

MONITORING REPORT

PUBLICATION DATE 14.10.2020

VERSION v. 1.1

RELATED SUPPORT - TEMPLATE GUIDE Monitoring Report v. 1.1

This document contains the following Sections

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KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS 5642
Title of the project (s) covered by monitoring report	Burn Stoves Project in Kenya
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	04.4 Date: 30/12/2021
Version number of the monitoring report	05.14
Completion date of the monitoring report	2530/0876/2022
Date of project design certification	28/02/2018
Date of Last Annual Report	1/10/2018 to 31/05/2020 (both days included)
Monitoring period number	3 rd
Duration of this monitoring period	01/06/2020 to 31/03/2022
Project Representative	BURN Manufacturing Co.
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	Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC); Version 3.1.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

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Table 1 – Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 13 Climate Action	Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	935,2641,578,957	VERs
SDG 1 End poverty in all its forms everywhere	1.4.1 Proportion of population living in households with access to basic services (efficient cook stoves)	66.33 Sh	Equivalent monetary savings
SDG 3: Ensure healthy lives and promote well-being for all at all ages	3.9.1 Illnesses and Mortality rate attributed to household and ambient air pollution	96.33% Users reported a decrease	Measurement of user perceptions between the baseline and project scenario: smoke levels, incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	242	Number of local jobs created in manufacturing and retail

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	VERs

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01/06/2020	31/12/2020	299,173,505,077
01/01/2021	31/12/2021	510,271,861,464
01/01/2022	31/03/2022	125,820,212,416

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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Project Objective: The Burn Stoves Project in Kenya seeks to improve health and incomes throughout Kenya by reducing time and money spent acquiring fuel for household and institutional cooking.

Project Plan: To achieve this goal, the project will help Kenyans access healthy, energy saving cookstoves. In order to reach a wide range of Kenyans with the most appropriate technology, the project leverages carbon finance to support the sale and distribution of stoves to households and institutions.

The project uses carbon finance to develop local market channels and to support other affiliate companies as they create sustainable distribution networks of locally appropriate efficient stoves.

Household Stoves: The Burn Stoves Project in Kenya is collaborating in Kenya with a range of local partners to reach customers with a range of models of efficient cookstoves. Burn Stoves Project in Kenya has invested carbon finance in the design of one locally made cookstove, the Jikokoa, with broad appeal that reduces the fuel use for an average Kenyan family by about 39%. Burn has already invested carbon finance in local manufacturing capability to manufacture over 100,000 stoves per year.

Burn Design Lab HH Charcoal Stove (Jikokoa)



Figure A1: BURN Design Charcoal

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Power Output: 1.175 kW
Thermal Efficiency: 44.9%

The Jikokoa stove is a charcoal stove featuring a refractory metal combustion chamber backed by abrasion resistant, lightweight ceramic insulation. This combination increases durability, efficiency and safety of the stove.

Project Partners:

Burn seeks to reduce poverty through innovative business models. The following are the Key project details:

- 1. The new project reference number is GS 5642
- 2. The name of the project changed to Burn Stoves Project in Kenya when the project sought to create a new project out of Paradigm project in line with the design change request submitted to GS
- 3. The design change occurred and approved by GS on 28th February 2018
- 4. The design change approval date by GS is, therefore, the effective date of the migration of stoves into the new project

- 5. First issuance under 2nd Crediting period for the monitoring period 26/04/2017 to 30/09/2018
- 6. Second issuance for the Monitoring period 1/10/2018 to 31/05/2020
- 7. The project requested for Design change which was approved by GS on [30/12/2021+9/11/2021](#)

A.2. Location of project
>>

The host country is Kenya and the project boundary is defined as the country of Kenya. The project sells the stove across the country and does not limit itself to specific region(s). The stove factory is based in Ruiru from where the stoves are manufactured and shipped to the retailers and distributors spread across the country. Therefore, the project boundary is taken as the whole country of Kenya.

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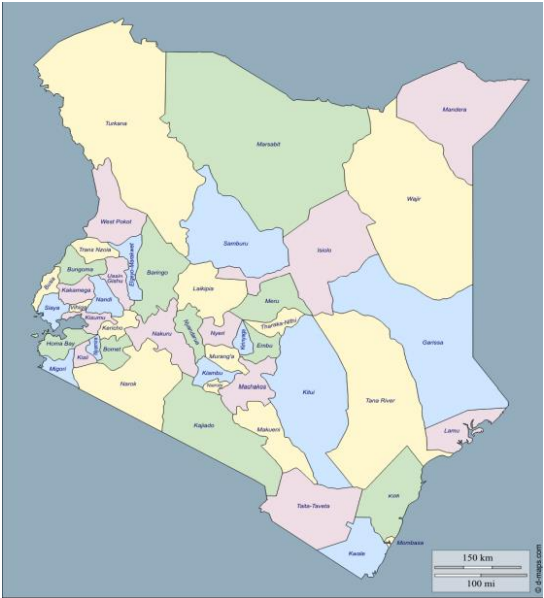


Figure A2: Map of Kenya

A.3. Reference of applied methodology

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Burn Stoves project applies the following approved GS VER methodology: Technologies and Practices to Displace Decentralized Thermal Energy Consumption; Ver 3.1.0

A.4. Crediting period of project

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Second Crediting period: 26/04/2017 – 25/04/2024 Renewable crediting period (7 years, renewable 2 times)

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SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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Burn has been selling stoves in Kenya since 2012 and continues to do so. Till 30/11/2020, BURN has distributed 379,652 Jikokoa cookstoves in different regions of Kenya. Out of which 9,046 stoves have aged beyond their self-life of 10 years hence not accounted in the calculations. During this monitoring period, only 370,606 stoves were found within the 10 years lifespan specified by manufacture.~~Of which 370,606 are operational in this MP.~~ The Jikokoa stove is a charcoal stove featuring a refractory metal combustion chamber backed by abrasion resistant, lightweight ceramic insulation. This combination increases durability, efficiency and safety of the stove.

Each cook stove produced and distributed under GS 5642 has a serial number tag/sticker, which identifies the cookstove assigning it a unique serial number, which can be tracked against other data such as the end user name and location and factory shipment records.

Once the stove is produced, it has a serial number attached which is scanned into the factory’s production database. The serial number is also scanned at dispatch and assigned to a customer. The customer details are retained. This process records the dispatch date of the stove and the quantity sold to each customer or retailer. During warranty activation, the serial number is matched, and the end user details are collected through the “Echomobile” application software. All the records of sales are recorded in electronic format.

B.1.1 Forward Action Requests

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During the previous verification covering the period 26/04/2017 to 30/09/2018, the following FARs was raised:

- 1) PP is requested to follow the updated requirements and guidelines for carrying out usage surveys for projects implementing improved cooking devices for the subsequent MP
- 2) Consider next time to give subjects enough time to be acquainted with the project stove especially for the non-users ones only before launching the PFT.
- 3) The PP shall include the relevant questions during surveys for all SD indicators and SDGs including the Perception of Air Quality. In the registered monitoring plan, the PP intends to conduct ‘Baseline Surveys’ while in the latest PDD it will be through ‘Survey’ for this and most other SDGs. The Baseline Surveys are defined separately from the BFT in the applied

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methodology. Not clear whether these ‘Surveys’ are part of the KPT Studies or standalone Surveys. Two of the SD indicators in the registered passport explicitly mention KPT studies as the way of monitoring while the SD10 is through project training records. A clear MP for SDI/SDGs shall be included in next MP.

The above FAR has been addressed by the PP during this monitoring period as well and complied with as follows:

- 1) **Forward Action Request # 1:** The PP has conducted usage surveys as per updated requirements and guidelines for carrying out usage surveys of GS as detailed in section C of this MR.
- 2) **Forward Action Request # 2:** The KT was undertaken both remotely and in person interviews. The users were given enough time and most of the users have been using the cookstoves for more than a year in this MP. As evident from the survey results approx. 97% users were aware of ICS benefits and how to use it.
- 3) **Forward Action Request # 3:** Although the project passport states that surveys were to be carried out during KT surveys. However, as the project conducts different surveys on project impacts, the SDG determination is carried together with these surveys. Instead, the project carries out project impact measurement through surveys using third parties and it is through these studies that the project identifies the project impacts on the applicable SDGs. The above surveys which were carried during this monitoring period were stand-alone surveys and not KPT surveys. The survey questions were modified to collect the relevant information required and these surveys capture more data and not only SDG data as per the passport. This is the most effective way of determining the project impacts since the surveys are stand alone and designed to capture other project impacts which are relevant to overall project sustainability.

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

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No Deviations

B.2.2. Corrections

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No Corrections

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B.2.3. Changes to start date of crediting period

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No Change

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

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No Change

B.2.5. Changes to project design of approved project

>>
The PP has requested GS for following changes to its Project Design:

- 1. The registered PDD mentioned that only Jikokoa stoves with an age of up to 3 years are credited. The project developer requested a permanent change from the registered PDD, also crediting stoves beyond 3 years old. The project developer requests approval of this design change for the upcoming verification/performance certification onwards. The upcoming verification has a monitoring period start date on 01/06/2020.
- 2. Further, the PD added the definition of use in the PDD to be in line with the 'Requirements and Guidelines: Usage Rate Monitoring'.
- 3. The fNRB value has been updated to be in line with a recent 3rd party study conducted for Kenya.

The design changes have been approved [on 30/12/2021](#).

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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Monitoring System
All monitoring tasks are carried out by Burn manufacturing Limited as outlined in diagram below

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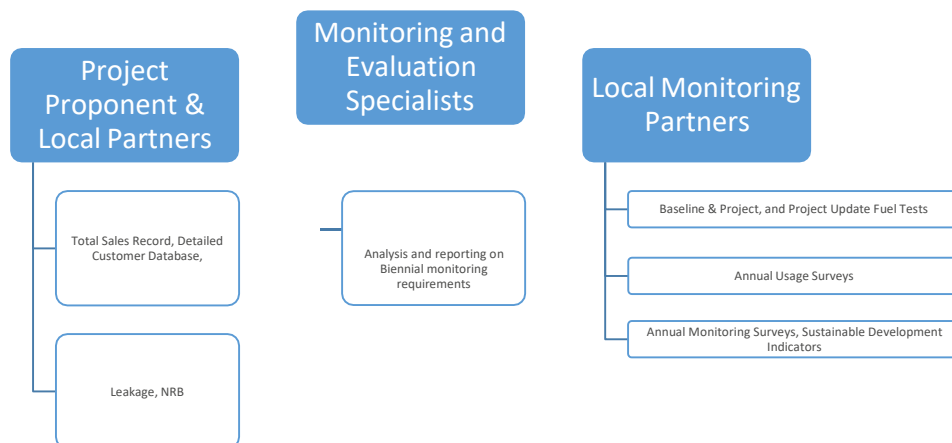
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Management

A senior member of staff at Burn appointed as Carbon Manager manages all monitoring requirements for the project. Burn is also responsible for ~~organising~~organizing and maintaining the Detailed Customer Database (DCD), Total Sales Record/Installation Record (TSR/IR) database.

The following on-going monitoring is conducted for the project activity. The monitoring activity provides a framework for project preparation and monitoring processes that has been undertaken, as required by the GS rules. This schedule takes into account the key parameters that are needed during the monitoring periods of the project. All required monitoring and documentation has been implemented, reported, consolidated and managed by the project proponent or a qualified expert partner to meet verification requirements.

The monitoring plan followed is outlined as follows:

1. Monitoring Procedure:

The project maintains sales record database consisting of SMS based customer activated warranties. The database is electronic and it has key parameters i.e. the serial number of the stove, the contact details of the customer and date of purchase. The project maintains a total sales records and project databases forms the basis for which all the previous verifications are based. This is the same database which will be utilised in future verifications. Continuous monitoring surveys and usage surveys are conducted annually while a leakage assessment is to be conducted every two years to update monitoring parameters over time.

A. Total Sales Record/Project database

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- i. The TSR/IR records volume of sales or installations and location for each project scenario.
- ii. The records are kept electronically and/or in paper records and provided at verification. The sales records contain the following information:
 - 1. From the product distribution partner:
 - a. Distribution partner name and contact information
 - b. Model/type of project technology sold
 - c. Quantity of project technology sold
 - d. Date of sale/installation
 - e. End user name, phone number, and address (if possible)
- iii. Frequency: Ongoing

B. Project Database

The project database is derived from the total sales record with project technologies differentiated by different project warranty activated serial numbers. The differentiation of the project database into sections is based on the results of the applicable monitoring studies for each project scenario, in order that ER calculations can be conducted appropriately section by section. Technologies age beyond their useful lifetime, as established from the date of their sale in the project database, has been ~~removed~~ marked "FAILED" in the project database and will no longer be credited.

The following on-going monitoring studies are conducted for each project scenario following the verification of the associated initial project studies. These monitoring studies investigate and define parameters that could not be determined at the time of the initial project studies or that change with time.

a) Monitoring Survey

The project will keep carrying out on-going monitoring studies to investigate and define parameters that could not be determined at the time of the re-validation of the project. The surveys investigate the following:

- a) Monitoring Survey to be done annually, to provide information on year-to-year trends in end user characteristics such as technology use, fuel consumption and seasonal variations. The survey to be done by applying appropriate statistical sampling method, to identify households to be investigated.
- b) Usage Survey has to be done biennially, or more frequently to identify the usage parameter that is weighed based on drop off-rates that are

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representative of the age distribution for project stoves in the total sales record. A usage parameter has been established to account for drop off rates as project technologies age and are replaced. This parameter has been applied when calculating the quantity of fuel consumed in project scenario p during year y ($P_{p,y}$).

- c) Project FT update to be done biennially to collect data on fuel consumption assessment representative of project technologies currently in use every two years. This has been done for this MP.
- d) Baseline FT update to be completed biennially to provide data on fuel consumption assessment representative of project technologies currently in use every two years.
- e) Leakage Assessment has been done for this MP
- f) The non-renewable biomass fraction for this crediting period is fixed based on the results of the NRB assessment. The NRB assessment for the project applied is calculated.

Sampling Method Stratified random sampling was applied since there are 8 different ages. The total population of JikoKoa stoves was stratified by age. The stratifications are as shown in the tables below.

Total stove sales by Age

Age of Stove	Numbers of Stoves	%
23-11-2020 to 22-11-2021 (Age 1)Year 1	26,011	7.0%
23-11-2019 to 22-11-2020 Year 2(Age 2)	57,720	15.6%
23-11-2018 to 22-11-2019 Year 3(Age 3)	70,005	18.9%
23-11-2017 to 22-11-2018 Year 4(Age 4)	83,724	22.6%
23-11-2016 to 22-11-2017 Year 5(Age 5)	55,165	14.9%
23-11-2015 to 22-11-2016 Year 6(Age 6)	43,237	11.7%
23-11-2014 to 22-11-2015 Year 7(Age 7)	33,791	9.1%
23-11-2013 to 22-11-2014 Year 8(Age 8)	953	0.3%
Total	3,70,606	100%

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On each of the strata, all stoves with end user details were given a number. Using online random number generator software <https://stattrek.com/statistics/random-number-generator.aspx> 90 random numbers were generated from each age group/stratum. With random numbers generated, the matching stoves were then selected from the database and their details were identified, conducted in person and remote surveys and a questionnaire was administered.

Sample Size

JikoKoa has a life of 7-10 years and therefore, the project developer sampled minimum 45 stoves from each age cluster totalling 455 stoves. The PP sampled more stoves in order to cater for any non-responses.

Remote Survey

The survey was conducted by trained Burn staff and a questionnaire was administered by telephone. All the data collectors spoke the local language which enabled full understanding of responses given by users, and any questions arising.

The following criteria was applied to analyse the survey results to determine the drop offs and usage rates:

- i. Those users who said they did not have the stoves or stove was broken were automatically counted as drop-off.
- ii. Those cases where the baseline stove was found to be still in use along the project stove were treated, a discount factor was applied for usage
- iii. Those who were found to be using other stoves in combination with project stove, a discount factor was established and applied for usage.

The data collected was entered and analysed in an Excel Spreadsheet. The survey resulted in a weighted average usage rate value of 67.94% which was applied for emission reduction calculation for the project during this monitoring period.

Sampling		
Age	Sample size targetted	Successful Survey
Age 1	45	59
Age 2	45	52
Age 3	45	63

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Age 4	45	60
Age 5	45	64
Age 6	45	53
Age 7	45	53
Age 8	45	51
Total	360	455

Also, PP followed both mandatory and good practices as per the Usage Survey Guidelines to claim 90% Usage rate.

1. Economic Gain of Fuel savings

During this Monitoring period when the KT is carried out, the project has determined the fuel savings associated with use of the stove. The project will also determine the prevailing fuel prices and using the fuel savings values determined, the project calculates the equivalent monetary gain associated with fuel saved for use of the stove by a household. This will give an indication of the project contribution to household effort in resilience towards poverty.

2. Adding a New Baseline or Project Scenario

The project proponent continues to monitor the project and while monitoring the project proponent will report any new addition to baseline or project scenario.

3. Quality Assurance and Quality Control

The project proponent is responsible for accurate and transparent record keeping, monitoring and evaluation. All supporting documentation and records for the project are maintained by BurnManufacturing and are easily accessible for spot checking and cross referencing.

Contact information in the total sales record allows a project auditor to easily contact and visit end users.

The quality assurance and control also includes the project device, which the project proponent ensures that the devices being produced are of the same or comparable quality. The stoves are produced in a factory owned by Burn Manufacturing following well laid down manufacturing to ensure that all products are of the same quality.

4. Data Storage and Archiving

Each stove sold has a unique serial number and a customised manual which shows simple steps of activating the stove warranty by SMS. When a customer activates the

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stove warranty, his/her details are captured in Burn Manufacturing system and this is what constitutes the project database. All the data will be archived for the entire crediting period and two years after the end of crediting period.

SECTION D. DATA AND PARAMETERS

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

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Relevant SDG Indicator	SDG 13: Climate Action Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
Data/parameter	EF _{b,CO2}
Unit	tCO ₂ /TJ
Description	CO ₂ emission factor arising from use of fuels in baseline scenario
Source of data	IPCC Default emission factor
Value(s) applied	112
Choice of data or Measurement methods and procedures	IPCC default values provide an accurate and conservative estimate of emissions reduction from various fuel sources.
Purpose of data	To determine the CO ₂ emission factor of the wood fuel
Additional comments	Term can include a combination of emission factors from fuel production, transport, and use.

Relevant SDG Indicator	SDG 13: Climate Action Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
Data/parameter	EF _{b,nonCO2}
Unit	tCO ₂ /TJ
Description	Non-CO ₂ emission factor arising from use of fuels in baseline scenario
Source of data	IPCC defaults are applied in conjunction with credible published literature
Value(s) applied	0.00
Choice of data or Measurement methods and procedures	IPCC default values provide an accurate and conservative estimate of emissions reduction from various fuel sources.
Purpose of data	To determine the non-CO ₂ emission factor arising from use of fuels in baseline scenario
Additional comments	Can include a combination of emission factors from fuel production, transport, and use. The PP has opted not to account for this source in order to ensure conservativeness.

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Relevant SDG Indicator	SDG 13: Climate Action Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
Data/parameter	EF _{p,CO2}
Unit	tCO ₂ /TJ
Description	CO2 emission factor arising from use of fuels in baseline scenario
Source of data	IPCC Default emission factor
Value(s) applied	112
Choice of data or Measurement methods and procedures	IPCC default values provide an accurate and conservative estimate of emissions reduction from various fuel sources.
Purpose of data	To determine the CO2 emission factor of the wood fuel
Additional comments	Can include a combination of emission factors from fuel production, transport, and use. This has same value as EF _{baseline} in projects which reduce use of the same fuel.

Relevant SDG Indicator	SDG 13: Climate Action Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
Data/parameter	EF _{p, nonCO2}
Unit	tCO ₂ /TJ
Description	Non-CO2 emission factor arising from use of fuels in project scenario
Source of data	IPCC defaults are applied in conjunction with credible published literature
Value(s) applied	0.00
Choice of data or Measurement methods and procedures	IPCC default values provide an accurate and conservative estimate of emissions reduction from various fuel sources.
Purpose of data	To determine the CH4 emission factor of the wood fuel
Additional comments	Can include a combination of emission factors from fuel production, transport, and use. This has same value as EF _{baseline} in projects which reduce use of the same fuel. The PP has opted not to account for this source in order to ensure conservativeness.

Relevant SDG Indicator	SDG 13: Climate Action Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
Data/parameter	NCV _b
Unit	TJ/ton

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Description	Net calorific value of charcoal fuel used in the baseline
Source of data	IPCC 2006 defaults values
Value(s) applied	0.015295
Choice of data or Measurement methods and procedures	IPCC default values provide an accurate and conservative estimate of emissions reduction from various fuel sources.
Purpose of data	To determine the calorific value of wood fuel used in the baseline
Additional comments	If EF is in units of tCO ₂ /t _{fuel} , remove NCV term from emission calculations.

Relevant SDG Indicator	SDG 13: Climate Action Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
Data/parameter	NCV _p
Unit	TJ/ton
Description	Net calorific value of the fuels used in the project
Source of data	IPCC 2006 defaults values
Value(s) applied	0.015295
Choice of data or Measurement methods and procedures	IPCC default values provide an accurate and conservative estimate of emissions reduction from various fuel sources.
Purpose of data	To determine the net calorific factor of wood fuel
Additional comments	This has same value as NCV _{baseline} in projects which reduce use of the same fuel.

Relevant SDG Indicator	SDG 13: Climate Action Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
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	C4EcoSolutions 3rd party report
Value(s) applied	0.97
Choice of data or Measurement methods and procedures	f _{NRB} analysis
Purpose of data	To calculate the quantity of non-renewable biomass being consumed in the baseline scenario and the project scenario
Additional comments	As applicable, NRB assessment may be used for multiple scenarios

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D.2 Data and parameters monitored

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Relevant SDG Indicator/Safeguarding Principle	SDG 13: Climate Action Target : 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries
Data / Parameter	P _{b,y}
Unit	Kg/household-day
Description	Quantity of fuel that is consumed in baseline scenario b during year y
Measured/calculated/default	Calculated
Source of data	Baseline FT or default baseline fuelwood consumption, baseline FT updates, and any applicable adjustment factors
Value(s) of monitored parameter	1.6335
Monitoring equipment	KT measurements using weighing scale and moisture meter <u>Digital Moisture Detector</u> - Wood moisture Wood range- 4-75% Accuracy- ± 0.5% <u>Weighing scale</u> Hook type with temperature 50 kgs
Measuring/reading/recording frequency:	Updated every two years
Calculation method (if applicable):	-
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of baseline emissions
Additional comments	A single baseline fuel consumption parameter is weighted to be representative of baseline technologies being compared for project crediting. A default value for fuelwood consumption i.e., 0.5 tonnes/capita/year is applied as discussed in section C option 1 of the methodology.

Relevant SDG Indicator/Safeguarding Principle	SDG 13: Climate Action Target: 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries
Data / Parameter	P _{p,y}
Unit	kg/household-day
Description	Quantity of fuel that is consumed in project scenario p during year y
Measured/calculated/default	Measured and calculated

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Source of data	Total sales record, Project FT, project FT updates, and any applicable adjustment factors
Value(s) of monitored parameter	Charcoal- 0.896 Wood- 0.6272 +6 LPG- 0.09 +6
Monitoring equipment	KT measurements <u>Digital Moisture Detector</u> - Wood moisture Wood range- 4-75% Accuracy- ± 0.5% <u>Weighing scale</u> Hook type with temperature 50 kgs
Measuring/reading/recording frequency:	Updated every two years
Calculation method (if applicable):	-
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of project emission reductions
Additional comments	A single project fuel consumption parameter is weighted to be representative of the quantity of project technologies of each age being credited in a given project scenario.

Relevant SDG Indicator/Safeguarding Principle	SDG 13. Climate Action Target: 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Data / Parameter	$U_{p,y}$
Unit	Percentage
Description	Usage rate in project scenario p during year y
Measured/calculated/default	Calculated
Source of data	Annual Usage Survey
Value(s) of monitored parameter	67.94
Monitoring equipment	KT Measurements
Measuring/reading/recording frequency:	Annual or more frequently, in all cases on time for any request for issuance
Calculation method (if applicable):	-
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	To calculate the Usage rate in project scenario p during year y.
Additional comments	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. The <u>mandatory and</u> Good Practice level as per the 'GS Requirements and Guidelines: Usage rate Monitoring' is being followed <u>as</u>

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	<u>follows -.</u> • <u>A “user” is defined as a household which uses the project stove for at least 7 meals per week and who indicated the last usage within a week. Usage was confirmed during monitoring/usage surveys.</u> • <u>Both remote and in-person usage survey was conducted after seeking deviation for the same from GS.</u> • <u>The primary cook was interviewed to ascertain the kitchen practices along with some photographs were taken.</u> • <u>The geocoordinates of the Households visited in person were also recorded.</u> • <u>The results were cross verified by BURN Manager by calling sampled HH to check if they were called or visited by BURN team and verify the response.</u> — • <u>As a Good practice training is provided to field staff on how to carry out the Usage surveys.</u> • <u>The records of training, demonstrations at the point of sale, post-sale follow up with end users and awareness campaigns has been submitted to VVB.</u> As per the manufacturer’s specifications the lifetime of the Jikokoa stove is between 7 to 10 years. As a significant drop in the usage rate is observed, some stoves have <u>not</u> been <u>considered for calculation removed</u> from the database during the lifetime and not credited anymore.
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Relevant SDG Indicator/Safeguarding Principle	SDG 13. Climate Action Target: 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Data / Parameter	N _{p,y}
Unit	Project technologies credited (units)
Description	Technologies in the project database for project scenario p through year y
Measured/calculated/default	Calculated
Source of data	Total sales record
Value(s) of monitored parameter	370,606
Monitoring equipment	Project database records
Measuring/reading/recording frequency:	Continuous
Calculation method (if applicable):	-
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	To calculate the number project scenario P through year y.

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Additional comments	The numbers are stoves which has been sold by the project. However, not all of them are claiming emissions since the usage rate for some of the age groups is very low while some are not active. The actual stove sales made to date are 379,652. However, numbers shown above are for the stoves considering active age groups from 1 to 8th year. Further, for the calculation of ER, actual days each stove operates in any given monitoring period will be determined and used for ER computation.
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Relevant SDG Indicator/Safeguarding Principle	SDG 13: Climate Action Target: 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.
Data / Parameter	LE _{p,y}
Unit	tCO2e per year
Description	Leakage in project scenario p during year y
Measured/calculated/default	Measured
Source of data	Baseline and monitoring surveys
Value(s) of monitored parameter	0
Monitoring equipment	KT measurements
Measuring/reading/recording frequency:	Every two years
Calculation method (if applicable):	-
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	To determine leakage in project scenario p during year y
Additional comments	Aggregate leakage can be assessed for multiple project scenarios, if appropriate

Relevant SDG Indicator/Safeguarding Principle	SDG 3: Ensure healthy lives and promote well-being for all at all ages Target: 3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.
Data / Parameter	Perceived Air quality
Unit	-
Description	Smoke levels and particulates
Measured/calculated/default	-
Source of data	Survey

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Value(s) of monitored parameter	-Majority of those surveyed were of the opinion that the air quality in their kitchens has improved due to use of JikoKoa. This is more so because the JikoKoa does not produce smoke compared with baseline charcoal stoves. As per the third-party survey carried out, 96.33% of customers said that they have experienced a change in health as a result of using the BURN cookstove. The most common benefits were no smoke, decreased incidents of eye problems or reduced respiratory illness when cooking with the stove
Monitoring equipment	Carrying out a survey through in person site visit of sampled households and telephone surveys.
Measuring/reading/recording frequency:	Biennial
Calculation method (if applicable):	-
QA/QC procedures	The type of measurement employed should take into consideration those factors which are out of control of households when reporting on this parameter.
Purpose of data	Reporting on sustainable development of the project
Additional comments	The project employed a third party entity to carry out survey and determine the impact of the project on health outcomes amongst other parameters.

Relevant SDG Indicator/Safeguarding Principle	SDG 1: End poverty in all its forms everywhere Target1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance
Data / Parameter	Equivalent monetary savings
Unit	Monetary savings based on fuel savings and prevailing fuel cost
Description	Financial impact
Measured/calculated/default	Measured and calculated
Source of data	Survey and KT results
Value(s) of monitored parameter	0.737 kg/day of charcoal translating to 66.33 shillings per day savings
Monitoring equipment	Direct calculation based on results from the KT
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Analysed statistically at 90/10
QA/QC procedures	The survey questions should be evaluated so that they bring out a clear picture of the gains of the stove
Purpose of data	Reporting on sustainable development of the project

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Additional comments	The project stove is fuel-efficient and uses less charcoal compared with the baseline stoves. from the KT results, it has been observed and determined that on average, JikoKoa Stove saves 0.737 Kg of charcoal per day, which translates to about 269 KGs/year. Charcoal prices in Kenya vary from time to time and on average a kilo of charcoal currently sells for 90 ¹ shillings in 2022 and with a savings of 0.737 kg/day, a family can save approx. 24,210 shillings (US\$205). This is a substantial amount of money that a family saves and can be utilized by a family to meet other household needs.
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Relevant SDG Indicator/Safeguarding Principle	SDG 8: Decent Work and Economic growth Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value for both men and women.				
Data / Parameter	Average hourly earnings of female and male employees, by occupation, age and persons with disabilities				
Unit	Numbers				
Description	Number of people directly employed by the project				
Measured/calculated/default	Calculated				
Source of data	Project records				
Value(s) of monitored parameter	242				
Monitoring equipment	Direct measurement based on employment numbers of those employed directly by the project				
Measuring/reading/recording frequency:	Annual				
Calculation method (if applicable):	-				
QA/QC procedures	-				
Purpose of data	Reporting on sustainable development of the project				
Additional comments	DEPARTMENTS	Numbers	Gender		Average salary scale (Ksh)
			M	F	
	After Sales	15	3	12	47,333
	Finance	11	3	8	129,545
	HR & Admin	16	3	13	82,346
	Inventory	13	12	1	85

¹ Current prices of charcoal is around 90 shillings per kilogram

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	IT	2	2	0	117,000
	Market Research	13	8	5	77,058
	Marketing	4	1	3	116,284
	Production line	64	29	35	88
	Production management	10	7	3	134,233
	Quality Assurance	15	7	8	120
	Research and Development	29	27	2	98,159
	Sales	39	10	29	34,559
	Supply chain	11	10	1	106,163
	Total number of employees	242	122	120	
	In addition, several other people have gained employment as a result of the project such as 62 trained stove repair experts spread across 62 repair centres in the country. For each repair done to the stove, the repair expert is paid KES 250 per repair.				

Relevant SDG Indicator/Safeguarding Principle	Goal 13. Take urgent action to combat climate change and its impacts Target 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries
Data / Parameter	Number of people/households with access to the energy efficient cook stoves and the usage rates of efficient cook stoves.
Unit	Number of stove users and usage rate
Description	Number of stove users and usage rates
Measured/calculated/default	Calculated
Source of data	Stove database records and surveys
Value(s) of monitored parameter	The project has been selling stoves in Kenya since inception and currently there are 370,606 active households who have access to the stove within the period of monitoring. However, by adjusting with usage rate, the number of stoves reduces to 251,789 and this is the number which claims emission reductions. The weighted average usage rate for the project is 67.94%
Monitoring equipment	Calculated
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures	Check of database to ensure consistency of reported data
Purpose of data	Reporting on sustainable development of the project
Additional comments	The project carried out a in person usage survey and remote surveys to establish project stove usage. The samples which were surveyed were categorised by vintage and a weighted average value was established. This is the eventual value which is applied in the ER calculation.

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

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
P _{b,y}	1.6335	1.6335
P _{p,y}	0.896	1.0679
U _{p,y}	67.94%	83.20%
N _{p,y}	370,606	285,814
LE _{p,y}	0	0
Perceived Air quality	96.33% customers experienced a change in health	51% of customers experienced a change in health
Equivalent monetary savings	0.737 kg/day of charcoal translating to 66.33 shilling per day savings	0.57 kg/day of charcoal translating to 63 shillings per day savings
Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	242 people employed and several trainings done	242 people employed and several trainings done
Number of people/households with access to the energy efficient cook stoves and the usage rates of efficient cook stoves.	370,606 units active Usage rate- 67.94%	285,814 units active Usage rate- 83.20%

The project fuel consumption has decreased as compared to last MP resulting in higher fuel savings for the project activity. The project fuel consumption is based on actual KPTs performed for the cookstoves.

Further, the Usage rate has decreased in comparison to last MP as the age group 4-5 onwards the usage rate has dropped drastically.

D.4. Implementation of sampling plan

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During the course of monitoring project parameters, the project proponent has conducted project survey of target population characteristics and carried out project Performance Field Test (PFT) of fuel consumption. The project survey and PFT will be conducted with end users through representative of the project scenario target population who are currently using the project technology.

Representativeness

All field tests must include a sample of potential end users that are typical of end users in the project activity. The surveys and field test were conducted concurrently with the same subjects.

For project surveys, a sample was drawn from the project database for the “active” stoves population. The project employs random sampling to draw samples.

Sample Sizing and Statistical Estimate of the Fuel or Emission Savings

All surveys have been carried out by the project proponent for fuel usage trends involving paired samples.

FT Sampling Design

KT Timing

The KT for this monitoring period was carried out from November 2021 to February 2022. In Kenya, there is no seasonal variation in cooking patterns over different months of the year. Most communities have a specific menu that they prepare year-round. As such, the timing of KT did not have to take care of any seasonal variation.

Protocol

The KT sampled only project users who had activated their warranty since their contacts were available in the Echomobile system managed by the PP.

In carrying out the surveys, the project randomly selected 455 households who were surveyed by telephone and in person to establish if they are still using their stove or not. The vintage of the 455 stoves has been categorized into 8 Age groups as follows;

Age Group	Total Surveys
	455
0-1 y'	59

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1-2 y'	52
2-3 y'	63
3-4 y'	60
4-5 y'	64
5-6 y'	53
6-7 y'	53
7-8 y'	51

The survey involved them being asked questions about their stove usage. All of them confirmed that they owned the JikoKoa stove and that they used it. The results of the survey showed that the usage of the stove was 67.94%.

Out of the 455 households who participated in the survey, the PP randomly selected 70 households to participate in the KPT exercise. The 70 households were surveyed to establish if the answers they provided during the telephone survey was correct and during the physical survey, it was confirmed that all of them indeed used the stove.

Carrying out the KT must be practical and logistically possible in order to ensure that fuel is measured in time, households must be available and willing to participate in the KT and the budget for the KT must be within the limits of the PP. All those factors were considered by the PP when sampling and these influence the location of the KT.

The villages were selected randomly and they had to be accessible by road, they had to be located near Nairobi i.e. lies within the peri-urban area defined by their proximity to Nairobi ranging within a 70 kilometres from Nairobi city centre and also their household availability be ensured for the entire period of the exercise.

The identified users were provided with charcoal to use for the entire period of the KT. Once the households were identified to participate in the KT, they were called and informed about the exercise and their consent and availability discussed. They were then visited by the KT enumerators on first day and a questionnaire was administered and also, they KT launched where each household was given charcoal and told on what to do.

Each day, the enumerators visited the household and weight their remaining charcoal and determined the quantities they had used. This was repeated for the entire period of the KT (3 days with project stove and 3 days with baseline stove).

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The KT used a paired sample where half of the respondents were project stove users while the other half were those who were not using the project stove. The users where given fuel (charcoal) which was pre-weighed and advised to cook normally. They were also informed that enumerators will visit them daily to take records on fuel consumption. Having used their respective stove for 3 days, they swapped to the other stove (i.e. KCJ switched to start using JikoKoa and those who were using JikoKoa switched to using baseline stove (KCJ)).

Household Identification

The project used the contact details of the sampled project stove users from the warranty activation system which contains the details of the users. They were then telephoned and requested for their participation.

For those who were not using the project stove, they were randomly identified through scouting where those who were using the stove were requested to help in identifying those who have not bought it. It was easy for the selected users to recommend them since they always have interactions with them and some of them have expressed willingness to buy one should they get enough money.

Fuel savings Analysis

The KT was carried out over a three-day period using one stoves and on the fourth day, the households switched to the other stove which they again used for 3 days. During their usage, field surveyors visited the households at same time in the day and monitored their fuel usage (i.e. fuel used, food cooked, number of people cooked for, etc). in situations where the fuel being monitored was low, they supplemented it and took records which was being used to calculate the daily fuel savings.

The daily fuel usage for baseline stoves and project stoves was then calculated and analysed statistically before the mean daily fuel consumption was established and subsequent fuel saving by the project stove (JikoKoa) was established. The analysis established that the precision level of 90/10 was achieved, and the average fuel savings was therefore used for the ER calculations.

- Monitoring Surveys (MS)

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The MS investigates changes over time in a project scenario by surveying end users with project technologies.

During this period, the PP conducts surveys continuously to determine how the project is performing over time. These surveys are meant to enhance market intelligence and user feedback to help in improving the project stove. The project keeps records on project warranty claims and repairs done to the stove which are out of warranty. From information, the PP collects information that helps determine how the project performs over time and helps them to establish the parts which need repairs more often. Through this, the PP gets to improve their research and design.

This repair information also helps the project to calculate the drop off rates of the stoves and also help in estimating the life of the stove.

o **Usage Surveys (US)**

The project sampled and interviewed 455 households who are JikoKoa users. The survey involved telephonic and in person interview of the users and administering a questionnaire on the stove use, its condition and stove benefits and getting photographic pictures of the stoves whenever possible. The survey aimed to identify the following:

- a) Stove usage trends
- b) Stove drop-offs
- c) Stove benefits to end-users
- d) Other sustainable development benefits of the stove to the household.

Sampling

The project database was organised in such a way that stoves were clustered by age. At the time of clustering, the project had a total active stove count of 370,606 stoves. Since only stoves with end user details are able to be contacted, only activated stoves in each age were allocated a number and the project developer used a random number generator to sample a total of 455 stoves by the allocated numbers. In each age, samples were drawn based on the sample sizes determined as outlined in section C above.

Having generated the random samples, the respective sampled numbers were identified based on the allocated numbers and their details extracted from the database. With the end users of sampled stoves extracted, the survey exercise started. The respective stove users

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were then contacted by phone and the reason for contacting them was provided and they were asked for their consent to continue with the exercise. Once approval was granted, a survey questionnaire was administered by phone and in person.

The data collected was then analysed statistically and it was established that above 90% stoves of year 1,2,3 stoves are operational, 75% of 4th year, 67.20% of 5 the year, 56.60% of 6th year, 45.30% of 7th year and 29.5% of 8 year are operational. The overall weighted average usage rate was determined to be 67.94%, this is the value that has been applied in the ER calculations.

For sustainable benefits, the outcomes are reported in section D.2 of this monitoring report.

SECTION E. CALCULATION OF SDG IMPACTS

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

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SDG 13: As noted before in section D.1 Fuel Production, the PP has chosen to use a biomass conversion factor. The baseline fuel and the project fuel are the same and the baseline emission factor and project emission are considered the same. The overall GHG reductions achieved by the project activity in year y are calculated as follows:

$$ER_y = \sum_{b,p} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b, fuel} * (f_{NRB,b,y} * EF_{fuel, CO2} + EF_{fuel, nonCO2})) - \sum LE_{p,y} \quad (1)$$

Where:

ER _y	1.4632.465	Emission reduction per stove per year (tCO2e/year)
N _{p,y}	370,606	Technologies in the project database for project scenario p through year y
U _{p,y}	67.94%	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)

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$P_{p,b,y}$	0.0044	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 the fieldtests
$f_{NRB,b,y}$	0.97	Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass
$NCV_{b,fuel}$	0.01529	Net calorific value of the fuel that is substituted or reduced. (IPCC default for charcoal-wood fuel, 0.01529 TJ/ton)
$EF_{b,fuel,CO2}$	112	CO2 emission factor of the fuel that is reduced. (IPCC default for charcoal fuel, 112 tCO ₂ /TJ)
$EF_{b,fuel,nonCO2}$	0.00	Non-CO ₂ emission factor of the fuel that is reduced $LE_{p,y}$
$LE_{p,y}$	0.00	Leakage for project scenario p in year y (tCO ₂ e/yr)

Baseline Emission estimation are conducted as follows:

$$BE_{b,y} = B_{b,y} * ((f_{NRB,y} * EF_{b,fuel, CO2}) + EF_{b,fuel, nonCO2}) * NCV_{b,fuel} \quad (3)$$

Where:

$BE_{b,y}$	1,142,788.2 213,319	Emissions for baseline scenario b during the year y in tCO ₂ e
$B_{b,y}$	0.596	Quantity of fuel ² consumed in baseline scenario b during year y, in tons, as per by-default factors (cases with project performance field test only)
$f_{NRB,y}$	0.97	Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)
$NCV_{b,fuel}$	0.01529	Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)
$EF_{b,fuel,CO2}$	112	CO ₂ emission factor of the fuel that is substituted or reduced. 112 tCO ₂ /TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel

² Parameter $B_{b,y}$ is in tonnes/household-year which is a change from $P_{b,y}$ in this MR which is reported in kg/household-day

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EF _{b,fuel,nonCO2}	0.00	Non-CO2 emission factor of the fuel that is substituted or reduced
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Project emission estimations are conducted as follows:

$$PE_{p,y} = B_{p,y} * ((f_{NRB,y} * EF_{p,fuel,CO2}) + EF_{p,fuel,nonCO2}) * NCV_{p,fuel} \tag{5}$$

Where:

PE _{p,y}	207,523634,361	Emissions for project scenario p during year y in tCO2e
B _{p,y} ³	0.3272	Quantity of fuel consumed in project scenario p during year y, in tons, and as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field test are performed, e.g. by-default baseline factors)(use of other fuels like wood-0.0022 t/day and LPG-0.0002 t/day was also factored in)
f _{NRB,y}	0.97	Fraction of biomass used during year y that can be established as non- renewable biomass (drop this term from the equation when using a fossilfuel baseline scenario)
NCV _{p,fuel}	0.01529	Net calorific value of the project fuel (IPCC default for wood fuel, 0.015 TJ/ton, LPG is 0.0473 TJ/ton). This is equal to the baseline fuel NCV in projects which use the same fuel.
EF _{p,fuel,CO2}	112	CO2 emission factor of the project fuel. This is equal to the baseline fuel EF in projects which use the same fuel, 112 tCO2/TJ for Wood/WoodWaste, 56.1 tCO2/TJ for LPG
EF _{p,fuel,nonCO2}	0.00	Non-CO2 emission factor of the project fuel. This is equal to the baselinefuel EF in projects which use the same fuel.

Therefore, the overall GHG reductions achieved by the project activity are then estimated as follows:

$$ER_y = \sum BE_{b,y} - \sum PE_{p,y} - \sum LE_{p,y} \tag{6}$$

Where:

ER _y	935,264 1,578,957	Emission reduction for total project activity in year y (tCO2e/yr)
BE _{p,y}	1,142,78 82,2013,7319	Baseline emissions for baseline scenario b in year y (tCO2e/yr)
PE _{b,y}	207,523 634,361	Project emissions for project scenario p in year y (tCO2e/yr)

³ Parameter B_{p,y} is in tonnes/household-year which is a change from P_{p,y} in this MR which is reported in kg/household-day

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LEp,y 0.00 Leakage for project scenario p in year y (tCO2e/yr)

SDG 1: End poverty in all its forms everywhere, the baseline stoves consume more charcoal and from the KT results, it has been observed and determined that on average, baseline stoves use about 1.633 Kg of charcoal per day, which translates to about 596 Kgs/year. In the current market prices charcoal prices in Kenya vary from time to time and currently, a kilo of charcoal goes for 90 shillings. With high baseline consumption, a household will incur an expenditure of 147 shillings/day and 53,644 shillings in a year

SDG 3: For 'Users' perception on smoke reduction and particulates the baseline situation is poor due to the use of low efficient stoves which generates more smoke and particulates and leads to health problems pertaining to smoke.

SDG 8: 'Decent Work and Economic growth' there was no employment needed to continue the use of the conventional cooking system in the baseline situation.

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

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SDG 13. No project emissions since the emission are calculated based on the fuel savings as shown in section E.1 above.

SDG 1: End poverty in all its forms everywhere, the project stove is fuel efficient and uses less charcoal compared with the baseline stoves. From the KT results, on average, a household using JikoKoa saves 0.737 Kg of charcoal per day, which translates to about 269 Kg/year. Charcoal prices in Kenya vary from time to time and on average a kilo of charcoal sells for 90 shillings in 2022 and with a savings of 0.737 kg/day, a family can save approx. 24,210 (approximately US\$ 205) shillings in a year. This is a substantial amount of money which a family saves and can be utilised by a family to meet other household needs.

SDG 3: For 'Users' perception on smoke reduction and particulates qualitative assessment was done through third party research and results from end users response shows that the standard of quality of life has improved since the project produces less smokes.

SDG 8: 'Decent Work and Economic growth' the project has employed 242 staff directly and 62 stove repair experts indirectly.

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E.3. Calculation of leakage
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- o Leakage Assessment
- Potential sources of leakage was assessed as part of the Project Fuel Test Updates.

Source	Risk	Findings
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	Very low	The displaced baseline stoves are not shared with other households hence there is no chance of them being used by those households that have not bought the JikoKoa stove.
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	Very low	Due to the rising demand for charcoal and increased population, new households are coming up which puts the demand for domestic fuels and this leads to increased demand for charcoal. Therefore, the project stove help in reducing the demand and need to make more charcoal. This, therefore, does not lead to leakage.
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	Very low	The impact of project stove on NRB of the country is low. As such, during the KT, the users explained that charcoal availability is still a challenge since the charcoal ban affects free flow.
The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining	No Risk	There is no space heating using since the majority of households cooks from kitchens which are separate from the main house for both during the baseline and project scenario.

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some use of inefficient technology		
By virtue of promotion and marketing of a Burn Stove, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline	Very low	Households commonly used charcoal in the baseline and few households were using wood and moved to JikoKoa. Although some households have LPG stoves, they normally use them mostly in the morning for quick breakfast making and this was the case even in the baseline scenario.

From the surveys during the KT, it was established that charcoal availability has gone down due to the charcoal ban in the country. Due to this, the household fuel consumption trends has changed and now the households are using less and less charcoal due to their lack of availability and price increase.

From the above, therefore, the leakage for this project is zero.

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
				935,2641,578,957
SDG 1	End poverty in all its forms everywhere	High charcoal consumption leading to high expenses for charcoal (KSh. 147/day)	Reduced charcoal consumption (KSh. 80.64/day)	Fuel savings of Ksh.66.33/day
SDG 3	Ensure healthy lives and promote well-being for all at all ages	Presence of high smoke and particulates	Less and minimal smoke generation and particulates.	Improved air quality leading to positive

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			Improved standard of living.	outcome of improving people's lives
SDG 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	No investment hence no jobs in baseline	Project created a business and jobs for project staff and indirect jobs to repair artisans.	Positive outcome- 242 employment opportunities

The project uses a direct calculation of emission reductions using equation 1 as shown above.

For SDG 13:

$$ER_y = \sum_{b,p} (N_{p,y} * U_{p,y} * P_{p,b,y} * NCV_{b,fuel} * (f_{NRB,b,y} * EF_{b,fuel,CO2} + EF_{b,fuel,nonCO2}) - \sum LE_{p,y}) \tag{1}$$

By substituting the above formula, the emission reduction per stove per years as follows:
 = 1.4632.465 tCO2e/yr

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 1: End poverty in all its forms everywhere	1.068 Kg of charcoal used per day	0.896 kg of charcoal used per day

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 3: Ensure healthy lives and promote well-being for all at all ages	The stove has high efficiency and consumes less fuel and produces less smoke. Kitchens have been improved and less particulates are produced using the stoves	The stove has high efficiency and consumes less fuel and produces less smoke.
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Project created a business and jobs for project staff and indirect jobs to repair artisans.	Positive outcome- 242 employment opportunities
SDG 13: Climate actions	853, 671 <u>853,671</u> 1,576,150	370,606 units active <u>1.463</u> 2.465
	units active 2.05 ER/stove/year	ERs/stove/year
Total benefits	2,055,972 tCO2e	<u>935,264</u> 1,5748,957 tCO2e

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

>>
The current monitoring period (1/06/2020 to 31/03/2022) falls under year 2020 and 2021 of the revised PDD i.e.

PDD Period	Current MP	No. of days	Pro-rata PDD ERs (in tCO2e)
2020 (26/04/2020-25/04/2021)	1/06/2020-25/04/2021	329	951,868
2021 (26/04/2021-25/04/2022)	26/04/2021-31/03/2022	340	1,104,104

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

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The difference in VERs per stove per year was caused by the following:

- Number of stoves estimated in PDD was higher
- Reduced fuel consumption per households
- Change in usage rates applied as monitored compared with PDD values.

SECTION F. SAFEGUARDS REPORTING

>>

Safeguarding principles	Assessment questions	Assessment of relevance to the project (Yes/potentially/no)	Justification	Mitigation measure (if required)
3.1 Human Rights	1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights	No	Improved cookstoves respect the dignity, cultural property and indigenous qualities of local communities. The project will improve local health through reduced indoor air pollution from reduced use of high emission stoves. ¹⁰	No mitigation measure required
	2. The Project shall not discriminate with regards to participation and inclusion.	No	Improved cookstoves project does not discriminate anyone. Stakeholders are involved in project planning and implementation.	No mitigation measure required.
3.2 Gender Equality and Women's Rights	1. Is there a possibility that the Project might reduce or put at risk women's access to or control of resources, entitlements and benefits?	No	The project seeks to promote gender equality and the empowerment of women. Women will have access to the cookstoves and they are the ones who make household decisions on which stove to use and buy. During project surveys, they will be interviewed and their comments will be used	There is no mitigation selected for this safeguarding principle.

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			during research development of the stove. There is no discrimination against women.	
	2. Is there a possibility that the Project can adversely affect men and women in marginalised or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?	No	The cook stove project will help in reducing the burden faced by women in search of fuelwood and charcoal for household use.	No mitigation measure is required.
	3. Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?	Yes	The cook stoves provide an easy way of cooking. They require less fuel and also save money spent on fuel and cooking. The women will therefore get more time to engage in other activities child care.	No mitigation measure is required.
	4. Does the Project take into account gender roles and the abilities of women or men to benefit from the Project's activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?	No	Both men and women will have equal opportunities to participate in decisions when it comes to buying the efficient stove. In addition, the use of project stoves will not alter the gender roles in households.	No mitigation measure is required.
	5. Does the Project design contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from engaging in other activities?	No	The project does not increase women's workload but rather reduces their workload by reducing the amount of time and money spent on fuel and cooking. Time saved can be spent on other activities.	No mitigation measure is required.

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	6. Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits?	No	The project does not discriminate against women, instead they empower them in decision making in households since they choose their stoves. Also they will have access to job opportunities that will be created by the project.	No mitigation measure is required.
	7. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services?	No	The project aims to reduce the amount of fuel used for providing household energy. Since most users of the stoves are women and reducing fuel consumption saves forests, then the women will play a big role in protecting forests.	No mitigation measure is required.
	8. Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards?	No	The project activity will distribute energy efficient cook stoves which will displace the traditional cookstoves used in the households. This will consequently reduce the level of indoor air pollution in the households and all health impacts associated with indoor air pollution.	No mitigation measure is required.

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3.4.2 Forced Eviction and Displacement not	1. Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	Project participants are self-selecting in that they choose whether or not to purchase a subsidized stove. The sale and distribution of cookstoves will not cause involuntary resettlement. ¹¹	No mitigation measure is required.
3.4.4 Indigenous Peoples	1. Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	The project involves cookstoves which are individual units and they are purchased by individual households. Their use will not involve resettlement or intrusion into indigenous people's way of life. ¹²	No mitigation measure is required.
3.5 Corruption	1. The project does not involve and is not complicit in corruption.	No	The project is not involved or complicit in corruption. ¹³	No mitigation measure is required.
3.6.1 Labour Rights	1. The project respects the employees' freedom of association and their right to collective bargaining and is not complicit in restrictions of these freedoms and rights 2. The project does not involve and is not complicit in any form of forced or compulsory labour. 3. The project does not employ and is not complicit in any form of child labour. 4. The project does not involve and is not complicit in any form	Yes No No No	The project respects all employees' freedom of association and does not restrict these rights. ¹⁴ All employees have right to join trade union. Participation in the project is voluntary; no forced or compulsory labour is employed by the project. all employees of the project sign employment contracts. <i>*See footnote for indicator 4 for related national agreements.</i> The project does not employ and is not complicit in child labor. ¹⁵ The project employs staff who are	No mitigation measure is required. No mitigation measure is required. No mitigation measure is required.

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	of discrimination based on gender, race, religion, sexual orientation or anyother basis. 5. The project providesworkers with a safe andhealthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments	Yes	above the legal age of 18 years. The project does not involve any form of discrimination based on gender, race, religion, sexual orientation, or anyother basis. *See footnote for indicator4 for related national agreements The manufacture of cookstoves involves light factory work.¹⁶ Employees are provided with protective clothing for use.The project has in place health and safety procedure to be followed by all employees.	required. No mitigation measure is required.
3.6.2 Negative Economic Consequences	1. Is the project financialsustainable 2. Will the Projects leadto negative economic impacts to the local economy during project design, implementation, operation and after the project.	Yes No	The cookstove project is being implemented with aim of being financially sustainable and the carbonfunds will help in meeting its financial operating costs. This cook stove project generates employment through the manufacture, sales, distribution of the cook stoves. Additionally, jobs are created during annual monitoring surveys of the cookstoves.	No mitigation measure is required. No mitigation measure is required.

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4.1.1 Emissions	1. Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	There project will reduce GHG emission given that the project introduces energy efficient cook stoves which uses less fuel compared with baseline stoves. By reducing the consumption charcoal and the smoke levels, GHG emissions are reduced.	No mitigation measure is required.
4.1.2 Energy Supply	1. Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The cook stoves use charcoal sourced from the local vendors which does not involve use of energy supply from the local grid.	No mitigation measure is required.
4.2.1 Impact on natural water patterns and flow	1. Will the Project affect the natural or pre- existing pattern of water courses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The project activity consists of cook stoves that does not impact on natural water patterns and flow.	No mitigation measure is required.
4.2.1 Erosion and/or water body stability	1. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? If 'Yes' or 'Potentially' proceed to question 2.	No	Use of energy efficient cook stoves will minimise deforestation in the project boundary since they require less fuel. This in turn will lead to reduction in the occurrence and severity of soil erosion.	No mitigation measure is required.

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	2. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	No	The project area is not susceptible to excessive erosion or water body instability and the proposed project activity shall not negatively affect soil conditions in the project scenario.	No mitigation measure is required.
4.3.1 Landscape modification and soil	1. Does the Project involve the use of land and soil for production of crops or other products?	No	The project is a cook stove project and It therefore does not involve production of crops neither will it lead to soil degradation.	No mitigation measure is required.
4.3.2 Vulnerability to Natural Disaster	1. Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The project does not create nor increase vulnerability to natural disasters or other extreme climatic conditions.	No mitigation measure is required.
4.3.3 Genetic Resources	1. Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?	No	The project activity is a cook stove project and does not involve the use of GMOs in its operations.	No mitigation measure is required.
4.3.4 Release of pollutants	1. Could the Project potentially result in the release of pollutants to the environment?	No	The project activity is a cook stove project which is aimed at reducing the amount of fuel used in the households as well as reduce indoor air pollution. The project has therefore no potential of releasing pollutants to the environment.	No mitigation measure is required.

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4.3.5 Hazardous and Non- hazardous Waste	1. Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The construction of the and distribution of the cook stoves will not lead to release or use of hazardous and non-hazardous chemicals and materials.	No mitigation measure is required.
4.3.6 Pesticides and fertilizers	1. Will the Project involve the application of pesticides and/or fertilisers?	No	The project is a cook stove project that does not use pesticides nor fertilizers.	No mitigation measure is required.
4.3.7 Harvesting of forests	1. Will the Project involve the harvesting of forests?	No	The project Activity will lead to sustaining the forests and the biodiversity as less fuel is required.	No mitigation measure is required.
4.3.8 Food	1. Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The project is a cook stove project that aims at providing affordable, clean, efficient and easy-way of cooking. It therefore does not affect crop production, quality, quantity and availability of the same in any way.	No mitigation measure is required.
4.3.9 Animal Husbandry	1. Will the Project involve animal husbandry?	No	The project is a cook stove project and It therefore does not involve animal husbandry practices.	No mitigation measure is required.

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.

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There have not been any grievances received during this monitoring period.

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

>>

No stakeholder mitigations were agreed to be monitored

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

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There have not been any legal contest or dispute for the project during this period

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