



**Verified Carbon
Standard**

DISTRIBUTION OF IMPROVED COOK STOVES IN SUB-SAHARAN AFRICA- MALAWI-CPA-002

Document Prepared by

C-Quest Capital Malaysia Global Stoves Limited

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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.

This grouped project is the second CPA implemented under CDM Programme of Activities (PoA) entitled “Distribution of Improved Cook Stoves in Sub-Saharan Africa”(CDM PoA 9007). C-Quest Capital Malaysia Global Stoves Limited (CQC) is the Coordinating / Managing Entity (CME) for the CDM POA in which this CPA is included. Ecoeye Co., Ltd. (henceforth referred as Ecoeye) and Korean Parties provided all implementation cost for all Improved Cookstoves under this CPA.

The project involves distribution of 100,000 domestic fuel-efficient improved cookstoves (ICS) in Malawi. The ICS disseminated through this project replaced the prevailing inefficient three-stone fires, or traditional pot supports¹. The ICS combusts wood more efficiently and improve thermal transfer to pots, hence saving fuel and lowering greenhouse gas emissions.

Under this grouped project, single pot, TLC-CQC Rocket Stove were distributed. In this grouped project, each ICS constitutes a single project activity instance which is in line with its definition stated in VCS Program Definitions version 4.3.

The end user was informed that carbon finance is being generated by the use of the ICS, and this finance is in turn used to facilitate the access to ICS (eg. providing ICS free of cost) and helps to cover project implementation costs.

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

Milestone of the project	Timeline
The date of the commencement of the project (Registration of first ICS under this project).	18-July-2018
Registration of the project under CDM (CPA inclusion date under CDM)	18-July-2018
CDM CPA Crediting period	From 18-July-2018 till 17-July-2025 (Renewable)

¹Traditional pot supports as used in the project is taken to include tripods for open fires and various inefficient traditional charcoal stoves (where applicable).

Milestone of the project	Timeline
1 st monitoring period successfully verified under CDM	18-July-2018 to 31-August-2018 (including both days) (Issued)
2 nd monitoring period successfully verified under CDM	01-September-2018 to 30-November-2019 (including both days) (Issued)
3 rd monitoring period successfully verified under CDM	01-December-2019 to 31-July-2020 (including both days) (Issued)
4 th monitoring period successfully verified under CDM	01-August-2020 to 31-December-2020 (including both days) (Issued)
1 st monitoring under VCS-Period 1	01-January-2021 to 31-October-2022 (including both days)

Installation of ICS -

Date of first ICS installed	18-July-2018
Date of last ICS installed	30-July-2020
Total no. of ICS distributed till end of date MP (31-October-2022)	100,000

First Monitoring Survey -

Survey dates for parameters $N_{y,i,j}$ and μ_y	24-May-2022 to 31-August-2022
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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 616,196 tCO₂e over the monitoring period of 01-January-2021 to 31-October-2022.

Audit Type	Period	Program	VVB Name	Number of years
CDM CPA Inclusion	02-January-2019	CDM	Carbon Check India Pvt. Ltd.	-
VCS Validation	13-June-2022 (Date of VCS registration)	VCS	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+	-

VCS Verification	01-January-2021 to 31-October-2022	VCS	LGAI TECHNOLOGICAL CENTER, S.A. (APPLUS+	1 year, 10 months
<u>Total</u>	=	=	=	1 year, 10 months

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.

1.3 Project Proponent

Organization name	C-Quest Capital Malaysia Global Stoves Limited
Contact person	Ken Newcombe
Title	Director
Address	Brumby Centre, Lot 42, Jalan Muhibbah, 87000 Labuan, Malaysia.
Telephone	+6 087 423828
Email	cqc-operations@cquestcapital.com

1.4 Other Entities Involved in the Project

Organization name	Ecoeye Co., Ltd
Role in the project	Ecoeye Co., Ltd. provided all implementation cost for all ICS under this CPA. Ecoeye Co., Ltd. provided stove subsidy to provide ICS for free of charge to household using baseline stove as well as operation & maintenance cost of ICS production and distribution for PP and CPA implementers to operate this CPA in financially sustainable condition.
Contact person	Mr. Sangsun HA
Title	Executive Director
Address	61, Yeouinaru-ro, Yeongdeungpo-gu, Seoul, Republic of Korea
Telephone	+82- 2-6480-7346

Email	sangsun_ha@ecoeye.com
Organization name	Total Land Care (TLC) Malawi
Role in the project	CPA Implementer (Worked as implementation partner for this project activity). TLC managed and coordinated activities of local partners, the promotion and installation of the ICS and also provided all necessary marketing and promotion assistance to local partners
Contact person	Dr William Trent Bunderson
Title	Executive Director
Address	PO Box 2440, Lilongwe, Total Land Care, Area 14, Plot 100, Lilongwe, Malawi.
Telephone	+265 1 770 904 / 905
Email	total.landcare.mw@gmail.com

1.5 Project Start Date

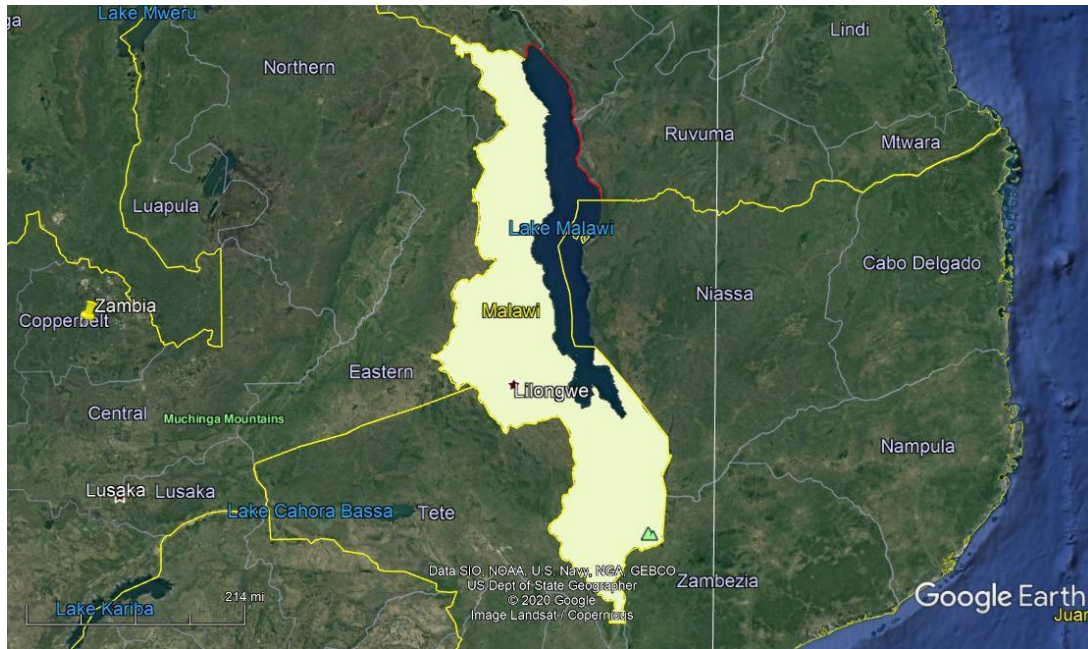
The start date of this project 18-July-2018, which is the registration date of first ICS (first project activity instance).

1.6 Project Crediting Period

18-July-2018 to 17-July-2028, 10 years fixed crediting period.

1.7 Project Location

The project location is the geographical boundary of Republic of Malawi. The project boundary is the geographic borders of the Republic of Malawi.



Map of project Area



Malawi (National)

Malawi, Northern Point

Latitude: - 9.366667° S

Longitude: 33.000000° E

Malawi, Western Point

Latitude: - 13.600000° S

Longitude: 32.666667° E

Malawi, Eastern Point

Latitude: - 14.883333° S

Longitude: 35.916667° E

Malawi, Southern Point

Latitude: - 17.133333° S

Longitude: 35.283333° E

Map: <https://www.mappr.co/political-maps/malawi/>

Geographical coordinates obtained from Google Earth®

Malawi Map

Republic of Malawi is divided into 3 regions – Northern, Central and Southern regions. To facilitate the management, implementation, and monitoring of the project, the project proponent divides the project boundary into 3 project regions according to the region.

No.	Project Region	Regions
1	Northern Area	Northern
2	Central Area	Central
3	Southern Area	Southern

Under this project, ICS were distributed in different villages all of which were located across the 25 districts in Malawi.

1.8 Title and Reference of Methodology

- VMR0006: Methodology for Installation of High Efficiency Firewood Cookstoves, Version 1.1²
- Standard: Sampling and Surveys for CDM project activities and programmes of activities, Version 09.0³

1.9 Participation under other GHG Programs

The project has been included under CDM PoA 9007 with project reference 9007-P1-0002-CP1.

https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/2WSXC9R0K3FEM0QH7DG5146NLVJZAI/view

1 st monitoring period (CDM)	25-April-2013 to 31-August-2018 (including both days)	748 CERs
2 nd monitoring period (CDM)	01-September-2018 to 30-November-2019 (including both days)	191,558CERs
3 rd monitoring period (CDM)	01-December-2019 to 31-July-2020 (including both days)	160,900CERs
4 th monitoring period (CDM)	01-August-2020 to 31-December-2020(including both days)	101,294 CERs

Declaration has been provided to the VVB that the emissions reductions arising from this program are not double counted under the CDM and VCS.

²<https://verra.org/methodology/vmr0006-methodology-for-installation-of-high-efficiency-firewood-cookstoves/>

³https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf

Apart from the above, the project has not been submitted for validation/certification under any other GHG or environmentally related program or mechanism, so it is not eligible to create another form of GHG-related environmental credit other than CERs and VCUs.

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

Emission Trading Programs and Other Binding Limits: This Project is not covered under any other emission trading programs or binding limits.

Other Forms of Environmental Credit: This Project does not receive any other forms of environmental credits.

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 TLC CQC Rocket Stove metal parts as well as the implementing partner in Malawi at the time of signing agreement for the goods and services provided by them, that ICS distributed in Malawi under this project. Also, intimated them about the project registration under CDM and VERRA for the generation of CERs and VCUs. A copy of the agreement signed with manufacturer of this ICS and implementing partners shared with VVB during validation. Evidence of the public statement(s) is provided in this report as appendix.

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 amount 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

- 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 labour 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.

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	3.9 ⁴	Project specific indicator: Reduction in PM _{2.5} emissions	Implemented activities to decrease	During the present monitoring period, the effort helped the 100,000 families who received single stoves reduce their PM 2.5 emissions by 264.32 tonnes. The same is demonstrated by survey findings, which indicate that 100% of respondents noticed less smoke close to TLC stoves' cooking areas. while 73% of respondents reported experiencing lower levels of eye irritation linked to cooking, 27% of respondents noted a reduction in chronic cough.	The project activity by replacing 100,000 traditional cookstoves with energy efficient project cookstoves has contributed to improved health and well-being brought about by reduced levels of fine particulate matter (PM_{2.5}) emissions within households by approximately 47 % below baseline emission level of 3.9 g/kg fuel⁵.

⁴<https://unstats.un.org/sdgs/metadata/>
⁵PM_{2.5} emissions from three stone fire. Source: Clean Cooking Catalog

2)	4.3	Project specific indicator: Number of individuals who received any informal training	Implemented activities to Increase	Helped increase the vocational and relevant skills of 4 local people during the current monitoring period 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.	Contributed to increasing vocational and relevant skills of 4 local individuals by providing non-formal education and training over project lifetime.
3)	5.4	5.4.1 Time spent on unpaid domestic and care work, by sex, age, and location.	Implemented activities to Decrease	The project has contributed to time savings and reduced drudgery in 100,000 households translating to benefiting an equal number of women. The survey results augment the above claim, as 100% of the respondents using TL CRS cookstoves reported having experienced fewer trips for wood collection as well as reduced cooking time, freeing up their time for other more productive activities or personal care.	The project has led to time savings and reduced drudgery in 100,000 households translating to benefiting an equal number of women as they are primary cooks and fuel wood collectors in most of the households.

4)	7.1	7.1.2 Proportion of population with primary reliance on clean technology	Implemented activities to Increase	Contributed to increasing access to clean cooking technology with 100,000 TLCRS installations in same number of households of Malawi that have been using traditional three stone fire or other traditional open fire, etc.	Contributed to increasing access to clean cooking technology with 100,000 TLCRS installations in 100,000 households of Malawi.
5)	8.3	8.3.1 Proportion of informal employment in non-agriculture employment, by sex.	Implemented activities to Increase	Contributed to generation of employment in informal sector (total economy, agriculture, and non-agriculture) by contracting 10 locals for varying lengths of time over the project lifetime with a focus on hiring females.	Contributed to generation of employment in informal sector (total economy, agriculture, and non-agriculture) by contracting 10 locals for various project related activities over the project.
6)	13.0	Project Specific Indicator: Reduction in GHG emissions as compared to the baseline scenario (open fire)	Implemented activities to Decrease	Contributed to total GHG emission reduction of 616,196 tCO ₂ e due to replacement of baseline stoves with TLCRS in the current monitoring period.	Contributed to GHG emission reduction through an estimated reduction of ~707,458 tCO ₂ e due to replacement of baseline stoves with TLCRS over project lifetime.
7)	15.2	15.2.1 Progress towards sustainable forest management by increasing above ground biomass in forests.	Implemented activities to Increase	Contributed an estimated reduction in removal of non-renewable woody biomass to the tune of ~2.01 tons per stove (TLCRS) in the current monitoring period, from forests surrounding the communities thereby leading to an increase in above ground biomass in these forests.	Contributed an estimated reduction in removal of woody biomass to the tune of ~2.01 tons per stove (TLCRS), over project lifetime.

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 is reduced. Women will have more time for other pursuits. The risk of being exposed to gender-based violence 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 rather reduces 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 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

Local Stakeholders Consultation was undertaken at CDM PoA Level. The project was included as a CPA under CDM PoA on 18-July-2018 with CDM reference 9007-P1-0002-CP1, and according to paragraph 3.20.5 of the VCS Standard (Version 4.2), this section does not need to be completed. Please refer to the CPA-DD at the website below for further information about CDM stakeholders' consultation:

<https://cdm.unfccc.int/UserManagement/FileStorage/C8P7BML01U3ZASH2VDG0Y4NJFK6X9>

As a part of the ongoing communication, the Stove users 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.

PP has a robust feedback and grievance redress policy and procedure in order to ensure that grievances of project-affected communities and individual stakeholders are properly handled and addressed. These procedures are implemented to enhance PP's accountability and transparency, as well as to promote project activities that can help communities in identifying adverse effects to them or their environment that PP had not previously identified and mitigated.

All the grievances received, and actions being taken during the current monitoring period are shown in the table below -

Grievance(s) Received	Action Taken
Lost serial number QR Cards	An end user has reported to field staff that she lost her one of the stove serial number card. Field coordinator went and re-issued the card to the beneficiary.
Improper use of Stick Shelf	An end user was found improperly using the stick shelf during field visit while cooking the food. Follow-up personnel retrained the beneficiary to properly use the stick shelf and explained about its importance and benefits.
Lost stove construction-maintenance manual	An end user has reported to Field Coordinator (FC) during field visit that she lost her stove construction-maintenance manual. Field enumerator visited the household and provided the stove manual to the beneficiary the next day.
Facing difficulties in preparing 'Ugali' (corn meal made from maize or corn flour)	An end user was facing difficulties in holding the pots while cooking their traditional meal 'Ugali'. Field coordinator visited the household and advised them to use locally made pot-holder (made of wooden stick) during the preparation of food.

2.3 AFOLU-Specific Safeguards

For non-AFOLU projects, this section is not applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

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



Till the end of the monitoring period, the project installed 100,000 stoves. Only one stove model (TLC-CQC Rocket Stove) was distributed in the project. Details of implementation dates (e.g., dates of construction, commissioning, and continued operation periods) has been provided under section 1.1 of this MR. No new stove has been installed during this monitoring period.

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.

Each ICS included in this grouped project can be identified by a unique serial number as mentioned in Database. No individual serial number can be in more than one project, so it is not possible for one ICS to be counted in two different projects. In addition, each project was cross-checked with other similar project in Malawi or in a 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 PoA, CDM project activity or voluntary carbon project activity.

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

3.2 Deviations

3.2.1 Methodology Deviations

This project did not apply any methodology deviations.

3.2.2 Project Description Deviations

This project did not apply any deviations related to Project Description.

3.3 Grouped Projects

All project activity instances included under this grouped project ensure that it meets the eligibility criteria below –

No.	Criterion	How the new project activity instances to comply
1	Meet the applicability conditions set out in the methodology applied to the project	All project activity instances (TLC-CQC Rocket Stoves) meets the applicability conditions as described and set out in Section 3.2 of VCS-PD.
2	Use the technologies or measures specified in the project description.	Only TLC-CQC Rocket stoves to be adopted under this grouped project.
3	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The project activity instances installed within Malawi only and subject to the same baseline scenario as determined in Section 3.4 of VCS-PD.
4	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	All project activity instances used the activity method for demonstration of additionality. Step 1: Regulatory Surplus There is no mandated government programme or policy in Malawi which intends to mandate for distribution of project activity instances (ICS). Step 2: Positive List Copy of Consent Letter/ record of consent signed by end user mentioning that end users were not charged for the ICS. As the project fulfills the conditions above, it is deemed additional.
5	Occur within one of the designated geographic areas specified in the project description	Project Activity Instance Database containing Geographical Coordinates of each household to which ICS are distributed confirms that all instances implemented in Malawi only.
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	Copy of Consent Letter/ record of consent given from end user to Project Proponent regarding rights of emission reduction claims to PP.
7	Start Date	Project Activity Instance Database containing date of installation of each ICS confirms that first ICS (project activity instance) installed on 18-July- 2018.

8	Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit.	1. Project Activity Instance Spreadsheet containing estimation of annual energy saving from each project activity instance (i.e., each ICS). 2. Project Activity Instance ER Spreadsheet containing estimation of annual energy saving from each project activity instance (i.e., each project ICS). 3. The expected annual energy saving for each project activity instance (i.e., each project ICS) comes out to be 8.75MWh_{th} , which is well below 1% (i.e, 1.8 GWh_{th}) of capacity limit. Therefore, the project activity instances under this grouped project activity shall not be assigned to clusters.
9.	Double Counting	Project Activity Instance Database containing unique serial number of each ICS. Each ICS distributed has corresponding end user details (i.e., name, geographical coordinates, address, unique serial number).

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

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	Independent Report (local study) by C4 EcoSolutions
Value applied:	0.94
Justification of choice of data or description of measurement methods and procedures applied	This parameter shall be determined ex-ante. C4 EcoSolutions (Pty) Ltd was appointed as third party to study and derive the f_{NRB} value for Malawi.

Purpose of Data	Calculation of emission reductions
Comments	Considered same as CDM CPA-DD, since project implementation was started from CPA inclusion of the project under CDM.

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,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 measurement methods and procedures applied	IPCC default value
Purpose of Data	Calculation of emission reductions
Comments	No comments

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	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 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
Purpose of Data	Calculation of emission reductions
Comments	No comments

Data / Parameter	B_{old}
Data unit	tonnes/year
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	The baseline survey assessed the average woody biomass usage per household per annum amongst users of 3-stone fires, / pot support according to interviews in Malawi. This data was gathered according to: Standard for Sampling And Surveys CDM Project Activities and Programme of Activities
Value applied:	3.2558
Justification of choice of data or description of measurement methods and procedures applied	This parameter was determined ex-ante at the time of CDM CPA inclusion.
Purpose of Data	Calculation of emission reductions
Comments	The value of this parameter has been considered same as that in the CDM CPA-DD, since project implementation commenced from CPA inclusion of the project under CDM.

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 shall be 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 applied	Measured directly or 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 applied:	87,100
Monitoring equipment	No monitoring equipment used.
QA/QC procedures applied	Data as per the sampling plan was collected by trained enumerators/surveyors and applied in the emissions reduction calculations.
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 As per the current MP survey 100% of stoves were found to be operational. However, as per the stove champion follow up survey conducted in latest MP, stoves in operation was 95.87%, and as per the secondary data of other projects, stoves in operation percentage was 87.10%. Hence, PP has considered the lowest value of stoves in operation 87.10% on a conserve basis. Proportion of operational stoves: 87.1% $N_{y,i,j} = 0.871 * 100,000$ $= 87,100$
Comments	No comments

Data / Parameter	$\eta_{new,y,i,j}$																						
Data unit	Fraction																						
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 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 Value applied:	Annual For ex-ante calculation, the value below is applied. <table border="1"> <thead> <tr> <th>Year</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> <tr><td>4</td><td>31.47%</td></tr> <tr><td>5</td><td>31.15%</td></tr> <tr><td>6</td><td>30.84%</td></tr> <tr><td>7</td><td>30.53%</td></tr> <tr><td>8</td><td>30.23%</td></tr> <tr><td>9</td><td>29.92%</td></tr> <tr><td>10</td><td>29.63%</td></tr> </tbody> </table> Not applicable.	Year	$\eta_{new,y,i,j}$	1	32.43%	2	32.11%	3	31.78%	4	31.47%	5	31.15%	6	30.84%	7	30.53%	8	30.23%	9	29.92%	10	29.63%
Year	$\eta_{new,y,i,j}$																						
1	32.43%																						
2	32.11%																						
3	31.78%																						
4	31.47%																						
5	31.15%																						
6	30.84%																						
7	30.53%																						
8	30.23%																						
9	29.92%																						
10	29.63%																						
QA/QC procedures applied	Not Applicable																						
Purpose of data	Calculation of emission reductions																						
Calculation method	Calculation to be performed using equation below: $\eta_{new,y,i,j} = \eta_p \times (DF_n)^{y-1} \times 0.94$ Efficiency calculation for each vintage under this MP is provided in ER spreadsheet for reference.																						
Comments	No 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 survey
Description of measurement methods and procedures applied	Minimum sample size of each type i and batch j should be in line with the latest version of Standard for sampling and surveys for CDM project activities and programme of activities or guidelines provided in methodology Section 8.4 option (b). (a) 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}. (b) If both the improved cookstove and baseline cookstoves are used together then surveys shall be conducted to record the average continued operation of baseline cookstoves in a sample of households. The surveys should be designed to capture the cooking habits and stove usage of households in the region, including quantification of use of baseline cookstoves, by formulating questions and/or collecting evidence to determine the frequency of usage of both the improved cookstoves and baseline cookstoves. For example, if there were 3 baseline

	cookstoves in a household and it was determined during the survey that use of one of them continues during the crediting period then a conservative adjustment factor of 0.33 is applied to Bold. Another example would be the case where there was only one baseline cookstove per household and its use during the project period continues along with the improved cookstove to meet 25% of the cooking needs of the household in which case the adjustment factor will be 0.25. Another example would be to interview the household and have them estimate the time of usage of the baseline cookstoves and improved cookstove on an average day.
Frequency of monitoring/recording	At least once every two years
Value applied:	9.88%
Monitoring equipment	Not Applicable
QA/QC procedures applied	Data as per the sampling plan was collected by trained enumerators/surveyors and applied in the emissions reduction calculations.
Purpose of data	Calculation of emission reductions
Calculation method	Calculated based on number of meals cooked on baseline stove divided by the total number of meals prepared by end users in a week.
Comments	No comments

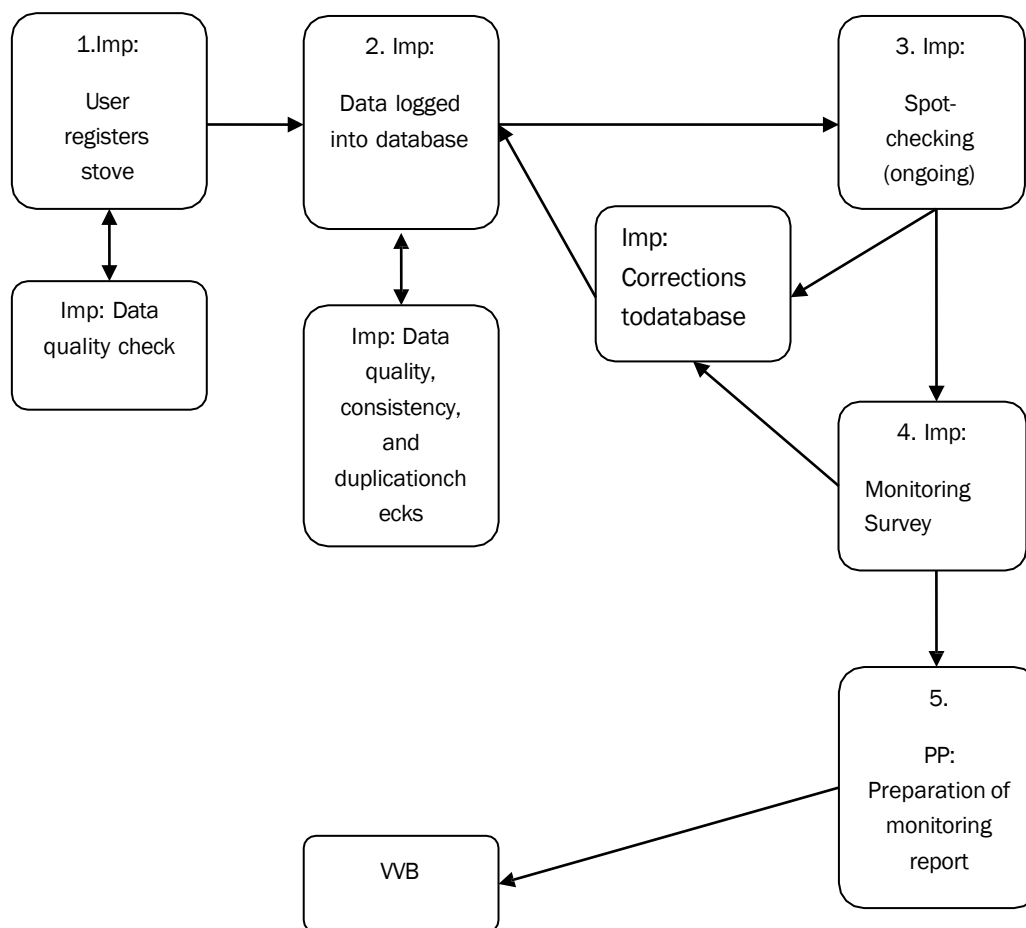
Data / Parameter	Life Span
Data unit	Number of years
Description	The operating lifetime of the project device. The life span should be reported if the methodology equation 5 is adopted to determine the project stove efficiency
Source of data	Manufacturer's specification
Description of measurement methods and procedures applied	Not Applicable
Frequency of monitoring/recording	Once at the time of project stove installation
Value applied:	10
Monitoring equipment	Not Applicable

QA/QC procedures applied	No comments
Purpose of data	Calculation of emission reductions
Calculation method	Not Applicable
Comments	No comments

4.3 Monitoring Plan

The monitoring system applied involves a number of key elements that ensure that the PP and Implementer have high-quality, unbiased and reliable information regarding the performance of the project in terms of implementation and outcomes.

The below flow-chart illustrates the roles and responsibilities of the parties during the implementation of the monitoring system for the grouped project. In the below flowchart, the Implementer is abbreviated to “Imp”, and can be the PP or another party authorized by the PP.



Below is the description of the above steps on the flow-chart.

1. Imp: User registers stove: Implementer collects/receives the necessary information requested on the Registration Card from the user. Means of collecting this information is through a physical Registration Card filled by Imp staff, end-users or partner organization's staff, or through the use of ICTs or SMS. Implementers' staff checks the accuracy of information provided, and request for field staff additional clarifications if needed.
2. Imp: Data logged into database: Implementer trained staff input the data in the database either manually (if data collected from physical Registration Card) or automatically if data was collected using ICTs or SMS. Implementer staff double check the information included on the database and check for duplications. Any duplicate information is investigated, and errors corrected or excluded from the database if it is a true duplicate entry.

3. Imp: Spot-checking (ongoing): Implementer field staff randomly select households included in the database and visit them 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 will be clearly marked as such and excluded from emission reductions calculations. During the spot check, if any ICS was found to be in poor working condition like crack in the stove body or with missing metal parts, field staffs either repaired the stoves or reported to the management of implementer who then either provided the parts from their existing stocks or order the same to PP who procured those from their suppliers. Implementers then provided those parts to the stove users. This is a continuous process.
4. Imp: Monitoring Survey : Implementer follows the requirements as per VCS-PD and CPA-DD to collect the necessary information for a monitoring period.
5. PP: Preparation of monitoring report: the PP prepare the final monitoring report to be provided to the verifier VVB for verification of emission reductions.

Responsibilities of PP and Implementer

Project Proponent -

- Maintain copies of the project database and back-up records necessary to verify stoves distributed within each project.
- Provide overall coordination of ICS distribution across the geographical boundary of the project.
- Oversee day-to-day operation of the project
- Coordinate with a VVB to verify emissions reductions from project; and
- Communicate in all matters with the VERRA.

Implementer -

- Coordinate and manage the market promotion necessary for successful distribution.
- Coordinate and manage the implementation of the monitoring plan.
- Develop and undertake stove distribution.
- Develop and maintain a stove tracking and monitoring and reporting system with a high level of data integrity.
- Maintain an accurate database of stove location for verification and issuance of carbon credits under a design agreed with PP.
- Keep all records necessary to verify distributed stoves within project;
- Implement and oversee day-to-day operation of the project, including ensuring users of the stoves are aware of how they should be used.
- Track stoves to end users and verify use.
- Facilitate the field work of commissioned VVBs for verification services;
- Supervise and provide training to local personnel for, monitoring and stoves distribution.
- Organize training sessions
- Distribute training materials

Sampling Plan

As per Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities; version 09.0, the sampling plan is the following:

(1) 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 be undertaken as part of a Sampling Plan that is designed in line with the requirements of the “Standard for sampling and surveys for CDM project activities and programme of activities”.

(1.1) 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, and with 90/10 confidence/prevision (as per ap biennial plied methodology VMR 0006; version 1.1).

Monitored Parameters:

Sr. no	Parameter	Description of Parameter	Frequency
1	$N_{y,i,j}$	Number of project devices of type i and batch j operating during year y	At least once every two years
2	μ_y	Adjustment to account for any continued use of pre-project devices during the year y	At least once every two years

(1.2) Target Populations

The target population are all households in the project database which are using fuelwood in ICS distributed under the project for cooking.

(1.3) Sampling Frame

It is expected that the geographical locations do not have influence on the parameters of interest that is $N_{y,i,j}$, & μ_y . Therefore, these parameters can be assumed to be highly 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. The Sampling Frame for individual parameters have been defined in the following paragraphs

The sample frame refers to all the information sources on the Database. The ICT system is the primary mechanism for data collection for distributed ICS and the Monitoring Survey (which includes a household questionnaire and visual inspection of ICSs) that was used throughout the lifetime of the project. The ICT data is used to populate the stoves Database and the

Monitoring Survey follows the “Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities”; version 09.

The project activity is only distributing one model of ICS. As explained below (on section “sampling method”), ICS shall be grouped together to create a Primary Sampling Unit which is homogenous. The procedure to determine the sample of households ensured that they adequately represent the broader project population, minimizing sampling error. Using, a 90 per cent confidence level, and a 10 per cent margin of error, a random sample selected from the target population.

Sampling frame for proportion of ICS still in operation ($N_{y,i}$) and Adjustment to account for any continued use of pre-project devices (μ_y)

The first step is to identify the Primary Sampling Units. Factors such as model of the ICS do not effect parameter $N_{y,j}$ and μ_y . Therefore, Primary sampling unit in case of these parameters is independent of model of stove.

(1.4) Sampling Method

The sampling method for the monitored parameters $N_{y,i,j}$, and μ_y is Simple Random Sampling and samples 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 involved 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)

μ_y Interview with end user for average number of meals cooked using baseline stove per week out of total meals cooked by household in a week.

Using the formulas below, the PPRandomly sample the required number of ICS from the primary sampling units.

(1.5) Sample Size

For the estimation of the proportion or mean value of the parameters investigated, the minimum sample size for each sample frame has to achieve the 90/10 confidence/precision.

The procedure to determine the sample of households ensured that they adequately represent the broader project population, minimizing sampling error. Using a 90 per cent confidence level,

and a 10 per cent margin of error, random samples selected from each Primary Sampling Unit. The parameter number of stoves still in operation during the monitoring period as determined by the monitoring survey ($N_{y,j}$ and μ_y) estimated through sampling annually/biennially. Both parameters to be monitored, are proportion/percentage parameter.

In order to calculate the required sample size estimates, values for the proportions are required. Furthermore, the standard deviation needs to be assumed in case of sampling for a mean value.

As per Guidelines for Sampling and surveys for CDM project activities and programmes of activities, there are different ways available to obtain the estimates of the parameter of interest:

- (a) Refer to the result of previous studies and use these results.
- (b) In a situation where information from previous studies is not available, a preliminary sample as a pilot could be conducted and use that sample is used to provide the estimates.
- (c) Use best guesses based on the researcher's own experiences.

For the registration purpose of project, option (c) as stated above shall be applied. For the following monitoring periods, the estimates can be adjusted taken the results of the previous monitoring period(s) into account or the result from recent pilot study which is conducted after the previous monitoring periods.

Parameter $N_{y,i,j}$ and μ_y

To estimate the sample size for both parameters 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 following assumptions are made to exemplify the sample size calculation for the parameters.

- (i) An overview of the estimated sample sizes for a hypothetical population of 100,000 ICS units applying a level of 90/10 is provided below. It is likely that all the sample frames

for each parameter may include fewer than 100,000 ICS in the first monitoring period, so this is a conservative approach. Hence, population size, N, is taken as 100,000 households/ICS (Assuming one ICS for one household).

- (ii) It is expected at least 85% of ICS still in operation and continuous usage rate of baseline stove is 15%, hence the expected proportion p is taken as 0.85.

Sample size calculation:

The calculation of the required sample size for each parameter in the first monitoring period is illustrated below. In all cases a conservative approach is taken, however if for any parameter the required confidence/precision is not met then the PP randomly select an additional sample and collect further data from this sample to ensure the pooled data meet or exceed the required thresholds.

Based on the above assumptions, the resulting sampling size is calculated as:

$$n \geq \frac{1.645^2 \times 100,000 \times 0.85(1 - 0.85)}{(100,000 - 1) \times 0.1^2 \times 0.85^2 + 1.645^2 \times 0.85(1 - 0.85)} = 47.68$$

Therefore, in this case a sample size of 48 is to be sampled from each primary sampling unit.

Sample Size	Required Sample Size
$n_{y,i,j}$	48
μ_y	48

Since parameters $N_{y,j,j}$, and μ_y share the same sampling units, PP may choose to have one common survey for these two parameters with largest number of sample size between these two parameters being chosen. Sampling more than one parameter within the same sample (household) helps reduce travel needs for monitoring and the associated costs. At the same time this approach ensures the random selection of samples for every parameter.

Oversampling is strongly encouraged, not only to compensate for any attrition, outliers or non-response associated with the sample, but also to prevent a situation at the analysis stage where the required reliability is not achieved, and additional sampling efforts would be required. The sample size shown above adjusted upwards to account for non-responses, PP shall determine the appropriate non-responses rate based on previous experience.

(2) Data

(2.1) Field Measurements

To monitor the number of stoves that continue to be in use ($N_{y,i,j}$) and continuous usage rate of baseline stove (μ_y) the data collected were representative number of stoves in the database that are in use for the monitoring period. The method of collecting data was field surveys of

required sample size of ICS users in the database. Data collected from the field surveys, entered in the database and included in the monitoring report.

The table below summarizes field measurement data requirements

Parameter	Timing (indicative)	Frequency	Methods to be applied	Comments on seasonal fluctuation
$N_{y,i,j}$	Monitoring will likely occur at least once every 2 years	annual/biennial	Visits to the premises, visual inspection, and interview with ICS end-user	Unlikely to be due to any seasonal fluctuation.
μ_y	Monitoring will likely occur at least once every 2 years	annual/biennial	Visits to the premises and interview with ICS end-user.	Unlikely to be due to any seasonal fluctuation.

(2.2) Quality Assurance/Quality Control

The PP applied 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 depends on the cost of each data collection approach and logistics required. The PP determined the most effective measure for each parameter from the following list (illustrated using a required sample size of 48):

- Buffer Group: Randomly draw a sample of at minimum 69 ICS and collect data from only 48 ICS.
- Use lower confidence bound (of $N_{y,i,j}$, μ_y) or, with a conservative approach according to the parameter definitions,

The PP choose to stop monitoring a particular parameter once the required level of confidence/precision has been reached, if the calculated minimum number of samples has been achieved. PP stopped sampling once the required sample size of 48 ICS is achieved.

	Precision Achieved	
	$N_{y,i,j}$	μ_y
Malawi	0.00%	2.03%

The required confidence and precision were met for all parameters. The sample size calculation is provided to verifying VVB for reference.

As per the current MP survey 100% of stoves were found to be operational. However, as per the stove champion follow up survey conducted in latest MP, stoves in operation was 95.87%¹ (precision achieved 0.45%), and as per the secondary data of other projects, stoves in operation percentage was 87.10%. Hence, PP has considered the lowest value of stoves in operation 87.10% on a conservative basis.

The sampling plan has the following procedures in place to ensure good quality data. The PP ensured that field personnel have reviewed, understand and have signed the monitoring plan, including provisions for maximizing response rates, documenting out-of-population cases, refusals and other sources of non-response. A quality control and assurance strategy was documented. Quality control and assurance strategies include addressing non-sampling errors, such as non-response or bias from interviewer. The monitoring plan explained how to properly survey households to prevent bias from interviewer. In the case a household refuses to participate, another household was chosen at random. To reduce interviewer bias, good questionnaire design and well-tested questionnaires was used.

The calculation of the sample size was carried out using estimates for parameter proportions, mean values and standard deviations, as the actual characteristics of the population/sampling frame are unknown. In order to ensure the quality of the sampling results, the PP can draw on the provisions for reliability calculations as provided by the Guidelines for Sampling and Surveys in CDM Project Activities and Programme of Activities (version 04). If the sampling results do not fulfil the required level of confidence and precision, the PP can undertake additional samples. If the reliability is still not sufficient after additional samples or other measures, the sampling may be repeated with an increased sample size. Alternatively, the PP may choose to apply the lower bound or higher bound according to the more conservative approach.

(2.3) Data archiving

Hard copies of the surveys has been kept and the registration database has back up. Original stove purchase contracts or other means of acceptance by the users were stored in the main office for the project proponent. A back-up of the registration database also 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.

(2.4) Analysis

The PP manages a project database that includes the following data that can be directly attributable to the project activity, thereby allowing unambiguous determination of the emission reductions attributable the project:

¹ File 1: 44.03.06 Privileged & Confidential - Stove champion data (26 August 2024)

File 2: 44.03.05 Stoves in Operation - Verified Secondary Data (2024-08-05).

- A list of households participating in project activity, including name, community/location, distribution date and unique serial number. Where replacements are made, assurance that the efficiency of the new ICS is similar to the specified.

Data obtained from the samples was used to estimate proportions values for the parameters described above. The values were then be factored into the emissions reduction calculations and result in the request for issuance of VCUs.

(3) Implementation

Sampling for the purpose of emission reduction calculation and elaboration of the monitoring report occurs at the end of each monitoring period. This sampling survey was conducted by trained personal either part of the Implementer or PP team, or an experienced third-party entity. The maximum length of one monitoring period will be two years (duration, not calendar years). The Implementer is responsible for managing household data collection and entry into the project database. Field personnel received training on how to properly deal with surveying techniques and reduce errors and sign a document certifying that there is no conflict of interest of those involved in data collection and analysis. If there is conflict of interest, the personnel were not allowed to participate in data collection and analysis. The project database recorded the start and end dates of each monitoring period and record the emission reductions attributable to each monitoring period. Appropriate record keeping procedures were implemented to ensure that each monitoring period data set can be transparently attributed to its corresponding CPA, preventing any occurrences of double counting. An internal review of the project database was done to be able to determine the status of project—the duration of previous monitoring periods, the households delivering monitoring data, and current verification activities.

(4) Monitoring Reporting

The PP assess all monitoring data and produce one or two monitoring reports for the project for the VVB to verify corresponding to the preceding monitoring period the project. This report presents the data relating to the emission reductions generated by the project at the time of the monitoring period.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The methodology does not account for baseline emissions separately. It quantifies net emission reductions achieved by the project which has been described in Section 5.4 of this document. The emission reductions calculations have been provided in an excel spreadsheet.

5.2 Project Emissions

The methodology does not account for project emissions separately. It quantifies net emission reductions achieved by the project which has been described in Section 5.4 of this document. The emission reductions calculations have been provided in an excel spreadsheet.

5.3 Leakage

Default leakage adjustment factor of 0.95 has been considered in accordance with methodology.

5.4 Net GHG Emission Reductions and Removals

The improved cookstove is introduced as energy efficiency measure in the project, therefore equations 1 and 2 of the methodology 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 CO ₂ e
$ER_{y,i,j}$	=	Emission reductions by improved cookstove of type i and batch j during year y in t CO ₂ e

$$ER_{y,i,j} = B_{y,savings,i,j} \times NCV_{wood\ fuel} \times f_{NRB,y} \times (EF_{wf,CO2} + EF_{wf,non\ CO2}) \times N_{y,i,j} \times 0.95 \quad \text{Equation (2)}$$

Where:

$B_{y,savings,i,j}$	=	Quantity of woody biomass that is saved in tonnes per 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) ⁶
$EF_{wf,CO2}$	=	CO ₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO ₂ /TJ) ⁷
$EF_{wf,non\ CO2}$	=	Non-CO ₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO ₂ /TJ) ⁸
$N_{y,i,j}$	=	Number of improved cookstoves of type i and batch j operating during year y
0.95	=	Discount factor to account for leakage

⁶ 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction

The quantify of woody biomass saved due to implementation of improved cookstoves to be estimated using equation below:

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

where

- η_{old} = Efficiency of baseline cookstove
- $\eta_{new,y,i,j}$ = Efficiency of the improved cookstove type i and batch j determined through water boiling test (WBT) during year y
Alternatively, efficiency may be determined using Equation 5
- 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. Alternatively, a default value of 0.5t/capita/year may be used.

$$\eta_{new,y,i,j} = \eta_p \times (DF_n)^{y-1} \times 0.94 \quad \text{Equation (5)}$$

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). This value may be based on actual monitoring or based on manufacturer's declaration on expected loss in efficiency or through publicly available literature on relevant industry standards. Alternatively default value of 0.99 efficiency loss per year can be considered.
- 0.94 = Adjustment factor to account for uncertainty related to project cookstove efficiency test.

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 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 -

⁷2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

⁸2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

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

Where,

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

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

The full set of emission reductions calculation for each project activity instance is provided in separate ER Calculation Spreadsheet for VVB reference.

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 2021 (1-January-2021 to 31-December-2021)	-	-	-	336,846
Year 2022 (1-January-2022 to 31-October-2022)	-	-	-	279,350
Total	-	-	-	616,196

Comparison of Ex-ante emission reductions and achieved emissions reductions -

<u>Ex-ante emissions reductions /removals</u>	<u>Achieved emissions reductions /removals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
603,795	616,196	+2.05%	There is an increase in emission reduction value compared to estimate during validation. This is because PP has considered a linear loss rate of 5% stoves every year during ER estimation (Ex ante). However, the actual stoves in operation was 87.10% during this verification.

APPENDIX X: SCOPE 3 EMISSION STATEMENT

Public Notice for VCS Project 2711

“Distribution of Improved Cook Stoves in Sub-Saharan Africa-Malawi-CPA-002”

This is to bring to your kind notice that C-Quest Capital Malaysia Global Stoves Limited is implementing a grouped project titled “Distribution of Improved Cook Stoves in Sub-Saharan Africa-Malawi-CPA-002” (VCS ID 2711). It involves distribution of improved cook stoves (ICS) to households in Malawi. For this purpose, Single pot TLC CQC Rocket stove were distributed to households. Stove Metal parts procured from local suppliers. We involved various local implementation partners for installation of these fixed project stoves in Malawi.

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

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

[Public Notice on CQC Website for Scope 3 emissions](#)