



INSTALLATION OF HIGH EFFICIENCY WOOD BURNING COOKSTOVES IN KENYA

Document Prepared by

C-Quest Capital SGS Stoves Private Limited

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Prepared By	C-Quest Capital SGS Stoves Private Limited
Contact	Address: 38 Beach Road #29-11, South Beach Tower, Singapore. Telephone: +1-202 247-7976 Email: cqc-operations@cquestcapital.com Website: www.cquestcapital.com

CONTENTS

1	PROJECT DETAILS.....	3
1.1	Summary Description of the Implementation Status of the Project.....	3
1.2	Sectoral Scope and Project Type	5
1.3	Project Proponent.....	5
1.4	Other Entities Involved in the Project.....	6
1.5	Project Start Date.....	6
1.6	Project Crediting Period.....	6
1.7	Project Location.....	6
1.8	Title and Reference of Methodology	7
1.9	Participation under other GHG Programs.....	8
1.10	Other Forms of Credit and Supply Chain (Scope 3) Emissions	8
1.11	Sustainable Development Contributions	8
2	SAFEGUARDS	13
2.1	No Net Harm.....	13
2.2	Local Stakeholder Consultation	13
2.3	AFOLU-Specific Safeguards	15
3	IMPLEMENTATION STATUS	15
3.1	Implementation Status of the Project Activity.....	15
3.2	Deviations	16
3.3	Grouped Projects.....	17
4	DATA AND PARAMETERS.....	17
4.1	Data and Parameters Available at Validation	23
4.2	Data and Parameters Monitored	25
4.3	Monitoring Plan	29
5	QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS.....	35
5.1	Baseline Emissions.....	35
5.2	Project Emissions.....	37
5.3	Leakage	37
5.4	Net GHG Emission Reductions and Removals.....	37
	APPENDIX A: ABBREVIATIONS.....	40
	APPENDIX B: SCOPE 3 EMISSION STATEMENT.....	41

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

A summary description of the implementation status of the technologies/ measures (e.g., plant, equipment, process, or management or conservation measure) included in the project.

The project involves distribution and installation of fuel-efficient Improved Cookstoves (ICS) in Kenya. The ICS disseminated through this project replaces the baseline cookstoves. Under this project two stoves (model TLC-CQC Rocket Stoves, each with single pot) are being installed per household in Kenya.

The ICS will burn wood more efficiently thereby improving thermal transfer to pots, hence saving fuel. Not only will this halt the rapidly progressing deforestation in Kenya but also reduces health hazards from indoor smoke pollution and women and children are able to spend less time collecting firewood.

TLC-CQC Rocket Stove usage substantially reduces fuel consumption and emissions for conducting cooking and water heating tasks in homes. The ICSs are more efficient than traditional firewood stove as they reduce heat loss and improve thermal transfer, resulting in a decrease in fuel use in comparison with traditional firewood stove. It substantially reduces wood fuel consumption compared with a three-stone fire or traditional pot support.



The first TLC Stove was installed on 06-October-2020. Till the end of 4th monitoring period, a total of 105,546 TLC Stoves were installed under the project. The details of instances added for each monitoring period is depicted in the table below.

All the data recorded during stove registration process was captured via handheld digital devices (smart phones and/or tablets). The information collected is then transferred to a centralized online project database. PP has distributed two improved cookstoves in the households as per the requirement of the stove users.

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

Monitoring Period (Table 1)

1 st Monitoring Period	06-October-2020 to 31-August-2021 (both dates are included)
2 nd Monitoring period	1-September-2021 to 28-February - 2022 (both dates are included)
3 rd Monitoring period	1-March-2022 to 15-September - 2022 (both dates are included)
4 th Monitoring period	16-September-2022 to 31-March- 2023 (both dates are included)

Installation of ICS (Table 2)

Date of first ICS installed	06-October-2020
Date of last ICS installed in 4 th MP	31-March-2023
No. of instances added/ICS installed during 1 st MP	4,742
No. of instances added/ICS installed during 2 nd MP	33,868
No. of instances added/ICS installed during 3 rd MP	45,698
No. of instances added/ICS installed during 4 th MP	28,142
Total no. of ICS in database till end of 4 th MP (31-March-2023)	105,546 ¹

First Monitoring Survey (Table 3)

Survey dates for parameters $N_{y,i,j}$ and $B_{y=1,new,i,j,survey}$	20-November-2021 to 13-December-2021
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Second Monitoring Survey (Table 4)

Survey dates for parameters $N_{y,i,j}$	23-May-2022 to 17-June-2022
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Third Monitoring Survey (Table 5)

Survey dates for parameters $N_{y,i,j}$	28-November-2022 to 14-December-2022
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Fourth Monitoring Survey (Table 6)

Survey dates for parameters $N_{y,i,j}$	01-June-2023 to 23-June-2023
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- The total GHG emission reductions or removals generated in this monitoring period.

The project results in a total emission reduction of 130,982 tCO₂e over the monitoring period of 16-September-2022 to 31-March-2023 (both dates are included).

Audit Type	Period	Program	VVB Name	Number of years
Validation	13-May-2022	VCS Validation	Carbon Check (India)	-

¹ For total ICS please refer section 2.2 and section 3.1 of this MR

			Private Ltd.	
1 st MP Verification	06-October-2020 to 31-August-2021 (both dates are included)	VCS Verification	Carbon Check (India) Private Ltd.	0 years,10 months,26 days
2 nd MP Verification	1-September-2021 to 28-February - 2022(both dates included)	VCS Verification	VKU Certification Pvt. Ltd.	0 years, 6 months,0 days
3 rd MP Verification	1-March-2022 to 15-September-2022(both dates included)	VCS Verification	VKU Certification Pvt. Ltd.	0 years, 6 months,15 days
4 th MP Verification	16-September-2022 to 31-March-2023(both dates included)	VCS Verification	VKU Certification Pvt. Ltd.	0 years, 6 months,15 days
Total	-	-	-	2-year-5-months,26 days

This is the 4th monitoring period for this project. The current monitoring period is considered from 16-September-2022 to 31-March-2023 (including both days). The total GHG emission reductions or removals generated in this monitoring period are 130,982tCO₂e (calculated value referred in the ER spread sheet).

1.2 Sectoral Scope and Project Type

The project is categorised under type/category as below:

- a) **Sectoral scope:** 03 - Energy demand
- b) **Type:** II – Energy efficiency improvement projects

The project is a grouped project activity.

1.3 Project Proponent

Organization name	C-Quest Capital SGS Stoves Private Limited
Contact person	Ken Newcombe
Title	Director

Address	38 Beach Road #29-11, South Beach Tower, Singapore
Telephone	+1-202 247-7976
Email	cqc-operations@cquestcapital.com

1.4 Other Entities Involved in the Project

Apart from C-Quest Capital SGS Stoves Private Limited, there are no other entities involved in the Project.

1.5 Project Start Date

06-October-2020 (date of commissioning of 1st ICS under this grouped project activity, installed in Village: Siyenga, Ward: Bunyala East, Sub- County: Navakholo, County: Kakamega, Province: Western, Stove Ids: CQCVKE0045621, CQCVKE0045622, Lat: 0.41327, Lon: 34.68609)

1.6 Project Crediting Period

06-October-2020 to 05-October-2030 (both days included), Ten years fixed crediting period.

1.7 Project Location

The project location is the geographical boundary of Republic of Kenya with coordinates 0° 1'24.8" S latitude and 37° 54.372' E longitude.²

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



Kenya map³

1.8 Title and Reference of Methodology

1. VMR0006: Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1⁴
2. Tool 30 version 3.0 – “calculation of the fraction of non-renewable biomass” (Version 3.0⁵)
3. Standard – “Sampling and Surveys for CDM project activities and programmes of activities” (Version 09.0⁶)

³ [Political Map of Kenya - Nations Online Project](#)

⁴ <https://verra.org/methodology/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/>

⁵ https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-30-v4.0.pdf/history_view

⁶ https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf

1.9 Participation under other GHG Programs

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

1.10 Other Forms of Credit and Supply Chain (Scope 3) Emissions

The project activity and the GHG emission reductions are not included in any emission trading program or any other mechanism that includes GHG allowance trading and include details about any such programs or mechanisms.

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

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 shall notify them of the project and potential risk of Scope 3 emissions double claiming via email”.

The Project Proponent has informed the manufacturer of the TLC-CQC Rocket Stoves parts as well as the implementing partner in Kenya at the time of signing agreement for the goods and services provided by them, that ICS will be distributed in Kenya under this project. Also, PP has intimated them about the project registration under VERRA for the generation of VCU.

Evidence of the emails and public statement⁷ has been submitted to the VVB during verification. Please refer Appendix B for the details.

1.11 Sustainable Development Contributions

The project contributes to sustainable development in a number of ways:

a) Environmental Sustainability

- The project helped significantly reduce greenhouse gas emissions over the monitoring period.
- The project helped 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.

b) Social Sustainability

- Considerably less time need to be spent collecting wood fuel for the family home thereby reducing the work burden on rural families and presenting alternative opportunities for economic development.
- The number of indoor pollutants from the burning of biomass in the family home reduced. Less carbon dioxide, carbon monoxide and particulates 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.

c) Economic Sustainability

⁷ <https://cquestcapital.com/latest/public-notice/>

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

Status of project under SD VISTA; Validation of the project has already begun. The project was under public comment period from 19-September-2022 to 19-October-2022.⁸

⁸ [Verra Search Page](#)

Table 1: Sustainable Development Contributions

The project leads to the achievement of the following SDGs due to the implementation of project activities:

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1	3.9	Project specific indicator: Proportion of individuals reporting improved health status after adoption of project stoves (attributable to reduced exposure to air pollution during cooking)	Implemented activities to increase	The project survey results augment the claim as 100% of the respondent's felt reduction in smoke and soot levels near the cooking area and 98% of respondents experienced reduced levels of itchiness of eye associated with cooking on open fire.	The project activity by replacing 500,000 traditional cookstoves with energy-efficient project cookstoves will contribute to improved health and well-being brought about by reduced levels of fine particulate matter (PM _{2.5}) emissions. within 250,000 households below baseline emission level of 3.9 g/kg fuel.
2	4.3.1	Project specific indicator: Number of individuals who received any informal training	Increase	Vocational training and project related training with respect to successful implementation of a programme, appropriate methods of conducting surveys, carrying out maintenance activities etc. in addition to issues related to climate change was provided to 20 individuals associated with the project during the current monitoring period.	Contribute to increasing vocational and relevant skills of at least 50 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
3	5.4	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age, and location.	Decrease	The project survey results augment the above claim as 88% of the respondents reported to having experienced fewer trips for wood collection freeing up their time for other activities	Contribute to reducing drudgery and reducing gender inequality, especially for women and children by saving time spent in collecting fuel wood and cooking, considered at an average of 2hr/day ⁹ , per household, for rural areas using an open fire or similar traditional

⁹ <https://www.esmap.org/node/55728>

					cookstove. The project will lead to time savings by approximately one hour every day ¹⁰ and associated reduction in drudgery in 0.25 million households translating to benefitting an equal number of women as they are primary cooks and fuelwood collectors in most of the households. The women can use the time saved for doing more productive activities or personal care.
4	7.1	7.1.2 Proportion of population with primary reliance on clean fuels and technology	Increase	Increasing access to clean cooking technology by distributing a set of project stoves in 52,773 households.	Increase access to clean cooking technology with project stoves installations in approximately 250,000 households under the project lifecycle
5	8.3	8.3.1 Proportion of informal employment in non-agriculture employment, by sex	Increase	A total of 10 individuals (7 females & 3 males) were directly and indirectly employed under the project activity during the current monitoring period in Kenya for various activities related to project implementation, maintenance, and monitoring.	Contribute to generation of employment in informal sector (total economy, agriculture, and non-agriculture) by contracting locals with a target employment of 50 employees for varying lengths of time over the project lifetime with a focus on hiring females. Employment comprises all persons of working age who, during a short reference period (minimum one week), or full time will be engaged in any activity to produce goods or provide services for pay or profit
6	13.0	Project Specific indicator: GHG emissions as compared to	Decrease	Total emission reduction in the current monitoring period is 130,982 tCO ₂ e.	Contribute to GHG reduction through an estimated reduction of ~7.38 tCO ₂ e per stove per year or 1,988,017 per year owing to the replacement of baseline stoves with project

¹⁰ <https://berkeleyair.com/impacts-and-effects-on-gender-related-outcomes-and-sustainable-cooking-fuel-supply-after-the-introduction-of-improved-cookstoves-in-rural-zambia>

	baseline scenario (open fire)			stoves.
7	15.2 15.2.1 Progress towards sustainable forest management by increasing above ground biomass in forests	Implemented activities to increase	The project has resulted in saving ~1.1323 tons of non-renewable biomass per stove during this MP leading to total savings of ~85,092 tons of biomass from 75,149 ICS operating.	Contribute an estimated reduction in removal of non-renewal woody biomass to the tune of 3.60 tons, per stove, per year, over the 10 years of crediting period from forests surrounding the communities thereby leading to an increase in above ground biomass in these forests.

2 SAFEGUARDS

2.1 No Net Harm

There are no potential negative environmental or socio-economic impacts for this project activity based on the following facts:

- The project does not coerce the population into any practice or habit which they are not willing to take up as the cooking practice or habit on the project stove is similar to what was practiced before implementing this project activity, i.e., on the baseline stove.
- The project activity promotes gender equality as it intends to reduce the burden on women in the most vulnerable communities by reducing the fuel wood consumption. The amount of time spent collecting fuel wood and cooking will be reduced. Women will have more time for other pursuits. The risk of being exposed to gender-based violence will also reduce.
- The project is neither involved in any activity that would bring environmental deterioration nor will lead to any emission of toxic substances. The project stoves will rather reduce emissions due to the increased thermal efficiency compared to the baseline stoves.
- There are no threats anticipated in terms of negative effects on the local economy. Moreover, the locals will also be employed as a result of this project activity. Thereby improving the economic growth in the region where the project activity has been implemented.

2.2 Local Stakeholder Consultation

Feedback was requested from local stakeholders for the “Installation of high efficiency wood burning cookstoves in Kenya” program between 26-October-2020 and 25-November-2020. Necessary precautions were taken place in light of the COVID-19 pandemic, with feedback having been conducted electronically when possible, minimizing large groups and socially distancing during in person meetings.

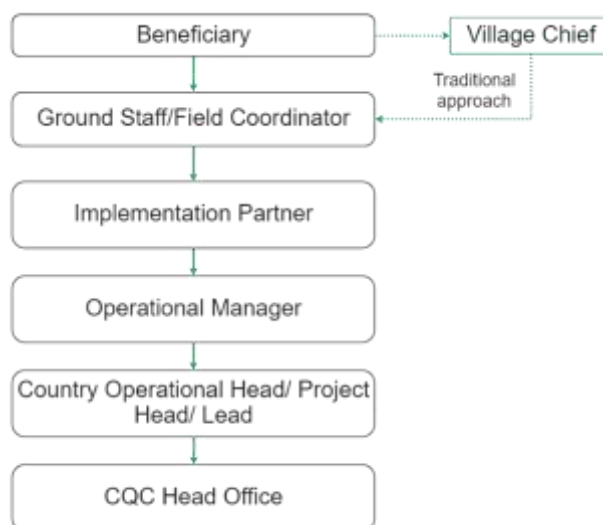
The outcomes from the local stakeholder consultation are available in Section 2.2 of the PD.

On-going communication mechanism.

The Stove owner can contact the local implementation partner in case any support or replacement of any stove part is required. The contact details of the local implementation partner have been shared with the end users during the stove installation. The local support staff address the end users’ query by providing the necessary support. In case of replacement of stove part is needed, local staff coordinates with the management team to arrange the replacement of the part. At the time of monitoring survey also, field staff takes feedback from the local stakeholders. All stakeholders’ concerns (positive or negative) during implementation of the project activity have been compiled in the survey results spreadsheet. Necessary action has been taken by the PP (if required) to address the concerns raised by stakeholders during ongoing communication.

Grievance Redressal mechanism.

PP follows a proper Feedback and Grievance Redress Policy and Procedure, which ensures that project-affected communities and individual stakeholders' grievances are properly prioritized and addressed. These measures are taken to enhance PP's accountability and transparency and to support the project initiatives that can help the communities to identify adverse effects to them, or their environment which had not previously been identified and mitigated by PP.



Flow of information/complaint/grievances from stakeholder to PP

The Grievance Policy and Procedure is accessible as a phone number of the PP/implementing partner office in Kenya is available on the brochure provided to each household, which is the most accessible manner to provide feedback. PP policy and procedure outline the process to evaluate and respond to complaints; the procedure details when a serious level complaint should be communicated to PP country teams and when it would be best addressed by the implementing partner.

Some of the grievance received during this monitoring period (Table 7):

Grievance received	Action taken
Beneficiary had the wrong information on the use of pot skirt	Educated the beneficiary on proper use of all the parts, including their importance.
Complained her stove was smoking a lot	Beneficiary was taken through the process of using all her stove parts correctly to avoid the smoke coming from improper parts usage.
Beneficiary didn't know how to use the stove parts	Beneficiary was re-educated on importance of all stove parts, and the stove parts usage.

PP through spot audits and stove champions program is continuously involved in monitoring of the stoves. Whenever issues are identified related to location change, non-usage,

typographical errors in database, etc., PP conservatively removes those households from the database for the monitoring period. For the current monitoring period, 7142 ICS (corresponding to 3571 households) of various provinces from previous MPs were removed from the MP4 database which were earlier part of MP3 database. Database comparison sheet is submitted to the VVB for reference.

2.3 AFOLU-Specific Safeguards

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

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

Till the end of the monitoring period, the project installed 105,546 stoves. Only one stove model (TLC-CQC Rocket Stove) was distributed in the project. Kenya is divided in to 8 provinces namely, Nairobi (the capital city), Central, Coast, Eastern, North-Eastern, Nyanza, Rift Valley and Western. Installations have taken place in 6 provinces till the end of the 4th monitoring period. The province wise installations at the end of MP4 are as follows:

Province	Number of stoves installed
Central	46,750
Coast	4
Eastern	52,168
Nyanza	242
Rift Valley	4,622
Western	1,760

PP had installed 28,142 ICS in MP4. 7142 ICS (corresponding to 3571 households) from various provinces were removed from the MP4 database which were earlier part of MP3 database. Hence, in some provinces there is a decrease in the no. of stoves in MP4 as compared to MP3 even after the addition of new households in MP4. Additionally, PP included a database of 238 ICS (corresponding to 119 households) during this period. These households had been conservatively excluded in the previous monitoring period due to typographical errors in their addresses. The details of these households could not be validated at that time. However, PP has since rectified and validated these details, subsequently incorporated them into the database during the current monitoring period.

S. No	Description	Total No. of stoves
1	Final count of Stoves in MP3 Database	84,308
2	New Stoves added in MP4	28,142
3	Stoves removed from MP4 database belonging to previous MPs	7,142
4	Stoves added in MP4 database belonging from previous MPs after rectifications	238
5	Final count of stoves in MP4 database	105,546

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

Technical Specifications	
Stove Size	Depth: 34.5cm Width: 34.5cm Height: 28 cm
Efficiency	34.5%
Average Life	10 years

Table 8

There were no events or changes to the project, the project proponent, or entities during the monitoring period.

VCS methodology VMR0006, version 1.1 allows the use of a leakage adjustment 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.

Under this project two stoves (model TLC-CQC Rocket Stoves, each with single pot) are being installed per household in Kenya.

Life span of ICS- CQC Rocket Stove

The life of TLC stove is at least 10 years owing to it being a clay and brick stove which can be easily repaired using a mixture of local clay, cow dung, sand, and water on a regular basis. The metal parts used in the stoves are under extended warranty from PP/manufacture side throughout the projected life span and will be replaced in case of request received from the stove owner for replacement. PP has confirmed the life span of 10 years through the above measures.

3.2 Deviations

3.2.1 Methodology Deviations

This project did not apply any methodology deviations.

3.2.2 Project Description Deviations

Deviation 1:

PP has taken deviation during the 3rd MP verification (01-March-2022 to 15-September-2022). Since 11-January-2023, project ownership rights transferred to C-Quest Capital SGS Stoves Private Limited. The relevant document (Deed of accession and Deed of Partial Release in respect of VCS registration deed of representation both dated 11-January-2023 and communications agreement dated 24-September-2022 for transferring the ownership to VCS

has been provided. Verra has approved this deviation, and it has been published on the project page¹¹.

Deviation 2:

In the section 3.5 of registered VCS-PD, other than the regulatory surplus and positive list, another step called project method has been added. NPV analysis steps are being added in the revised VCS-PD to confirm the additionality of each project activity instances, where PP has other sources of revenue except carbon credit sales.

PP has taken deviation during 1st MP verification (06-October-2020 to 31-August-2021) because in certain villages of Kenya, Implementing Partner has charged a nominal amount for the readymade bricks used for building the stove (for around 2000 ICS). This happened due to the shortage of raw materials like clay and cow dung in that village/ HH vicinity. These raw materials had to be arranged from other locations by implementing partners at additional cost. Other than these 2000 stoves, project Implementer/Project Proponent installs all the stove at zero cost and PP does not plan on charging the end users any amount. PP has replaced the IP that charged the amount with another IP ensuring that distribution/installation will remain free of cost.

PP has calculated NPV of the project and provided detailed investment analysis spread sheet sheets to VVB during first verification. Also, Implementation cost and project revenue are mentioned in detail in the section 3.5 of the VCS PD.

The proposed changes do not have any impact on applicability of methodology, appropriateness of the baseline scenario and estimation of emission reductions.

3.3 Grouped Projects

New project activity instances included under this grouped project ensure that it meets the eligibility criteria below.

S. No.	Criterion	Compliance Requirement	Method of Evaluation
1	Methodology: Meet the applicability conditions set out in the methodology applied to the project	The project activity instance shall use VCS approved methodology-VMR0006: Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1 and shall meet the applicability conditions set out in the	All new project activity instances met the applicability conditions as mentioned in Section 3.2 of the registered VCS-PD. Applicability Criteria 1: Project activities shall be implemented in domestic premises.

¹¹ <https://registry.verra.org/app/projectDetail/VCS/2349>

		methodology.	Method of evaluation: All ICSs installed under this monitoring period are in households only. Same can be verified from the project database provided to VVB. Applicability criteria 2: 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 single pot or multi-pot; in case of project stove replacing fossil fuel baseline stove, it shall exclusively use renewable biomass. Method of evaluation: ICS deployed has 34.5% thermal efficiency, which is higher than 25%. The Thermal Efficiency test report and Manufacturer's specification, submitted to VVB, indicate that the TLC-CQC rocket stove has a thermal efficiency of 34.5%. Applicability criteria 3: Both 'Projects' and 'Large Projects' can use this methodology. Each cookstove shall result in annual energy saving of less than or equal to 1% of the capacity limit indicated in the methodology. Method of evaluation: Each cookstove results in annual energy saving of 0.009 GWh/TLC-CQC Rocket
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			stove which is below the 1% threshold. The calculation is provided in the ER spread sheet provided to the VVB.
2	Technology: Use the technologies and measures specified in the project description	The project activity instance shall implement TLC-CQC Rocket Stoves having minimum efficiency of 25%; below which it shall not be eligible under this grouped project.	TLC-CQC Rocket stove has a thermal efficiency of 34.5%. Thermal Efficiency test report/ Manufacturer 's specification submitted to VVB to establish minimum efficiency criteria in the first year of stove installation.
3.	Baseline Scenario: Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	All new project activity instances will be installed within Kenya only and the baseline scenario is the continued use of non-renewable wood fuel by the target population to meet similar thermal energy needs as provided by project cookstoves in absence of project activity. This also conforms to the applied methodology.	The baseline scenario of the ICS installed households were using three-stone fires or pot support. PP has submitted the registration form cum consent deeds of individual ICS which contains geographical coordinates, address of households as well as confirmation by end user (stove user) stating that they were using traditional three stone fire or pot support before the installation of project stove.
4.	Additionality: Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	Each project activity instance shall demonstrate its compliance with- 1. Regulatory Surplus: The project should not be 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. 2. Positive List:	1. Regulatory Surplus: There is no law, statute or government programme or policy in Kenya mandating the project activity nor is there any systematically enforced law, statute or other regulatory framework for such projects. Hence this requirement is satisfied for all project activity instances to be included in the current grouped project. 2. Positive List: During the current monitoring period, all ICS

		The inclusion of new project activity instances shall have to comply with positive list that is the ICS are installed/ distributed at zero cost to end user and the project activity instance has no other source of revenue but GHG credits.	were distributed at zero cost to stove owner/end user. This information can be confirmed through interviews with stove owners/end users during the verification process.
5	Occur within one of the designated geographic areas specified in the project description	All new project activity instances will be installed within Kenya only.	All ICSs installed under this monitoring period are in households located in Kenya. This can be confirmed from the Project Activity Instance Database containing the Geographical Coordinates of each household to which cookstoves are distributed.
6	Ownership: Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance	A default Beneficiary Agreement for end users including the provision that emission reductions generated by the project activity are owned by the Project Proponents will be provided for project activity instance.	The end users have signed registration form cum consent deed to transfer the ownership rights of the carbon assets generated from this project to the PP. PP has submitted copy of registration form cum consent deed to VVB to confirm the ownership of emission reduction claims.
7	Start Date	The start date of project activity instance shall be same as or later than the grouped project start date.	Start date of the project activity is 06-October-2022, as mentioned in the section 1.5 of the MR. PP has provided Project Activity Instance Database containing date of installation of each ICS.

8	Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit.	1. The aggregate energy savings by a single project activity shall not exceed the equivalent of 180 GWh_{th}/year as mentioned in the methodology AMS II G: Energy efficiency measures in thermal applications of non-renewable biomass. 2. Each project activity instance that exceeds one percent of the capacity limit (i.e., 1.8 GWh_{th}) shall be identified. 3. 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.	The annual energy saving for each project activity instance (i.e., each project ICS) came out 0.009 GWh_{th}/ TLC Rocket Stove, well below 1% (i.e., 1.8 GWh_{th}) of the capacity limit. The calculation is provided in the ER spread Sheet provided to the VVB. As the annual energy saving is below 1% of the limit, the project activity instances under this grouped project activity are not assigned to clusters.
9.	Double Counting	The Improved Cookstove distributed under this project shall be uniquely identifiable based on the distribution records.	PP has provided Project Activity Instance Database to VVB which contains unique serial number of each ICS. Each ICS distributed have corresponding end user (stove owner) details (i.e., name, geographical coordinates, address, unique serial number). The combination of this

			unique serial number of each ICS along with geographical address of the stove owner confirms the unique identity of each project device. This is also ensures that no double counting of emission reductions occurred.
10	Target Population	End user for each project activity instance shall be households, with non-renewable biomass on inefficient wood or 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.	All ICSs installed under this monitoring period are the households only who were using traditional three stone fire or pot support. PP has provided registration records cum consent deeds of individual ICS which contains geographical coordinates, address as well as confirmation by end user (stove owner) stating that they were using traditional three stone fire or pot support before the installation of project stove.
11	Crediting period	Be eligible for crediting from the start date of the instance through to the end of the project crediting period (only). Note that where a new project activity instance starts in a previous verification period, no credit may be sought for GHG emission reductions or removals generated during a previous verification period and new instances are eligible for crediting from the start of the next verification period.	The start date of the instance will be the date the stove began generating GHG emission reductions or removals. The end of the crediting period of instance will be the end date of project crediting period as mentioned in section 1.6 of Monitoring report.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	f_{NRBy}
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
Value applied	0.94
Justification of choice of data or description of measurement methods and procedures applied	This parameter has determined ex-ante. C4 Eco Solutions (Pty) Ltd was appointed as third party to study and derive the f_{NRB} value for Kenya the value has been calculated in accordance with Tool 30 version 3; using latest available versions of Food and Agriculture Organization (FAO) report, UN Data and other publicly available data that have been published by reliable sources.
Purpose of Data	Calculation of emission reductions
Comments	The report of f_{NRB} was made available to VVB during the validation.

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	No comments

Data / Parameter	$EF_{wf,CO2}$
Data unit	tCO ₂ /TJ

Description	CO ₂ emission factor for the use of wood fuel in baseline scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion ¹²
Value applied	112
Justification of choice of data or description of measurement methods and procedures applied	IPCC default value
Purpose of Data	Calculation of emission reductions
Comments	No comments

Data / Parameter	$EF_{wf,non\ CO_2}$
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	No comments

Data / Parameter	η_{old}
Data unit	Fraction
Description	Efficiency of baseline cookstove
Source of data	Methodological default value
Value applied	0.1
Justification of choice of data or description of measurement methods and procedures applied	A default value of 0.1 is used, as 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

¹² <https://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html>

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	0.345
Justification of choice of data or description of measurement methods and procedures applied	This parameter has determined ex-ante
Purpose of Data	Calculation of $\eta_{new,y,i,j}$
Comments	No comments

4.2 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 Survey
Description of measurement methods and procedures to be applied	Measured based on a representative sample. Sampling standard shall be used for determining the sample size to achieve 90/10 confidence precision according to the latest version of Standard for sampling and surveys for CDM project activities and programme of activities.
Frequency of monitoring/recording	At least once every two years
Value monitored	75,149
Monitoring equipment	No equipment was used to monitor this parameter
QA/QC procedures to be applied	The unique reference number of each stove shall be logged in the monitoring database showing the total number of stoves. Data from the sampling plan will be collected in each monitoring period by trained project staff and applied in the emission reduction calculations. Internal cross-checks by the Project Proponent will be undertaken as Quality Check.
Purpose of data	Calculation of emission reductions

Calculation method	Proportion of operational stoves obtained from the survey is multiplied by the total commissioned stoves to arrive at this value. Proportion of operational stoves: 71.20% $N_{y,i,j} = 71.20\% * 105,546$ $= 75,149$
Comments	As per the current MP survey 98.96% of stoves were found to be operational. However, as per the stove champion follow up survey conducted in latest MP, stoves in operation were 79.04%, and as per the secondary data of other projects, stoves in operation percentage were 90.70%. PP has considered as minimum number of stoves in operation as per MP3 value of 71.20%. Hence, PP has considered the lowest value of stoves in operation 71.20% on a conservative basis.

Data / Parameter	$\eta_{new,y,i,j}$								
Data unit	Fraction								
Description	Efficiency of the improved cookstove type <i>i</i> and batch <i>j</i> during year <i>y</i>								
Source of data	Calculation								
Description of measurement methods and procedures to be applied	To adopt Option V given in the methodology: “Efficiency of the improved cookstoves to be estimated using equation 5 above where loss in efficiency per year is calculated, and therefore this parameter does not need to be monitored”								
Frequency of monitoring/recording	Annually								
Value monitored	the value below is applied. <table border="1"> <thead> <tr> <th>Year (y)</th><th>$\eta_{new,y,i,j}$</th></tr> </thead> <tbody> <tr> <td>1</td><td>32.43%</td></tr> <tr> <td>2</td><td>32.11%</td></tr> <tr> <td>3</td><td>31.78%</td></tr> </tbody> </table>	Year (y)	$\eta_{new,y,i,j}$	1	32.43%	2	32.11%	3	31.78%
Year (y)	$\eta_{new,y,i,j}$								
1	32.43%								
2	32.11%								
3	31.78%								
Monitoring equipment	Calculated value								
QA/QC procedures to be applied	This parameter has been calculated using equation 5 of the applied methodology.								
Purpose of the data	Calculation of emission reductions								

Calculation method	Calculation was performed using equation below: For Vintage 1 stoves-- $\eta_{\text{new},y i,j} = \eta_p \times (DF_n)^{y-1} \times 0.94$ $= 0.345 \times (0.99)^{1-1} \times 0.94$ $= 0.3243$ For Vintage 2 stoves: $= 34.5\% \times (0.99)^{2-1} \times 0.94$ $= 0.3211$ For Vintage 3 stoves: $= 34.5\% \times (0.99)^{3-1} \times 0.94$ $= 0.3178$
Comments	No comments

Data / Parameter	<i>B_{y=1,new,i,j,survey}</i>
Data unit	Tonnes per device per year
Description	Annual quantity of woody biomass used by improved cookstoves in tonnes per device of type i and batch j, determined in the first year of the implementation of the project through a sample survey.
Source of data	First Monitoring survey
Description of measurement methods and procedures to be applied	Sampling standard "sampling and surveys for CDM project activities and programme of activities" version 9 was used for determining the sample size. This value was determined in the first year of the introduction of the devices through sample surveys. Proper training has been provided to the monitoring personnel before conducting the onsite monitoring survey.
Frequency of monitoring/recording	In the first year of project implementation
Value monitored	0.9490 (This value has been updated for all the MPs based on VERRA 6.1 finding in MP1)
Monitoring equipment	Weighing Scale
QA/QC procedures to be applied	Calibration of weighing scales used for measuring the fuel wood was done in house before start using on site.
Purpose of the data	Calculation of emission reductions
Calculation method	This is monitored value

Comments	This parameter was validated and verified by VVB during the first verification as per the methodology requirement.
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Data / Parameter	Life Span
Data unit	Number of years
Description	The operating lifetime of the project device.
Source of data	Manufacturer's specification
Description of measurement methods and procedures to be applied	TLC cookstoves manufactured under the project activity match the fixed design specification. This has achieved by using brick molds of specified dimensions to make bricks used for stove construction locally. This ensured, that each stove that is built at individual end user household measures exactly same as the dimensions specified by the manufacturer. Post construction, training has been provided to end users on use, care, and upkeep of these stoves. PP conducted periodic audits and surveillance of the stoves distributed under the project activity to ensure their proper functioning throughout the project lifetime. This along with spot audits and after installation maintenance services, ensure that the project stoves continue to work at efficiencies as specified by the manufacturer.
Frequency of monitoring/recording	Once at the time of project stove installation
Value monitored	10
Monitoring equipment	No equipment was used to monitor this parameter
QA/QC procedures to be applied	This parameter is referred from the Manufacturer's specification. The life of TLC stove is at least 10 years owing to it being a clay and brick stove which can be easily repaired using a mixture of local clay, cow dung, sand, and water on a regular basis. The metal parts used in the stoves are under extended warranty from PP/manufacturer side throughout the projected life span and will be replaced in case of request received from the stove owner for replacement.
Purpose of the data	Calculation of emission reductions
Calculation method	No calculation used for this parameter
Comments	No comments

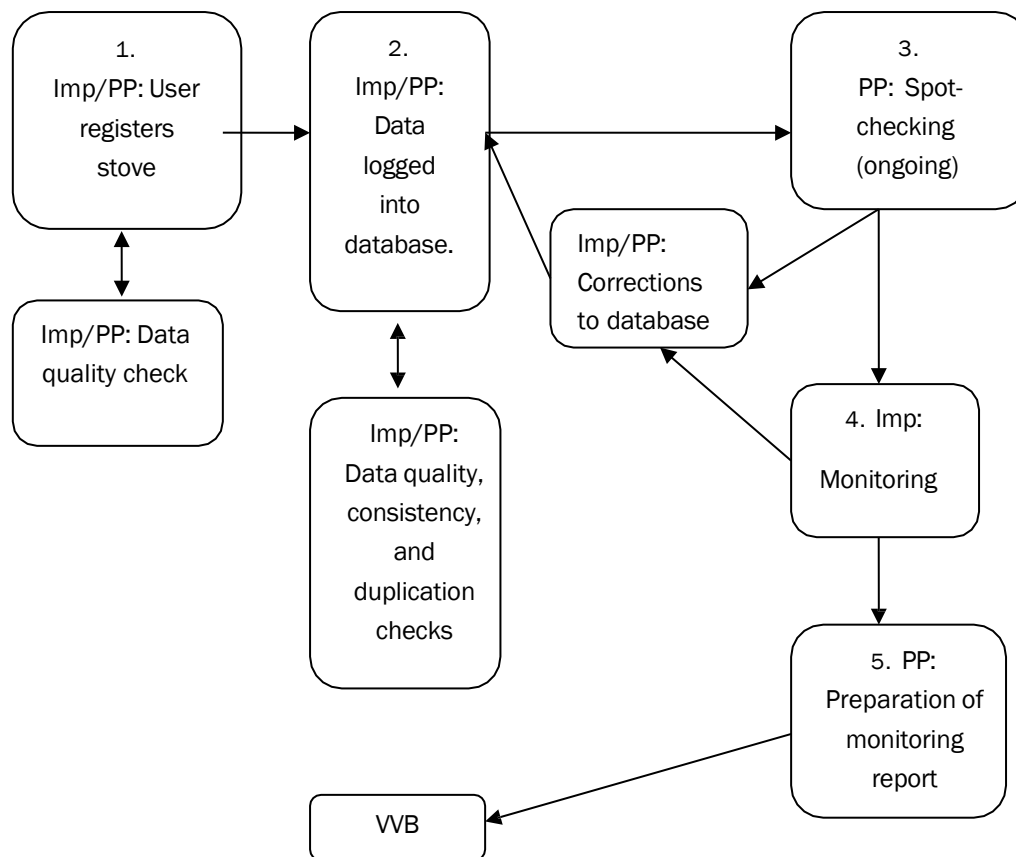
4.3 Monitoring Plan

The project's monitoring system follows the monitoring plan described in section 5.3 of the VCS-PD.

The monitoring system applied involves several key elements to ensure that the PP has 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 VCS methodology VMR0006, version 1.1 on the basis of the amount of non-renewable biomass saved by the ICS in the project activity.

Roles and Responsibilities

The below flow-chart illustrates the roles and responsibilities of the parties during the implementation of the monitoring plan for the project activity. In the below flowchart, the project implementer is abbreviated to "Imp", and the project proponent is abbreviated to PP.

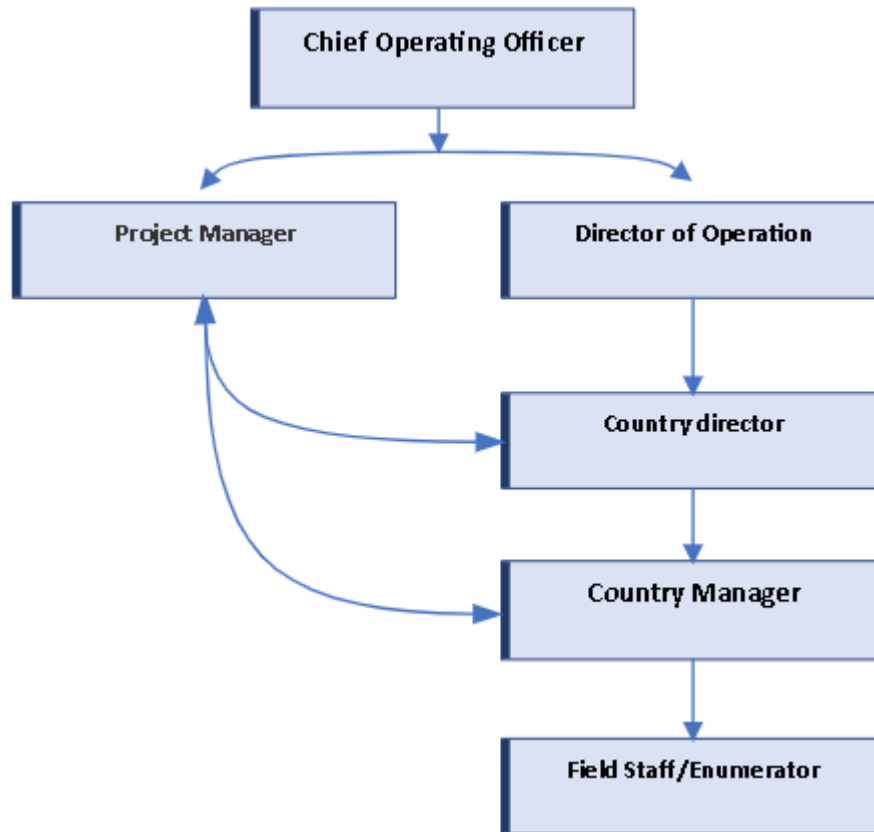


1. **Implementer/Project proponent:** Stove registration; Project implementer/project proponent collected/received the necessary information required for the Registration process from the user. The Means of collecting this information were through the use of ICTs. Project Implementers' staff/ project proponent's staff double checks the accuracy of information provided, and request for field staff's additional clarifications if needed.
2. **Implementer/ project proponent:** Data logged into database: Registered data by the staff of the project implementer/ project proponent uploads in the database automatically. PP 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. **Project Proponent: Spot-** checking (ongoing): PP has a procedure for internal auditing called spot-checking in every monitoring period (There is no set frequency for conducting the checks, currently the checks are being performed at least once in six months spanning over multiple days), where field staff randomly selects households to ensure proper functioning of the project stoves throughout the project lifetime and to ensure that the project stoves continue to work as efficient as specified by the manufacturer. Field staff of PP/Implementer 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 case, ICS are found to be no longer in use, they get clearly marked as such and is excluded from emission reductions calculations.

During the spot check, if any of the project stoves was found to be in poor working condition like cracked/damaged or with missing metal parts, the stove owner repairs the stove as they have been trained during installation. If the stove owners are unsuccessful in repairing, the field staff informs the implementer to provide the necessary assistance and the missing metal parts are reported to the management of implementer who then either provides the parts from their existing stocks or request the same to project proponent who procured those from their suppliers. Implementing partner then provides those parts to the stove owners. This is a continuous process.

4. **Implementer: Monitoring:** Project implementer follows the requirements as per VCS-PD to collect the necessary information for a monitoring report.
5. **Project Proponent: Preparation of monitoring report:** The project proponent prepares the final monitoring report to be provided to the VVB for verification of emission reductions.

The PP is comprised of Project Manager, Chief Operating officer, Director of operations, Country Director, Country manager and field staffs/enumerators to support the Team. The organizational chart can show as below:



Roles and responsibilities

Chief Operating Officer

- Responsible for managing coordination among different departments and oversees the timely project execution.

Project Manager

- Ensures compliance of the technology with project requirements.
- Follows up of registration of any project and issuance of VCU.
- Oversees the proper implementation of project as per compliance standard.
- Communicate with Verra and VVB.

Director of Operations

- Oversees implementation of projects on ground for a complete region (ex- Africa region, SEA region).

Country Director

- Oversees implementation of projects on ground for a specific country.

Country managers

- oversees the execution of training, which includes all aspects of stove design, construction, use & maintenance, of the field staff of project proponent and project implementer.
- Periodically checks and confirms that the installed ICS conform to the standards detailed in the project description.
- Procurement and delivery of stove parts, posters, brochures, and stove ID cards (QR cards).
- Checks and keeps control of all issued serial numbers.
- Maintain record of issued serial numbers.
- Authenticates any changes/replacements of serial numbers during the life span of the ICS.

Field staff/Enumerator

- **Execute installation and registration of stoves with the implementation partner in the selected households.**
- Assist the team in conducting the monitoring survey.
- Conducts spot checking of the installed stoves.

Thus, PP coordinates and manages the implementation of each element of the monitoring plan.

Data measuring, recording Method and Implementation of Sampling Approaches

Steps 1, 2 and 3 – Involves captured end user information and populated the database, as well as provided database quality control.

Step 4 - Involves creating sampling surveys to capture data on number of project devices operating during year y ($N_{y,j}$) .

Table 9

Parameter	Description of Parameter	Sampling approach (outcome in brackets)
$N_{y,j}$	Number of project devices operating during year y	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]

Due to the large number of ICS envisioned to be distributed in the project activity, it is not economically feasible to monitor each individual ICS unit distributed. Therefore, representative sampling was undertaken that is designed in line with the requirements of the Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities version 09.0.

Sample size calculation:

- (i) Parameter $N_{y,i}$:

To estimate the sample size for the parameter $N_{y,i}$ the following equation is used:

$$n \geq \frac{1.645^2 N \times p \times (1 - p)}{(N - 1) \times 0.1^2 \times p^2 + 1.645^2 p \times (1 - p)}$$

Where:

n = Sample size

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

p = Expected proportion

1.645 = Represents the 90% confidence required

0.1 = Represents the 10% relative precision

The sampling size is calculated as follows;

The calculation of the required sample size for $N_{y,i,j}$ parameter in this monitoring period is illustrated below. During 4th verification, 98.96% of ICS were found to be in operation. So, for this monitoring period, PP has considered the same value of expected proportion (p) as 0.85.

Table 9

Definition	Value	Justification
The population size N is	105,546	Number of stoves registered in database
The expected proportion p for $N_{y,i}$ is	0.85	A conservative assumption of 85% is applied for sample size calculation.
Sample size	47.73	Calculated
Sample size (rounded up)	48	Calculated
Total samples selected short listed	69	Including 30% non-response

$$n \geq \frac{1.645^2 \times 105,546 \times 0.85(1 - 0.85)}{(105,546 - 1) \times 0.1^2 \times 0.85^2 + 1.645^2 \times 0.85(1 - 0.85)} = 47.73$$

48 ICS were calculated to be surveyed, to compensate for any attrition, outliers or non-response associated with the sample, 30% extra samples have been additionally selected. Therefore the total sample short listed for parameters $N_{y,i,j}$ for the monitoring survey is 69. The minimum required sample size is 48.

Sample stoves were selected using the random number generator technique. Under this project activity two stoves were distributed in one household. Survey team also surveyed the second stove, if distributed in the sample household. Therefore, during this survey total 96 stoves were surveyed.

Step 5 - Involved monitoring analyses and accuracy and precision checks. The project proponent scrutinized the monitoring data to confirm accuracy of results, analyzed the data, and estimated the resulting emissions reductions outlined in this monitoring report.

The following parameter was obtained through sampling:

1. $N_{y,i,j}$: Number of stoves in operation

Simple random sampling was used for all monitoring parameters in accordance with the Sampling Plan of section 5.3 of the VCS-PD. The objective was to obtain reliable and unbiased estimates of

the monitoring parameters. Reliability levels were set at 90% confidence and 10% precision as per VMR0006, version 1.1.

A single homogeneous population (Primary Sampling Unit, as per VCS-PD) was considered for the parameter.

The following table summarizes the sample sizes and results.

Table 10

Monitored Parameter	Sample size (No. of cookstoves)	Actual samples surveyed	Survey Results	Precision achieved
Number of stoves in operation ($N_{y,i,j}$)	48	96	98.96%	1.72%

As per the current MP survey 98.96% of stoves were found to be operational (**Precision achieved 1.72%**). However, as per the stove champion follow up survey conducted in latest MP, stoves in operation was 79.04% and as per the secondary data of other projects, stoves in operation percentage was 90.70%. PP has considered as minimum number of stoves in operation as per MP 3 value of 71.20% (**precision achieved 3.39%**)[‡]. Hence, PP has considered the lowest value of stoves in operation 71.20% on a conservative basis.

Implementation and quality assurance and control and procedures used for handling any internal auditing performed and any non-conformities identified:

Data obtained from the samples were used to estimate proportions and mean values for the parameters described above. The values were then factored into the emissions reduction calculations. Project proponent provides training to monitoring personnel on monitoring procedures, including provisions for maximizing response rates, documenting out-of-population cases, refusals and other sources of non-response. The monitoring survey included several questions to support the information on the key monitoring parameters. These included visual inspections to confirm stove use and presence of baseline stoves, comments by surveyors, check of randomly selected households against actual household information, and refusal tracking. These strategies aimed at minimizing surveyor or non-response biases.

[‡] For VVB reference excel spreadsheet workbook compiling the primary data from our stove champion program with respect to stoves in operation (usage rate) for our Sub-Saharan Africa projects under review has been uploaded to the data room and available at 44.03.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

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

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

Where:

- i = Indices for the situation where more than one type/model of improved cookstove is introduced to replace three-stone fire
- J = Indices for the situation where there is more than one batch of improved cookstove of type i
- ER_y = Emission reductions during year y in t CO₂e
- ER_{y,i,j} = Emission reductions by improved cookstove of type i and batch j during year y in t CO₂e

$$ER_{y,i,j} = B_{y,savings,i,j} \times NCV_{wood\ fuel} \times f_{NRB,y} \times FEF_{wf,CO_2} + EF_{wf,non\ CO_2H} \times N_{y,i,j} \times 0.95 \quad \text{Equation (2)}$$

Where:

- B_{y,savings,i,j} = Quantity of woody biomass that is saved in tonnes per improved cookstove 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})
- NCV_{wood fuel} = Net calorific value of the non-renewable woody biomass that is substituted or reduced (IPCC default for wood fuel, 0.0156 TJ/tonne)¹³
- EF_{wf,CO₂} = CO₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO₂/TJ)¹⁴

¹³2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction

¹⁴2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

$EF_{wf,non\ CO2}$	= Non-CO ₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO ₂ /TJ) ¹⁵
$N_{y,i,j}$	= Number of improved cookstoves of type i and batch j operating during year y
0.95	= Discount factor to account for leakage

To calculate $B_{y,savings,i,j}$, we use equation 4 of the applied methodology¹⁶

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

Where:

$B_{y=1,new,i,survey}$	Annual quantity of woody biomass used by improved cook stoves in tonnes, determined in the first year of the implementation of the project through a sample survey
η_{old}	Efficiency of baseline cookstove. A default value of 0.10 has been used as the replaced system is a three stone fire, or a conventional system with no improved combustion air supply or flue gas ventilation system, i.e., without a grate or a chimney.
$\eta_{new,i,j}$	Efficiency of the improved cook stove determined using Equation 5 of the methodology.

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

Where:

η_p	Efficiency of project stove (fraction) at the start of project activity
$(DF_n)^{y-1}$	Discount factor to account for efficiency loss of project cookstove per year of operation (fraction). default value of 0.99 efficiency loss per year has considered for the project activity
0.94	Adjustment factor to account for uncertainty related to project cookstove efficiency test

The full set of emission reductions calculation for two stoves per HH is provided in emission reduction spread sheet.

¹⁵2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

¹⁶ Equation 4 of methodology VMRO006, version 1.1

5.2 Project Emissions

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

5.3 Leakage

Leakage is considered as default 0.95 in accordance with methodology.

5.4 Net GHG Emission Reductions and Removals

Calculation of GHG Emission Reductions

$$ER_{y,i,j} = B_{y,savings,i,j} \times NCV_{wood\ fuel} \times f_{NRB,y} \times :EF_{wf,CO_2} + EF_{wf,non\ CO_2} \times N_{y,i,j} \times 0.95$$

Where:

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

Parameter	Description	Unit	Source	Value
$B_{y,savings,1}$	Total biomass that is saved in tonnes during the monitoring period of vintage 1	Tonnes	Calculated from results of sampling survey conducted during 1st Monitoring survey	2.1286
$B_{y,savings,2}$	Total biomass that is saved in tonnes during the monitoring period of vintage 2	Tonnes	Calculated	2.0978
$B_{y,savings,3}$	Total biomass that is saved in tonnes during the monitoring period of vintage 3	Tonnes	Calculated	2.0674
Annual energy savings/stove	Annual energy saving from each project activity instance (i.e., each project ICS).	GWh _{th} /stove/year	Calculated	0.009
$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass	Fraction	Value determined from survey methods	0.94
$NCV_{wood\ fuel}$	Net Calorific Value of biomass	TJ/tonne	IPCC default for wood fuel	0.0156
EF_{wf,CO_2}	CO ₂ emission factor for the use of wood fuel in baseline scenario	tCO ₂ e/TJ	IPCC default for wood fuel	112
$EF_{wf,non\ CO_2}$	Non-CO ₂ emission factor for the use of wood fuel in baseline scenario	tCO ₂ e/TJ	IPCC default for wood fuel	26.23

0.95	Discount factor to account for leakage	Fraction	Default from VMR0006 version 1.1	0.95
η_{old}	Efficiency of the system being replaced	Fraction	Default from VMR0006 version 1.1	0.10
$\eta_{new,1}$	Efficiency of the system being deployed as part of the project activity (Vintage 1)	Fraction	Calculated	0.3243
$\eta_{new,2}$	Efficiency of the system being deployed as part of the project activity (Vintage 2)	Fraction	Calculated	0.3211
$\eta_{new,3}$	Efficiency of the system being deployed as part of the project activity (Vintage 3)	Fraction	Calculated	0.3178
$N_{y,i,j}$	Number of stoves still in operation during the monitoring period	Quantity	Stove registration/Installation database	75,149
$B_{y=1,new,i,survey}$	Quantity of woody biomass used in the absence of the project activity	Tonnes / device/ year	Monitoring Survey	0.9490

Table 11

PP has calculated the emission reduction for each ICS installed under the project activity separately. In this section example for ER calculation of one ICS (stove serial number CQCVKE0049959) is provided:

ER In year 2022.

Date of installation: 01-January-2022

For year 2022, vintage for the stove: Vintage 1

No. of days for MP: 107 (from 16-September-2022 to 31-December-2022)

Year fraction: $107/365 = 0.29^{17}$

$$B_{y=1,new,i,survey} = 0.9490$$

$$\eta_{new,i,j} = 0.3243$$

$$B_{y,savings,i,j} = 0.9490 \times ((0.3243/0.1) - 1)$$

$$= 2.1268$$

$$ER_{y,i,j} = 2.1268 \times 0.0156 \times 0.94 \times (112 + 26.23) \times 0.712 \times 0.95 \times 0.29$$

$$= 0.85$$

¹⁷ For comparable period.

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)
Year 2022 (16-September-2022 to 31-December-2022)	N/A	N/A	N/A	66,135
Year 2023 (01-January-2023 to 31-March-2023)	N/A	N/A	N/A	64,847
Total	N/A	N/A	N/A	130,982

The estimated baseline emissions, project emissions & leakage emissions have been reflected as Not Applicable (N/A) because of the following reasons:

The methodology does not quantify baseline & project emissions separately. It directly quantifies net emission reductions achieved by the project as described in sections 4.1 & 4.2 of the PD which is in line with section 8.1 & 8.2 of the applied methodology.

Comparison of ex-ante and ex-post ERR for the current monitoring period.

<u>Ex-ante emissions reductions/removals</u>	<u>Achieved emissions reductions/removals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
226,498 tCO ₂ e	130,982 tCO ₂ e	-42.17%	PP has considered as minimum number of stoves in operation as per MP 3 value of 71.20%, hence actual emission reductions are less as compared to ex-ante estimates.

APPENDIX A: ABBREVIATIONS

CDM: Clean Development Mechanism

CQC: C-Quest Capital SGS Stoves Private Limited

GHG: Green House Gas

ICS: Improved Cookstoves

PP: Project Proponent

SDG: Sustainable Development Goals

SD VISta: Sustainable Development Verified Impact Standard

TLC: Total Land Care

VCS: Voluntary Carbon Standard

VCU: Voluntary Carbon Unit

APPENDIX B: SCOPE 3 EMISSION STATEMENT

Response requested // Letter for Supply Chain - Scope 3 Emission



Julie Brown

To ☐ catrine.mwangazalight.com;
☐ pauline.njeri.mwangazalight.com; **+1 other**
Cc ☐ Peris Ruru; ☐ Ndichu Kariuki;
☐ Chrispine Otieno Lwal; **+2 others**



3/13/2023

Dear Catrine, Meenaz, and Pauline,

This is to bring to your kind notice that C-Quest Capital SGS Stoves Private Limited is implementing a grouped project titled, "Installation of High Efficiency Wood Burning Cookstoves in Kenya" (VCS ID 2349). It involves distribution of improved cook stoves (ICS) to households in Republic of Kenya. For this purpose, we have involved your organization for distribution of project stoves in Republic of Kenya.

Verified Carbon Units (VCUs) may be issued for the greenhouse gas emission reductions and removals for which C-Quest Capital SGS Stoves Private Limited will be claiming carbon credits under VERRA. The ownership of these credits lies exclusively with C-Quest Capital SGS Stoves private Limited.

This mail intends to apprise you about the project, to avoid any potential risk of double claiming of Scope 3 emissions under the grouped project.

Regards,
Julie

Julie Brown
Country Director- Kenya, Rwanda, Uganda, South Sudan, Burundi
Phone +254 746 050 079
Whatsapp +1 919 907 9001
E-mail jbrown@cquestcapital.com
Website www.cquestcapital.com

CQuestCapital

E-mail sent to Implementation Partner (Mwangaza light)

Public notice published on PP's website¹⁸.



¹⁸ <https://cquestcapital.com/latest/public-notices/>