Gold Standard for the Global Goals

TEMPLATE

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

KEY PROJECT INFORMATION

PROGRAMME OF ACTIVITY INFORMATION – (DELETE BELOW TABLE IF N/A)

GS ID of Programme	GS10789
Title of the programme	ECOA_BURN multi-country Clean Cooking Programme
Version of POA-DD applicable to this monitoring report	4.1
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	GS10789 VPA1: Efficient and Clean Cooking for households in Somalia v4.0 GS ID: GS10790

Key Project Information

GS ID (s) of Project (s)	GS11433
Title of the project (s) covered by monitoring report	GS10789 VPA5: Efficient and Clean Cooking for households in the Democratic Republic of Congo (DRC)
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	2.6
Version number of the monitoring report	1.7
Completion date of the monitoring report	13/06/2023
Date of project design certification	30/12/2022
Date of Last Annual Report	NA
Monitoring period number	1
Duration of this monitoring period	01/01/2021-01/04/2022 (Both days included)
Project Representative	BURN Manufacturing Co.
Host Country	Democratic Republic of Congo
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

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	27,255	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)	45.20%	Equivalent monetary savings in %
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	98.94% 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 7: Ensure access to affordable, reliable, sustainable and modern energy for all	Target 7.1 and 7.B	8,832	Number of sold/ distributed ICS in use
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	No. of jobs created	25	Number of local jobs created

Table 2 – Product Vintages

		Amount Achieved
Start Dates	**End Dates**	**VERs**
01/01/2021	31/03/2021	21,816
01/01/2022	01/04/2022	5,439
TOTAL		**27,255**

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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This VPA deploys highly efficient improved charcoal cookstoves (ICS), known as 'Jikokoas' reducing woody biomass consumption for urban and peri-urban households in the Democratic Republic of Congo (DRC).

The VPA is implemented by BURN Manufacturing Co. (in the following 'BURN'), at the same time Coordinating and Managing Entity (CME) of the PoA, the biggest manufacturer of highly efficient improved cookstoves in Sub-Saharan Africa producing all its stoves in the first and only modern cookstove manufacturing facility in Kenya. BURN collaborates with various local partners on the ground to assist in the different activities of this cookstove project.

The scenario existing prior to the implementation of the project is the use of very inefficient traditional cookstoves, consuming a lot of non-renewable charcoal and firewood. The high biomass consumption has negative impacts on the environment leading to deforestation and land degradation, Greenhouse Gas Emissions (GHG) emissions, loss of soil fertility and soils' reduced ability of water retention. Further, indoor air pollution through health-damaging pollutants while combusting firewood and charcoal result in diseases like e.g. pneumonia, stroke, ischaemic heart diseases, chronic obstructive pulmonary diseases and lung cancer.

Technologies and/or measures

The VPA deploys an efficient cookstove known as Jikokoa intended for use with charcoal. The technology was designed and developed by BURN. These highly efficient cookstoves translate into considerable charcoal savings when compared to traditional cookstoves. The Jikokoa stove's design considers the local cooking culture in the project area to ensure that improvements in technology and improved standards of living do not come at the expense of cultural traditions.

Burn Design Lab HH Charcoal Stove (Jikokoa)

A.2. Location of project

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Host Country: Democratic Republic of CongoRegion/State/Province etc:

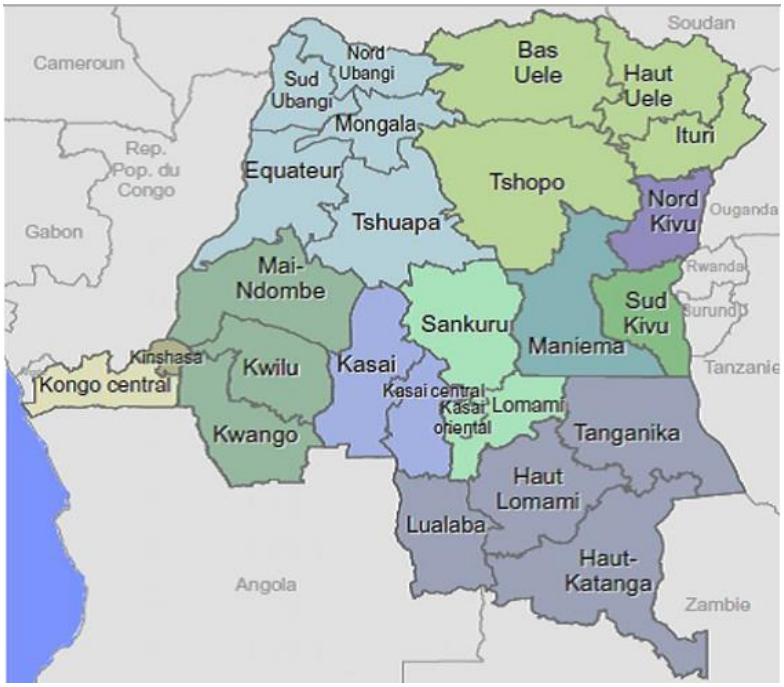
Urban and peri-urban areas within the borders of the following 16 Provinces within the Democratic Republic of Congo. 10 out of the total 26 Provinces from DRC are not included in the project boundary.

1.	Kinshasa
2.	Haut-Katanga
3.	Sud-Kivu
4.	Tshopo
5.	Nord-Kivu
6.	Kasai-Central (previous Kasai-Occidental)
7.	Kasai-Oriental

8.	Kasai
9.	Maniema
10.	Ituri
11.	Tanganyika
12.	Lualaba
13.	Kwilu
14.	Kongo Central
15.	Haut-Uele
16.	Lomami

The GPS coordinates from the Democratic Republic of Congo are the following:

Latitude: -4° 02' 0.66" S



Longitude: 21° 45' 0.22" E

Figure 1: Map of DRC with the 26 provinces

A.3. Reference of applied methodology

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Technologies and Practices to Displace Decentralized Thermal Energy Consumption, version 3.1

A.4. Crediting period of project

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The crediting period of the project is from 01/01/2021to 31/12/2025 (both days included). The crediting period for this project is 5 years. The crediting period may be renewed twice in line with the Community Services Activity Requirements.

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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a) Purpose of the specific-case VPA(s) and the measures taken for GHG emission reductions or net GHG removals by sinks

The purpose of the VPA is to achieve widespread distribution and effective use of efficient cooking technologies in urban and peri-urban households. The widespread use of efficient cooking technologies will result in vastly reduced woody biomass consumption. Reduced woody biomass consumption will result in GHG emission reductions, relative to the applicable non-renewable biomass factor.

b) Description of the technology employed and installed equipment and/or infrastructure, including information requested by the eligibility criteria.

The efficient cook stove relies on two main design principles to achieve a high thermal efficiency, namely improved airflow, and thermal insulation. Improved airflow design allows better fuel-air mixing and regulation of the fuel-air mixture, increasing the rate at which oxygen is delivered to fuel in the combustion chamber. The increased flow rate of oxygen allows the combustion to occur at a higher temperature. The thermal insulation of the efficient cooking stove ensures thermal energy is directed to the cooking surface and is does not become waste heat. The VPA deploys efficient charcoal cooking stoves known as Jikokoa Classic (G3.5) and Jikokoa Xtra (G4), which have been designed and developed by BURN Manufacturing Co.

Please see the technical specifications in the following table:

Stove Manufacturer	BURN

Stove Model	Jikokoa G3.5
Stove Type	Charcoal Stove

Materials

Stove Body	CRCA Carbon Steel painted high gloss black epoxy powder coat
Pot Rest	StainlessSteel
Burning Chamber	StainlessSteel
Ash Tray	Aluzinc
Feet	StainlessSteel

Measurements

Height	cm	24.4 cm
Diameter (stove top)	cm	26.0 cm
Weight	kg	4 kg
Fuel Chamber Volume	cm^3	954 cm^3
Packaging Dimensions	cm	29.0 L x 28.5 W x 25.1 H

WBT Results

Parameter	**Unit**	**Value**
High power thermal efficiency (average of cold start and hot start)	%	48.1%
Firepower	kW	2.05
Boil Time	minutes	27.72

Lifetime

Warranty	2 years
Estimated Lifetime[3]	7 to 10 years

Stove Manufacturer	BURN
Stove Model	Jikokoa Xtra (G4)
Stove Type	Charcoal Stove

Materials

Stove Body	CRCA Carbon Steel painted high gloss black epoxy powder coat

Pot Rest	StainlessSteel & Cast Iron
Burning Chamber	StainlessSteel
Ash Tray	Aluzinc
Feet	Aluzinc

Height	cm	27.0 cm
Diameter (stove top)	cm	30.2 cm
Weight	kg	5.5 kg
Fuel **Chamber** Volume	cm^3	1030 cm^3
Packaging Dimensions	cm	30.2 L x 30.5 W x 27.5 H

WBT Results

Parameter	**Unit**	**Value**
High power thermal efficiency (average of cold start and hot start)	%	44.6%
Firepower	kW	2.21
Boil Time	minutes	27.96

Lifetime

Warranty	2 years

Estimated Lifetime[1]	7 to 10 years

Stove Manufacturer	BURN
Stove Model	Ecoa Char MMJ[2]
Stove Type	Charcoal Stove

Materials

Stove Body	CRCA Carbon Steel, painted hammertone black epoxy powder coat
Pot Rest	Stainless Steel
Burning Chamber	Stainless Steel
Ash Tray	Aluzinc
Feet	Aluzinc
Handles	Stainless Steel and Polypropylene plastic[3]

Measurements

Height	cm	22.8 cm
Diameter (stove top)	cm	26.7 cm
Weight	kg	3.0 kg
Fuel Chamber Volume	cm^3	1,152 cm^3
Packaging Dimensions	cm	29.5 L x 29.5 W x 24.0 H9

WBT Results

Parameter	**Unit**	**Value**
High power thermal efficiency (average of cold start and hot start)	%	49.29%

[1] The lifetime of the Jikokoa Xtra may go beyond the indicated lifetime. Hence, depending on the usage rate of the stoves, stoves will be either removed from the database after the end of its lifetime and not credited anymore or remain in the database for crediting until the moment a significant drop in usage rate is observed. As an alternative, worn out ICS may be replaced by newly distributed stoves. Manufacturer's declaration about the ICS lifetime has beensubmitted to the validating DOE.

[2] The name of the stove model is still subject to change.
[3] The name of the stove model is still subject to change.

Firepower	kW	2.2
Boil Time	minutes	25.13

Lifetime

Warranty	1 year
Estimated Lifetime[4]	7 to 10 years

Photos: To the top left: Jikokoa Classic, To the top right: Jikokoa Xtra, To the bottom:ECOA Char MMJ

The project has been implemented as described in the PDD. There are no changes from the project design. The only stove models that have been distributed in this Monitoring period are the Jikokoa Classics[5].. The below table shows year wise distribution of the stoves for the VPA:

Year of distribution	Sales
2020	40
2021	6,500
2022	3,274
Total	**9,814**

[4] The lifetime of the Ecoa Char MMJ may go beyond the indicated lifetime. Hence, depending on the usage rate of the stoves, stoves will be either removed from the database after the end of its lifetime and not credited anymore or remain in the database for crediting until the moment a significant drop in usage rate is observed. As an alternative, worn out ICS may be replaced by newly distributed stoves. Manufacturer's declaration about the ICS lifetime has been submitted to the validating VVB.

[5] Jikokoa Xtra and MMJ were not distributed in DRC in this monitoring period

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

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No temporary deviation

B.2.2. Corrections

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No Corrections

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

>>

No Change

B.2.5. Changes to project design of approved project

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No Change

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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Stoves were sold to end-users by BURN directly or through dedicated distributors. Distributors were trained on the stove distribution and data collection procedures.

The CME operates and manages an electronic data management system that stores information on and track all efficient cooking technologies under the VPA. As a minimum the following information will be recorded through a cloud-based web platform (KoboCollect) in the database:

- Unique serial number (USN) of the ICS
- Date of shipment to distributor/retailer
- Name of distributor/retailer
- Quantity of ICS distributed
- Geographic area (state) of distributor/retailer
- Model type of the ICS

Besides, the distribution database will contain end-user contact details (name, state, mobile number, or national ID number) of at least 10 times the survey and field test sample size (including usage surveys for each age of product), to ensure an adequate end-user pool to which random sampling can be applied. To claim the ICS warranty, end-users have to register their end-user details through SMS or call.

The USN of each ICS entered into the sales database will be linked to a sales date (recorded during distribution) or shipment date. Thus, for any monitoring period it is possible to calculate the period of time for which the stoves included in the emissions reduction calculations are deemed operating. If for e.g. a stove has been operating for 180 days, then the full-year operating fraction is 0.493 (=180/365 days stove will be counted as operational (= start crediting) from the next day following the stove distribution or after a conservatively calculated period of the date of shipment. The sum of the operating fractions of all appliances determines the equivalent full-time appliances for the monitoring period.

The USN has the following format comprising of 9 digits[31]:

1st digit	2nd digit	3rd	4th	5th	6th	7th	8th	9th
Product ID	100000th	10000th	1000th	100th	10th	Random	Random	1st
ID	S1	S2	S3	S4	S5	R1	R2	S6

Each section on the USN will identify the product as follows:

- Product type: the first digit identifies the stove type (Jikokoa)
- # Production number: S1 to S6 are digit slots for a sequential numbering ordered by time of production, allowing for 1 million unique serial numbers.For instance, the first stove off the line would have "000000" for its S1-S6digits.
- Random digits: R1 and R2 are 2 random digits placed in slots 7 & 8, to make the USN unpredictable to outside parties

Example for USN: 105097338

- "1" stands for Jikokoa product ID
- "050978" for S1-S6, meaning it was the 50,979th Jikokoa produced
- "33" for R1-R2, the random digits

The data for the system will be updated and modified as required to allow for optimal performance of each VPA implementation and monitoring. All data will be stored for at least two (2) years after the expiry of the 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 Default value
Value(s) applied	9.46
Choice of data or Measurement methods and procedures	IPCC Default value
Purpose of data	Non-CO_2 Emission calculation in baseline
Additional comments	

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 project scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 2, chapter 2 (Table 2.5)
Value(s) applied	112
Choice of data or Measurement methods and procedures	Default IPCC value for fuel wood is applied.
Purpose of data	To determine the CO2 emission factor of the wood fuel

Additional comments	.

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	tCO2/TJ
Description	Non-CO2 emission factor arising from use of fuels in project scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 2, chapter 2 (Table 2.9)
Value(s) applied	37.25
Choice of data or Measurement methods and procedures	IPCC Default value
Purpose of data	Non-CO_2 emission calculation in project
Additional comments	

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
Description	Net calorific value of fuel used in the baseline
Source of data	IPCC 2006 defaults values
Value(s) applied	0.015
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 tCO2/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	0.015
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	fNRB Report for DRC dated 26/10/2021 by Delta Ecology
Value(s) applied	73.998%
Choice of data or Measurement methods and procedures	f_{NRB} assessment based on CDM fNRB tool, Tool 30, version 03.0[6]
Purpose of data	Calculation of emission reductions
Additional comments	The fNRB value will remain fixed during the crediting period

[6] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v3.0.pdf

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	Wood-to-charcoal conversion factor
Unit	kg firewood / kg charcoal
Description	Conversion factor for transforming fuel wood into charcoal
Source of data	IPCC default value
Value(s) applied	6
Choice of data or Measurement methods and procedures	Default IPCC value (1996 IPCC Guidelines for National Greenhouse Gas Inventories) is applied (https://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch1ref3.pdf)
Purpose of data	Used to calculate fuel savings in fuel wood equivalent
Additional comments	Fixed ex-ante at VPA level

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	$P_{b,y}$
Unit	t/household/year
Description	Quantity of charcoal that is consumed in baseline scenario b during year y
Source of data	Baseline KPT
Value(s) applied	1.35748
Choice of data or Measurement methods and procedures	This value is based on baseline KPTs carried out with 201 end-users. The baseline KPT has followed the procedures as outlined in the methodology in section 7 and Annex 4. For more details see section B.4. of the VPA-DD.
Purpose of data	Used to calculate the fuel savings
Additional comments	The baseline will remain by-default fixed during the crediting period since the project activity targets non- industrial applications (see page 6 of TPDDTEC)

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	$N_{p,y}$
Unit	Number of project cookstove credited (units)
Description	Cookstoves in the project database for project scenario p through year y
Measured/calculated/default	Calculated
Source of data	Total distribution record
Value(s) of monitored parameter	Full year stoves equivalent: 4,814.68 The above mentioned values already take into account multi project stoves operational in a household.
Monitoring equipment	BURN keeps records of all distributed ICS in an electronic database. As a minimum the following information will be recorded through KoboCollect in the database: • Unique serial number (USN) of the ICS • Date of shipment to distributor/retailer • Name of distributor/retailer • Quantity of ICS distributed • Geographic area (state) of distributor/retailer • Model type of the ICS Besides, the distribution database will contain end-user contact details (name, state, mobile number, or national ID number) of at least 10 times the survey and field test sample size (including usage surveys for each age of product), to ensure an adequate end-user pool to which random sampling can be applied. To claim the ICS warranty, end-users must register their end-user details through SMS or call.
Measuring/reading/recording frequency:	Continuously
Calculation method (if applicable):	-
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of emission reductions
Additional comments	The total distribution record is divided based on project scenario to create the project database. Any multiple use of the same BURN ICS as well as the lag time between sale/shipping and actual usage is conservatively taken into account.

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	t/household/year
Description	Quantity of fuel that is consumed in project scenario p during year y
Measured/calculated/default	Calculated
Source of data	Project KPT
Value(s) of monitored parameter	0.53475
Monitoring equipment	-
Measuring/reading/recording frequency:	Every 2 years
Calculation method (if applicable):	A project KPT has been done during Validation of the project. Since this monitoring is being carried out within 2 years of last KPT, the same value is being used.
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of project emissions
Additional comments	A single project fuel consumption parameter is weighed 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	90% (Weighted average usage rate) (cap for value good practice as per "Usage Rate Monitoring Requirements and Guidelines") Age Group 0-1 usage rate: 97.6% Age Group 1-2: 97.4%
Monitoring equipment	The usage survey is carried out annually as described in section B.7.2 of this VPA-DD

Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Estimation of CO2e emission reductions
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. For all age groups, the cap value of 90% for "good practice" as per "Usage Rate Monitoring Requirements and Guidelines" has been applied. Only those households have been accounted for as users who use the project stove for at least 7 meals per week and who indicated the last usage within a week. Those households, for which on-site observations in the kitchen did not indicate clear usage, have been defined as "Non-user". Any continued baseline stove use has been accounted for as part of the usage survey

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	-
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	Leakage assessment has been carried out for this monitoring period and the results have been submitted to the VVB.

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	µy
Unit	Fraction
Description	Adjustment to account for any continued use of pre-project devices (baseline stove) in the project scenario during the year y
Measured/calculated/default	Measured
Source of data	Monitoring/Usage surveys
Value(s) of monitored parameter	0.92
Monitoring equipment	Monitoring Usage Survey Questionnaires
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Average Proportion of use of the Project ICS in relation to all pre-project stoves in use in the household, weighted per age group.
QA/QC procedures	-
Purpose of data	Emission reduction calculation
Additional comments	

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, itchy eyes and breathing problems
Measured/calculated/default	-
Source of data	Usage/monitoring survey
Value(s) of monitored parameter	98.94 % perceive an improved air quality
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):	Carrying out surveys (either site visits or telephone surveys) to check on the pollution-related inconveniences (such as smoke levels, itchy eyes and breathing problems) in the project scenario compared to the baseline scenario.

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 SDG 3
Additional comments	This parameter is measured qualitatively, but not quantitatively.

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	Monetary savings related to the purchase of charcoal
Unit	-
Description	Monetary savings related to the purchase of charcoal
Measured/calculated/default	Measured and calculated
Source of data	Usage/monitoring survey
Value(s) of monitored parameter	45.20%
Monitoring equipment	Direct calculation based on results from the usage survey
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Carrying out surveys (either site visits or telephone surveys) to check on the money spent for purchasing charcoal in the project scenario compared to the baseline scenario
QA/QC procedures	-
Purpose of data	Reporting on SDG 1
Additional comments	This parameter is measured qualitatively, but not quantitatively.

Relevant SDG Indicator/Safeguarding Principle	SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all. Target 7.1: By 2030, ensure universal access to affordable, reliable and modern energy services
Data / Parameter	Number of sold/distributed ICS in use
Unit	Numbers
Description	Number of sold/distributed ICS in use
Measured/calculated/default	Project records like contracts, payment slips, employee list or others
Source of data	Project database

	Supporting files:
Value(s) of monitored parameter	8,832
Monitoring equipment	-
Measuring/reading/recording frequency:	Continuously
Calculation method (if applicable):	The total number of ICS sold/distributed is summed up in the database and multiplied with usage rate
QA/QC procedures	-
Purpose of data	Reporting on SDG 7

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	Project records like contracts, payment slips, employee list or others
Source of data	Project records
Value(s) of monitored parameter	25
Monitoring equipment	Direct measurement based on employment numbers of those employed directly by the project
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Counting employee contract
QA/QC procedures	-
Purpose of data	Reporting on SDG 8

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

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
$P_{b,y}$	1.35748	NA
$P_{p,y}$	0.53475	NA

$U_{p,y}$	90%	NA
$N_{p,y}$	4,814.68	NA
$LE_{p,y}$	0	NA
Perceived Air quality	98.94%	NA
Equivalent monetary savings	45.20%	NA
Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	25 people employed and several trainings done	NA
Number of people/households with access to the energy efficient cook stoves and the usage rates of efficient cook stoves.	8,832 units active Usage rate- 90%	NA

D.4. Implementation of sampling plan

>>

Monitoring/Usage Surveys and Project KPTs

Methodology Followed

Data collection for usage/monitoring survey was conducted from 1st April 2022 to 3rd June 2022. A team of 21 Enumerators were trained for the data collection by BURN team to ensure understanding of usage/monitoring requirements, data collection procedure, and specific requirements pertaining to KPTs.

The leading team in DRC consisting of team leaders and project managers, were trained by the Carbon officer from BURN headquarter in Kenya and external carbon consultant. This team thereafter trained a local team of 21 surveyors who were well versed with the local culture and language. The training was adequately tailored to usage surveys/KPTs and included an interactive discussion of questions with surveyors, going through the questions of the usage survey questionnaire (data collection form) and KPT, role plays as well as interview techniques.

The usage monitoring surveys and KPT households were visited between 1st April 2022 to 3rd June 2022.

Sampling frame

The sampling frame for the usage/monitoring survey and project KPTs consisted of households registered with end-user details (like location, phone number etc) in BURN´s sales database.

Sampling Method

The simple random sampling approach was used.

Registered households were randomly selected by using a random generator. With random numbers generated, the matching stoves were then selected from the database and their details were identified and contacted via telephone to make bookings for availability for physical visits and KPTs as well as conducting telephone usage surveys.

Sample Size

As per the applied methodology, the minimum sample size is 100. The PP sampled more stoves to cater for any possible non-responses at 163 for age group 0-1. A total of 281 surveys were carried out in Monitoring period 1.

Telephone 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. Telephone surveys conducted were all recorded.

In person Surveys

In person surveys were conducted for the purpose of both the usage/monitoring survey, collection of KPT stoves. Data was collected by trained enumerators who spoke the local language. All households visited had the following evidence:

i. GPS coordinates
ii. Photographs showing general kitchen area

The sampled households for KPTs were asked prior to conducting the KPT whether they use the stove. Since KPTs are only to be conducted on operational stoves.

Unreachable and declining households

Out of all surveys conducted, there were households that declined to participate in the surveys, while others were unreachable during the duration of the survey period. For all unreachable households, the PP ensured to make at least 3 separate attempts to reach the household before they were discounted as unreachable. To replace such households, the PP ensured to select the next available household in the randomized list of households until they found a household available for the surveys. A total of 114 households were replaced due to unreachability of the households at the time of the surveys, while another 44 households declined to participate in the surveys for various reasons.

The main reasons for replacement of households selected were:

iii. The telephone number could not be reached at least 3 attempts made on 3 days

ii. Uncooperative/Hostile respondents; e.g. did not want to participate

iv. The primary cook unavailable during the data collection period e.g. travelled.

Results

Usage survey

Type of survey	Period of survey	Actual number of samples conducted	Achieved precision
Usage/monitoring survey	1st April to 3rd June 2022[7]	163	Not applicable. Minimum sample size of 100

Usage/monitoring surveys	28th January 2023 to 18th February 2023	125	Not applicable. Minimum sample size of 100

Since, as part of the first round review with GS, it was identified that the aging was incorrectly done, BURN has carried out additional surveys.

Kitchen Performance Tests

Stove type	Period of KPT	Actual number of samples (N° of stoves) conducted	Achieved precision
Jikokoa	11/04/2022 to 24/05/2022	63	9%

Since for the project KPT, the 90/30 precision was followed and precision attained was 9%, the mean value was considered for ER calculation.

SECTION E. CALCULATION OF SDG IMPACTS

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

>>

SDG 13:

The transparent ex-ante calculations of the outcomes of SDG 13 (i.e. CO2e reductions) are provided in a separate excel spreadsheet uploaded to GS registry for the performance certification review.

$ERy = \sum b,p\ (Np,y * Up,y * Pp,b,y * NCVb,\ fuel * (f\ NRB,b,\ y * EFfuel,\ CO2 + EFfuel,\ nonCO2)) - \sum LEp,y$

Where:

∑b,p Sum over all relevant (baseline b/project p) couples

Np,y Cumulative number of project technology-days included in the project database for project scenario p against baseline scenario b in year y
Up,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)

Pp,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 the field tests

f NRB,b, y Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)

NCVb,fuel Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)

EFb,fuel,CO2 CO2 emission factor of the fuel that is substituted or reduced. 112 tCO2/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel

EFb,fuel,nonCO2 Non-CO2 emission factor of the fuel that is reduced. 9.46 tCO2/TJ

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

The methodology directly provides the following equation for emission reductions; without separate baseline, project or leakage emission reduction equations.

$P_{p,b,y} = (Pb,y - Pp,y)*CF$

$P_{p,b,y}$ = Specific fuel savings in wood equivalent
$P_{b,y}$ = Baseline fuel consumption
$P_{p,y}$ = Project fuel consumption

CF = Wood-to-charcoal conversion factor

SDG 1

In the baseline scenario, it is estimated that households spend 100% in charcoal fuel, i.e. that there are no savings. The savings are a result of the implementation of the project activity.

SDG 3

In the baseline scenario, it is estimated that 100% of the households suffer pollution- related inconveniences (such as smoke levels, itchy eyes and breathing problems).

Improved air quality is a result of the implementation of the project activity.

SDG 7

In the baseline scenario, it is estimated that no improved cookstoves are implemented, hence the baseline value is zero. The distribution of improved cookstoves is a result of the implementation of the carbon project activity.

SDG 8

In the baseline scenario, it is estimated that no jobs are being generated. Job creation is a result of the implementation of the carbon project activity.

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

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SDG 13:

The transparent ex-post calculations of the outcomes of SDG 13 (i.e. CO2e reductions) are provided in a separate excel spreadsheet uploaded to GS registry for the performance certification review.

The methodology directly provides the following equation for emission reductions; without separate baseline, project or leakage emission reduction equations.

ERy = ∑b,p (Np,y* Up,y* Pp,b,y* NCVb, fuel * (f NRB,b, y * EFfuel, CO2 + EFfuel, nonCO2))– ∑ LEp,y

Where:

∑b,p Sum over all relevant (baseline b/project p) couples

Np,y Cumulative number of project technology-days included in the project database for project scenario p against baseline scenario b in year y
Up,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)

Pp,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 the field tests

f NRB,b, y Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)

NCVb,fuel Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)

EFb,fuel,CO2 CO2 emission factor of the fuel that is substituted or reduced. 112 tCO2/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel

EFb,fuel,nonCO2 Non-CO2 emission factor of the fuel that is reduced

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

$P_{p,b,y} = (P_{b,y} - P_{p,y})*CF$

$P_{p,b,y}$ = Specific fuel savings in wood equivalent

$P_{b,y}$ = Baseline fuel consumption

$P_{p,y}$ = Project fuel consumption

CF = Wood-to-charcoal conversion factor

Results from this monitoring period shows that in MPI, the project has achieved 35,458 tCO_2e emission reductions.

SDG 1

The monitoring of SDG 1 has been made through a qualitative evaluation of a sample of households during the usage/monitoring survey (either site visits or telephone surveys) to check on the money spent for purchasing charcoal in the project scenario compared to the baseline scenario. Results from this monitoring period show that in average the monetary savings are 45.20% related to the purchase of charcoal in the project scenario.

SDG 3

The monitoring of SDG 3 has been made through a qualitative evaluation of a sample of households during the usage/monitoring survey (either site visits or telephone surveys) to check on the pollution-related inconveniences (such as smoke levels, itchy eyes and breathing problems) in the project scenario compared to the baseline scenario. Results from this monitoring period show that 98.94% of respondents perceive air quality improvements at their homes since purchasing and cooking with the project stove as compared to the baseline.

SDG 7

The parameter 'project technologies in use' has been calculated as part of the outcome calculation for SDG 13 and is provided in the separate ER calculation excel spreadsheet. The eligible project technology days are multiplied with the usage rate (Up,y) to determine the 'project technologies in use'. In this monitoring period, the project technologies in use has been calculated as 8,832

SDG 8

The number of created jobs has been determined for the respective years of the monitoring period. Both Casual and Contract employees have been considered for thisparameter. An employee list has been provided as a supporting document.

The methodology directly provides the following equation for emission reductions; without separate baseline, project or leakage emission reduction equations.

E.3. Calculation of leakage

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0 as per Leakage survey carried out for this MP.

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

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
SDG 13	Climate Action	27,255	0	27,255
SDG 1	End poverty in all its forms everywhere	0%	45.20%	45.20%
SDG 3	Ensure healthy lives and promote well-being for all at all ages	0%	98.94%	98.94%
SDG 7	Ensure access to affordable, reliable, sustainable and modern energy for all	0	8,832	8,832
SDG 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	0	25	25

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[8] achieved during this monitoring period
SDG 1: End poverty in all its forms everywhere	45.20%	45.20%
SDG 3: Ensure healthy lives and promote well-being for all at all ages	90%	98.94%
SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all	14,390	8,832
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	25	25
SDG 13: Climate actions	73,822tCO_2e	27,255 tCO_2e

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

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

>>

The actual emission reductions are less than the ex-ante estimated ones (see SDG 13). For SDG 1,3,7 and 8 the values are same since the same Usage survey and KPT analysis have been used for this MR which was considered during Validation (see explanation in section E.6.).

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

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For SDG 13, the actual value is lower than the estimated (ex-ante) value. See explanation in section E.5.1.

SECTION F. SAFEGUARDS REPORTING

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No stakeholder mitigation actions were identified during the Design Certification of the project. Therefore, not applicable.

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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The Grievance Mechanism for this VPA is set up in 3 ways:

i. Phone Number: End users can call in Altech: +243 822230188 which is the dedicated phone number where they can call and communicate their comments or complaints to BURN's after sales service unit. No phone calls with any comments, disputes, inputs have been received.

ii. Logbook: A log book has been placed at Altech head office. No comments, disputes, inputs have been received on the log books during the monitoring period.

iii. Internet Email Access: No comments, disputes, inputs have been received via email during the monitoring period.

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

>> Not applicable

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

>> No legal contests have arisen with the project during the monitoring 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