Gold Standard for the Global Goals

TEMPLATE

KEY PROJECT INFORMATION & VPA DESIGN DOCUMENT (PDD)

PUBLICATION DATE **04.05.2022**

VERSION **v. 2.0**

RELATED SUPPORT - Programme of Activity requirements

This document contains the following Sections

KEY PROJECT INFORMATION

Type of VPA	☒ Real case VPA ☐ Regular VPA
Scale of VPA	☐Microscale ☐Small scale ☒Large scale
Title of corresponding real case VPA (if applicable)	-
GS ID of real case VPA (if applicable)	-
GS ID of VPA	GS11604
Title of VPA	TASC Clean Cooking PoA – VPA 4 (Zambia)
Time of First Submission Date	11/04/2022
Date of Design Certification	N/A
Version number of the VPA-DD	1.8
Completion date of version	15/02/2023
Coordinating/managing entity	The African Stove Company Ltd. (TASC)
VPA Implementer (s)	The African Stove Company Ltd. (TASC)
Project Participants and any communities involved	TASC
Host Country (ies)	Zambia
GS ID and Title of applicable Design Certified VPA	
GS ID and Title of applicable Performance Certified VPA	N/A
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Other Requirements applied	N/A
Methodology (ies) applied and version number	Technologies and Practices to Displace Decentralized Thermal Energy Consumption (TPDDTEC), version 3.1
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
VPA Cycle:	☐ Regular ☒ Retroactive

Land-use & Forest and Agriculture - Key Project Information[1]

N/A

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Goals Targeted	SDG Impact (defined in B.6.)	Estimated Annual Average	Units or Products
1 No Poverty	Installation of ICS Financial Savings	1,127 2,213.28	ICS Kwacha
3 Good Health and Well-Being	Households reporting reduction in smoke/ PM emissions while cooking on project ICS	100%	Households
5 Gender Equality	Female households reporting time saving from fuel collection & cooking time	100%	Households
7 Affordable and Clean Energy	ICS installed that are in operation	1,127 (charcoal)	ICS
8 Decent Work and Economic Growth	Number of person (male and female) hired under Project	30	Contracted Staff
12 Responsible Consumption and Production	Reduced deforestation due to charcoal fuel savings	2.08 (charcoal)	Tonnes per stove per annum
13 Climate Action	Average annual reduction of CO_2 emissions	8,589	tCO_2e

[1] Please refer to 0 for detailed information on LUF projects

SECTION A. DESCRIPTION OF PROJECT

A.1. Purpose and general description of project

The goal of the proposed project is to distribute improved cookstoves (ICS) to households in Zambia.

The African Stove Company Ltd. (TASC)[2] is the coordinating/managing entity (CME) of the PoA and is the sole implementer of the VPA. TASC's mission is financing and developing high-impact climate mitigation projects.

The VPA is retroactive in nature, as the first ICS was distributed in Zambia on the 16th April 2021. It was submitted to SustainCert for preliminary review on 11th April 2022.

The stakeholder consultation has not been carried out thus far due to COVID-19. As the GS COVID-19 interim guidance expired at the end of June 2022, the LSC and SFR will be conducted during the first monitoring period.

1. The location of the project activity:

The VPA is implemented in Zambia and charcoal ICS were distributed in urban areas, where inefficient charcoal grates are commonplace.

The VPA Implementer will capture data from each household about the baseline appliance and fuel source that is being used, to ensure that households using charcoal on grates are targeted by the VPA.

2. The technologies/measures to be employed and/or implemented by the project activity:

The project ICS combust biomass fuels more efficiently, reducing the greenhouse gas (GHG) emissions and particulate emissions (PM), thus improving the indoor air quality in project households. Due to the higher thermal efficiency of the ICS relative to the

[2] https://tasc.je/

3-stone fires or charcoal grates, the ICS reduce the amount of non-renewable biomass fuel required for meeting similar thermal energy needs.

The ICS will be distributed by TASC in urban or peri-urban Zambia to individual households, which have been identified as using charcoal for day-to-day cooking purposes. Sensitization meetings will inform communities of the project, the technology and the agreement between the end users and the Project Participants. TASC will manage the logistics of the ICS distribution process and collect all the required data from ICS end users via a bespoke app that connects automatically to the project monitoring database.

3. The project boundary

Zambia

4. The baseline scenario

In the absence of the proposed VPA, charcoal grates are used for cooking and their replacement with project ICS reduces non-renewable biomass fuel consumption, saving greenhouse gas emissions.
1127 ICS have been distributed and logged in the monitoring database at the time of the writing this VPA-DD.

A.1.1. Eligibility of the VPA under approved PoA

Table 2 Eligibility for VPA inclusion as per PoA requirements

No.	Eligibility Criterion	Description/ Required condition	Means of Verification/Supporting evidence for VPA inclusion
1	Geographic Boundary and target area	Each VPA shall involve installation of ICS within the geographical boundary of PoA.	Monitoring database, listing the location of ICS distributed under the VPA and GPS location (where possible) of each End User household
2	Double Counting	Each VPA shall be added to the monitoring database with a unique set of distribution data.	All ICS distributed in the VPA shall have: • a unique ID serial number • a GPS tag (if possible) • End user data (name/address/physical

			location/phone number/govt. ID number - where possible) • Records of baseline stove type and fuel type used This data uniquely identifies each ICS, avoiding any double counting and trace its user for future monitoring and verification. Duplicate End User data will be identified in the monitoring database and resolved by the VPA Implementer. This distribution data will be held securely in the monitoring database.
3	Exclusiveness of VPA	The VPA was not previously registered as a project activity or included as a VPA in any other registered PoA or deregistered as a VPA of a PoA.	The VPA did not participate or was not registered in any other voluntary/compliance standards previously and the VPA is not currently listed with any other voluntary/compliance standards.
4	Specifications of Technology/ Measure	1. **Type -** The VPA will promote dissemination of improved biomass ICS in PoA. 2. **Capacity -** The rated annual thermal energy savings of ICS included under the VPAs shall not be more than 1.8GWhth.	Technical details of the ICS (including thermal efficiency and energy/power rating) will be provided in the baseline emissions calculations of the specific VPA. As specific VPA may have ongoing distribution of ICS, and new stove models may be introduced during the crediting period of the VPA, this may be checked at the time of subsequent verification.
5	Start Date	Date on which first ICS was installed under the VPA. The start date of any proposed VPA will be on or after the start date of the PoA	16/04/2021: the date of the End User Agreement for the first ICS distributed in the VPA, as entered in the Monitoring Database (see Section C.1).
6	Applicability of the methodologies	VPA must follow TPDDTEC version 3.1. The applicability criteria of the methodology	Applicability of the methodology is described in Section B of the VPA-DD.

		are listed in section B.2 of the PoA-DD. Technology related requirements stipulated by the methodology have been specified in criteria #4 above.	
7	Additionality	VPAs will apply the Positive List justifications (see Section C of PoA-DD): 1. ICS shall be distributed to households 2. The annual thermal energy savings of ICS included under the VPAs shall not be more than 1.8GWh$_{th}$	ICS shall be distributed to households substantiated via the monitoring database. The annual thermal energy savings per ICS is equal to 0.009 GWh, as seen in the Threshold assessment sheet of the ER calculation sheet.
8	Official Development Assistance (ODA)	Affirmation that funding from Annex I Parties, if any, does not result in a diversion of ODA	A Declaration from CME and VPA Implementer will be made that no funds for official development assistance will be used for program implementation
9	Target Group and Distribution Mechanism	Target Group: Households Distribution Mechanism: Via VPAI / local partners	The ICS by virtue of their size, output and design are usable only in households. The monitoring database will confirm distribution to households. A bespoke distribution mechanism is defined in Section A1 of this VPA-DD.
10	Sampling	VPAs under the program will adhere to all sampling requirements in TPDDTEC, version 3.1	The VPA will follow monitoring plan in line with the requirements of the TPDDTEC methodology. The monitoring and sampling plan is described in section B.7. of the VPA-DD.
11	SSC Threshold	Not applicable as per section B.1 above	N/A
12	Eligibility of Technologies	As per TPDDTEC, version 3.1: "Examples of these technologies include the introduction of improved biomass or fossil fuel cookstoves, ovens, dryers, space and water heaters (solar and otherwise), heat retention	The VPA included improved biomass cookstoves as defined by being >20% thermal efficiency in the manufacturer's specifications

		cookers, solar cookers, bio-digesters, safe water supply and treatment technologies that displace the boiling of water, thermal insulation in cold climates, etc."	
13	Conditions to be met by each VPA regarding SDG outcomes assessment	The SDG assessment is done at VPA level	The VPA included the SDG outcomes in the monitoring parameters and report on these in each monitoring report. The SDG outcome assessment is done at VPA level and is highlighted in section B.6.
14	Conditions to be met by each VPA regarding safeguarding principles	The Safeguarding Principles assessment is done at VPA level.	The VPA included the Safeguarding Principles in the monitoring parameters and report on these in each monitoring report. The safeguards assessment is done at the VPA level and is detailed in Appendix 1.
15	Conditions to be met for retroactive VPAs	Retroactive projects shall submit for Preliminary Review within one year of the project start date.	The start date of the project was 16/04/2021 and the VPA-DD was submitted for Preliminary Review on 11/04/2022. This is within 1 year of the project start date. LSC will be completed prior to the first verification of the VPA.
16	Conditions to be met for CER Labelling	N/A	N/A
17	Conditions to be met in multi-country PoAs	Conditions that might apply for a single country PoA will apply to each country that is included in the PoA including *inter alia* baseline parameter assessments, LSC etc.	The VPA applied the applicability and eligibility criteria to the project boundary of Zambia, which is a host country included in the PoA-DD.

An analysis of VCS/CDM/GS Registries is carried out and the following similar projects are observed in Zambia:

STANDARD	NAME OF PROJECT	HOW THE VPA IS DIFFERENT
VCS	FUEL EFFICIENT STOVES IN ZAMBIA CPA 3.	The stove is different from the one distributed under the VPA with a thermal efficiency of 29.5% and using wood as

		fuel. Hence the stoves in the VPA cannot be included in this VCS project.
VCS	INSTALLATION OF HIGH EFFICIENCY WOOD BURNING COOKSTOVES IN ZAMBIA - PROJECT 2	The stove is a rocket based one made of clay. Hence the stoves in the VPA cannot be included in this VCS project.
VCS	INSTALLATION OF HIGH EFFICIENCY WOOD BURNING COOKSTOVES IN ZAMBIA	The stove is a rocket based one made of clay. Hence the stoves in the VPA cannot be included in this VCS project.
VCS	FUEL EFFICIENT STOVES IN ZAMBIA CPA 3	The stove is different from the one distributed under the VPA with a thermal efficiency of 29.5% and using wood as fuel. Hence the stoves in the VPA cannot be included in this VCS project.
VCS	FUEL EFFICIENT STOVES IN ZAMBIA CPA 2	The stove is different from the one distributed under the VPA with a thermal efficiency of 29.5% and using wood as fuel. Hence the stoves in the VPA cannot be included in this VCS project.
VCS	FUEL EFFICIENT STOVES IN ZAMBIA CPA 1	The stove is different from the one distributed under the VPA with a thermal efficiency of 29.5% and using wood as fuel. Hence the stoves in the VPA cannot be included in this VCS project.
VCS	Fuel Efficient Stoves in Zambia – Korea Carbon Management Ltd. CPA No.1	This CPA involves the distribution of the Greenway Jumbo stove which has a thermal efficiency of 31.7% and using wood as fuel. Hence the stoves in the VPA cannot be included in this VCS project.
VCS	Fuel Efficient Stoves in Zambia (Korea Carbon Management Ltd. CPA No.2)	This CPA involves the distribution of the Greenway Jumbo stove which has a thermal efficiency of 31.7% and using wood as fuel. Hence the stoves in the VPA cannot be included in this VCS project.
VCS	Distribution of Improved Cook Stoves in Sub-Saharan Africa-Zambia-CPA-007	The stove is a rocket based one made of clay with a thermal efficiency of 34.5% and uses wood as fuel. Hence the stoves

		in the VPA cannot be included in this VCS project.
Gold Standard	TASC CLEAN COOKING POA – VPA 1 (ZAMBIA)	This PoA/VPA is implemented by TASC and involves distribution of a different stove type as the VPA in question. The stoves are distributed in different areas within Zambia and hence the risk of overlap is minimal.
Gold Standard	UPENERGY-SOCIAL AND CLIMATE IMPACT PROGRAMME-COOKING DEVICES VPA-6 BY UPENERGY GROUP	The stove models used by this VPA are different from the stoves used in the VPA. Hence, they cannot be included in each others' VPA.
Gold Standard	PowerUp Smart Electric Stoves for Clean Air-Zambia-VPA2	The stove models used by this VPA are different from the stoves used in the VPA. Hence, they cannot be included in each others' VPA.
Gold Standard	Clean Cooking with Biomass Gasification in Zambia (VPA1)	The stove models used by this VPA are different from the stoves used in the VPA. Hence, they cannot be included in each others' VPA.
Gold Standard	Afstor Solar Cooker	The stove models used by this VPA are different from the stoves used in the VPA. Hence, they cannot be included in each others' VPA.
Gold Standard	"Commonland African Improved Cookstove Programme – VPA 01 (Peace Parks and Simalaha Community Conservancy)	This PoA/VPA is implemented by Commonland and involves distribution of a different stove type as the VPA. The stoves are distributed in different areas within Zambia and hence the risk of overlap is minimal.
Gold Standard	GS5047 VPA40 African Improved Cookstove and Clean Water Programme: Lusaka Clean Cooking Project I	This micro-scale activity involves the distribution of a biomass waste pellet Mimi Moto stove in the Peri-urban areas of Lusaka. The stove models used by this VPA are different from the stoves used in the VPA in question and they are distributed in different areas. Hence, they cannot be included in each others' VPA
Gold Standard	GS5047 VPA41 African Improved Cookstove and Clean	This micro-scale activity involves the distribution of a biomass waste pellet Mimi Moto stove in the Peri-urban areas of Lusaka.

	Water Programme: Lusaka Clean Cooking Project II	The stove models used by this VPA are different from the stoves used in the VPA in question and they are distributed in different areas. Hence, they cannot be included in each others' VPA
Gold Standard	GS5047 VPA42 African Improved Cookstove and Clean Water Programme: Lusaka Clean Cooking Project III	This micro-scale activity involves the distribution of a biomass waste pellet Mimi Moto stove in the Peri-urban areas of Lusaka. The stove models used by this VPA are different from the stoves used in the VPA in question and they are distributed in different areas . Hence, they cannot be included in each others' VPA
Gold Standard	GS5047 VPA43 African Improved Cookstove and Clean Water Programme: Lusaka Clean Cooking Project IV	This micro-scale activity involves the distribution of a biomass waste pellet Mimi Moto stove in the Peri-urban areas of Lusaka. The stove models used by this VPA are different from the stoves used in the VPA in question and they are distributed in different areas. Hence, they cannot be included in each others' VPA
Gold Standard	TASC Clean Cooking PoA – VPA 3 (Zambia)	This VPA is implemented by TASC and involves distribution of a different stove technology than this VPA. Wood burning stoves are distributed to wood burning households in rural Zambia. Which are not the targeted recipients in this VPA. The stoves are distributed in different areas within Zambia and hence the risk of overlap is minimal.
CDM	Project 2969 : CDM LUSAKA SUSTAINABLE ENERGY PROJECT 1	The project shifts from non-renewable biomass to renewable biomass and hence is fundamentally different from the VPA in terms of its design.
CDM	PoA 10351 : Climate action with rural households by Climate Future Action Stichting	No CPAs have been included in this PoA till date.
CDM	PoA 10124 : CDM Sustainable Energy Programme	One CPA for Zambia has been included in this PoA. The stoves used in this CPA are Prime square stove, the Peko Pe

		stove, the ACE stove, and the Jet stove. These stoves are different from the stoves in the VPA and hence there is minimal risk of inclusion in each other's VPAs
CDM	PoA 10053 : Empowering DRC communities through the use of Improved Cook Stoves	No Zambia CPAs have been included in this PoA till date.
CDM	PoA 9780: Promotion of Energy Efficient Cook Stoves within Southern African Development Community (SADC)	No Zambia CPAs have been included in this PoA till date.
CDM	PoA 9934: CDM Africa Sustainable Energy Programme	No Zambia CPAs have been included in this PoA till date.
CDM	PoA 6864: Fuel Efficient Stoves in Africa	The stoves included in this PoA are Grameen Greenway Infra stoves that are different from the Burn stoves included in the VPA. There is minimal risk of inclusion in each other's VPAs
CDM	PoA 9265 : Top Third Ventures Stove Programme	No Zambia CPAs have been included in this PoA till date.
CDM	PoA 7359 : PoA for the Reduction of emission from non-renewable fuel from cooking at household level	No Zambia CPAs have been included in this PoA till date.
CDM	PoA 8060 : Improved Cookstoves Program for Zambia	No CPAs have been included in this PoA till date

While there a number of VCS/CDM/GS VPAs/projects, as described above there is a minimal to no risk that stoves included in the VPA will be included on any other project/VPA/PoA in GS/any other standard.

CME will ensure that there is no double counting taking place by enforcing the following measures:

1. At time of each issuance, CME will carry out a study to determine issuances from projects/VPAs in other standards that use the same project stove as in the VPA.

2. If projects/VPAs with same stove models as the VPA are observed, this will be flagged internally and also transparently mentioned in the Monitoring Report. Further, as required by the methodology mitigation measures will be put in place to ensure that ERs are not double counted. It should be noted however that the right for origination of carbon credits under this VPA vests with and this is unequivocally clear through the end-user agreements and via an agreement with the ICS manufacturer.

Double counting across VPAs:
The CME captures the serial number of each stove distributed under this PoA. As required by the methodology TPDDTEC v3.1., a monitoring database will be provided to the VVB and SustainCert with the unique serial number of each stove mentioned clearly. The CME will do a QA/QC of the data to avoid duplication of stoves across VPAs.

A.1.2. Legal ownership of products generated by the VPA and legal rights to alter use of resources required to service the project

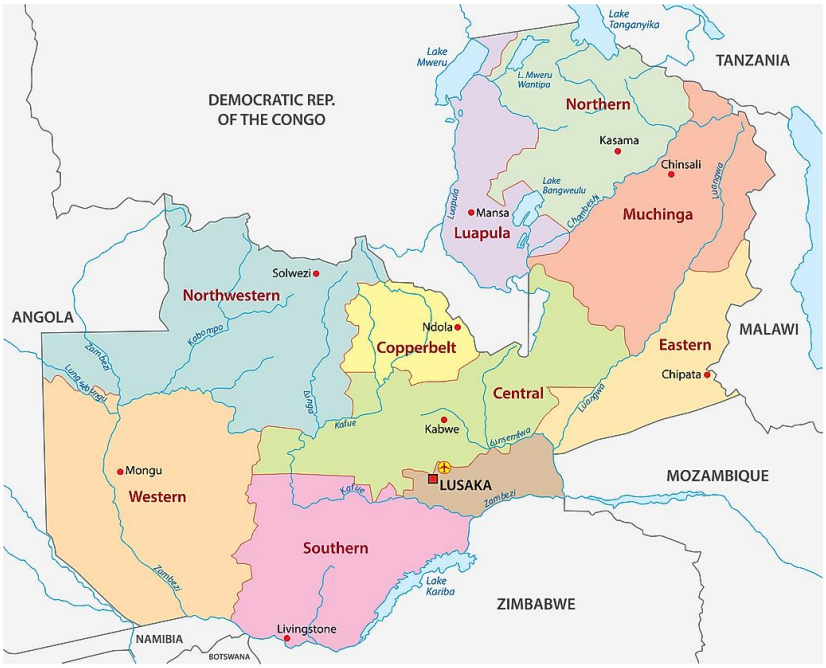
The legal ownership of products generated by the VPA are retained by the Project Participants. This is confirmed via each end user signing a confirmation that they have understood the 'End User Agreement' at the point of distribution. This agreement confirms that the legal ownership of the products resides with the Project Participants. The ICS manufacturer has also provided a letter confirming that they do not claim any rights to the emissions reductions.

The End User Agreement is provided by the CME as a written statement on project documentation provided to beneficiaries in their local language.

The signed confirmation that this has been understood and agreed to is collected via the monitoring app at the point of distribution.

A.2. Location of VPA

The project is located in Zambia:



Zambia map and provinces

The VPA is implemented across Zambia and not limited to any specific provinces. The GPS coordinates of Zambia are - 13.1339° S, 27.8493° E

A.3. Technologies and/or measures

The VPA will implement ICS technologies which are based on the principle of improving heat transfer from combustion chamber to the cooking pot, saving cooking fuel and time.

The ICS design optimizes the combustion chamber shape, fuel amount, and air flow through the stove. To maximize thermal energy, the thermal mass of the ICS is reduced minimizing heat loss through the sides and bottom of the stove and the cooking surface is positioned at the optimal distance from the fire. This is essential to establishing a correct gas flow path needed for efficient heat transfer.

The clearance between the grate and the floor provides for natural draft of air into the combustion chamber resulting in improved combustion as compared to traditional cook stoves where such natural draft is absent resulting in incomplete combustion of fuel. The combustion chamber may also have a refractory lining that reduces heat loss from the walls of the stove.

The stoves distributed under this VPA shall have a thermal efficiency of at least 20%.

As an example, this VPA has commenced the distribution of the Jikokoa charcoal stove. The Jikokoa is manufactured by Burn Manufacturing LLC and delivers a thermal efficiency of 53.7% which was obtained through third party testing by KIRDI in 2020.

Burn Jikokoa model cookstove

Sustainable Development Goals Targeted	How the project contributes to the identified SDG
13 Climate Action (mandatory)	ICS emissions are lower than those of the baseline appliance thereby reducing CO_2 emissions
1 No Poverty	The ICS provide improved access to basic services; i.e. a more efficient and less polluting form of cooking, thus money savings from reduction in fuel costs
3 Good Health and Wellbeing	The ICS result in lower emissions of indoor air pollutants (CO/PM2.5), which cause respiratory diseases, therefore improving the health of the end-users
5 Gender Equality	ICS use reduces time required for fuel collection and cooking, predominantly for women, freeing up time for them to utilize.
7 Affordable and Clean Energy	Providing access to affordable (stove is free of cost) and cleaner technology for cooking
8 Decent Work and Economic Growth	Local employment is generated in logistics, ICS distribution, monitoring and project management

12 Responsible Consumption and Production	Biomass fuel savings are generated via ICS use

A.4. Scale of the VPA

The VPA is a large scale VPA

A.5. Funding sources of VPA

The project is funded from private sources.

No public funding from any Annex 1 party is involved.

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

B.1. Reference of approved methodology (ies)

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

B.2. Applicability of methodology (ies)

Applied methodology: Technologies and Practices to Displace Decentralized Thermal Energy Consumption, version 3.1, August 2017

Applicability Criteria	**Justification**
This methodology is applicable to programmes or activities introducing technologies and/or practices that reduce or displace greenhouse gas (GHG) emissions from the thermal energy consumption of households and non-domestic premises. Examples of these technologies include the introduction of improved biomass or fossil fuel cookstoves.	The VPA involves distribution of fuel-efficient improved biomass cookstoves ("ICS") to households in Zambia.
The project boundary needs to be clearly identified, and the technologies counted in the project are not included in any other voluntary market or CDM project activity (i.e. no double counting takes place). In some cases, there may be another similar activity within the same target area. Project proponents must therefore have a survey mechanism in place together with appropriate mitigation measures so as to prevent any possibility of double counting.	Section A.1.1 Eligibility Criteria 1 and 2 outline the VPA's compliance with this applicability criteria.
The technologies each have continuous useful energy outputs of less than 150kW per unit (defined as the total useful energy delivered from start to end of operation of a unit divided by time of operation). For technologies or practices that do not deliver thermal energy in the project scenario but only displace	Section A.1.1 Eligibility Criteria 7 confirms distributed ICS capacity is limited to 1.8 GWh_{th} energy savings per annum - less than 150kW equivalent.

thermal energy supplied in the baseline scenario, the 150kW threshold applies to the displaced baseline technology.	
Using the baseline technology as a backup or auxiliary technology in parallel with the improved technology introduced by the project activity is permitted as long as a mechanism is put into place to encourage the removal of the old technology (e.g. discounted price for the improved technology) and the definitive discontinuity of its use. The project documentation must provide a clear description of the approach chosen and the monitoring plan must allow for a good understanding of the extent to which the baseline technology is still in use after the introduction of the improved technology.	The VPA provides subsidized ICS technology that offers a 'step-change' in the efficiency of cooking in end user households. Training was provided to end users at the point of distribution to encourage them to move away from their traditional inefficient appliances. Use of the baseline appliance will be monitored via the habit survey (parameter $U_{p,y}$) and any residual use will be captured in the kitchen performance tests (parameter $B_{p,y,i}$) which records all charcoal use. If the baseline appliance is still in use, higher charcoal usage will be recorded in the KPTs, resulting in lower ER's.
The project proponent must clearly communicate to all project participants the entity that is claiming ownership rights of and selling the emission reductions resulting from the project activity. For technology producers and the retailers of the improved technology or the renewable fuel in use, this must be communicated by contract or clear	The End User Agreement with transfer the rights of ownership of VERs from the ICS beneficiary to CME. The VPA Stove Manufacturer, Burn, has provided a waiver letter to

written assertions in the transaction paperwork. If the claimants are not the project technology end users, the end users will need to be informed and notified that they cannot claim for emission reductions from the project.	confirm that they have no claim over the ERs generated by the stoves. Any subsequent manufacturers will provide the same.
Project activities making use of a new biomass feedstock in the project situation (e.g. shift from non-renewable to green charcoal, plant oil or renewable biomass briquettes) must comply with relevant Gold Standard specific requirements for biomass related project activities, as defined in the latest version of the Gold Standard rules. If the biomass feedstock is sourced from a dedicated plantation, the criteria must apply to both plantations established for the project activity AND existing plantations that were established in the context of other activities but will supply biomass feedstock.	No new biomass feedstock usage is envisaged in the project activity.
Adequate evidence is supplied to demonstrate that indoor air pollution (IAP) levels are not worsened compared to the baseline, and greenhouse gases emitted by the project fuel/stove combination are estimated with adequate precision. The project fuel/stove combination may include instances in which the project stove is a baseline stove.	The test reports of the initial stove model to be distributed are provided. IAP parameters CO and PM2.5 tested at high power. Jikokoa: CO = 9.74 g/MJ PM 2.5 = 34.15 mg/MJ This is significantly lower than baseline appliances.
Records of renewable fuel sales may not be used as sole parameters for emission reduction calculation, but may be used as data informing the equations in section 2.0 of this methodology. These records need to be correlated to data on distribution and results of field tests and surveys confirming (a) actual use of the renewable fuel and usage patterns (such as average fraction of non-renewable fuels used in	Renewable fuels are not used in the project scenario. The fuel used in the project is non-renewable and is harvested by end-users. Further, any renewable component is considered in

mixed combustion or seasonal variation of fuel types), (b) GHG emissions, (c) evidence of CO levels not deteriorating (d) any further factors effecting emission reductions significantly.	the fNRB and ERs are discounted accordingly.

B.3. VPA boundary

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Combustion of woody biomass	CO_2	Yes	Important source of emissions
		CH_4	Yes	Important source of emissions
		N_2O	Yes	Important source of emissions
Project scenario	Combustion of woody biomass	CO_2	Yes	Important source of emissions
		CH_4	Yes	Important source of emissions
		N_2O	Yes	Important source of emissions

B.4. Establishment and description of baseline scenario

The use of three stone/open fires or conventional inefficient stoves for cooking by the project stove users is the applicable pre-project scenario. Traditional biomass remains the main energy source for cooking in rural areas and poor urban (peri-urban) clusters in Zambia.

More than 700 million Africans (82%) use solid fuels, such as wood, charcoal, dung, crop waste, and coal, for their primary cooking needs. This high level of solid-fuel use, combined with household reliance on inefficient and unsafe traditional cookstoves, constitutes a first-order public health crisis: household air pollution (HAP) from solid-fuel cooking emissions kills nearly 600,000 Africans annually and is now recognized as the second-largest health risk factor in terms of death and disability in the region. Solid-fuel cooking in SSA accounts for up to 1% of global greenhouse gas emissions and 6% of global black carbon, an important additional driver of climate change because it both absorbs solar radiation in the atmosphere and deposits soot on snow and ice surfaces. Solid-fuel cooking also imposes significant costs on African households and economies, with a mid-range estimated opportunity cost of 3% of regional annual gross domestic product (GDP)—including avoidable spending on solid fuels, time losses due to firewood collection, the economic costs of increased mortality

and morbidity burdens, and the environmental and climate costs of deforestation and carbon dioxide emissions.[3]

Only 11% of Africans use "clean" cookstoves that run on modern fuels, such as liquefied petroleum gas (LPG) (5%) and electric stoves (6%), as their primary cooking appliances. Many of these households continue to use traditional biomass-burning stoves as their secondary cooking device due to the common phenomenon of fuel and stove "stacking" (simultaneous usage of multiple fuels and stove technologies). Kerosene, which is used by 7% of Africans, likely does not qualify as a clean cooking solution in many instances, given the increasing evidence of harm from typical kerosene stoves in Africa. Stoves that run on such renewable fuels as biogas, ethanol, and solar are uncommon (less than 1%), and the penetration of "advanced" biomass gasifier cookstoves (less than 0.1%) that can come near the International Organization for Standardization's (ISO's) Tier 4 emission performance is still at a pilot stage. A growing number of SSA households (about 3.5%) use intermediate improved cookstoves (ICS) (e.g., rocket stoves), which are substantially more fuel efficient but do not achieve the emission reductions needed to realize the full health and environmental benefits of clean cooking. Another 9–10% of SSA households have access to both basic ICS (less than 5%) and legacy cookstoves (less than 5%) that offer only moderate improvements in fuel efficiency and emissions over traditional cooking technologies. In aggregate, Africa has a significantly lower rate of access to clean and improved solutions (25%, excluding legacy stoves) than any other region globally.[4]

Baseline scenario for this VPA:

In Zambia around 83.6% of households use solid fuels for their cooking energy requirement and 50.7% of households use firewood as the source of energy for cooking purpose. 84.5% of the households in rural Zambia use woodfuel for cooking[5].

[3] https://openknowledge.worldbank.org/bitstream/handle/10986/22521/Clean0and0impr000a0landscape0report.pdf?sequence=1&isAllowed=y

[4] https://openknowledge.worldbank.org/bitstream/handle/10986/22521/Clean0and0impr000a0landscape0report.pdf?sequence=1&isAllowed=y

[5] Table 14.9: Percentage Distribution of Households by Main Type of Cooking Energy by Residence, Zambia 2015, Page 133, Living Conditions Monitoring Survey Report, Central Statistical Office, Republic of Zambia)

In Zambia, households collect as well as purchase solid fuel for their cooking energy requirement. Only 17% of population use Improved Cookstoves[6], meaning most households still cook their food on open 3-stone fires or charcoal grates. This cooking method is inefficient and leads the unsustainable use of non-renewable biomass resources in Zambia.

Baseline establishment:

Step 1: Identify target population
The baseline for this VPA is established by identifying fuel use in Zambia, which is the baseline fuel for all end users (the "target population") in the VPA. As per the methodology, the VPA is establishing one baseline scenario: urban/peri-urban end users predominantly using inefficient charcoal grates.

In line with the requirements of the methodology (page 8), as a first step the target population is identified i.e. peri-urban/rural or urban households in Zambia. The VPA will also focus distribution of ICS on households and communities that predominantly rely on charcoal in Zambia.

Step 2: In-person surveys
The methodology states: "the baseline survey requires in-person interviews with a robust sample of end users without project technologies that are representative of end users targeted in the project activity". For this VPA, baseline surveys have been completed in the target population.

A random sample of non-project households was conducted in the project area, the sample size was established according to the TPDDTEC Version 3.1 document which states that for a group size > 1000 a minimum sample size of 100 is required. A

[6] Zambia Beyond Connections, Energy Access Diagnostic Report Based on the Multi-Tier Framework, World Bank Group

sample of 120 households were selected at random across various regions within the geographical boundary of the project.

A baseline study was conducted in Solwezi, an urban centre in the Copperbelt of Zambia, to establish the need for an improved charcoal burning cookstove. A total of 111 baseline surveys were completed between 29/03/2022 and 05/04/2022 for charcoal burning stoves in various communities across Solwezi.

The average household surveyed in Solwezi consisted of the following age demographics:

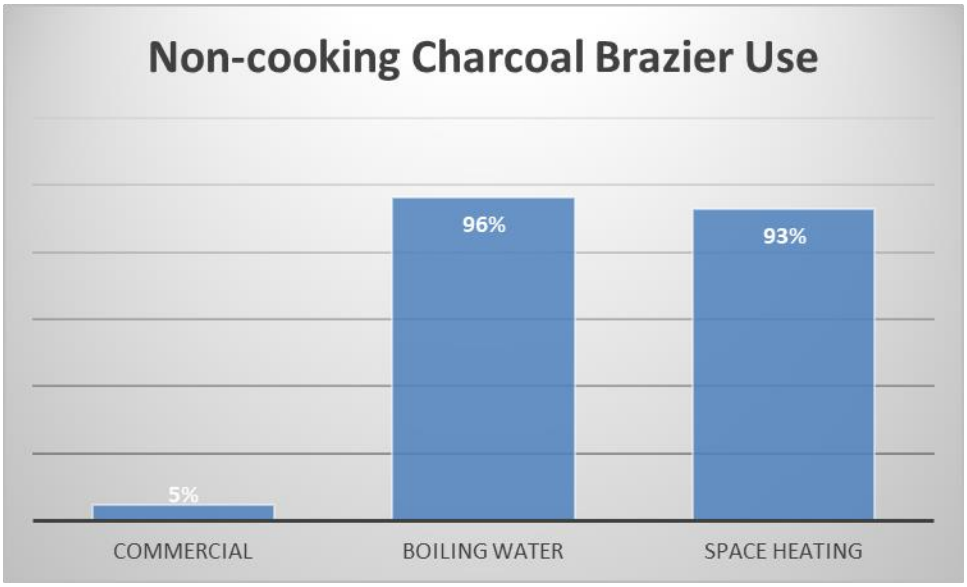
- 3 Children 0-14 years old;
- 1.8 Females older than 14 years;
- 1.5 Males age 15-59,
- And 0.1 males older than 60.

It was established from these surveys that all respondents used charcoal as a fuel. All respondents indicated that they use charcoal braziers for cooking as well as other tasks.

Image of a traditional charcoal captured during the baseline survey

In the bar graph below, alternative usages of the charcoal braziers are indicated, other than cooking. Here it is evident that boiling/heating water is most (96%) in

addition to normal cooking practices, followed by space heating (93%). Preparing food/drink for commercial use is less common with 5% of users indicating this usage.



Cooking is predominantly done both indoors and outdoors with 96% of the respondents indicating as such. Cooking only indoors/outdoors is both only done by 2% of the respondents. Daily fires are common practice with 99% indicating such and only 1% stated use of several times a week. On average 3 fires are made per day by households and 23% of households keep their fires burning throughout the day.

Charcoal is mostly purchased by respondents (97%) and only 3% of respondents produce their own charcoal. For the respondents buying charcoal, the average spend is 227 Zambian kwacha per month, which was also indicated to have increased over the last year. Charcoal buying is mostly done by females (83%) and the average age of the collectors are 36 years old.

When asked if they are interested in receiving a new improved cookstove, all the respondents indicated that they would like to receive one.

The quantity of fuel consumed in baseline scenario ($B_{b,y}$) was determined via baseline KPT's, which were carried out randomly on non-project households (i.e. those without a project ICS) according to the KPT Version 4.0 document[6]. The KPTs were conducted between 10/05/2022 and 13/05/2022.

The KPT sample size determination was based on the guidance given in the TPDDTEC Version 3.1 methodology. A Single-Sample KPT was applied with 90/10 precision, giving a sample size of 45. To ensure for completeness of the results, oversampling was practiced and a total of 55 households were randomly approached for KPT's.

A total of 4 field officers were used for the baseline monitoring activities. The field officers used for the baseline activities were experienced field officers who took part in prior baseline KPT's and habit surveys as well as verification monitoring KPT and Habit survey campaigns.

Baseline KPT's were carried out by Data Capturers (DCs) at multiple non-project households selected at random from within the project boundary. The KPTs consisted of data being collected on 4 consecutive days at each household at approximately the same time each day.

At the start of the KPT, an amount of charcoal that was estimated to be required for the next 4 days of usage was weighed and set aside as a Control Pile. Family members were then instructed to only use charcoal from this Control Pile during the KPT and to maintain their normal cooking/heating practices to ensure the usage rate of charcoal during the KPT's was best representative. DC's then visited the same households at roughly the same time on each of the 4 days in order to weigh the charcoal left in the Control Pile, or to check and weigh any additional charcoal that needed to be added and measure the moisture content of randomly selected charcoal pieces. For each visit, the number of people that ate their meals in the household since the DC's last visit was recorded as this number can vary from one day to the next. Also, the age and gender of all people present in the household were recorded. At the end of the KPT the final weight of the remaining charcoal in the Control Pile was recorded.

Data was captured using the ODK Collect application on the DC's phone with a specific webform created for the KPT data. The results were uploaded directly to TASC's ONA cloud-based monitoring database and could then be exported in to a excel spreadsheet for analysis.

From processing of the KPT results, 3 samples were rejected as outliers as they were more than the upper outlier threshold value of 10.99 kg. Thus, of the 55 samples a total of 52 were used for the KPT fuel use calculations. The precision of the 52 samples equaled 4.47% and is lower than the required 10%. On average it was determined a household consumes 7.02 kg of charcoal per day or 2.56 tonnes of charcoal per annum.

B.5. Demonstration of additionality

Specify the methodology or activity requirement or product requirement that establish deemed additionality for the proposed project (including the version number and the specific paragraph, if applicable).	According to GS4GG Community Services Activity Requirements version 1.2, Para 4.1.9: *Projects that meet any of the following criteria are considered as deemed additional and therefore are not required to prove Financial Additionality at the time of design certification:* *(a) Positive list (Annex B of this document)* *(b) Projects located in LDC, SIDS, LLDC* *(c) Microscale projects*
Describe how the proposed project meets the criteria for deemed additionality.	The VPA meet the Positive List criteria of: *Project activities solely composed of isolated units where the users of the technology/ measure are households or communities or institutions and where each unit results in <= 600 MWh of energy savings per year or <=600 tonnes of emission reductions per year* Each unit included in the VPA will result in approximately 9 MWh energy savings (calculation in the ER calculation sheet) and is therefore deemed additional. This VPAs is located in an LDC, Zambia, and therefore is automatically additional as per (b) above.

The VPA meets the requirements of the Community Services Activity Requirements, as follows –

No.	Community Services Activity Requirements	Justification
1	Para 3.1.1: Para 3.1.1: Pre-identified CSA project types are noted below. Project Developers may submit new project types to Gold Standard for approval following the Principles & Requirements. (b) End-use energy efficiency: Project activities that reduce energy requirements as compared to baseline scenario without effecting the level and quality of services or products, where the end-user of the products and services are clearly identified and when the physical intervention is required at the end-user end. For example, efficient cooking, heating, lighting, etc.	This VPA includes distribution of efficient improved cookstoves (ICS) reducing greenhouse gas (GHG) emissions from thermal energy consumption due to burning of non-renewable woody biomass for cooking in Zambia for residential users. Therefore, the project falls under Type b (End-use energy efficiency) of Pre-identified CSA project types.
2	Para 3.1.2: Project Area and Boundary shall be defined in line with the applicable Impact Quantification Methodologies and Product Requirements	The geographical project boundary of this VPA is defined as the country of Zambia (also detailed in Section A.2 of this document).
3	Para 3.1.3: Certain Impact Quantification methodologies allow projects to account Suppressed Demand scenario when establishing a baseline. In such cases, the application of Suppressed Demand baseline is limited to Small Scale and Microscale Projects.	This VPA does not apply suppressed demand scenario.
4	Para 3.1.4: Projects involving the distribution of a large number of devices for services such as heating, cooking, lighting, electricity generation, water treatment technology such as water filter, etc. shall provide a clear description of the ownership of the Products that are generated under Gold Standard Certification all along the investment chain. In line with the FPIC requirement, the proofs that end-users are aware of and willing to give	The Project Participants retain the ownership rights to the carbon credits from this VPA. This is communicated clearly to end users though the community sensitization process and documented clearly through an End User Agreement signed by the ICS recipients.

	up their rights on Products shall be provided. The transfer of Product ownership shall be discussed during local stakeholder consultations for projects.	

B.5.1. Prior Consideration

The project start date is the date when the first ICS was distributed under the VPA: 16/04/2021 (see Section C.1).

The first time of submission to SustainCert for preliminary review was 11/04/2021; i.e. less than 1 year following the start date.

B.5.2. Ongoing Financial Need

Not relevant as OFN is required only at time of renewal of crediting period.

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact Indicator (Proposed or SDG Indicator)
SDG 1: No Poverty	1.4 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	Via distribution of ICS, the VPA avoids cooking on traditional stoves. This results in increased access to basic services (efficient cooking), new technology (improved stoves) and reduces poverty by reducing purchased fuel consumption, or time taken to collect fuel. 1.4.1 Proportion of population living in households with access to basic services

SDG 3: Good Health and Well Being	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	Via distribution of ICS, the PoA results in reduction in exposure to indoor air pollutants associated with biomass fuel based traditional cooking. 3.9.1 Mortality rate attributed to household and ambient air pollution
SDG 5: Gender Equality	5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	In the poorest communities, the burden of collecting and/or purchasing fuel for cooking often falls on women and children. By reducing fuel collection and cooking time, the PoA provides women in project households with more time to invest in other productive economic development activities. 5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location
SDG 7: Affordable and Clean Energy	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	The PoA involves dissemination of efficient, modern technology for cooking and helps in using available energy sources more efficiently. 7.1.2 Proportion of population with primary reliance on clean fuels and technology

SDG 8: Decent Work and Economic Growth	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	The PoA will generate employment in the Host Country in distribution, logistics, management and monitoring activities. 8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities
SDG 12: Responsible Consumption and Production	12.2 By 2030, achieve the sustainable management and efficient use of natural resources	Via distribution of ICS, the PoA will reduce the consumption of non-renewable biomass in participant households by as much as 50%, depending on stove model. 12.2.2 – Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP.
SDG 13: Climate Action	13.2 Integrate climate change measures into national policies, strategies and planning	The PoA contributes towards avoidance of GHG emissions by reducing the use of non-renewable biomass in cooking. Amount of CO_2e emissions reduced by the project per year.

B.6.1. Explanation of methodological choices/approaches for estimating the SDG Impact

SDG 1: No Poverty

Applied methodology/approach	**Equation/calculation**

1.4.1 Proportion of population living in households with access to basic services Approach: 1. Monitor the number of ICS distributed under the project as an indicator of providing access to basic services for households 2. Monitor the money savings due to reduced fuel consumption from using ICS	1. ICS distribution records: Net Benefit (SDG 1) = $BSA_{Project}$ – $BSA_{Baseline}$ Where: $BSA_{Baseline}$ Number of ICS distributed in baseline = 0 $BSA_{Project}$ Number of ICS distributed in Project = 1,127 2. Ex-post Monitoring Survey Records measuring money savings due to reduced fuel consumption in households (HHS): Net Benefit (SDG 1) = $HHS_{Project}$ – $HHS_{Baseline}$ Where: $HHS_{Baseline}$ HHS annual spend on fuel in baseline = 2724 Kwacha $HHS_{Project}$ HHS annual spend on fuel in project = 517.56 Kwacha

SDG 3: Good Health and Well Being

Applied methodology/approach	**Equation/calculation**
3.9.1Mortality rate attributed to household and ambient air pollution Approach: Monitoring Surveys conducted to capture information on users' perception on reduction in health issues after shifting to project ICS	Ex-post Monitoring Surveys to check change in health issues like reduction in smoke levels or particulate matter etc. Net Benefit (SDG 3) = $SPM_{HH,Project}$ – $SPM_{HH,Baseline}$ Where: $SPM_{HH,Baseline}$ % HH reporting reduction in smoke/PM emissions while cooking on improved stove in baseline = 0 $SPM_{HH,Project}$ % HH reporting reduction in smoke/PM emissions while cooking on improved stove in project = 100%

SDG 5: Gender Equality

Applied methodology/approach	Equation/calculation
5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location Approach: Monitoring Surveys conducted to capture information on time savings due to reduced fuel collection needs after shifting to project ICS	Ex-post Monitoring Survey Records measuring time savings from reduced fuel collection or cooking time with ICS use Net Benefit (SDG 5) = $HHTS_{Project}$ – $HHTS_{Baseline}$ Where: $HHTS_{Baseline}$ % HH reporting time saving from fuel collection due to reduced fuel consumption in baseline = 0 $HHTS_{Project}$ % HH reporting time saving from fuel collection due to reduced fuel consumption in project = 100%

SDG 7: Affordable and Clean Energy

Applied methodology/approach	Equation/calculation
7.1.2 Proportion of population with primary reliance on clean fuels and technology Approach: Monitor the number of ICS distributed under the project as an indicator of providing clean technology (relative to baseline stoves).	ICS distribution records Net Benefit (SDG 7) = $ACS_{Project}$ - $ACS_{Baseline}$ Where: $ACS_{Baseline}$ Access to affordable and clean energy (Number of operating ICS units under Baseline) = 0 $ACS_{Project}$ Access to affordable and clean energy (Number of operating ICS units under Project) = 1,127

SDG 8: Decent Work and Economic Growth

Applied methodology/approach	Equation/calculation

8.5.1Average hourly earnings of female and male employees, by occupation, age and persons with disabilities Approach: Recording the number of contracted employees (male / female) in the project under administrative, sales, production and management positions	Employment records Net Benefit (SDG 8) = QE $IG_{Project}$ - QE $IG_{Baseline}$ Where: QE $IG_{Baseline}$ Quantitative Employment and income generation (Number of person (male and female) hired under Baseline) = 0 QE $IG_{Project}$ Quantitative Employment and income generation (Number of person (male and female) hired under Project) = 30

SDG 13: Climate Action

Applied methodology/approach	**Equation/calculation**
13.2.1 Amount of CO_2e emissions reduced by the project per year Approach: TPDDTEC, version 3.1	Baseline emissions are calculated as follows: $BE_{b,y} = B_{b,y} * ((f\,NRB_{,y} * EF_{b,fuel,\,CO2}) + EF_{b,fuel,\,nonCO2}) * NCV_{b,\,fuel}$ Where: – $B_{b,y}$ = Quantity of fuel consumed in baseline scenario b during year y, in tons, determined as 2.56 tonnes through KPT's. – $fNRB_{,y}$ = A fixed non-renewable biomass fraction value has been calculated as 0.91 for Zambia[7] – $NCV_{b,\,fuel}$ = Net calorific value of the fuel that is substituted or reduced (IPCC default value for Wood/Wood Waste) – $EF_{b,fuel,CO2}$ = CO_2 emission factor of the fuel that is substituted or reduced. (IPCC default value for Wood/Wood Waste)

[7] See C4EcoSolutions report

	– $EF_{b,fuel,nonCO2}$ = Non-CO_2 emission factor of the fuel that is substituted or reduced. (IPCC default value for Wood/Wood Waste) Project non-renewable biomass assessment may be deemed same as baseline, albeit should be updated for project fuel mix. Project fuel consumption will be established via project field test KPTs and will be conducted at-least biennially. The project field test KPTs will be determined using either paired / independent or single sample tests. 90/30 rule for sample size determination will be applied in case of paired or independent sampling. 90/10 rule will be applied in case of single sampling. In case desired precision is not achieved, lower bound value of the 90% confidence interval should be applied. GHG reductions achieved by the VPA will be calculated as follows: $ER_y = \sum BE_{b,y} - \sum PE_{p,y} - \sum LE_{p,y}$ Where: ER_y Emission reduction for total project activity in year y (tCO_2e/yr) $BE_{b,y}$ Baseline emissions for baseline scenario b in year y (tCO_2e/yr) $PE_{p,y}$ Project emissions for project scenario p in year y (tCO_2e/yr) $LE_{p,y}$ Leakage for project scenario p in year y (tCO_2e/yr) As per the methodology the governing equation for the emission reduction calculations is as follows with ($\sum BE_{b,y} - \sum PE_{p,y}$) is directly merged in to the following equation: $ER_y = \sum_{b,p} N_{p,y} * U_{p,y} * (f_{NRB,b,y} * ER_{b,p,y,CO2} + ER_{b,p,y,nonCO2})) - \sum LE_{p,y}$ Where: $N_{p,y}$ Cumulative number of project technology-days included in the Monitoring Database for

		project scenario p against baseline scenario b in year y
	$U_{p,y}$	Cumulative usage rate for technologies in project scenario p in year y, based on cumulative adoption rate and drop off rate revealed by usage surveys (fraction). A separate usage factor is determined for each technology in the project.
	$ER_{b,p,y,CO2}$	Specific CO_2 emission savings for an individual technology of Project pagainst an individual technology of Baseline b in year y, in tCO_2/day as derived from the statistical analysis of the data collected from the field tests
	$ER_{b,p,y,nonCO2}$	Specific non-CO_2 emission savings for an individual technology of Project pagainst an individual technology of Baseline b in year y, in tCO_2/day as derived from the statistical analysis of the data collected from the field tests
	$LE_{p,y}$ (tCO_2e/yr)	Leakage for project scenario p in year y
	$ER_{b,p,y,CO2} = \Sigma_i \{ f_{NRB,b,i,y} * B_{b,y,i} * NCV_{b,i} * EF_{b,i,CO2} \} - \Sigma_i \{ f_{NRB,b,i,y} * B_{p,y,i} * NCV_{p,i} * EF_{p,i,CO2} \}$	
	Where:	
	$fNRB_{,b,i,y}$	Fraction of woody biomass used in year y for fuel type *i* that can be established as non-renewable biomass (NRB) (drop this term from the equation when using a fossil fuel baseline scenario)
	$B_{b,y,i}$	Fuel consumption for fuel type *i* used in baseline b in year y, in tonnes/day, as derived from the default factor for the quantity of fuel consumed in baseline scenario ($B_{b,y}$)
	$B_{p,y,i}$	Fuel consumption for fuel type *i* used in project *p* in year y, in tonnes/day, as derived from the statistical analysis of the data collected from the field tests
	$NCV_{b,i}$	Net calorific value of the fuel type i used in baseline b (TJ/tonnes)
	$NCV_{p,i}$	Net calorific value of the fuel type *i* used in project p (TJ/tonnes)

	$EF_{b,i,CO2}$ CO_2 emission factor of the fuel type *i* used in the baseline (tCO_2/TJ) $EF_{p,i,CO2}$ CO_2 emission factor of the fuel type *i* used in the project (tCO_2/TJ) $ER_{b,p,y,nonCO2} = \sum_i \{ B_{b,y,i} * NCV_{b,i} * EF_{b,i,nonCO2} \} - \sum_i \{ B_{p,y,i} * NCV_{p,i} * EF_{p,i,nonCO2} \}$ Where: $EF_{b,i,nonCO2}$ non-CO_2 emission factor of the fuel type *i* used in the baseline (tCO_2/TJ) $EF_{p,i,nonCO2}$ non-CO_2 emission factor of the fuel type *i* used in the project (tCO_2/TJ) Leakage, if applicable, will be assessed on the following points: a. The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project. b. The NRB or fossil fuels saved under the project activity are used by non-project users who previously used lower emitting energy sources. c. The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario. d. The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology. By virtue of promotion and marketing of a new technology with high efficiency, 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.

SDG 15: Responsible Consumption and Production

Applied methodology/approach	Equation/calculation
Ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands,	Refer SDG 13 for determination of fuel savings due to project activity

mountains and drylands, in line with the obligations under the international agreements Approach: Reduction in domestic fuel consumption after shifting to ICS	

Data and parameters fixed ex-ante (all SDG13)

Data/parameter	$B_{b,y}$
Unit	Tonnes per household per annum
Description	Quantity of fuel consumed in baseline scenario b during year y, in tonnes
Source of data	Baseline KPTs
Value(s) applied	2.56 tonnes charcoal
Choice of data or Measurement methods and procedures	For illustration: see VPA-DD Section B.4
Purpose of data	Calculation of baseline scenario
Additional comment	n/a

Data/parameter	$EF_{b,i,CO2}$
Unit	tCO_2/t_{fuel}
Description	CO_2 emission factor arising from use of fuel type *i* in baseline scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5 - Default emission factors for stationary combustion in the residential and agriculture/forestry/fishing/fishing farms categories
Value(s) applied	Charcoal: 3.304 tCO2/tfuel
Choice of data or Measurement methods and procedures	The default IPCC factor for charcoal emissions has been applied (112 tCO_2/TJ) and multiplied by $NCV_{biomass}$ (0.0295TJ/t)
Purpose of data	Calculation of baseline scenario
Additional comment	-

Data/parameter	$EF_{b,i,nonCO2}$
Unit	tCO_2/t_{fuel}
Description	Non-CO_2 emission factor arising from use of fuel type *i* in baseline scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.9 - Residential Source Emission Factors
Value(s) applied	Charcoal: 1.099 tCO2/tfuel
Choice of data or Measurement methods and procedures	Mean value of the range of default IPCC factors for charcoal N_2O and CH_4 emissions has been applied and multiplied by $NCV_{biomass}$ (0.0295TJ/t)
Purpose of data	Calculation of baseline scenario
Additional comment	-

Data/parameter	$EF_{p,i,CO2}$
Unit	tCO_2/t_{fuel}
Description	CO_2 emission factor arising from use of fuel type *i* in project scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.5 - Default emission factors for stationary combustion in the residential and agriculture/forestry/fishing/fishing farms categories
Value(s) applied	Charcoal: 3.304 tCO2/tfuel
Choice of data or Measurement methods and procedures	The default IPCC factor for charcoal emissions has been applied (112 tCO_2/TJ) and multiplied by $NCV_{biomass}$ (0.0295TJ/t)
Purpose of data	Calculation of baseline scenario
Additional comment	-

Data/parameter	$EF_{p,i,nonCO2}$
Unit	tCO_2/t_{fuel}
Description	Non-CO_2 emission factor arising from use of fuel type *i* used in project scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Stationary Combustion, Table 2.9 - Residential Source Emission Factors.
Value(s) applied	Charcoal: 1.099 tCO2/tfuel

Choice of data or Measurement methods and procedures	Mean value of the range of default IPCC factors for charcoal N_2O and CH_4 emissions has been applied and multiplied by $NCV_{biomass}$ (0.0295TJ/t)
Purpose of data	Calculation of baseline scenario
Additional comment	-

Data/parameter	$NCV_{b,i}$
Unit	TJ/tonne
Description	Net calorific value of the fuel type *i* used in the baseline
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1: Introduction, Table 1.2 - Default net calorific values
Value(s) applied	Charcoal: 0.0295 TJ/tonne
Choice of data or Measurement methods and procedures	Default IPCC net calorific value for charcoal has been applied (29.5TJ/Gg)
Purpose of data	Calculation of baseline scenario
Additional comment	-

Data/parameter	$NCV_{p,i}$
Unit	TJ/tonne
Description	Net calorific value of the fuel type *i* used in the project scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 1: Introduction, Table 1.2 - Default net calorific values
Value(s) applied	Charcoal: 0.0295 TJ/tonnes
Choice of data or Measurement methods and procedures	Default IPCC net calorific value for charcoal has been applied (29.5TJ/Gg)
Purpose of data	Calculation of baseline scenario
Additional comment	-

Data/parameter	$f_{NRB,b,i,y}$
Unit	Fraction of non-renewable biomass used in the baseline
Description	Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass
Source of data	C4 EcoSolutions study

Value(s) applied	Fuelwood / wood chips / woody charcoal: 0.91
Choice of data or Measurement methods and procedures	N.A.
Purpose of data	Calculation of baseline scenario
Additional comment	Value once established in the first VPA of a country may be used for subsequent VPAs in that country

B.6.2. Ex ante estimation of SDG Impact

SDG 1: No Poverty

Net Benefit (SDG 1) $= BSA_{Project} - BSA_{Baseline}$

$= 1,127$

Where:

$BSA_{Baseline}$ Number of ICS distributed in baseline = 0

$BSA_{Project}$ Number of ICS distributed in Project = 1,127

Net Benefit (SDG 1) $= HHSProject - HHSBaseline$

$= (227 - 42.56)*12$ months

$= 2,213.28$

Where:

$HHFCS_{Baseline}$ –Average monthly fuel cost baseline
= 227 Kwacha from baseline survey (see Section~~372~~ B4)

$HHFCS_{Project}$ –Average monthly fuel cost in project
= $HHS_{Baseline}$ * (Bb,y-By, savings)/Bb,y
= 227 * (2.56-2.08)/ 2.56

= 42.56 Kwacha

SDG 3: Good Health and Well Being

Net Benefit (SDG 3) $= SPM_{HH,Project} - SPM_{HH,Baseline}$

$= 100\%$

Where:

$SPM_{HH,Baseline}$ % HH reporting reduction in smoke/PM emissions while cooking on improved stove in baseline = 0

$SPM_{HH,Project}$ % HH reporting reduction in smoke/PM emissions while cooking on improved stove in project = 100%

SDG 5: Gender Equality

Net Benefit (SDG 5) = $HHTS_{Project}$ – $HHTS_{Baseline}$
= 100%

Where:

$HHTS_{Baseline}$ % HH reporting time saving from fuel collection/purchase/during cooking due to reduced fuel consumption in baseline
= 0

$HHTS_{Project}$ % HH reporting time saving from fuel collection/purchase/during cooking due to reduced fuel consumption in project
= 100%

SDG 7: Affordable and Clean Energy

Net Benefit (SDG 7) = $ACS_{Project}$ - $ACS_{Baseline}$
= 1,127

Where:

$ACS_{Baseline}$ Access to affordable and clean energy (Number of operating ICS units under Baseline)
= 0

$ACS_{Project}$ Access to affordable and clean energy (Number of operating ICS units under Project)
= 1,127

SDG 8: Decent Work and Economic Growth

Net Benefit (SDG 8) = QE $IG_{Project}$ - QE $IG_{Baseline}$
= 30

Where:

QE $IG_{Baseline}$ Quantitative Employment and income generation (Number of person (male and female) hired under Baseline)
= 0

QE $IG_{Project}$ Quantitative Employment and income generation (Number of person (male and female) hired under Project)
= 30

SDG 12: Responsible Consumption and Production

Charcoal fuel saving while cooking on the project ICS. Ex-ante calculation = 2.08 tonnes per stove per annum.

$B_{y,savings} = B_{old} - B_{py}$

Where:

$B_{y,savings}$ = 2.08 (Estimated Ex-Ante)

B_{old} = 2.56 (Baseline KPT's)

B_{py} = 0.48 (Estimated Ex-Ante)

SDG 13: Climate Action

The overall GHG reductions achieved by the project activity will be calculated as follows (see ER calc sheet for details):

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

Where:

ER_y Emission reduction for total project activity in year y (tCO_2e/yr)
= 8,589 (average)

$BE_{b,y}$ Baseline emissions for baseline scenario b in year y (tCO_2e/yr)
= 9,639 (average)

$PE_{p,y}$ Project emissions for project scenario p in year y (tCO_2e/yr)
= 0

$LE_{p,y}$ Leakage for project scenario p in year y (tCO_2e/yr)
= 96 (average)

As per the methodology the governing equation for the emission reduction calculations is as follows with ($\sum BE_{b,y} - \sum PE_{p,y}$) is directly merged in to the following equation.

$ER_y = \sum_{b,p} N_{p,y} * U_{p,y} * (ER_{b,p,y,CO2} + ER_{b,p,y,nonCO2}) - \sum LE_{p,y}$

Where:

$\sum_{b,p}$ Sum over all relevant (baseline b/project p) couples
= 1,127ICS

$N_{p,y}$ Cumulative number of project technology-days included in the sales/distribution database for project scenario p against baseline scenario b in year y
= 1,127 * 365
= 411,355 days

$U_{p,y}$ Cumulative usage rate for technologies in project scenario p in year y, based on cumulative adoption rate and drop off rate revealed by usage surveys (fraction)
= 90%

$ER_{b,p,y,CO2}$ Specific CO_2 emission savings for an individual technology of Project against an individual technology of Baseline b in year y, in tCO_2/day as derived from the statistical analysis of the data collected from the field tests
= 5.58 pa
= 0.0153 tCO_2e/day

$ER_{b,p,y,nonCO2}$ Specific non-CO_2 emission savings for an individual technology of Project against an individual technology of Baseline b in year y, in tCO_2/day as derived from the statistical analysis of the data collected from the field tests
= 2.04 pa
= 0.0056 tCO_2e/day

$LE_{p,y}$ Leakage for project scenario p in year y
= 1%
= 96 tCO_2e/yr

$$ER_{b,p,y,CO2} = \sum_i \{ f_{NRB,b,i,y} * B_{b,y,i} * NCV_{b,i} * EF_{b,i,CO2} \} - \sum_i \{ f_{NRB,b,i,y} * B_{p,y,i} * NCV_{p,i} * EF_{p,i,CO2} \}$$

Where:

$f_{NRB,b,i,y}$ Fraction of woody biomass used in year y for fuel type *i* that can be established as non-renewable biomass (NRB)
= 0.91

$B_{b,y,i}$ Fuel consumption for fuel type *i* used in baseline b in year y in tonnes, as per the baseline default factors
= 2.56t

$B_{p,y,i}$ Fuel consumption for fuel type *i* used in project p in year y in tonnes, as derived from the statistical analysis of the data collected from the field tests

= 0.48 (estimated charcoal pKPT value Ex-Ante)

$NCV_{b,i}$ Net calorific value of the fuel type *i* used in baseline b (TJ/tonnes)
= 0.0295 (Charcoal)

$NCV_{p,i}$ Net calorific value of the fuel type *i* used in project p (TJ/tonnes)
= 0.0295 (Charcoal)

$EF_{b,i,CO2}$ CO_2 emission factor of the fuel type *i* used in the baseline
= 112 tCO_2/TJ
= 3.304 tCO_2/ tfuel

$EF_{p,i,CO2}$ CO_2 emission factor of the fuel type *i* used in the project
= 112 tCO_2/TJ
= 3.304 tCO_2/ tfuel

i Fuel Type (Charcoal)

$ER_{b,p,y,nonCO2} = \sum_i \{ B_{b,y,i} * NCV_{b,i} * EF_{b,i,nonCO2} \} - \sum_i \{ B_{p,y,i} * NCV_{p,i} * EF_{p,i,nonCO2} \}$

Where:

$EF_{b,i,nonCO2}$ non-CO_2 emission factor of the fuel type *i* used in the baseline

= 1,224 (CH_4), 11.25 (N_2O) tCO_2/TJ

= 1.099 tCO_2/ tfuel

$EF_{p,i,nonCO2}$ non-CO_2 emission factor of the fuel type *i* used in the project

= 1,224 (CH_4), 11.25 (N_2O) tCO_2/TJ

= 1.099 tCO_2/ tfuel

LEy Leakage for project scenario p in year y
= 1% (baseline estimate)

B.6.3. Summary of ex ante estimates of each SDG outcome

SDG 13: Climate Action

Year	Baseline estimate	Project estimate	Net benefit
17/04/2021-16/04/2022	9,639	0	8,589
17/04/2022-16/04/2023	9,639	0	8,589
17/04/2023-16/04/2024	9,639	0	8,589
17/04/2024-16/04/2025	9,639	0	8,589
17/04/2025-16/04/2026	9,639	0	8,589
Total	48,197	0	42,945

Total number of crediting years	5		
Annual average over the crediting period	**9,639**	**0**	**8,589**

SDG 1: No Poverty

Access to Basic Technology

Year	Baseline estimate	Project estimate	Net benefit
17/04/2021-16/04/2022	0	1,127	1,127
17/04/2022-16/04/2023	0	1,127	1,127
17/04/2023-16/04/2024	0	1,127	1,127
17/04/2024-16/04/2025	0	1,127	1,127
17/04/2025-16/04/2026	0	1,127	1,127
Total	0	1,127	1,127
Total number of crediting years	5		
Annual average over the crediting period	0	**1,127**	**1,127**

Financial Savings

Year	Baseline estimate	Project estimate	Net benefit
17/04/2021-16/04/2022	2,724	510.75	2,213.28
17/04/2022-16/04/2023	2,724	510.75	2,213.28
17/04/2023-16/04/2024	2,724	510.75	2,213.28
17/04/2024-16/04/2025	2,724	510.75	2,213.28
17/04/2025-16/04/2026	2,724	510.75	2,213.28
Total	13,620	2,553.75	11,066.4
Total number of crediting years	5		
Annual average over the crediting period	**2,724**	510.75	2,213.28

SDG 3: Good Health and well being

Year	Baseline estimate	Project estimate	Net benefit
17/04/2021-16/04/2022	0	100%	100%
17/04/2022-16/04/2023	0	100%	100%
17/04/2023-16/04/2024	0	100%	100%
17/04/2024-16/04/2025	0	100%	100%
17/04/2025-16/04/2026	0	100%	100%
Total	0	100%	100%
Total number of crediting years	5		
Annual average over the crediting period	0	100%	100%

SDG 5: Gender Equality

Year	Baseline estimate	Project estimate	Net benefit
17/04/2021-16/04/2022	0	100%	100%
17/04/2022-16/04/2023	0	100%	100%
17/04/2023-16/04/2024	0	100%	100%
17/04/2024-16/04/2025	0	100%	100%
17/04/2025-16/04/2026	0	100%	100%
Total	0	100%	100%
Total number of crediting years	5		
Annual average over the crediting period	0	100%	100%

SDG 7: Affordable and Clean Energy

Year	Baseline estimate	Project estimate	Net benefit
17/04/2021-16/04/2022	0	1,127	1,127
17/04/2022-16/04/2023	0	1,127	1,127
17/04/2023-16/04/2024	0	1,127	1,127
17/04/2024-16/04/2025	0	1,127	1,127
17/04/2025-16/04/2026	0	1,127	1,127
Total	0	1,127	1,127
Total number of crediting years	5		
Annual average over the crediting period	0	**1,127**	**1,127**

SDG 8: Decent Work and Economic Growth

Year	Baseline estimate	Project estimate	Net benefit
17/04/2021-16/04/2022	0	30	30
17/04/2022-16/04/2023	0	30	30
17/04/2023-16/04/2024	0	30	30
17/04/2024-16/04/2025	0	30	30
17/04/2025-16/04/2026	0	30	30
Total	0	30	30
Total number of crediting years	5		
Annual average over the crediting period	0	30	30

SDG 12: Responsible Consumption and Production

Charcoal ICS Savings:

Year	Baseline estimate	Project estimate	Net benefit
17/04/2021-16/04/2022	2.56	0.48	2.08
17/04/2022-16/04/2023	2.56	0.48	2.08
17/04/2023-16/04/2024	2.56	0.48	2.08
17/04/2024-16/04/2025	2.56	0.48	2.08
17/04/2025-16/04/2026	2.56	0.48	2.08
Total	2.56	0.48	2.08
Total number of crediting years	5		
Annual average over the crediting period	2.56	0.48	2.08

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

SDG 13

Data / Parameter	$B_{p,y,i}$
Unit	Tonnes per household per annum
Description	Quantity of fuel consumed in project scenario p during year y, in tonnes, 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)
Source of data	Field performance Tests (FPTs)
Value(s) applied	0.48 tonnes (estimated)
Measurement methods and procedures	Kitchen Performance Test (KPT)
Monitoring frequency	Updated every two years
QA/QC procedures	The equipment used for testing, if any either will be externally calibrated or newly purchased within one year of the time of use so measurements are done with the necessary guarantees.
Purpose of data	For emission reduction calculations
Additional comment	A 'Case of a Single Sample Test' shall be applied with a minimum sample size of 20 and the '90/10 rule' or '90% confidence rule' applied. KPT protocol shall be used for PFT (for e.g.: PCIA KPT protocol may be used)

Data / Parameter	$U_{p,y}$
Unit	Fraction (or %)
Description	Usage rate in project scenario p during year y determined on a sampling basis
Source of data	Annual usage survey
Value(s) applied	90%
Measurement methods and procedures	Sampling surveys (telephonic / physical) may be conducted to record the continued operation of project devices. The usage rate shall be calculated for each age (simple random / stratified random sampling to be applied as applicable)
Monitoring frequency	Annual
QA/QC procedures	CME will provide guidance and training to enumerators for conducting surveys to meet specific requirements of the methodology, if any. The value obtained will be tested to determine if the desired precision was met.
Purpose of data	For emission reduction calculations
Additional comment	-

Data / Parameter	$N_{p,y}$
Unit	number
Description	Technologies in the Monitoring Database for project scenario p through year y
Source of data	Total sales record
Value(s) applied	1,127
Measurement methods and procedures	One stove is distributed per household and the total number of stoves is listed in the Monitoring Database
Monitoring frequency	Continuous
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	For emission reduction calculations
Additional comment	ICS included in the VPA will be registered in the monitoring database via the data collection app and the emissions reductions will be calculated from the day immediately following the installation date.

Data / Parameter	$LE_{p,y}$
Unit	Tonnes of CO_2 equivalent per year
Description	Leakage in project scenario p during year y
Source of data	Leakage assessment
Value(s) applied	135
Measurement methods and procedures	Qualitative / quantitative assessment
Monitoring frequency	Aggregate leakage can be assessed for multiple project scenarios, if appropriate, every two years
QA/QC procedures	N.A.
Purpose of data	For leakage emissions
Additional comment	Applicable only if relevant

SDG 1

Data / Parameter	BSA / HHS
Unit	Number Currency
Description	Proportion of population living in households with access to basic services Financial Savings
Source of data	1. ICS distribution records 2. Ex-post Monitoring Survey Records
Value(s) applied	1,127 ICS in use Kwacha (Local currency)
Measurement methods and procedures	1. Records of number of VPA ICS distributed in Monitoring Database 2. Ex-post monitoring survey to assess the proportion of population with ICS still in operation and/or amount of money spent less monthly
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	SDG 1 contribution
Additional comment	-

SDG 3

Data / Parameter	SPM_{HH}

Unit	%
Description	Air Quality in project households
Source of data	Ex-post monitoring survey records
Value(s) applied	100%
Measurement methods and procedures	Ex-post monitoring survey assessing on a sampled basis the percentage of VPA households reporting reduction in smoke/PM emissions/indoor air pollution while cooking on the project ICS vs. baseline
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	SDG 3 contribution
Additional comment	-

SDG 5

Data / Parameter	HHTS
Unit	% Hr per household
Description	% of household reporting time savings
Source of data	Ex-post Monitoring Survey Records
Value(s) applied	100%
Measurement methods and procedures	Ex-post monitoring survey assessing on a sampled basis the percentage of VPA households reporting reduced fuel collection need while cooking on the project ICS vs. baseline.
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	SDG 5 contribution
Additional comment	-

SDG 7

Data / Parameter	$AACS_{HH}$
Unit	Number
Description	Number of households having access to affordable, reliable and modern energy services.
Source of data	ICS Monitoring Database
Value(s) applied	1,127 ICS

Measurement methods and procedures	Monitoring the number of ICS distributed under the project as an indicator of providing affordable, reliable and modern energy services.
Monitoring frequency	Continuous
QA/QC procedures	-
Purpose of data	SDG 7 contribution
Additional comment	-

SDG 8

Data / Parameter	QE IG
Unit	Number
Description	Quantitative Employment and income generation
Source of data	Employment records
Value(s) applied	30
Measurement methods and procedures	Recording the number of employees (male / female) in the VPA for ICS distribution, logistics, monitoring & management
Monitoring frequency	Annually
QA/QC procedures	It will be ensured that the minimum wages as per host country requirements are provided.
Purpose of data	SDG 8 contribution
Additional comment	-

SDG 12

Data / Parameter	$B_{y,savings}$
Unit	Tonnes/year
Description	Reduction in domestic fuel consumption
Source of data	Ex-post monitoring survey records
Value(s) applied	2.08 tonnes charcoal (estimated Ex-Ante)
Measurement methods and procedures	Ex-post monitoring ($B_{p,y,i}$) via KPTs to determine fuel savings
Monitoring frequency	Annually / biennially
QA/QC procedures	-
Purpose of data	SDG 12 contribution
Additional comment	This value is indicative and will be updated prior to first issuance.

B.7.2. Sampling plan

All monitored parameters will be assessed using simple random sampling, at the required precision/confidence level, which shall be applied for determining parameter values based on age batches as project technologies age over time and/or are replaced. The ICS in the sampled population shall be categorized based on age and sample size shall be determined based on expected parameter values in each age category using stratified random sampling approach as per the CDM Standard: "Sampling and surveys for CDM project activities and programmes of activities".

The overall sample size determined for monitored parameters via surveys shall be distributed within each age category based on percentage of stoves in corresponding age category. For example, if only technologies in the first year of use (age 0-1) are being credited, a usage parameter must be established through a usage survey for technologies age 0-1. If technologies in the first year of use (age 0-1) and second year of use (age 1-2) are credited, a usage parameter is required that is weighted to be representative of drop off rates for technologies age 0-1 and age 1-2.

For determining the fuel consumption in the project scenarios, the KPT sample size determination shall be based on the guidance given in the methodology.

The sampling approach and sample size calculations will be presented transparently and accurately in each monitoring report.

B.7.3. Other elements of monitoring plan

The other elements of the monitoring plan include:

- Operational and management structure

The PoA CME has overall responsibility for implementation, control and review of the monitoring plan. All monitored data will be submitted to the CME for review.

The VPA Implementer (VPAI) has responsibility for the actual implementation of the monitoring plan at VPA level and will employ and train staff to undertake monitoring activities accordingly.

- Provisions for data archiving

All monitoring data will be collected in the first instance via the VPAI and submitted to the CME for QA/QC.
Data will be archived by the CME electronically and securely on its own server for future auditing purposes.

- Responsibilities and arrangements for data collection

The CME will provide the format and means for the VPAI to collect monitoring data – this may be electronically collected or via a paper-based system.

The VPAI will collect monitoring data in the first instance by appointing by trained field-based monitoring teams, which may also be an appointed 3rd party agency. All data collected in the field will be retained securely by the VPAI for future audit purposes.

Once collected data will be collated and screened for QA/QC purposes by the VPAI prior to submission to the CME for further QA/QC.

Cross-VPA monitoring may be carried out and in doing so the requirements of CDM Standard for Programmes of Activity will be followed.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1. Start date of VPA

16/04/2021

This is the date of distribution of first ICS under the VPA, as evidenced by the Monitoring Database records.

First Monitoring Database entry:

ID number	Submission time datetime	Beneficiary Surname string	Beneficiary Name string	NRC Number string	Phone Number string	Gender categorical	Geo-tag of Beneficiary house geofield	Scan Stove Serial Number	Photo of stove image
77378030	Apr 16, 2021	Chisenga	Keddy	336198641	0973373504	Male	-15.378054999999998 28....	148618687	1618597734972.jpg

Signature confirming End User Agreement:

C.1.2. Expected operational lifetime of VPA

15 years 0 month

C.2. Crediting period of project

C.2.1. Start date of crediting period

16/04/2021

C.2.2. Total length of crediting period

5 years, renewable twice

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1. Safeguarding Principles that will be monitored

A completed Safeguarding Principles Assessment is in Appendix 1, ongoing monitoring is summarised below.

Principles	Mitigation Measures added to the Monitoring Plan
Principle 6. Labour Rights	VPAI employment contracts will be made available. Stove manufacturers will be required to show a suitable, up-to-date OHS policy

D.2. Assessment that project complies with GS4GG Gender Sensitive requirements

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	The VPA lists SDG 5 as a key impact area for the project and provides the means to monitor this within the monitoring plan. The VPAI ensures that gender-sensitive approaches are taken during stakeholder consultations.
Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	The VPA aligns with the Zambia National Gender Policy and directly addresses the issues raised in Section 2.3.5 Energy[8]
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	Not required. Improved cookstove projects not following Gender responsive approach do not require to contract an expert as per Gender Equality Requirements & Guidelines. The project will have a positive impact on women included under the programme by providing them with cleaner cooking solutions.
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	Not required. Improved cookstove projects not following Gender responsive approach do not require to contract an expert as per Gender Equality Requirements & Guidelines.

[8] http://extwprlegs1.fao.org/docs/pdf/zam152916.pdf

	The stakeholder consultation will include interactions with potential beneficiaries including women and their feedback shall be considered appropriately.

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

A Local Stakeholder Consultation has not been possible to date owing to COVID-19 restrictions and the CME is applying the GS COVID-19 Interim Measures, which are valid until 30th June 2022.

The below is a summary of the 2 step GS4GG Consultation for monitoring purposes. Please refer to the separate Stakeholder Consultation Report for a complete report on the initial consultation and stakeholder feedback round.

TASC will be conducting a complete LSC/SFR process during 2022, as the COVID-19 situation eases in Zambia and the Gold Standard Interim Measures expire.

E.1. Summary of stakeholder mitigation measures

Owing to COVID-19 restrictions, local stakeholders in Zambia have been consulted only as follows:

1. Community sensitization meetings held between April-December 2020
2. An electronic LSC accompanying the PoA Design Consultation between 04/02/2021 and 04/03/2021

No comments were received that require changes to the proposed VPA design.

E.2. Final continuous input / grievance mechanism

Method	Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers.
Continuous Input / Grievance Expression Process Book (mandatory)	The CME invites continuous input to the PoA via a dedicated email address. The VPA Implementer will identify a physical location within the VPA. To be established as paper-based feedback form.
GS Contact (mandatory)	help@goldstandard.org
CME/VPAI Contact	cookstoves@tasc.je

SECTION F. **Eligibility and inclusion criteria for VPAs inclusion**

The below table is completed in Section A and in this section of the VPA-DD.

No.	Eligibility Criterion	Description/ Required condition	Means of Verification/Supporting evidence for VPA inclusion
1	Geographic Boundary and target area	Each VPA shall involve installation of ICS within the geographical boundary of PoA.	Monitoring database, listing the location of ICS distributed under the VPA and GPS location (where possible) of each End User household
2	Double Counting	Each VPA shall be added to the monitoring database with a unique set of distribution data.	All ICS distributed in the VPA shall have: • a unique ID serial number • a GPS tag (if possible) • End user data (name/address/physical location/phone number/govt. ID number - where possible) • Records of baseline stove type and fuel type used This data uniquely identifies each ICS, avoiding any double counting and trace its user for future monitoring and verification. Duplicate End User data will be identified in the monitoring database and resolved by the VPA Implementer. This distribution data will be held securely in the monitoring database.
3	Exclusiveness of VPA	The VPA was not previously registered as a project activity or included as a VPA in any other registered PoA or deregistered as a VPA of a PoA.	The VPA did not participate or was not registered in any other voluntary/compliance standards previously and the VPA is not currently listed with any other voluntary/compliance standards.

4	Specifications of Technology/ Measure	3. **Type -** The VPA will promote dissemination of improved biomass ICS in PoA. 4. **Capacity -** The rated annual thermal energy savings of ICS included under the VPAs shall not be more than 1.8GWhth.	Technical details of the ICS (including thermal efficiency and energy/power rating) will be provided in the baseline emissions calculations of the specific VPA. As specific VPA may have ongoing distribution of ICS, and new stove models may be introduced during the crediting period of the VPA, this may be checked at the time of subsequent verification.
5	Start Date	Date on which first ICS was installed under the VPA. The start date of any proposed VPA will be on or after the start date of the PoA	16/04/2021: the date of the End User Agreement for the first ICS distributed in the VPA, as entered in the Monitoring Database (see Section C.1).
6	Applicability of the methodologies	VPA must follow TPDDTEC version 3.1. The applicability criteria of the methodology are listed in section B.2 of the PoA-DD. Technology related requirements stipulated by the methodology have been specified in criteria #4 above.	Applicability of the methodology is described in Section B of the VPA-DD.
7	Additionality	VPAs will apply the Positive List justifications (see Section C of PoA-DD): 3. ICS shall be distributed to households 4. The annual thermal energy savings of ICS included under the VPAs shall not be more than 1.8GWh_{th}	ICS shall be distributed to households substantiated via the monitoring database. The annual thermal energy savings per ICS is equal to 0.009 GWh, as seen in the Threshold assessment sheet of the ER calculation sheet.
8	Official Development Assistance (ODA)	Affirmation that funding from Annex I Parties, if any, does not result in a diversion of ODA	A Declaration from CME and VPA Implementer will be made that no funds for official development assistance will be used for program implementation

9	Target Group and Distribution Mechanism	Target Group: Households Distribution Mechanism: Via VPAI / local partners	The ICS by virtue of their size, output and design are usable only in households. The monitoring database will confirm distribution to households. A bespoke distribution mechanism is defined in Section A1 of this VPA-DD.
10	Sampling	VPAs under the program will adhere to all sampling requirements in TPDDTEC, version 3.1	The VPA will follow monitoring plan in line with the requirements of the TPDDTEC methodology. The monitoring and sampling plan is described in section B.7. of the VPA-DD.
11	SSC Threshold	Not applicable as per section B.1 above	N/A
12	Eligibility of Technologies	As per TPDDTEC, version 3.1: "Examples of these technologies include the introduction of improved biomass or fossil fuel cookstoves, ovens, dryers, space and water heaters (solar and otherwise), heat retention cookers, solar cookers, bio-digesters, safe water supply and treatment technologies that displace the boiling of water, thermal insulation in cold climates, etc."	The VPA included improved biomass cookstoves as defined by being >20% thermal efficiency in the manufacturer's specifications
13	Conditions to be met by each VPA regarding SDG outcomes assessment	The SDG assessment is done at VPA level	The VPA included the SDG outcomes in the monitoring parameters and report on these in each monitoring report. The SDG outcome assessment is done at VPA level and is highlighted in section B.6.
14	Conditions to be met by each VPA regarding safeguarding principles	The Safeguarding Principles assessment is done at VPA level.	The VPA included the Safeguarding Principles in the monitoring parameters and report on these in each monitoring report. The safeguards assessment is done at the VPA level and is detailed in Appendix 1.

15	Conditions to be met for retroactive VPAs	Retroactive projects shall submit for Preliminary Review within one year of the project start date.	The start date of the project was 16/04/2021 and the VPA-DD was submitted for Preliminary Review on 11/04/2022. This is within 1 year of the project start date. LSC will be completed prior to the first verification of the VPA.
16	Conditions to be met for CER Labelling	N/A	N/A
17	Conditions to be met in multi-country PoAs	Conditions that might apply for a single country PoA will apply to each country that is included in the PoA including *inter alia* baseline parameter assessments, LSC etc.	The VPA applied the applicability and eligibility criteria to the project boundary of Zambia, which is a host country included in the PoA-DD.

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Complete the Assessment below and copy all Mitigation Measures for each Principle into SECTION D above. Please refer to the instructions in the Guide to Completing this Form below.

Assessment Questions/ Requirements	Justification of Relevance (Yes/ potentially/ no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Rights			
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	The VPA will 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 Right. The project will not discriminate with regards to participation and inclusion	Not required
The Project shall not discriminate with regards to participation and inclusion	No	The VPA does not discriminate with regards to participation and inclusion	Not required
Principle 2. Gender Equality			

1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women 2. Projects shall apply the principles of non-discrimination, equal treatment, and equal pay for equal work 3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks 4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)	No	The VPA activity does not endorse any form of discrimination based on gender. ICS will be distributed to all willing customers within the project boundary. The project will have a positive impact on women considering that they will spend less time on cooking or fuel procurement and will be able to cook in cleaner environment.	Not required
Principle 3. Community Health, Safety and Working Conditions			
The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	No	ICS distributed under the VPA reduce exposure to harmful indoor air pollutants and smoke levels. This can lead to a reduction of respiratory illness compared to cooking on traditional biomass stoves using solid biomass fuel.	Not required
Principle 4.1 Sites of Cultural and Historical Heritage			
Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?	No	Not relevant	Not required
Principle 4.2 Forced Eviction and Displacement			

Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	Not relevant	Not required
Principle 4.3 Land Tenure and Other Rights			
Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	No	Not relevant	Not required
Principle 5. Corruption			
The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	No	Neither the CME not VPAI is complicit in any form of direct or indirect corruption.	Not required
Principle 6.1 Labour Rights			
The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions	No	The VPA does not involve any forced labour and the CME & VPAI will ensure that all employment is in compliance with local labour regulations and laws.	VPAI employment contracts will be made available.
Workers shall be able to establish and join labour organisations	No	The CME puts no constraints / limitation on employees to form a union.	Not required

Working agreements with all individual workers shall be documented and implemented and include: a. Working hours (must not exceed 48 hours per week on a regular basis), AND b. Duties and tasks, AND c. Remuneration (must include provision for payment of overtime), AND d. Modalities on health insurance, AND e. Modalities on termination of the contract with provision for voluntary resignation by employee, AND f. Provision for annual leave of not less than 10 days per year, not including sick and casual leave.	No	The CME's policies and employment contracts are compliant with the requirement	VPAI employment contracts will be made available.
No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion)	No	The CME and VPAI do not promote and are not complicit in child labour	Not required
The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures	No	Not relevant	Not required
Principle 6.2 Negative Economic Consequences			
Does the project cause negative economic consequences during and after project implementation?	No	No negative economic consequences are deemed applicable	Not required
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The VPA reduces GHG emissions relative to baseline scenario	Not required

Principle 7.2 Energy Supply			
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 project will reduce fuel resource consumption instead	Not required
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	Not applicable	Not required
Principle 8.2 Erosion and/or Water Body Instability			
Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	No	The VPA shall result in reduction in demand of biomass fuel in the region putting less pressure of forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling.	Not required
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for production of crops or other products?	No	Not applicable	Not required
Principle 9.2 Vulnerability to Natural Disaster			

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	Not applicable	Not required
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No	Not applicable	Not required
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	Not applicable	Not required
Principle 9.5 Hazardous and Non-hazardous Waste			
Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	Not applicable	Not required
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	Not applicable	Not required
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	The VPA does not involve harvesting of forests. The VPA shall result in reduction in	Not required

		demand of biomass fuel in the region putting less pressure of forests for deforestation and will hence indirectly avoid erosion associated with tree cutting/ felling.	
Principle 9.8 Food			
Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	Not applicable	Not required
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	Not applicable	Not required
Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	Not applicable	Not required
Principle 9.11 Endangered Species			

Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	Not applicable	Not required

APPENDIX 2- CONTACT INFORMATION OF VPA IMPLEMENTER

Organization name	The African Stove Company Ltd. (TASC)
Registration number with relevant authority	Jersey Financial Services Commission Companies Registry Registered Number: 129398
Street/P.O. Box	17a York Street
Building	
City	St. Helier
State/Region	
Postcode	JE2 3RD
Country	Jersey
Telephone	
E-mail	cookstoves@tasc.je
Website	www.tasc.je
Contact person	Nick Marshall
Title	Director
Salutation	Mr.
Last name	
Middle name	Marshall
First name	Nick
Department	-
Mobile	-
Direct tel.	-
Personal e-mail	nick@tasc.je

APPENDIX 3- LUF ADDITIONAL INFORMATION

Risk of change to the Project Area during Project Certification Period:	NA
Risk of change to the Project activities during Project Certification Period:	-
Land-use history and current status of Project Area:	-
Socio-Economic history:	-
Forest management applied (past and future)	-
Forest characteristics (including main tree species planted)	-
Main social impacts (risks and benefits)	-
Main environmental impacts (risks and benefits)	-
Financial structure	-
Infrastructure (roads/houses etc):	-
Water bodies:	-
Sites with special significance for indigenous people and local communities - resulting from the Stakeholder Consultation:	-
Where indigenous people and local communities are situated:	-
Where indigenous people and local communities have legal rights, customary rights or sites with special cultural, ecological, economic, religious or spiritual significance:	-

APPENDIX 4-SUMMARY OF APPROVED DESIGN CHANGES

NA

Revision History

Version	Date	Remarks
2.0	4 May 2022	
1.1	7 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Inclusion criteria table added Gender sensitive requirements added Prior consideration (1 yr rule) and Ongoing Financial Need added Safeguard Principles Assessment as annex and a new section to include applicable safeguards for clarity Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on Stakeholder Consultation information required Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption