstove

$\eta_{new, i, j}$ = Efficiency of the improved cook stove type i and batch j determined through water boiling test (WBT). For this project activity efficiency is measured each monitoring period and annually.

Where the project households continue to use baseline cookstoves along with improved cookstoves, **B_{old}** shall be adjusted ex-post based on the percentage of project households found to continue such practice according to Equation 6. For such cases, the quantity of woody biomass saved $B_{y, savings, i, j}$, due to implementation of improved cook stoves shall be calculated using an adjusted value to account for ex-post use of baseline stoves in addition to improved cookstove

$$B_{old, adjusted} = B_{old} \times (1 - \mu_y) \quad \text{Equation (6)}$$

$B_{old, adjusted}$ = Adjusted **B_{old}** to account the ex-post usage of charcoal in baseline cookstove(s) by project households in addition to improved cookstove (in tonnes per device).

μ_y = Baseline stove usage factor to account for use of baseline cookstoves along with improved cookstoves.

The quantity of charcoal consumed in absence of project activity (**B_{old}**) shall be determined using an estimation of average annual consumption of charcoal per household which may be derived using any of the following options:

¹⁹ 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Chapter 2 Stationary Combustion

- a. **Historical Data:** Project proponent shall ensure that the relevance of data is appropriately justified for the target population and is the latest available data from credible source(s).
- b. **Baseline Survey of Local Usage:** Project proponent shall carry out a survey of usage prior to implementation of the project activity following the sampling approach described in the latest version of CDM document Sampling and surveys for CDM project activities and programme of activities. Alternatively, the project participant may follow the simple random sampling approach and the minimum sample size should be determined as per the following guidelines:
 - Project target population < 300: Minimum sample size 30
 - Project target population 300 – 1000: Minimum sample size 10% of group size
 - Project target population > 1000: Minimum sample size 100

This simplified approach may also be used for determining minimum sample size for parameters listed under Sections 4.1 and 4.2 in which case it is not requisite for the sample size to meet confidence/precision requirements

- c. **Minimum Service Level.** Where historical data or a baseline survey has not been conducted, a default value of 0.5 ton/capita/year may be considered as the baseline biomass consumption. Household size shall be determined using credible references/literature or target population specific surveys. The survey shall be conducted as per guidelines outlined in option (b) above

In order to address the potential source of leakage which can be attributed to diversion of non-renewable biomass saved by project devices to non-project households which previously used renewable biomass; a net to gross adjustment factor of 0.95 is applied to $ER_{y,i,j}$.

Fraction of non-renewable biomass (f_{NRB}) calculation for Tanzania:

Parameter	Value	Source
Total Woody biomass consumption (t/yr) (H)	3,87,29,373	Energy Statistics Database of United Statistics Division; http://data.un.org/Data.aspx?q=fuelwood&d=EDATA&f=cmID%3aFW
Renewable biomass (t/yr) (RB)	31,10,336	Global Forest Resources Assessment 2020 Report, Tanzania, Page 12, Rome 2020. Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Local study (in accordance with section 3.2 para 19 of the TOOL30, v4.0)
Non-renewable biomass (t/yr) (NRB)	3,56,19,037	Calculated (Equation 2 of CDM tool 30, v04.0)
Fraction of non-	0.91	Calculated (Equation 1 of CDM Tool 30, v04.0)

renewable biomass		
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$$fNRB = NRB / (NRB + RB)$$

Where:

$fNRB$ = Fraction of non-renewable biomass in the applicable area in the relevant period (fraction or %)

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

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

$$NRB = H - RB$$

Where,

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

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

Where:

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

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

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

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

$$RB = \sum(MAI_{forest,i} \times (F_{forest,i} - P_{forest,i})) + \sum(MAI_{other,i} \times (F_{other,i} - P_{other,i}))$$

Where:

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

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

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

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

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

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

i = Sub-category i of forest areas and other land areas

Third party has used latest "Official statistics or reports or peer-reviewed literature" to derive the f_{NRB} value for Tanzania (for detailed calculation refer the f_{NRB} report and analysis sheet).

Third party report also has been submitted to the VCS VVB.

Ex-Ante Calculations

For ex-ante calculation purpose, the assumptions below are applied for the 7 years of the first crediting period:

1.The project will install up to 425000 ICS, ICS installation will be implemented in the first three years: 90,000 in year 1, 175,000 in year 2, 185,000 in year 3.

2.According to the kitchen performance test, B_{old} is calculated to be 4.40. A baseline stove usage rate (μ_y) of 10% is assumed, so $B_{old,adjusted}$ is calculated at 3.96 as described by equation 6 of the methodology.

3.The life span of the ICS is 7 years.

Determination of number of ICS operating during year y - $N_{y,i,j}$

Year	$N_{y,i,j}$
Year 1	85,500
Year 2	2,22,000
Year 3	3,82,500
Year 4	3,71,875

Year 5	3,61,250
Year 6	3,50,625
Year 7	3,40,000

Determination of efficiency of ICS during year y

$$\eta_{new,y,i,j} = \eta_p \times (DF_n)^{y-1} \times 0.94$$

Where

$$\eta_p = 37.90 \%$$

$$DF_n = 0.99$$

Example of calculation:

If y= 1

$$\eta_{new,y,i,j} = 37.9\% \times (0.99)^{1-1} \times 0.94$$

$$= 35.63 \%$$

Hence the efficiency of ICS during year y is as below:

Year	$\eta_{new,y,i,j}$
Year 1	35.6%
Year 2	35.3%
Year 3	34.9%
Year 4	34.6%
Year 5	34.2%
Year 6	33.9%
Year 7	33.5%

Determination of quantity of woody biomass that is saved in tonnes per ICS during year y

$$B_{old,adjusted} = B_{old} \times (1-\mu_y)$$

$$= 4.4 \times (1-0.10)$$

= 3.96 tonnes/year

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

Example of calculation: If y= 1,

$$B_{y,savings,i,j} = 3.96 \text{ tonnes} \times [(1-0.20/0.3563)]$$

=1.737 tonnes

Year (y)	$\eta_{new,y,i,j}$	η_{old}	$B_{y,savings,i,j}$
Year 1	35.6%	0.20	1.737
Year 2	35.3%	0.20	1.714
Year 3	34.9%	0.20	1.692
Year 4	34.6%	0.20	1.669
Year 5	34.2%	0.20	1.646
Year 6	33.9%	0.20	1.622
Year 7	33.5%	0.20	1.599

Note - The lifespan of cook stove is 7 years, however with proper maintenance, the lifespan can be extended beyond 7 years, and hence ER estimation is determined for 7 years.

Determination of emission reductions by ICS of batch 1 during year y

$$ER_{y,i,j} = B_{y,savings,i,j} \times f_{NRB,y} \times NCV_{woodfuel} \times (EF_{wf,co2} + EF_{wf, non co2}) \times N_{y,i,j} \times 0.95$$

Where,

$$NCV_{wood fuel} = 0.0156 \text{ TJ/tonne}$$

$$f_{NRB,y} = 0.91 \text{ (PP has submitted the third party report to the VCS VVB)}$$

$$EF_{wf,2} + EF_{wf, non CO2} = 112 + 26.23 = 138.23 \text{ tCO}_2/\text{TJ}$$

Example of calculation:

If y=1,

$$ER_{y,i,j} = 1.737 \times 0.0156 \times 0.91 \times 138.23 \times 85,500 \times 0.95$$

= 276,843 tCO₂

Year (y)	$B_{y,savings,i,j}$	NCV_{wood} <i>fuel</i>	$EF_{wf,CO2} +$ $EF_{wf,non\ CO2}$	$N_{y,i,j}$	f_{NRB}	$ER_{y,i,j}$
Year 1	1.737	0.0156	138.23	85,500	0.91	2,76,843
Year 2	1.714	0.0156	138.23	2,22,000	0.91	7,09,528
Year 3	1.692	0.0156	138.23	3,82,500	0.91	12,06,324
Year 4	1.669	0.0156	138.23	3,71,875	0.91	11,56,931
Year 5	1.646	0.0156	138.23	3,61,250	0.91	11,08,291
Year 6	1.622	0.0156	138.23	3,50,625	0.91	10,60,414
Year 7	1.599	0.0156	138.23	3,40,000	0.91	10,13,314

The total ER estimation combined for Project activity Instances are as below: -

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
Year 1	2,76,843	0	0	2,76,843
Year 2	7,09,528	0	0	7,09,528
Year 3	12,06,324	0	0	12,06,324
Year 4	11,56,931	0	0	11,56,931
Year 5	11,08,291	0	0	11,08,291
Year 6	10,60,414	0	0	10,60,414
Year 7	10,13,314	0	0	10,13,314

Total	65,31,645	0	0	65,31,645
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The annual average of 7 years' period for project activity is 933,092 tCO₂e

6 MONITORING

6.1 Data and Parameters Available at Validation

Data / Parameter	Bold
Data unit	Tonnes/year/HH
Description	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices.
Source of data	Calculated through Baseline survey assessment & KPTs
Value applied:	Charcoal – 4.4 tonnes/year/ICS (Fuelwood equivalent)
Justification of choice of data or description of measurement methods and procedures applied	The kitchen performance test (KPT) has been used to calculate this value, as per the KPT protocol²⁰ 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 9.0²¹. 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.

²⁰ <https://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/604-1.pdf>

²¹ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf

Purpose of Data	Calculation of emission reduction
Comments	Parameter f_{NRB} once determined shall remain fixed ex-ante for the entire crediting period. Where charcoal is used by baseline devices, a default wood to charcoal conversion factor of 6 Kg of firewood per kg of charcoal may be used in line with paragraph 35 of AMS II.G, version 12. The baseline KPT conducted is in accordance with the KPT Protocol.

Data / Parameter	$f_{NRB,y}$
Data unit	Fraction
Description	Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass
Source of data	Value determined from survey methods using the CDM tool 30 Version 4.0.
Value applied	0.91
Justification of choice of data or description of measurement methods and procedures applied	This parameter is fixed ex-ante.
Purpose of Data	Calculation of emission reductions
Comments	The report of f_{NRB} will be made available to VVB during the validation.

Data / Parameter	EF_{wf,CO_2}
Data unit	tCO ₂ /TJ
Description	CO ₂ emission factor for the use of wood fuel in baseline scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
Value applied	112
Justification of choice of data or description of	IPCC default value

measurement methods and procedures applied	
Purpose of Data	Calculation of emission reductions
Comments	N/A

Data / Parameter	$EF_{wf,non\ CO2}$
Data unit	tCO ₂ /TJ
Description	Non-CO ₂ emission factor for the use of wood fuel in baseline scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
Value applied	26.23
Justification of choice of data or description of measurement methods and procedures applied	IPCC default value
Purpose of Data	Calculation of emission reductions
Comments	-

Data / Parameter	$NCV_{wood\ fuel}$
Data unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted or reduced
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction
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 emission reductions
Comments	-

Data / Parameter	η_{old}
Data unit	Fraction
Description	Efficiency of baseline stove
Source of data	Default value used from the methodology by combining it with weighted average of the two different type of baseline technologies
Value applied	0.20
Justification of choice of data or description of measurement methods and procedures applied	A default value of 0.2 has used for other types of devices from VMR0006 Version 1.1 ²²
Purpose of Data	Calculation of emission reduction
Comments	-

Data / Parameter	η_p
Data unit	Fraction
Description	Efficiency of project stove at the start of project activity
Source of data	Manufacturer's specification
Value applied	SmartHome Pro – 0.379
Justification of choice of data or description of measurement methods and procedures applied	This parameter shall be determined ex-ante
Purpose of Data	Calculation of η_{new} for ex-ante calculation.
Comments	-

²² <https://verra.org/wp-content/uploads/imported/methodologies/VMR0006-Methodology-for-Installation-of-High-Efficiency-Firewood-Cookstoves-v1.1>.

6.2 Data and Parameters Monitored

Data / Parameter	$N_{y,i,j}$																				
Data unit	Number																				
Description	Number of project devices of type i and batch j operating during year y																				
Source of data	Monitoring																				
Description of measurement methods and procedures to be applied	Through Monitoring Survey the sampling standard will be used for determining the sample size to achieve 95/10 confidence precision according to the latest version of Standard for sampling and surveys for project activities and programme of activities.																				
Frequency of monitoring/recording	At least once every two years																				
Value applied	ICS distribution during 1st Crediting period: - <table border="1"> <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> </table> For ex-ante emission reduction calculation, Operating ICS during 1st Crediting period; - <table border="1"> <tr> <td>Year 1</td><td>85,500</td></tr> <tr> <td>Year 2</td><td>2,22,000</td></tr> <tr> <td>Year 3</td><td>3,82,500</td></tr> <tr> <td>Year 4</td><td>3,71,875</td></tr> <tr> <td>Year 5</td><td>3,61,250</td></tr> <tr> <td>Year 6</td><td>3,50,625</td></tr> <tr> <td>Year 7</td><td>3,40,000</td></tr> </table>	Year 1	90,000	Year 2	125,000	Year 3	185,000	Year 1	85,500	Year 2	2,22,000	Year 3	3,82,500	Year 4	3,71,875	Year 5	3,61,250	Year 6	3,50,625	Year 7	3,40,000
Year 1	90,000																				
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Year 3	3,82,500																				
Year 4	3,71,875																				
Year 5	3,61,250																				
Year 6	3,50,625																				
Year 7	3,40,000																				
Monitoring equipment	Monitoring Survey																				
QA/QC procedures to be applied	-																				

Purpose of data	Calculation of emission reduction
Calculation method	Proportion of operational stoves (u_y) obtained from the survey is multiplied by the total commissioned stoves to arrive at this value.
Comments	-

Data / Parameter	$\eta_{new, i, y}$
Data unit	%
Description	Efficiency of the improved cookstove type i and batch j determined through water boiling test (WBT) during year y
Source of data	Calculation
Description of measurement methods and procedures to be applied	For the project activity efficiency of the device will be monitored by conducting water boiling test (WBT) annually with each monitoring period.
Frequency of monitoring/recording	Annually
Value applied	For ex-ante calculation, the value below is applied SmartHome Pro – 37.9%
Monitoring equipment	Calibration details of the equipment mentioned in appendix 1. The WBT test has been conducted by third party laboratory.
QA/QC procedures to be applied	-
Purpose of data	Calculation of emission reduction
Calculation method	WBT Protocol
Comments	-

Data / Parameter	μ_y
Data unit	Fraction
Description	Adjustment to account for any continued use of pre-project devices during the year y
Source of data	Monitoring

Description of measurement methods and procedures to be applied	Minimum sample size of each type i and batch j will be in line with the guidelines provide in section 5.4 This parameter will be monitored using one of the following methods: If the baseline cookstoves are decommissioned and no longer used, as determined by the monitoring survey its value is 0 and B_{old}, adjusted is equal to B_{old}. If both the improved cookstove and baseline cookstoves are used together then surveys will be conducted to record the average continued operation of baseline cookstoves in a sample of households. The surveys will be designed to capture the stove usage of households in the monitored region by formulating questions and/or collecting evidence to determine the frequency of usage of both the improved cookstoves and baseline cookstoves.
Frequency of monitoring/recording	At least once every two years
Value applied	0.1
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of data	Calculation of emission reduction
Calculation method	-
Comments	

6.3 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 VMR 0006 version 1.1 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
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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 2020²³.

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 9.0²⁴.

The average fuel consumption values established from the baseline KPTs is 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 6.2. The share of operating stoves and the continued use of pre-project devices 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.

²³ <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=TZ>

²⁴ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf

No monitoring for leakage through competitive uses of biomass is required, as the parameter $B_{old,i,j}$ is multiplied by 95% to account for leakage.

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

(a) Sampling Design

Due to the large number of ICS envisioned to be distributed as part of the project activity, it is not economically feasible to monitor each individual ICS unit distributed. Therefore, representative sampling will be undertaken as part of a project activity that is designed in line with the requirements of the “Sampling and surveys for CDM project activities and programme of activities”, version 04.

(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	$N_{y,i,j}$	Number of project devices of type i and batch j operating during year y
2	$\mu_{y,i,j}$	Adjustment to account for any continued use of preproject devices during the year y
3	$\eta_{new,y,i,j}$	Efficiency of the device of each type i and batch j implemented

The efficiency of the project ICS ($\eta_{new,i,j}$) is a monitoring parameter, which was calculated based on Water Boiling Tests (WBT).

(ii) Target Populations:

The target population for the proportion of ICS still in operation ($N_{y,i,j}$) in the project database which are using charcoal in ICS distributed under the project for cooking.

The target population for pre-project appliances ($\mu_{y,i,j}$) is the set of old stoves still in use under project activity database.

The target population for the efficiency of the project ICS ($\eta_{\text{new},i,j}$) which was calculated based on Water Boiling Tests (WBT).

(iii) Sampling Frame

It is expected that the geographical locations do not have influence on the parameters of interest that are $N_{y,i,j}$, $\eta_{\text{new},i,j}$ and μ_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 ICS in operation ($N_{y,i,j}$)

The sample frame refers to all the information sources on the 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 Implemented and ICS models into consideration, Project instances shall be grouped together to create a Primary Sampling Unit, which is homogenous. As per EB 86 Annex 04, Appendix-2, paragraph 1, for the use of a single sampling plan covering a group of projects, provided the homogeneity of population can be demonstrated, or differences are taken into account in the sample size calculation, a 95/10 confidence/precision is applied for biennial sampling.

The first step is to identify the Primary Sampling Units. Primary sampling units are project instances, which have same ICS model. That is project with the same ICS model can therefore be grouped together and form a Primary Sampling Unit.

In case project has two different ICS models being implemented – this will form two Primary Sampling Units. This is justified by the fact that project might vary in terms of performance and it is important for the PP to collect and monitor accurate data for each stove model.

2) Adjustment to account for any continued use of pre-project devices during the year ($\mu_{y,i,j}$)

During the same field surveys, μ_y , the proportion of users still using their baseline stove, will also be determined. This method is preferred over using data loggers, since installing data loggers is not considered practical. Occasional usage of a pre-project stove is deemed insignificant, so μ_y is only calculated if baseline stoves are used on a weekly basis.

This survey will be part of the above mentioned $N_{y,i,j}$ survey and will therefore be conducted with the same households.

The surveys should capture the number of meals cooked using the baseline stove in the dry and wet season. There will be three situations:

1. Project ICS are completely discarded
2. Baseline stove(s) are completely discarded
3. Baseline stove(s) used along with project ICS.

The first scenario will not be taken into account for μ , since this proportion of operational stoves is already used to calculate $N_{y,i,j}$. The second scenario gives a μ of 0% for that household. For the third case, PP is monitoring through monitoring survey.

Parameter $\eta_{new,i,j}$

The thermal efficiency $\eta_{new,i,j}$ is a monitoring parameter and 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 $N_{y,i,j}$, $\eta_{new,i,j}$ and $\mu_{y,i,j}$ 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):

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

$\mu_{y,i,j}$: Pre project device only is in use then fraction to be used to calculate total number, however if pre project device is used along with project ICS, proportion of usage of each will be determined by cooking habits evaluated by survey questionnaire during the monitoring period.

$\eta_{new,y,i,j}$ - 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. It is important to note that for $\mu_{y,i,j}$ where partial usage of both old stoves and project ICS are observed, for each household under sample cooking habits must be taken into consideration.

(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 biennial sampling.

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

There are two parameters for survey that are estimated through sampling: the number of stoves still in operation during the monitoring period as determined by the monitoring survey ($N_{y,i,j}$), and the continued use of old stoves, ($\mu_{y,i,j}$), ($\eta_{new,y,i,j}$) - Efficiency of the ICS. In line with AMS-II. G, both can be sampled in a single survey with a random sample of households using the above-described confidence/precision levels depending on annual or biennial monitoring frequency.

Thus, both the sampling parameters considered based on 'proportion value', hence to estimate the sample size for parameters $N_{y,i,j}$, $\eta_{new,y,i,j}$ and $\mu_{y,i,j}$. the following equation is used:

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

Where:

n = Sample size

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

p = Expected proportion

1.96 = Represents the 95% confidence required

0.1 = Represents the 10% relative precision

During 1st Monitoring period: -

The total numbers of Household/ICS during 1st Monitoring period are 2759 ICS which has been the population size for the current monitoring period.

N (Population size (Total number of households/ICS) – 2759 (1st MP)

Random Sample Monitoring – 130 (1st MP)

Minimum Sample Size

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

Quality Assurance/Quality Control

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

Oversampling: Randomly draw a sample more than the calculated number (say 20%) and collect data from each.

Buffer Group: Randomly draw additional samples (say 20%) and collect data from only for minimum numbers of ICS as per sample size calculation. If this would not result in the required sample size data would be collected from the additional ICS that were selected in the sample.

Data archiving

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

Personal Training

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

Roles and Responsibilities of Project Proponent

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

Organizational Structure

Person	Role
PP database administrator	The database administrator is responsible for updating and maintaining all electronic databases. Required competencies include experience with data management systems (e.g. Excel, STATA, or ONA/ODK), minimum 2 years working experience in a similar field, and at minimum a Bachelor's degree from an institution of higher education.
Monitoring team	The monitoring team will be assigned by the PP to conduct the user interviews and check the operational status of Cookstoves (ICS) in Households during the periodic sampling and reports the results to the database administrator. The skills and experience required for the data collection activities include:

	• Experience conducting surveys/tests • Experience conducting door-to-door surveys • Local language skills (especially important for input to questionnaire design and interviewing of end users) • English language skills • Cultural awareness • Numerical proficiency • Data entry skills
--	--

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

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

7 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

7.1 Data and Parameters Monitored

Data / Parameter	$N_{y,i,j}$
Data unit	Number
Description	Number of project devices of type i and batch j operating during year y
Value applied:	2,653 (Total operational stoves)
Comments	Calculation of emission reduction

Data / Parameter	$\eta_{new,i,y}$
------------------	------------------

Data unit	%
Description	Efficiency of the improved cookstove type i and batch j determined through water boiling test (WBT) during year y
Value applied:	SmartHome Pro – 34.55%
Comments	Calculation of emission reduction

Data / Parameter	μ_y
Data unit	Fraction
Description	Adjustment to account for any continued use of pre-project devices during the year y
Value applied:	0.05
Comments	Calculation of emission reduction

7.2 Baseline Emissions

The methodology does not account for baseline emissions separately, but instead quantifies net emission reductions achieved by the project. Please refer to Section 7.5.

7.3 Project Emissions

The methodology does not account for project emissions separately, but instead quantifies net emission reductions achieved by the project. Please refer to Section 7.5.

7.4 Leakage

Leakage shall be considered as default 0.95 in accordance with methodology.

7.5 Net GHG Emission Reductions and Removals

Net GHG emission reductions are calculated by applying Equations 1 and 2 for project activities replacing baseline stoves using non-renewable biomass (charcoal) and Equation 1 and 7 for project activities replacing baseline stoves using fossil fuel.

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

Where:

- **ER_y**= Emission reductions during year y in t CO₂e
- **i** = Indices for the situation where more than one type/model of improved cook stove is introduced to replace traditional charcoal stoves.
- **j** = Indices for the situation where there is more than one batch of improved cook stove of type i
- **ER_{yij}**= Emission reductions by improved cook stove of type i and batch j during year y in tCO₂e

$$ER_{y,i,j} = B_{y,savings,i,j} \times f_{NRB,y} \times NCV_{woodfuel} \times (EF_{wf,co2} + EF_{wf, non\ co2}) \times N_{y,i,j} \times 0.95 \quad \text{Equation (2)}$$

Where:

- **B_{y, savings, i, j}** = Quantity of woody biomass that is saved in tonnes per cookstove device of type i and batch j during year y
- **f_{NRB,y}** = Fraction of woody biomass that can be established as non-renewable biomass (fNRB)₂₅
- **NCV_{wood fuel}** = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne)₂₆
- **EF_{wf, co2}** = CO₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO₂/TJ)₂₇
- **EF_{wf, non co2}** = non-CO₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO₂/TJ)₂₈
- **N_{y, i, j}** = Number of project devices of type i and batch j operating during year y
- **0.95** = Discount factor to account for leakage

The quantify of woody biomass saved **B_{y, savings, i, j}** due to implementation of improved cook stoves was estimated by the following option set out in Equations 3.

$$B_{y,saving,i,j} = Bold \times \left(1 - \frac{\eta_{old}}{\eta_{new,i,j}}\right) \quad \text{Equation (3)}$$

Where:

- **B_{old}** = Annual quantity of woody biomass that would have been used in the absence of the project activity (in tonnes per device) to generate useful thermal energy equivalent to that provided by the improved cook stove. The value of B_{old} can be sourced from historical data or baseline surveys. A default wood to charcoal conversion factor of 6 kg of firewood per kg of charcoal may be used in line with paragraph 35 of AMS II.G, version 12. Alternatively, default value of 0.5 t/capita/year may be used.

²⁵ Default values endorsed by designated national authorities and approved by the Board are available at <https://cdm.unfccc.int/DNA/fNRB/index.html>

²⁶ AMS II.G. Version 12

²⁷ 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Chapter 2 Stationary Combustion

²⁸ 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Chapter 2 Stationary Combustion

- η_{old} = As per the methodology where more than two types of baseline devices are replaced by the project technology weighted average values (taking the amount of woody biomass consumed by each device as the weighting factor) shall be used.
 - A default value of 0.1 shall be used if baseline device is a three-stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney.
 - A default value of 0.2 shall be used for other types of devices.
- $\eta_{new,i,j}$ = Efficiency of the improved cook stove type i and batch j determined through water boiling test (WBT).

The quantity of charcoal consumed in absence of project activity (B_{old}) shall be determined using an estimation of average annual consumption of charcoal per household which may be derived using any of the following options:

Baseline Survey of Local Usage: Project proponent shall carry out a survey of usage prior to implementation of the project activity following the sampling approach described in the latest version of CDM document Sampling and surveys for CDM project activities and programme of activities. Alternatively, the project participant may follow the simple random sampling approach and the minimum sample size should be determined as per the following guidelines:

- Project target population < 300: Minimum sample size 30
- Project target population 300 – 1000: Minimum sample size 10% of group size
- Project target population > 1000: Minimum sample size 100

This simplified approach was be used for determining minimum sample size for parameters listed in the section below in which case it was 95/10 precision.

For this project activity, during the current monitoring period, the project proponent has conducted random sampling and selected 130 units from a population size of 2759 ICS/Household. It is crucial to emphasize that all the stoves distributed during this monitoring period are of the same type.

Sample Size Calculation

Stove Thermal Efficiency $\eta_{new,i,j}$				
Stove Model (Sampling Frame)	Total Sales (Sampling Frame Size)	Rated Efficiency (%)	Expected SD (%)	Calculated Sample Size (n)

Smart-Home Pro	2759	37.90%	3.79%	6
Sample size determination				
Estimated efficiency (mean)				37.90%
Estimated Standard Deviation of efficiency (SD)				3.79%
Vmean = (SD/mean)2				0.01
Minimum Sample Size required (efficiency)				4
tDistribution sample size adjustment	11			11
	5			5
	8			8
	6			6
	7			7
	6			6
Monitoring Results				
Stove Model (Sampling Frame)	Sampling frame size	Monitored Sample Size	Monitored Efficiency (%)	Monitored Standard Deviation
Smart-Home Pro	2759	30	34.55%	0.28%
Reliability Check				
Samples Monitored				30
Mean Efficiency				34.55%
Standard error of mean				0.05%
Relative precision (Margin of error) (%)				0.30%
Result				Ok, acceptable
Lower Bound confidence value				not applicable

Usage Rate (Uy)			
Stove Model (Sampling Frame)	Total Sales (Sampling Frame Size)	Usage Rate (Uy) (%)	Calculated Sample Size (n)
Smart-Home Pro	2759	95%	30
Sample size determination			
Estimated Uy (p)			95.00%
Estimated Standard Deviation of Uy (SD)			21.79%
VUy = (SD/p) ²			0.05
Sample Size required (Uy)			30
Monitoring Results			
Stove Model (Sampling Frame)	Sampling frame size	Monitored Sample Size	Monitored Usage
Smart-Home Pro	2759	130	96%

Reliability Check	
Samples Monitored	130
Monitored Uy (p)	96%
Standard Error of Uy	1.65 %
Relative precision (Margin of error)	3.36 %
Result	Ok, acceptable
Lower Bound confidence value	not applicable

Use of Baseline Stove per Vintage (Uy)				
Stove Model (Sampling Frame)	Total Sales (Sampling Frame Size)	Rated value (tonnes per year)	Expected SD	Calculated Sample Size (n)
2022	2759	0.9	0.09	7
Sample size determination				
Estimated (p)				0.90
Estimated Standard Deviation (SD)				0.09
Vmean = (SD/p) ²				0.01
Minimum Sample Size required				4
tDistribution sample size adjustment			Iteration 1	11
			Iteration 2	5
			Iteration 3	8
			Iteration 4	6
			Iteration 5	7
			Iteration 6	6
Monitoring Results				
Stove Model (Sampling Frame)	Sampling frame size	Monitored Sample Size	Monitored Mean Value of use of baseline stove	Monitored Standard Deviation
2022	2759	130	0.31	0.17
Reliability Check				
Samples Monitored				130
Mean value				0.31
Standard error of mean				0.015
Relative precision (Margin of error) (%)				9.38 %
Result				ok acceptable
Applicable Value				0.05

ER Calculation for the Project activity instances is given below:

$$B_{old,adjusted} = B_{old} \times (1 - \mu_y)$$

$$B_{old,adjusted} = (4.4) * (1 - 0.05)$$

$$= 4.172 \text{ tons wood-eq/HH-yr}$$

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

$$B_{y,savings,i,j} = ((4.172) * (1 - (20\%/34.55\%)))$$

$$= 1.76 \text{ tons wood-eq/HH-yr}$$

$$ER_{y,i,j} = B_{y,savings,i,j} \times f_{NRB,y} \times NCV_{woodfuel} \times (EF_{wf,co2} + EF_{wf,non\ co2}) \times N_{y,i,j} \times 0.95$$

$$ER_y = 1.76 * 0.0156 * 0.91 * (112 + 26.23) * 2,653 * 0.95$$

$$= 1,193 \text{ tCO}_2\text{e}$$

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2022(22-April-2022 to 31-August-2022)	1,193	-	-	1,193
Total	1,193	-	-	1,193

<u>Ex-ante emissions reductions/removals</u>	<u>Achieved emissions reductions/removals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
3,069 (132 days)	1,193	(-) 61%	Actual emission reductions achieved are lower than the value estimated in ex-ante calculation. This is mainly because the WBT test value derived from the sampling survey testing is lower than the projected value & very small year fraction of VCU accounting for the project activity instances.

APPENDIX 1 – STAKEHOLDER CONSULTATION SUPPORTING EVIDENCE



LSC INVITEES PARTICIPATION CHART

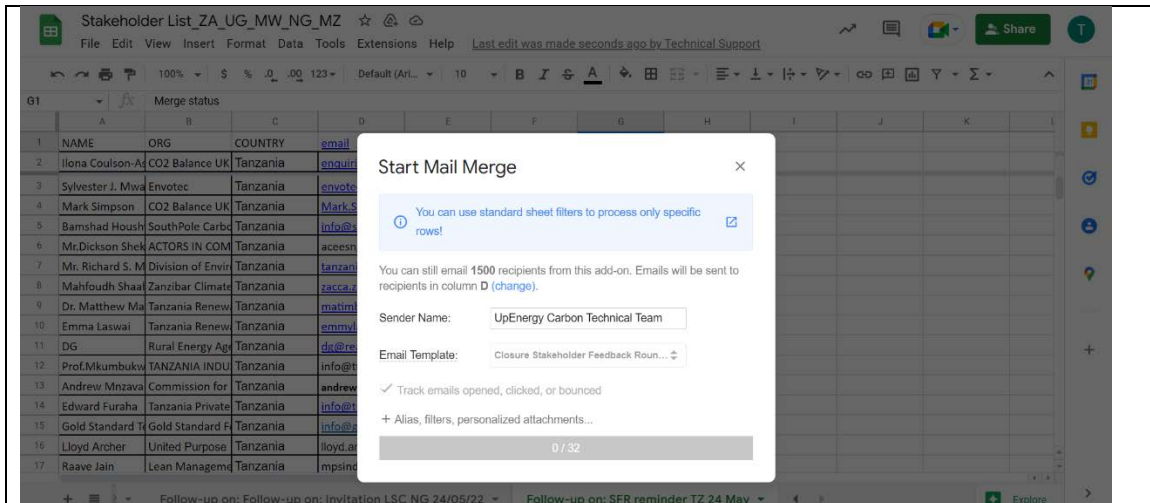
SN	ORGANIZATION	NAME	CONTACT	REGION	DISTRICT
1	OneLink Solution	Clay Mumbum	015858023	DSM	Kyaukse
2	DASAF	Douglas Mziray	0714 374081	LUSHO TO	DA
3	NIPPO DNC	Victoria Juma	0153 717813	DSM	DA
4	ACEB-12	DICKSON MHEWU	0787434343	LUSHO TO	DA
5	ESTER KUREMA	ESTER KUREMA	0656932410	DSM	DA
6	CONNIE TEMU	CONNIE TEMU	0763123163	DSM	DA
7	EDGAR KUREMA	EDGAR KUREMA	0679147677	DSM	DA
8	WUBIRIMANI	WUBIRIMANI	016 378343	DSM	DA
9	FOOD VENDOR	KULISA YAHAYA	0717 177256	DSM	K. Juma
10	"	HAKIMA MURRAY	0787900055	DSM	HIN
11	"	SITI JOVIN	0716711572	DSM	S. Jovin
12	"	FATMA SHOMARI	0782900056	DSM	DA
13	"	RACHEL MURRAY	0713 756661	DSM	DA
14	BEAT	JUMA RAMADHAN	0767288774	DSM	LALA
15	UDSM	SHABANI SOAH	0788244490	DSM	UBUNGO
16	STEVE JUMA	AREMBO NDIKAYE	0133410380	DSM	LALA
17	THE GUARDIAN	EMILY CHARLES	0742268750	DSM	UBUNGO
18	BUSINESS	GRACE MSACI	0672205508	DSM	DA
19	ENSO	Lameck Kishamba	0766478473	DSM	UBUNGO
20	ENSO	Frankie Songola	0782492601	DSM	DA
21	FOOD VENDOR	SCHOLASTICA JOSEPH	0653405356	DSM	S. JOSEPH
22	HAKIMA	HAKIMA MAUMUTI	0652323972	DSM	S. Jovin
23	"	SARAH KAMUKU	0782492601	DSM	S. Jovin
24	FOOD VENDOR	CHRISTINA JOHN	0786744873	DSM	DA



LSC INVITEES PARTICIPATION CHART

SN	ORGANIZATION	NAME	GENDER	CONTACT	REGION	DISTRICT
1	FOOD VENDOR	SIA THOMAS	F	07857709	DSM	UBUNGO
2	"	WUBIRIMANI	F	06529709	DSM	UBUNGO
3	CHITRE ZIMBA	T				
4	TASAF	Gregory Zimba	F	0751745229	DSM	UBUNGO
5	TIFA	Mukata John	F	0713 504114	DSM	UBUNGO
6	YDPA	DE SHONA MUMBO	F	0691-35508	DSM	UBUNGO
7	YDPA	FLORIAN S. KALIMBO	F	0613 353150	DSM	UBUNGO
8	GENERALIST	ESTHER	F	0150-32104	DSM	UBUNGO
9	GENERALIST	BERT MUMBO	M	0744-224420	DSM	UBUNGO
10	GENERALIST	ARMAN K. MUMBO	M	0741-196610	DSM	UBUNGO
11	UPENERGY	VERENE MASOMBE	F	0654-30608	DSM	UBUNGO
12	UPENERGY	SUNILAY JACKSON	M	0653-30608	DSM	UBUNGO
13	UPENERGY	ANANTIA KARTHEK	M	0744-30608	DSM	UBUNGO
14	UPENERGY	TOTINI OTHMAN	M	0744-30608	DSM	UBUNGO
15	UPENERGY	KUMAR SHARMA	M	0744-30608	DSM	UBUNGO
16	UPENERGY	ADITHYAN	F	0744-30608	DSM	UBUNGO
17	UPENERGY	ADITHYAN	M	0744-30608	DSM	UBUNGO
18	UPENERGY	ADITHYAN	F	0744-30608	DSM	UBUNGO
19	UPENERGY	ADITHYAN	F	0744-30608	DSM	UBUNGO
20	UPENERGY	ADITHYAN	M	0744-30608	DSM	UBUNGO
21	UPENERGY	ADITHYAN	F	0744-30608	DSM	UBUNGO
22	UPENERGY	ADITHYAN	M	0744-30608	DSM	UBUNGO
23	UPENERGY	ADITHYAN	F	0744-30608	DSM	UBUNGO
24	UPENERGY	ADITHYAN	M	0744-30608	DSM	UBUNGO
25	UPENERGY	ADITHYAN	F	0744-30608	DSM	UBUNGO
26	UPENERGY	ADITHYAN	M	0744-30608	DSM	UBUNGO
27	UPENERGY	ADITHYAN	F	0744-30608	DSM	UBUNGO
28	UPENERGY	ADITHYAN	M	0744-30608	DSM	UBUNGO
29	UPENERGY	ADITHYAN	F	0744-30608	DSM	UBUNGO
30	UPENERGY	ADITHYAN	M	0744-30608	DSM	UBUNGO

Email/Newspaper Invites: -



NAME	ORG	COUNTRY	email
Ilona Coulson	CO2 Balance UK	Tanzania	enquir
Sylvester J. Mwa	Envotec	Tanzania	envote
Mark Simpson	CO2 Balance UK	Tanzania	Mark.S
Bamshad Housh	SouthPole Carbo	Tanzania	info@s
Mr.Dickson Shek	ACTORS IN COM	Tanzania	aceesn
Mr. Richard S. M	Division of Envin	Tanzania	tanzan
Mahfoudh Shaal	Zanzibar Climate	Tanzania	zacca.z
Dr. Matthew Ma	Tanzania Renew	Tanzania	matim
Emma Laswai	Tanzania Renew	Tanzania	emmw
DG	Rural Energy Ag	Tanzania	dx@re
Prof.Mkumbukw	TANZANIA INDU	Tanzania	info@t
Andrew Mnzava	Commission for	Tanzania	andrew
Edward Furaha	Tanzania Private	Tanzania	info@e
Gold Standard T	Gold Standard F	Tanzania	info@e
Lloyd Archer	United Purpose	Tanzania	lloyd.ar
Raave Jain	Lean Managem	Tanzania	mpsind

Announcement

UpEnergy Group, Tanzania is organizing one-day stakeholder consultation meeting on the project UpEnergy – Social and Climate Impact Programme. Details are mentioned below:

Venue: Ubungu Plaza Limited
P.O Box55612
Dar-Es-Salaam
Tanzania
Tel:(022) 2450806

Date: 22nd April 2022

Time: 10:30 am

This is a date change announcement with reference to the newspaper ad published on 17th April 2022. The original event was planned on 11th April 2022 which is now happening on 22nd April 2022.

Date of Invitation – 22-March-2022			
Stakeholder Type/Organization (if relevant)	Name of invitee	Male/ Female	Method of invitation
Climatecare	Sally Gakii	Female	Email
CO2 Balance UK	Ilona Coulson-Ashworth	Male	Email
Envotec	Sylvester J. Mwambije	Male	Email
CO2 Balance UK	Mark Simpson	Male	Email
Climate Neutral Group	Mark Huis in T Veld	Male	Email
SouthPole Carbon Asset Management	Bamshad Houshyani	Male	Email
ACTORS IN COMMUNITY EMPOWERMENT AND ENVIRONMENTAL SUSTAINABILITY (ACEES)	Mr.Dickson Shekivuli	Male	Email
Tanzania Bureau of Standards	Joseph Ismail	Male	Email
Division of Environment, Vice-President's Office	Mr. Richard S. MUYUNGI	Male	Email
Zanzibar Climate Change Alliance (ZACCA)	Mahfoudh Shaaban Haji	Female	Email
Zanzibar Climate Change Alliance (ZACCA)	Rahma Ramadhan Khamis	Male	Email
Tanzania Traditional Energy Development Organization (TaTEDO)	Estomih Sawe	Male	Email
Tanzania Renewable Energy Association (TAREA)	Dr. Matthew Matimbwi	Male	Email
Tanzania Renewable Energy Association (TAREA)	Emma Laswai	Male	Email
EWM Consult (T) Ltd	Sam Shemsanga	Male	Email
Rural Energy Agency (Autonomous under Ministry of Energy and Minerals)	DG		Email

TANZANIA INDUSTRIAL RESEARCH AND DEVELOPMENT ORGANIZATION (TIRDO)	Prof.Mkumbukwa M.A. Mtambo	Male	Email
REA	Arfaxad Ndilanha	Male	Email
Sustainable Energy Development Centre	Hassan Bussiga	Male	Email
Commission for Science and Technology	Andrew Mnzava	Male	Email
Tanzania Private Sector Foundation	Edward Furaha	Male	Email
University of Dar es salaam	Dr. Hassan Rajabu, Prof.Kimambo	Male	Email
Gold Standard Foundation	Gold Standard Team		Email
Sustain-CERT	Sustain-Cert Team		Email
United Purpose	Lloyd Archer	Male	Email
Global Offset Research	siddharth Yadav		Email
Lean Management Systems Promotion Society	Raave Jain	Female	Email
HIVOS	Harry Clemens	Male	Email
Myclimate Foundation	Mr. Martin Jenk		Email
Concern Health Ghana	Isaac Ampomah	Male	Email
EUROPEAN UNION (EU)	Eng :Francis Songela	Male	Email
Power Corner	Cecila Manu	Female	Email
National Carbon monitoring center(Sokoine university)	Dr Eriakim Zahabu	Male	Email
TAMISEMI	Stakeholder		Email
NEMC	Stakeholder		Email
International Youth development programme	Frola Kalinga	Female	Email

Day Liff	Felista Asenga	Female	Email
Restuta Kokushazi	Restitutam Kokushazi		Email
AFRIHAND TANZANIA LTD	Jaffary Mashaka	Male	Email
Tumaini Media	Elizabeth Chahoha	Female	Email
Conne Modest Temu	Conne Modest Temu		Email
<u>Styden Rwebangila</u>	Commisioner Ministry of energy		Phone
Stanford Kway	TAMISEMI		Phone
Ester peter mrema	Ester Peter Mrema	Female	Phone
Esther Singano	Esther Singano	Female	Phone
Valentina Quaranta	Off grid sun	Female	Phone
Dr .Andrew Komba	VICE PRESIDENT OFFICE	Male	Phone
Mlay John	SNV Tanzania	Male	Phone

APPENDIX 2 – CALIBRATION DETAILS

Weighing scale

Sr.No	WMA - 4217752
Calibration Date	March - 2022
Calibration Due Date	March - 2023
Frequency	Annual



VERIFICATION DATE

Month ☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

Year 2021 ☒ 2022 ☐ 2023

WMA
Weights & Measures Agency

C/M P/M SB BST VTC
FST W/B WMT F/M

VERIFIED

WEIGHTS AND MEASURES AGENCY

Should be re-verified before

Month ☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

Year 2022 ☒ 2023 ☐ 2024

Thermometer: -

Sr.No	66001481
Calibration Date	02-December-2021
Calibration Due Date	02-December-2022
Frequency	Annual