

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

RELATED SUPPORT - **TEMPLATE GUIDE Monitoring Report v. 1.1**

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Key Project Information

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KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS 879
Title of the project (s) covered by monitoring report	Energy Efficient Cookstoves for Siaya Communities, Kenya
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	V3_2_6
Version number of the monitoring report	V1.3
Completion date of the monitoring report	19/09/2024
Date of project design certification	1 st CP 03/07/2012 2 ND CP 27/03/2018
Date of Last Annual Report	N/A
Monitoring period number	2 nd CP-6 th Monitoring period
Duration of this monitoring period	01/01/2023-31/12/2023 ¹
Project Representative	Foundation myclimate Tembea Youth Centre for Sustainable Development
Host Country	Kenya
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption v2.0 (24/04/2015).
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

¹ Both the start and end days (01.01.2023 and 31/12/2023) of the monitoring period are included for emission reduction.

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 13	Amount of CO ₂ e emissions reduced by the project per year.	289,372	tCO ₂ e(VERs)
SDG 1	Time (hours) and money (KES) saved per household per year due to fuel savings achieved by project stoves	192 hours KES 8,564	Hours / KES per household per year
SDG 3	Proportion (%) of positive comments from stove users on air quality improvement with project stove	100%	%
SDG 4	Number of persons reached with awareness creation	2,364 0 schools	Number
SDG 5	Number of jobs offered by TYCSD to local female employees	109 46% of employees are female.	Number of female employees
SDG 7	Number of persons that benefit from efficient and clean cooking technologies	28,064	Number of beneficiaries
SDG 8	Number of jobs offered by TYCSD to local employees at good conditions.	236	Number of employees
SDG 12	Fuel savings in % achieved by project technologies compared to baseline.	54.0%	Percentage

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	VERs
01/01/2023	31/12/2023	289,372 VERs

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

1. The project disseminates a rocket-type improved cook stove to replace the use of open fires for cooking. The baseline technology is the open three stone fire, by replacing this technology with improved cookstoves that promote heat transfer efficiency and high fuel burning efficiency lead to less fuel usage and therefore reduced emissions. The efficient cook stoves are constructed using locally available materials, such as mud, bricks, and sawdust. Local artisans are identified in the villages and trained in stove construction and household mobilization.

2. The employed technology is a fixed installed biomass rocket stove designed for burning wood and consisting of two cooking units that can be separately fired. The efficient cook stoves are constructed using locally available materials, such as mud, bricks and sawdust.



Installed project rocket stove with two cooking units.

The project started distribution on 4th October 2010, with continuous installation to date (on-going). The table below provides annual installations since project start.

Year	number of stoves
2011	4,662
2012	5,139
2013	5,187
2014	6,840
2015	14,186
2016	7,819
2017	8,360
2018	7,885
2019	7758
2020	6586
2021	9315
2022	39887
2023	6024
TOTAL	129648

A.2. Location of project

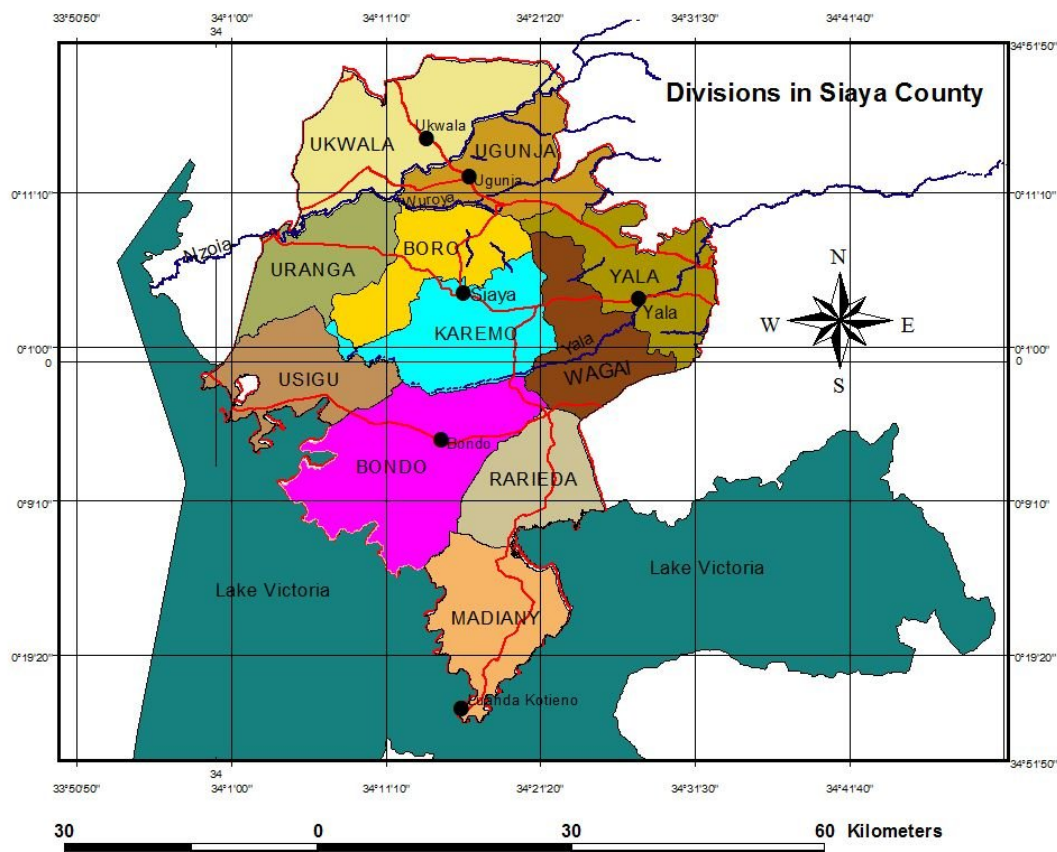
Country: Kenya

Provinces: Nyanza

County: Siaya

Coordinates: The county is located between the following coordinates: 0°24'08.52"S, 34°17'24.05"E to the south, 0°01'57'59"S, 34°00'31.65"E to the west, 0°19'04.01"N, 34°16'52.80"E to the north and 0°06'38.41"N, 34°33'16.82"E to the far east.

The coordinates of the town Ugunja, where the office of the project owner Tembea Youth Centre for Sustainable Development is located, are 00° 10' 59.88" N and 34°17' 59.99" E.



Map 1: Divisions in Siaya County

A.3. Reference of applied methodology

The approved monitoring methodology applied to the project activity is Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption V2.0 (24/04/2015)." The reference is

https://globalgoals.goldstandard.org/standards/407_V2.0_EE_ICs_Technologies-and-Practices-to-Displace-Decentralized-Thermal-Energy-TPDDTECConsumption.pdf

GS Usage Rate guidelines ver2.0 (27/10/2020)

Sampling and surveys for CDM projects activities and programmes of activities. V04.0

A.4. Crediting period of project

The start date of the first crediting period is 01/01/2011-31/12/2017.

The start date of the second crediting period is 01/01/2018-31/12/2024.

The crediting period of the project was renewed for another 7 years starting January 2018.

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

The project continuously installed efficient cookstoves since the start of the project implementation. Since then, a total of 129,648 project stoves have been installed.

Table 1: Annual stove installations

Year	number of stoves
2011	4,662
2012	5,139
2013	5,187
2014	6,840
2015	14,186
2016	7,819
2017	8,360
2018	7,885
2019	7758
2020	6586
2021	9315
2022	39887 ²
2023	6024
TOTAL	129648

The project trained 15 artisans in the monitoring period in efficient stove construction and conducted awareness and education events on efficient cooking and climate change. The trainings are conducted by lead artisans with support from Tembea field officers. The trainings are on stove construction, maintenance, data collection, stove usage, and customer support. The trainings are field based with both theory and practical content. 1 training was conducted on 7th to 18th August 2024. In total 83 artisans worked in 2023 (inclusive of 15 newly trained and 68 trained from previous years).

The project's awareness creation activities reached a total number of 2,364 people in 2023.

Relevant dates for the project activity:

Start date of the project: 04 October 2010

² In 2022 the stoves reported was 26,562 however this covered construction upto 23/08/2022, this was due to delays in collection and verification of beneficiary data before inclusion in the final sales record. In total 39887 stoves were constructed in 2022 expansion activity.

Date of first stove sale: 04 October 2010³

Date of registration: 03 July 2012

Start date of the first crediting period: 01 January 2011

First monitoring period:	01 Jan 2011 –	02 July 2012
Second monitoring period	03 July 2012 –	31 Dec 2013
Third monitoring period	01 Jan 2014 –	31 Dec 2014
Fourth monitoring period	01 Jan 2015 –	31 Dec 2015
Fifth monitoring period	01 Jan 2016 –	31 Dec 2016
Sixth monitoring period	01 Jan 2017 –	31 Dec 2017

Start date of the second crediting period: 01 January 2018

First monitoring period:	01 Jan 2018 –	02 July 2018
Second monitoring period	03 July 2019 –	31 Dec 2019
Third monitoring period	01 Jan 2020 –	31 Dec 2020
Fourth monitoring period	01 Jan 2021 –	31 Dec 2021
Fifth monitoring period	01 Jan 2022 –	31 Dec 2022
Sixth monitoring period	01 Jan 2023 –	31 Dec 2023

Project is in continuous operation.

B.1.1 Forward Action Requests

N/a

B.2. Post-Design Certification changes

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B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

N/A

B.2.2. Corrections

N/A

B.2.3. Changes to start date of crediting period.

N/A

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline.

N/A

B.2.5. Changes to project design of approved project

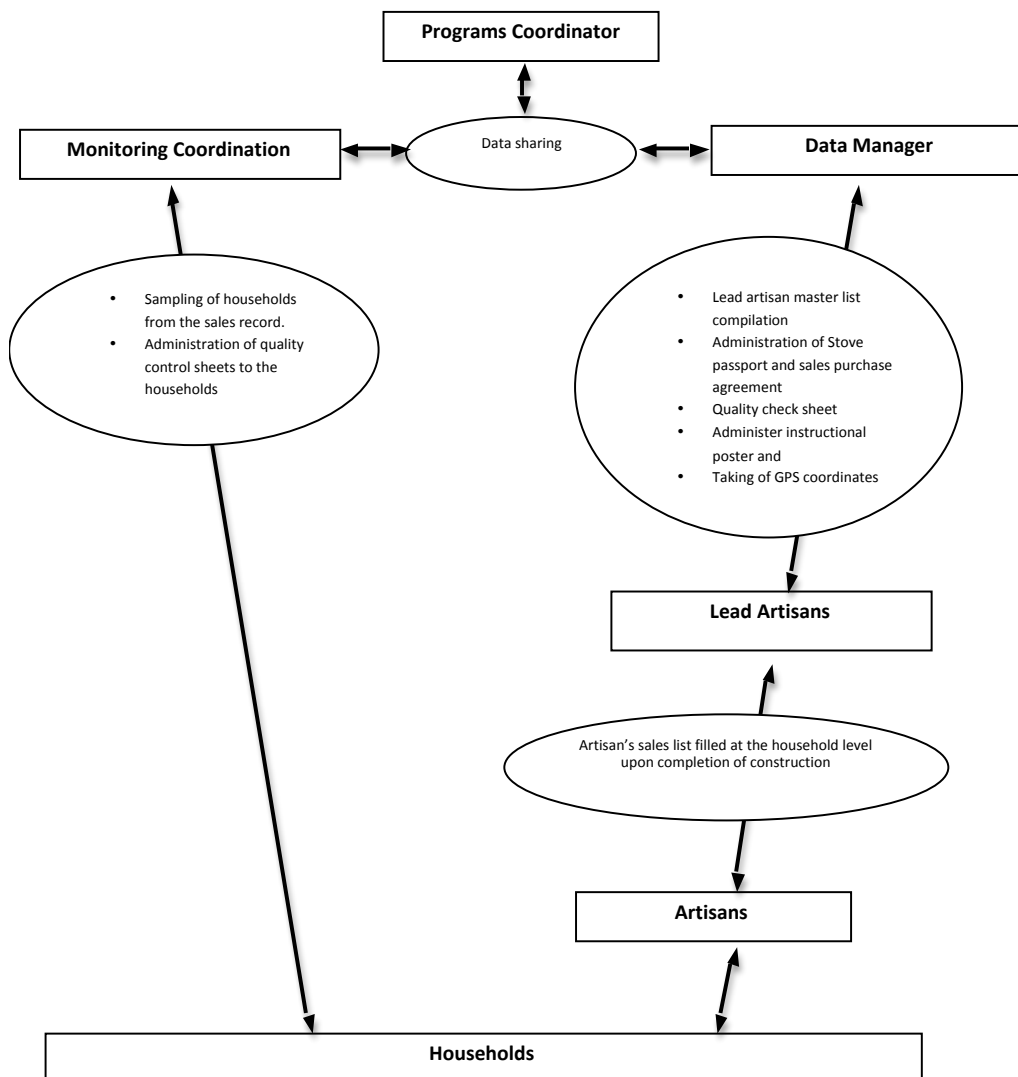
The project undertook design change in 2023 to allow the stove age limit to be fixed at 14 years. The same was allowed.

³ Stove installed between 04/10/2010 until 04/01/2011 are excluded from this monitoring period. The period had only 238 stove and since this meant an extra age group it was removed to simplify the monitoring exercise.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

A detailed description of the monitoring system can be found in the latest version of the Monitoring Manual provided as a separate document. This includes roles and responsibilities, organizational structure etc.

Monitoring coordination



Specific Personnel and Qualifications

Name	Designation	qualification
Job Orina	Internal monitoring manager	Bsc In Disaster Mitigation and Sustainable development, certificate in Low Carbon development (WBI) and monitoring & evaluation (UNPAN), long experience in data collection, analysis and report preparation as well long experience in the climate change sector.

Victor John Mondri	Data Manager/deputy manager	Bsc In Disaster Mitigation and sustainable development, long experience in data management
Nicholas Ngesa	Project officer in charge of construction	Bachelor of Commerce
Joshua Omondi	Project officer in charge of CSL	Certificate in project design and development and Certificate in Community saving and loaning
Erick Otieno	Field officer csl/stove construction	Certificate in Community Saving and Loaning
Sarah Sophy	Finance officer	Diploma in Community development and social work, certificate in Accounting.
Vincent Odour	Lead artisan	Long experience in stove construction, Kenya secondary school certificate

General Summary of Monitoring System:

Data management and storage

Tembea has developed internal mechanisms to ensure availability of data within and beyond the project period. All data used for monitoring is stored in soft and hard copies. Tembea uses cloud storage, backup systems as well as file cabinets in the office to ensure safe keeping of the data.

Monitoring data collection tools and methodologies

The following approaches are used in collecting data for monitoring.

1. Office based

1. Sales record: this is an excel file that is used to enter details about the stoves. The file enable entry on the data of sale, name of stove owner, location, postal address, telephone number, GPS coordinates, mode of use, stove type, stove number, and other monitoring details.
2. CSL database: this is a customized excel file that is used to analyze and store data on the community savings and loaning approach that is used to facilitate local communities to acquire cook stoves. The file captures the names of the groups, names and sex of the members, dates of formation, asset-based information, loan information amongst others.
3. Excel sheet for monitoring data: this is a template that is used to enter and store all the data collected from the field for monitoring surveys. The file captures the questions in the questionnaires and their varying responses. This is used to capture the sustainable development indicators that the project is promoting.

b) Field based

1. Artisan Data sheet: this is a tool used by the artisan involved in the construction of the stoves in the field. They capture the following details: date of construction, name of stove user, sub-location, village, address and phone number.

2. Lead Artisan construction summary sheet: This is a tool that has been developed to help lead artisans collect information on the stoves constructed. The template collects the date of construction, the constructing artisan information, stove owner name, contacts, stove number, mode of purchase, initial amount, GPS coordinates and lead artisans' remarks.
3. Transaction books for CSL: these are books that are used by the CSL groups to record their transactions. The book collects the details of the groups including, date of formation, group name, names of members, transaction procedures, loans information and meetings dates.
4. Questionnaires: there are many questionnaires that are administered to monitor project progress. The Questionnaires include the one for monitoring and usage survey. They are all attached in the monitoring manual.

C) Data flow consistency and intervals

1. Sales Record: the sales records is updated once a month. Every other Monday of the week the data manager receives data from the field and throughout the month QA/QC procedures are administered on the data.
2. CSL database: is updated once a month. Throughout the month field officer and the project officer are involved in collecting and verifying data from the groups.
3. Excel sheet for monitoring data: this is done once a year as is agreed upon with the project partners.

D) QA/QC measures

Tembea is responsible for ensuring data quality, the following measures are undertaken for the information described above;

1. Tracking of data
2. Use of SP/SPA
3. Counter checking with field officer documents
4. Review of group transaction books
5. Review of financial records
6. Counter checking of data

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Data/parameter:	$P_{b,y}$
Unit	Tons/stove/year
Description	Quantity of woody biomass consumed in the baseline scenario in year y and per day in year y.
Source of data	Baseline and Project Field Performance Tests 2017.
Value(s) applied)	2.7375 t/stove/year and 0.0075 t/stove/day
Choice of data or measurement methods and procedures	Kitchen performance test
Purpose of data	Baseline emission calculation
Additional comments	Parameter also used to calculate values for SDG 13

Data/parameter:	EF _{b,co2}
Unit	tCO2/t_fuel
Description	CO2 emission factor arising from use of fuel in baseline scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2, Tables 1.2/2.5 Default IPCC values for wood / wood waste are applied.
Value(s) applied)	tCO2/t wood (=112.0 tCO2/TJ * 0.0156 TJ/ t) 1.7472 tCO2e/t wood
Choice of data or measurement methods and procedures	Default values
Purpose of data	Baseline emissions calculations
Additional comments	Parameter used to calculate SDG 13

Data/parameter:	EF _{b,non-co2}
Unit	tCO2/t_fuel
Description	Non-CO2 emission factor arising from use of wood-fuel in baseline scenario
Source of data	https://globalgoals.goldstandard.org/ru-2020-applicability-of-global-warming-potential-for-gold-standard-for-the-global-goals-projects/
Value(s) applied)	0.1476 tCO2eq/t wood
Choice of data or measurement methods and procedures	Default values
Purpose of data	Project emissions calculations
Additional comments	

Data/parameter:	EF _{p,co2}
Unit	tCO2/t_fuel
Description	CO2 emission factor arising from use of fuel in project scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Tables 1.2/2.5 Default IPCC values for wood / wood waste are applied
Value(s) applied)	1.7472 tCO2/t wood (=112.0 tCO2/TJ * 0.0156 TJ/ t)
Choice of data or measurement methods and procedures	Default values

Purpose of data	Project emissions calculations
Additional comments	

Data/parameter:	$EF_{p,nonCO2}$
Unit	Data unit: tCO ₂ /t _{fuel}
Description	Description: Non-CO ₂ emission factor arising from use of wood-fuel in project scenario
Source of data	https://globalgoals.goldstandard.org/ru-2020-applicability-of-global-warming-potential-for-gold-standard-for-the-global-goals-projects/
Value(s) applied)	0.1476 tCO ₂ eq/t wood
Choice of data or measurement methods and procedures	Default value
Purpose of data	Project emissions calculation
Additional comments	GWP for second commitment period are applied.

Data/parameter:	$f_{NRB,i,y}$
Unit	Fractional non-renewability (%)
Description	Non-renewability status of woody biomass fuel in scenario i during year y
Source of data	Official CDM default value is applied. This value was accepted by the DNA of Kenya on 19 September 2012, and it is the latest available official value for f_{NRB} . http://cdm.unfccc.int/DNA/fNRB/index.html
Value(s) applied)	92%
Choice of data or measurement methods and procedures	Default value
Purpose of data	Baseline and project emissions calculation
Additional comments	This value is fixed for the duration of the crediting period. However, the PP can at any time chose to reassess and adjust the NRB value.

D.2 Data and parameters monitored

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SDG 1: No Poverty

Data / Parameter	Time and monetary savings
Unit	Hours / KES per household per year
Description	Time (hours) and money (KES) saved per household per year due to fuel savings achieved by project stoves
Measured/calculated/default	Calculated
Source of data	Monitoring Survey GS879_Monitoring_Usage_Survey_2023.V01.1.xlsx]Monitoring Survey_2023'!\$A0\$692
Value(s) of monitored parameter	192 hours' time saved per households per year KES 8,564 saved per household per year
Monitoring Equipment	Monitoring usage survey data tool
Measuring/reading/recording frequency	Annual
Calculation method (if applicable)	1. Annual time expenditures (hours) in the baseline minus annual time expenditures in the project 2. Annual monetary (KES) expenditures in the baseline minus annual monetary expenditures in the project
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of Project scenario
Additional comment	NA.

Summary:

The BS estimated an expenditure of KES 12,906 on fuel per year and 404 hours used in fuel gathering per year for the baseline scenario. The monitoring survey 2023 showed average annual expenditures of KES 4,342 on fuel and 212 hours for fuel collection. This results in average annual savings of KES 8,564 and 192 hours per household.

SDG 3: Good health and well-being

Data / Parameter	Air quality improvement
Unit	% Of stove users stating improved air quality
Description	Proportion (%) of positive comments from stove users on air quality improvement with project stove
Measured/calculated/default	Calculated
Source of data	Monitoring Survey GS879_Monitoring_Usage_Survey_2023.V01.1.xlsx]Monitoring Survey_2023'!\$CS\$615
Value(s) of monitored parameter	100%
Monitoring equipment	Monitoring and usage survey questionnaire
Measuring/reading/recording frequency	Annual
Calculation method (if applicable)	Number of stove users stating air quality improvement with project stove divided by total users interviewed.
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of Project scenario
Additional comment	NA.

SDG 4: Quality Education

Data / Parameter	Awareness creation in the community
Unit	Number of schools and persons
Description	Number of persons reached with awareness creation
Measured/calculated/default	Measured
Source of data	Activity registers GS 879_Awareness_creation_2023.xls]awareness creation 2023'!\$D\$29
Value(s) of monitored parameter	2,364 persons 0 schools reached
Monitoring Equipment	Awareness creation activity register
Measuring/reading/recording Frequency	Annual
Calculation method (if applicable)	Counting number of schools visited and number of participants in awareness creation activities. The events are organized and facilitated by project field officers.
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of Project scenario
Additional comment	NA.

SDG 5: Gender Equality

Data / Parameter	Number of female employees Atleast 30% of employees are female.
Unit	Number of female employees
Description	Number of jobs offered by TYCSD to local female employees.
Measured/calculated/default	Measured
Source of data	TYCSD employment records GS 879_list of project staff_2023.xlsx]Project Staff 2023'!\$C\$601
Value(s) of monitored parameter	109 female employees 46% of the employees are female
Monitoring Equipment	Employment register
Measuring/reading/recording frequency	Annual
calculation method (if applicable)	1. Counting number of female employees 2. Number of female employees divided by total number of employees.
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of Project scenario
Additional comment	NA.

SDG 7: Affordable and clean Energy

Data / Parameter	Number of persons that benefit from efficient and clean cooking technologies
Unit	Number of beneficiaries
Description	Number of persons that benefit from efficient and clean cooking technologies
Measured/calculated/default	Measured
Source of data	Project ER, Monitoring survey GS879_Monitoring_Usage_Survey_2023.V01.1.xlsx]Monitoring Survey_2023'!\$BD\$617 GS 879_Tembea_Cook Stove _ER_V01.0.xlsx]SDG 7'!\$B\$14
Value(s) of monitored parameter	28,064
Monitoring equipment	Not applicable
Measuring/reading/recording	Annual
Calculation method (if applicable)	Total number of stoves sold multiplied with usage rates multiplied with average household size
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of Project scenario
Additional comment	NA

Summary:

This is calculated by multiplying the number of cook stoves installed in the monitoring period by the usage rate and average household size. This is $6,024 \times 0.8807 \times 5.3$. This is an annual value not cumulative.

SDG 8: Decent work and economic growth

Data / Parameter	Number of jobs offered
Unit	Number of employees
Description	Number of jobs offered by TYSCD to local employees at good conditions
Measured/calculated/default	Measured
Source of data	TYCSD employment records GS879_list of project staff_2023.xlsx]Project Staff 2023'!\$C\$354
Value(s) of monitored parameter	15 Project staff 83 Artisans worked during the monitoring period. 138 community mobilizers Total 236 project employees
Monitoring equipment	Staff register
Measuring/reading/rerecording frequency	Annual
calculation method (if applicable)	Total number of employees
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of Project scenario
Additional comment	NA

SDG 12: Sustainable consumption and production

Data/parameter:	Fuel savings achieved
Unit	%
Description	Fuel savings in % achieved by project technologies compared to baseline.
Measured/calculated/default	Calculated
Source of data	PFT study results GS 879_PFT_Update_analysis_V01.xlsx(PFT_update_2023_BA 113)
Value(s) of monitored parameter	Average: 54.0% fuel saving achieved by project technology compared to baseline.

Monitoring equipment	Hand-held spring weight scales to measure wood weight with accuracy to kilogram; scales checked just prior to measurements using items (bag of sugar purchased from national supermarket) with known and standardized weights (Kenya Bureau of Standards Certified); the scales were tested for their individual accuracy and between scale consistency. In combination with water boiling tests which were used to calculate baseline fuel consumption.
Measuring/reading/recording frequency:	Every two years
Calculation method (if applicable):	Fuel savings divided by baseline fuel consumption expressed in %
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Calculation of Project scenario
Additional comments:	None

SDG 13: Climate action

Data/parameter:	CO _{2e} emissions reductions
Unit	t CO _{2e}
Description	Amount of CO _{2e} reduced by the project per year
Measured/calculated/default	Calculated
Source of data	Project ER file GS 879_Tembea_Cook Stove _ER_V01.xlsx]ER_calculation_2024!\$C\$24
Value(s) of monitored parameter	289,372 tCO _{2e}
Monitoring equipment	N.A.
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	According to applied methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC) and as outlined in the PDD V8, section E.
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Calculation of Project scenario
Additional comments:	None

Data/parameter:	P _{p,y}
Unit	t_biomass/unit-year and t_biomass/unit-day
Description	Quantity of woody biomass consumed in the project scenario during year y and per day in year y.
Measured/calculated/default	Measured

Source of data	Performance Field Tests 2023 240107_PFT_Update_analysis_V01.xlsx]statistical_outlier! \$AM\$147
Value(s) of monitored parameter	1.2582 t wood/year and 0.0034 t wood/day
Monitoring equipment	Hand-held spring weight scales to measure wood weight with accuracy to kilogram; scales checked just prior to measurements using items (bag of sugar purchased from national supermarket) with known and standardized weights (Kenya Bureau of Standards Certified); the scales were tested for their individual accuracy and between scale consistency.
Measuring/reading/recording frequency:	Every two years
Calculation method (if applicable):	Mean (90/30 rule applicable) of wood biomass use of all selected households was calculated
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Calculation of Project scenario
Additional comments:	Exercise conducted in 2023.

Data/parameter:	$P_{p,b,y}$
Unit	t_biomass/unit-year and t_biomass/unit-day
Description	Quantity of woody biomass consumed in the project scenario in year y and per day in year y.
Measured/calculated/default	Measured
Source of data	Performance Field Tests 2023 240107_PFT_Update_analysis_V01.xlsx]statistical_outlier! \$AM\$147
Value(s) of monitored parameter	1.2582 t wood/year and 0.0034 t wood/day
Monitoring equipment	Hand-held spring weight scales to measure wood weight with accuracy to kilogram; scales checked just prior to measurements using items (bag of sugar purchased from national supermarket) with known and standardized weights (Kenya Bureau of Standards Certified); the scales were tested for their individual accuracy and between scale consistency.
Measuring/reading/recording frequency:	Every two years
Calculation method (if applicable):	Mean (90/30 rule applicable) of wood biomass use of all selected households was calculated
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	SDG 13 calculation.
Additional comments:	Exercise conducted in 2023.

Data/parameter:	Usage ($U_{p,y}$)																																
Unit	Proportion (percentage)																																
Description	Usage rate in project scenario during year y																																
Measured/calculated/default	Calculated																																
Source of data	Usage survey 2023 GS 879_Monitoring_Usage_Survey_2023.V01.1.xlsx]Monitoring Survey_2023'!BH721-CF721																																
Value(s) of monitored parameter	<table border="1"> <thead> <tr> <th colspan="2">Usage rates (= 1 - drop-off rate)</th></tr> </thead> <tbody> <tr><td>age 0-1</td><td>80.6%</td></tr> <tr><td>age 1-2</td><td>84.5%</td></tr> <tr><td>age 2-3</td><td>91.3%</td></tr> <tr><td>age 3-4</td><td>77.5%</td></tr> <tr><td>age 4-5</td><td>85.3%</td></tr> <tr><td>age 5-6</td><td>89.5%</td></tr> <tr><td>age 6-7</td><td>92.3%</td></tr> <tr><td>age 7-8</td><td>94.6%</td></tr> <tr><td>age 8-9</td><td>92.7%</td></tr> <tr><td>age 9-10</td><td>86.8%</td></tr> <tr><td>age 10-11</td><td>100.0%</td></tr> <tr><td>age 11-12</td><td>100.0%</td></tr> <tr><td>AGE 12-13</td><td>100.0%</td></tr> <tr> <td>weighted single usage rate</td><td>88.07%</td></tr> <tr> <td>Applied rate</td><td>88.07%</td></tr> </tbody> </table> To arrive at the weighted usage rate, the single usage rate for each age category with usage above 90% was capped at 90% then multiplied by the percentage stove per age group, after which all the usage rates are summed to find the weighted usage rate. find more details in the file GS 879_Tembea_Cook Stove_ER_V01.0.xlsx]Analysis'!\$C\$56 Also consider annex 1 for more details.	Usage rates (= 1 - drop-off rate)		age 0-1	80.6%	age 1-2	84.5%	age 2-3	91.3%	age 3-4	77.5%	age 4-5	85.3%	age 5-6	89.5%	age 6-7	92.3%	age 7-8	94.6%	age 8-9	92.7%	age 9-10	86.8%	age 10-11	100.0%	age 11-12	100.0%	AGE 12-13	100.0%	weighted single usage rate	88.07%	Applied rate	88.07%
Usage rates (= 1 - drop-off rate)																																	
age 0-1	80.6%																																
age 1-2	84.5%																																
age 2-3	91.3%																																
age 3-4	77.5%																																
age 4-5	85.3%																																
age 5-6	89.5%																																
age 6-7	92.3%																																
age 7-8	94.6%																																
age 8-9	92.7%																																
age 9-10	86.8%																																
age 10-11	100.0%																																
age 11-12	100.0%																																
AGE 12-13	100.0%																																
weighted single usage rate	88.07%																																
Applied rate	88.07%																																
Monitoring equipment	Survey questionnaires																																
Measuring/reading/recording frequency:	Annual																																
Calculation method (if applicable):	A single usage parameter is weighted to be representative of the quantity of project technologies of each age being credited in a given project scenario. See Project ER for details.																																
QA/QC procedures:	Random sampling of population. Transparent data analysis and reporting Refer to section D.4 of the MR.																																
Purpose of data:	Calculation of Project scenario																																

Additional comments:	None
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Data/parameter:	Project Technology Days ($N_{p,y}$)
Unit	Number of days
Description	Project technologies credited (units)
Measured/calculated/default	Calculated
Source of data	Project ER GS 879_Tembea-sales record_V01.1.xlsx]Project_technology_days'!\$I\$6
Value(s) of monitored parameter	46,193,199
Monitoring equipment	N.A.
Measuring/reading/recording frequency:	Continuous
Calculation method (if applicable):	The number of days between the installation date of each stove and the end of monitoring period was calculated then adjusted for the 21 days' between date of sale and start of stove usage for households.
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Calculation of Project scenario
Additional comments:	In calculation of total days – we subtract date of start of stove usage in the monitoring period from the end date of the monitoring period and sum this for all installed stove. For stoves installed in the monitoring period we use the installation date as the start date of stove usage whereas for stoves installed in previous monitoring days we use the start date of the monitoring period (01.01.2023). In calculation of Adjusted days- we subtract the 21 days grace period from the project technology days for all installation that happened in the monitoring period, then sum for all stove installation. This is the parameter used for ER calculations.

Data/parameter:	Leakage ($LE_{p,y}$)
Unit	t_CO2eq per year
Description	Leakage in project scenario during year y
Measured/calculated/default	Calculated
Source of data	Monitoring survey 2023
Value(s) of monitored parameter	0 Potential leakage effects were assessed at the stage of Revalidation in 2017 and were considered insignificant. Further, results from Monitoring/Usage Survey conducted in 2023 showed no leakage effects.

Monitoring equipment	N/A
Measuring/reading/recording frequency:	Every other year
Calculation method (if applicable):	N/A
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Calculation of leakage
Additional comments:	None

Data/parameter:	Similar new project activity in the project area
Unit	Number of new project activities
Description	List of similar cook stove projects and an assessment of how (e.g. target population, cook stove type, etc.) and to what degree overlap occurs
Measured/calculated/default	Reported
Source of data	Gold Standard registry, CDM Pipeline and local field observations.
Value(s) of monitored parameter	0 (no similar project activity was identified)
Monitoring equipment	N.A.
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	N.A.
QA/QC procedures:	Transparent data analysis and reporting
Purpose of data:	Calculation of leakage
Additional comments:	None

The project aims at maintaining a close and continued contact with the stove users to ensure stove usage. This is important to receive feedback from the stove users and to advise on appropriate project stove application. One main instrument for this is the Community Savings & Loaning groups (CSL) approach. In addition, also community mobilizers and environmental clubs in schools are crucial to reach out to households:

- The CSL groups play a very important role for the successful adoption and use of the project stove and discontinuation of the baseline technology. CSL groups meet on a weekly basis and provide a perfect framework for peer-to-peer support and knowhow exchange amongst stove users thus increasing use and adoption of the Tembea stoves. Further, Tembea staff attends CSL meetings of each group monthly. This is a good opportunity to get regular feedback from households on their experience with the project stove, to advise on appropriate stove usage and to discourage the use of the three stone fire.

- A network of community mobilizers visits stove users on a random basis to provide accompaniment/solidarity in decommissioning the traditional stoves. Regular reporting/feedback from the community mobilizers to lead artisans/project staff helps in gauging the level of discontinuation by stove users.

The project monitors the use of baseline technology through monitoring/usage surveys.

D.3. Comparison of monitored parameters with last monitoring period

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
SDG 13	289,372 VERs	238,699 VERs
SDG 13 $P_{p,y}$	1.2582 t wood/year and 0.0034 t wood/day	1.2462 t wood/year and 0.0033 t wood/day
SDG 13 $P_{p,b,y}$	1.2582 t wood/year and 0.0034 t wood/day	1.2462 t wood/year and 0.0034 t wood/day
SDG 13 $U_{p,y}$	88.07%	90%
SDG 13 $N_{p,y}$	46,193,199	36,859,351
SDG 13 leakage	0	0
SDG 13 Similar new project activity in the project area	0	0
SDG1	192 hours 8,564 KES	238 hours 8,631 KES
SDG 3	100% Of users	100% Of users
SDG 4	2,364 persons reached. 0 schools	2,870 persons reached. 0 schools
SDG 5	46 % of project staff women	38% of project staff women
SDG 7	28,064 persons benefitted from efficient and clean cooking	124,310 persons benefitted from efficient and clean cooking
SDG 8	236 receiving incomes from the project	578 receiving incomes from the project
SDG 12	54.0% fuel saving compared to baseline	54.7% fuel saving compared to baseline

Explanation for achieved values.

SDG 1-The inflation witnessed affected the price of firewood local, leading to reduced savings. This also pushed many homes to fetch firewood thus reducing time saved as competition for resource implied more time to find adequate quantities.

SDG 4-Lower number of community members were reached for awareness creation as the project downscaled activities.

SDG 5- More women were recruited as project artisans.

SDG7- Less stoves were constructed compared to 2022.

SDG 8- Reduced constructions of stoves leading to less manpower demand.

SDG 13- More ERs achieved as more stoves were in use and more stove days recorded.

SDG 13 ($P_{p,y}$, $P_{p,b,y}$) - No much difference in the fuel consumed by project technologies based of fuel test.

SDG 13 ($U_{p,y}$) - Slight drop in usage rate, this is being reviewed to create understanding to address the same.

SDG 13 ($N_{p,y}$) - The change is due to more stoves having full year usage hence more technology days than in the year of installation when curing days and date of installation were discounted.

D.4. Implementation of sampling plan.

>>

We conducted the sampling for all surveys and tests according to the methodologies outlined in Technologies and Practices to Displace Decentralized Energy Consumption V2.0.

Description of implemented sampling design.

- Date for monitoring usage survey data collection was determined.
- The sales record was prepared to allow for calculation of stoves ages.
- Stove age categories were determined.
- Using simple random sampling samples were selected per age group.

Collected data.

Monitoring parameters collected from surveys.

- SDG 1- Time and money spent on firewood purchase- the project sought to determine how many/much hours and money households spend on purchase of firewood. A simple average of the same is used.
- SDG 3- Household feedback on air quality-households are asked to make assessment if air quality has improved after adoption of project stove and also a comparison of the two (baseline and project stoves)
- SDG 13- Usage rate; Households using project technology- by direct question to household if they use the technology, physical assessment if the stove is used (assessing presence of ash) and photo of the stove. Then also checking frequency of use.
- SDG 13-P_{p1,y} – data collected from PFT activity details provided below

Monitoring Parameters collected from activity reports and office data.

- SDG 4- data is provided from activity reports.
- SDG 5- data is collected from project employment records .
- SDG 7- data is collected from the project ER and applies usage rate which is collected from surveys.
- SDG 8- data is collected from employment record.
- SDG 12- this is computed based on PFT data and baselines values registered at renewal of crediting period.
- SDG 13-project technology days- computed from the project ER.
- SDG 13- emission reduction are computed based on surveyed and office provided data

Additional information collected is used by the PD to design campaigns and related activities.

Analysis of collected data.

- Excel functions were used for data analysis.

Demonstration that required confidence/precision level has been met

- As per the applicable methodology monitoring and usage survey values are not subject to confidence/precision calculation. This assessment is subjected to PFT values. See section below for PFT results.

Demonstration that the samples were randomly selected and are representative of the population.

- Simple random excel function was used to sample eligible end users. The sales record was first developed into age groups and then simple random samples generated per age group.

- The sample was developed on 01/12/2023 follow up with the monitoring survey that happened from 04/12/2023-15/01/2024. There were challenges completing the surveys by end year as many of the sampled households were not reachable spreading the exercises to January 2024.
- Calculation of age groups
- In preparing sample groups the PD calculate age groups by subtracting the date of construction from the anticipated date of the survey. In this monitoring period there are 13 age groups as indicated in the table below.
- Summary of age groups, sample sizes. As per the methodology a minimum of 30 (the survey achieved higher eligible samples) surveys are targeted per age group and simple random sampling function of excel is used.

Age group	successful surveys	Sampled
0-1 yrs	36	40
1-2yrs	103	105
2-3yr	46	48
3-4yrs	40	40
4-5yr	34	35
5-6yrs	38	40
6-7yrs	53	55
7-8yrs	35	38
8-9yrs	42	45
9-10yrs	53	55
10-11yrs	32	35
11-12yrs	38	40
12-13yrs	44	45
	594	621

Successful surveys are households that were reached for the monitoring survey and answered all questions. 27 samples were dropped due to incomplete survey forms.

PFT exercise

- The project conducted a PFT exercise to update the project fuel consumption value as required by the methodology the previous PFT was conducted in 2021.

Sampling procedure for PFT

- To ensure representativeness of the sample based on stove age and geographical distribution a simple random sampling approach considering the different stove age categories was applied.
- Samples were selected from the total sales record using simple random sampling method. The table below summarizes the characteristics of the total sales record and the selected sample.
- To calculate age categories; the PFT start date was defined as 05.06.2023, subtracting this from the date of installation gives the stove age.
- From the total Sales record containing all stove users up to end of 30th May 2023 a sample of 120 households was selected with the minimum eligible sample of 79 achieved.
- A sample size of 79 was used considering that the previous PFT survey had low COV. As guided by the applicable methodology the minimum sample size recommended is 30 but to consider attrition we settled for 79 eligible households.

The below table gives the sample characteristics.

age group	% in sales record	sample size
% of stoves of age 0-1	11%	9
% of stoves of age 1-2	15%	12
% of stoves of age 2-3	6%	5
% of stoves of age 3-4	8%	6
% of stoves of age 4-5	9%	7
% of stoves of age 5-6	5%	4
% of stoves of age 6-7	13%	10
% of stoves of age 7-8	8%	6
% of stoves of age 8-9	6%	5
% of stoves of age 9-10	3%	2
% of stoves of age 10-11	6%	5
% of stoves of age 11-12	6%	5
% of stoves of age 12-13	4%	3
total		79

Confidence and Precision achieved in the PFT survey

Confidence 15.28%

Precision 2%

For more details refer to the PFT update analysis file - GS 879_PFT_Update_analysis_V01.xlsx (PFT_update_2023 cells AX100-BA 106)

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

>>

SDG 1: No poverty

Baseline surveys conducted in 2017 for the renewal of the crediting period provided the baseline values for time expenditures for fuel acquisition per household per year. These values were calculated as the statistical average value of a representative sample from household interviews.

= 404 hours & KES12906

SDG 3: Good health and well-being

Without the project stoves, no air quality improvements are achieved. Thus, the baseline value is 0% of households stating air quality improvement with project stove.

SDG 4: Quality education

Without the project, no training activities are conducted. Thus, the baseline value is 0 (zero) persons and 0 schools.

SDG 5: Gender equality

Without the project, no women receive training or income from the project activity. Thus, the baseline value is 0 (zero) women receiving training or income from the project activity.

SDG 7: Affordable and clean energy

Without the project, no persons benefit from efficient and clean cooking. Thus, the baseline value is 0 (zero) persons that benefit from efficient and clean cooking technologies.

SDG 8: Decent work and economic growth

Without the project, no persons would receive income from the project activity. Thus, the baseline value is 0 (zero) persons receiving an income from project activity, 0 (zero) persons receiving an income more than what they were earning prior to project, and 0 (zero) persons employed by the project with salaries at par with or above host country standards.

SDG 12: Sustainable consumption and production

Quantity of woody biomass consumed in the baseline scenario in year and per day were obtained using equation: $B_{fuel} = \eta_{project} / \eta_{baseline} * P_{fuel}$. Thermal efficiencies (η) from water boiling tests (Project technology) and default value for baseline (from methodology page 23 footnote). The data for project KPTs fulfils the 90/30 rule, thus the statistical mean value can be applied.

SDG 12 = 0.0075 t wood/ day/ stove 54.0% fuel saving

Baseline stove consumption

SDG 13: Climate Action

According to the applied methodology, there is no need to calculate baseline emissions separately. When the baseline fuel and the project fuel are the same and the baseline emission factor and project emission factor are considered the same, overall GHG reductions achieved by the project activity are calculated as follows (see applied methodology, page 14):

$$ERY = \sum_{b,y} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b,fuel} * (f_{NRB,b,y} * EF_{fuel,CO2} + EF_{fuel, nonCO2})) - LE_{p,y}$$

Where:

$\sum_{b,y}$ = sum over all relevant (baseline b/project p) couples

$N_{p,y}$ = cumulative number of project technology days included in the project ER for project scenario p against the baseline scenario b in year y.

$U_{p,y}$ = cumulative usage rate for technologies in project scenario p in year y, based on cumulative adoption rate and drop off rate revealed by usage surveys (fraction)

$P_{p,b,y}$ = Specific fuel savings for an individual technology of project p against an individual technology of baseline b in year y, in tons/day, as derived from the statistical analysis of the data collected from field tests.

$NCV_{b,fuel}$ = Net calorific value of the fuel that is substituted or reduced ((IPCC default for wood fuel, 0.015 TJ/ton)

$f_{NRB,b,y}$ = fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass

$EF_{fuel,CO2}$ = CO2 emission factor of the fuel that is substituted or reduced. 112 tCO2/TJ for wood/wood waste.

$EF_{fuel, nonCO2}$ = Non-CO2 emission factor of the fuel that is reduced

$LE_{p,y}$ = leakage for project scenario p in year y (tCO2eq/yr)

The parameters $NCV_{b,fuel}$ and $NCV_{p,fuel}$ are not applicable to this project since EF is in units of tCO2/t_{fuel} (see methodology page 21). Therefore, the formula applied is:

$$ERY = \sum_{b,y} (N_{p,y} * U_{p,y} * P_{p,b,y} * (f_{NRB,b,y} * EF_{fuel,CO2} + EF_{fuel, nonCO2})) - LE_{p,y}$$

SDG 13 = 535493 tCO₂e

E.2. Calculation of project value or estimation of project situation of each SDG Impact

>>

SDG 1: No poverty

Annual household surveys provide data on time expenditures for fuel acquisition in the project scenario. The statistical average of a representative sample from household interviews is used.

SGD 1 = 212 hours & KES 4,342

SDG 3: Good health and well-being

Annual household surveys provide data on improvement of air quality with project stove. The statistical average of a representative sample from household interviews is used.

SDG 3 = 100% of stating improved air quality

SDG 4: Quality education

Tembea records number of persons reached in various training programmes, such as, Community Savings and Loaning, Stove construction, climate change awareness and education, and various other training activities.

SDG 4 = 2,364 persons reached with awareness creation and 0 schools

SDG 5: Gender equality

Tembea records number of women that receive income and training from the project. The share of female employees is calculated by dividing number of female employees by total number of employees.

SGD 5 = 46 %

SDG 7: Affordable and clean energy

Number persons that benefit from efficient and clean cooking is calculated by counting total number of stoves installed as recorded in the total sales record for the current MP multiplied with usage rates from latest usage surveys multiplied with average household size from latest monitoring surveys.

SGD 7 = 28,064 beneficiaries

SDG 8: Decent work and economic growth

Tembea records number of persons that receive income from the project activity, number of persons that receive an income more than what they were earning prior to project, and number of persons employed by the project with salaries at par with or above host country standards.

SDG 8 = 236 persons

SDG 12: Sustainable consumption and production

Quantity of woody biomass consumed in the projects scenario in year and per day are obtained from latest project KPTs. In case the data fulfils the 90/30 rule, then the statistical mean value can be applied.

SDG 12 = 54.0% wood saved

0.0034 t wood/ day/ stove

Project stove consumption

SDG 13: Climate Action According to the applied methodology, there is no need to calculate project emissions separately. When the baseline fuel and the project fuel are the same and the baseline emission factor and project emission factor are considered the same, overall GHG reductions achieved by the project activity are calculated as follows (see applied methodology, page 14):

$$ER_y = \sum_{b,y} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b,fuel} * (f_{NRB,b,y} * EF_{fuel,CO2} + EF_{fuel, nonCO2})) - LE_{p,y}$$

Where:

$\sum_{b,y}$ = sum over all relevant (baseline b/project p) couples

$N_{p,y}$ = cumulative number of project technology days included in the project ER for project scenario p against the baseline scenario b in year y.

$U_{p,y}$ = cumulative usage rate for technologies in project scenario p in year y, based on cumulative adoption rate and drop off rate revealed by usage surveys (fraction)

$P_{p,b,y}$ = Specific fuel savings for an individual technology of project p against an individual technology of baseline b in year y, in tons/day, as derived from the statistical analysis of the data collected from field tests.

$NCV_{b,fuel}$ = Net calorific value of the fuel that is substituted or reduced ((IPCC default for wood fuel, 0.015 TJ/ton)

$f_{NRB,b,y}$ = fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass

$EF_{fuel,CO2}$ = CO2 emission factor of the fuel that is substituted or reduced. 112 tCO₂/TJ for wood/wood waste.

$EF_{fuel, nonCO2}$ = Non-CO2 emission factor of the fuel that is reduced

$LE_{p,y}$ = leakage for project scenario p in year y (tCO₂eq/yr)

The parameters $NCV_{b,fuel}$ and $NCV_{p,fuel}$ are not applicable to this project since EF is in units of tCO₂/t_{fuel} (see methodology page 21). Therefore the formula applied is:

$$ERY = \sum_{b,y} (N_{p,y} * U_{p,y} * P_{p,b,y} * (f_{NRB,b,y} * EF_{fuel,CO2} + EF_{fuel, nonCO2})) - LE_{p,y}$$

The table below summarizes the values used in 2023 for the parameters of the applied formula:

Parameter	Project Scenario
Baseline wood use (tons/day)	0.0075
Project wood use (tons/day)	0.0034
$P_{p,b,1}$: Fuel savings (tons/day)	0.0034
Fraction NRB	0.92
U_p	0.881
N_p	46,193,199
$EF_{fuel,CO2}$	1.7472
$EF_{fuel, nonCO2}$	0.1476
LE_p	0

The formula for emission reduction calculations including the values used for the parameters is:

$$ER_{2023} = 46,193,199 * 0.881 * 0.0034 * (0.92 * 1.7472 + 0.1476) - 0$$

$$SDG\ 13 = 246,121 tCO_2\ e$$

E.3. Calculation of leakage

>>

There is no leakage observed in the monitoring period.

Leakage form	Estimate of risk	Justification
a) The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project.	No risk	The displaced baseline technology is the least efficient and most common cooking method in the project area. It is highly unlikely that users outside the project boundary who cook on a more efficient, more convenient and less emitting technology (such as LPG, electricity,...) would switch back to open fires.
b) The non-renewable biomass or fossil fuels saved under the project activity are used by non-project users who previously used lower emitting energy sources.	No risk	The Kitchen Surveys conducted and the Monitoring Survey 2023 show that 0% of stove users used the saved fuel for other purposes, which would include selling the fuel to non-project users.
c) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario	No risk	There is no known CDM or VER project in the project area and thus no likelihood the project will affect another CDM or VER project activity for its NRB fraction.
d) The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology	No risk	No risk of this leakage as household have adopted the rocket stove and, in most cases, the three stone is demolished.
e) The project stipulates substitution within households who commonly used a technology with relatively lower emissions.	No risk	The project targets users that apply traditional open fires, which constitute the least efficient cooking technologies, which have higher emissions than the project stoves. Thus, there is no risk for this form of leakage.

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	Amount of CO ₂ e emissions reduced by the project per year.	535,493	246,121	289,372 tCO ₂ e

1	Time (hours) and money (KES) saved per household per year due to fuel savings achieved by project stoves	404 hours KES 12,906	212 hours KES 4,342	192 hours KES 8,564
3	Proportion (%) of positive comments from stove users on air quality improvement with project stove	0% of stove users stating improved air quality	100% of stove users stating improved air quality	100% of stove users stating improved air quality
4	Number of persons reached with awareness creation	0 Schools/Persons reached with awareness creation	2,364 Persons and 0 schools reached with awareness creation	2,364 Persons and 0 schools reached with awareness creation
5	Number of jobs offered by TYCSD to local female employees	0 Number of female employees	46 % of employees are women.	46% of employees are women. 109 women employees
7	Number of persons that benefit from efficient and clean cooking technologies	0 Beneficiaries	28,064 Beneficiaries	28,064 Beneficiaries
8	Number of jobs offered by TYCSD to local employees at good conditions.	0 Number of employees	236 Number of employees	236 employees
12	Fuel savings in % achieved by project technologies compared to baseline.	0.0075t wood/day/ stove	0.0034t wood/day/ stove	0.0041 t wood/day/ stove 54.0% fuel saving

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ⁴ achieved during this monitoring period
SDG 13	143,672	289,372
SDG 1	No estimate available	192 hours KES 8,564
SDG 3	Expect participants to respond that indoor air quality has improved over baseline.	100% of stove users stating improved air quality

⁴ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

SDG 4	No estimate available	2,364 persons and 0 schools reached with awareness creation
SDG 5	Project is expected to train and generate income for 300 women.	46% 109 women employed
SDG 7	No estimate available	28,064 beneficiaries
SDG 8	No estimate available	236 Persons
SDG 12	No estimate available	54.0% fuel savings

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

The ex-ante values are based on the same methodology and assumption as the calculation for this monitoring period emission calculation. Below are assumption used in the ex-ante estimation;

- 65,400 stoves implemented
- Fuel savings of 0.0041
- Baseline fuel consumption of 0.0075t/day/stove
- Project fuel consumption of 0.0034t/day/stove

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

There are more stoves in use than had been anticipated in the PDD.

Below are the comparisons.

Parameter	Ex ante values	Actual
Number of stoves	65,400	129,648
Stove age	7 years	14 years

There are 64,248 more stoves in use than had been anticipated and design change that allowed for stoves that change project technology from 7 to 14 years.

SECTION F. SAFEGUARDS REPORTING

During the transition review no safeguarding principle was threatened by the project therefore no measures to be reported.

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

The project has designated grievance book in the main office, a dedicated mobile number and means through the community savings and loaning groups to channel grievances to the organization.

In the monitoring period 3 issues were raised as per table below;

Date	User ID	Issue	Action	Status	
3/3/2023	T23/124778	Newly constructed stove cracking	Stover owner inducted on stove maintenance	Resolved	Cracks on exteriors corrected with proper curing and

					maintenance hence no impact on usage. It took approximately 1hr to train and demonstrate proper maintenance.
8/7/2023	T23/126692	Difficulty lighting new stove.	Stover owner inducted on stove usage	Resolved	Stove in continuous use. It took approximately 1hr to train and demonstrate proper lighting and use.
10/11/2023	T21/80729	Wrong position of stove in the kitchen.	Artisan assigned to do new stove at the owner's cost. Warranty elapsed.	Resolved.	Stove was destroyed once the new one was in use hence no project technology days affected. The artisan took 2-3 hrs to demolish the old stove.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

N/A

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period.

No legal issue was documented/communicated in this monitoring period.

Annex 1:

Fulfillment of updated requirements and guidelines for carrying out usage survey for projects implementing improved cooking devices.

The PP has undertaken measures to meet the update rules for conducting usage surveys for cook stove projects published on 23/08/2017.

A. Mandatory requirements

- I. Definition of stove user vs non-user-The project defines non-user as households that use the baseline stove at least once a day. To imply that any household that

reports to use the baseline stove, once, twice, or thrice a day is considered not using the project stove. In the analysis of monitoring data in column BS of the usage sheet the above criteria have been applied.

II. Household observation

- Kitchen observation- The PP has in the past used this criterion to check stove usage and quality. However, during this monitoring, the enumerators were trained on other techniques of checking stove use. This include presence of ash- if the ash is there, and if hot, appearance of soot- could be on the cooking service, wall, or firewood inlet.
- Interview with primary cook- The enumerators sought to interview the primary cook stove users.
- Photos of the cooking area- The PP took photos of all the households visited for monitoring activity. However, the PP notes that considering the size of some kitchens it was difficult to achieve very clear photos however what is presented here captures the requirement. it includes a date stamp. The photos have been submitted saved with name of the household and their respective stove number. The questionnaire was revised to seek consent from the household.
- GPS coordinates- GPS coordinates for all the households visited for the usage survey were collected and included in the monitoring data.

III. Verification checks- the monitoring team leader contacted 35 households out of 594 reached for the usage survey translating 5.8% which is within the 5-10% required by the guideline. The PP developed a template that was used to capture responses from the household compared to those in the questionnaire. The exercise was undertaken daily to also check the work of the enumerators.

B. Good Practice Monitoring requirements

1. Field team Training and supervision- The PP developed a training guide capturing the updated rules to train enumerators involved in collection of data for usage survey. The train guide and participants list has been uploaded. The PP used the verification check as required in Mandatory requirements of the updated rules to review the works by enumerators. Throughout the exercise there was support from the team leader to the field teams.
2. End user training and follow up- the PP uses the Community Saving and Loaning groups as a platform to train, monitor and promote stove use. The groups are made of between 15-20 members from same locality who form the group to save resources, to collectively guarantee each other to acquire cook stoves. 100% of stoves sold to the community use this approach and hence was considered appropriate platform to train, monitor and promote stove use. The PP has trained and recruited community mobilizers who train community on stove use, economic empowerment, and climate change. We have 138 mobilizers (list uploaded). We also use the stove artisan as earliest contact to train household on stove use immediately after stove construction. Due to budgetary constraints these activities are conducted alongside awareness creation events. List of events and dates have been uploaded.
3. Awareness campaign- from the start of the project in 2010 the PP has spent considerable resources to promote community awareness on climate change, its connection to witnessed impacts as well as why use of energy efficient cook stoves matters. In the initial years this included a school programme where children were educated to encourage their parents or custodians to use Tembea cook stoves. This requirement has been met alongside number 2 (End user training and follow up)

Conclusion

The project seeks issuance using 88.1% usage rate as provided by the updated rules having taken measures to meet the stated requirements. The PP however notes the

requirements for End user training and Awareness can be progressively realized to increase the numbers reached over time, considering its budgetary requirement.

Revision History

Version	Date	Remarks
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption