Gold Standard for the Global Goals
Key Project Information & Project Design Document (PDD)

Gold Standard® for the Global Goals

Version 1.1 – August 2017

KEY PROJECT INFORMATION

Title of Project:	GS 7438 Improved Cookstove Project In Uganda
Brief description of Project:	The majority of people in Uganda rely on woody biomass for cooking. According to statistics by the Government of Uganda, 94% of the population use predominantly firewood and charcoal to prepare their food. This high demand for woody biomass increases the pressure on the natural resources and the local forests. Firewood and charcoal are the kind of non-renewable woody biomass. Burning firewood and charcoal for cooking is not only leading to significant greenhouse gase emissions but families also need to spend a lot of time and/or money on collecting and/or purchasing firewood and charcoal. Besides, firewood collection and charcoal production lead to deforestation and environmental degreadation. Additionally, the inefficient combustion of firewood leads to Indoor-Air-Pollution, which represents a high risk for the health of women and youth. This project seeks to increase access of households and communities to improved cookstoves by disseminating affordable high thermal efficiency and low greenhouse gas emitting cooking stoves to replace three stone fire or low-efficiency cookstoves in Uganda. By using the improved stoves, firewood and charcoal consumed for cooking would be greatly reduced, so that greenhouse gas emissions would be greatly reduced; simultaneously ICSs can provide co-benefits to users in the form of relief from high fuel costs, reduced exposure to health-damaging indoor air pollutions, faster cooking, and increased cleanliness and convenience. In addition, reduced firewood and charcoal demand would lead to less forest cutting and the reduction in deforestation.
Expected Implementation Date: Expected duration of Project:	July 1, 2018 15 years
Project Developer:	Swiss Carbon Value Ltd.
Project Representative:	Swiss Carbon Value Ltd.
Project Participants and any communities involved:	Swiss Carbon Value Ltd. Potential Energy, Inc.
Version of PDD: Date of Version:	Version 2.0 May 24, 2019
Host Country / Location:	Uganda

Certification Pathway (Project Certification/Impact Statements & Products	Project Certification
Activity Requirements applied: (mark GS4GG if none relevant)	Community Services Activity Requirements (Version 1.1, 01.03.2018)
Methodologies applied:	Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 3.1 (August 2017)
Product Requirements applied:	GHG Emission Reductions & Sequestration Project Requirements (Version 1.1, 01.03.2018)
Regular/Retroactive:	Retroactive
SDG Impacts:	1 – SDG 7 Affortable and Clean Energy 2 – SDG 8 Decent Work and Economic Growth 3 – SDG 13 Climate Action
Estimated amount of SDG Impact Certified	1 – SDG 7 Affortable and Clean Energy Number of stoves sold：15,900 per year 2 – SDG 8 Decent Work and Economic Growth Number of jobs created: 12 3 – SDG 13 Climate Action GHG Emission Reductions : 213,600tCO_2/yr

SECTION A. Description of project

A.1. Purpose and general description of project

>> (Provide a brief description of the project including the description of scenario existing prior to the implementation of the project.)

The goal of the project is to promote the use of efficient or improved cook stoves (ICS) in Uganda. The ICS disseminated through this project will replace the prevailing inefficient three-stone fires or traditional cook stoves with ICS which combust woody biomass more efficiently and improve thermal transfer to pots, resulting in reduced fuel consumption and lower greenhouse gas emissions. The project aims to establish regular use of ICS by distributing improved cook stoves. The adoption and usage of the improved cook-stoves therefore, constitutes the project scenario.

The majority of people in Uganda rely on woody biomass for cooking. According to statistics by the Government of Uganda, 94% of the population use predominantly firewood and charcoal to prepare their food.[1] Most households in Uganda today still use the traditional three-stone fires as the main means for preparing their food. The baseline scenario is defined by the typical baseline fuel consumption patterns in a population that is targeted for adopting the new project technology. The Baseline Scenario for this project would thus be that the usage of firewood and/or charcoal in traditional low efficiency charcoal/firewood stove or three-stone fire for cooking in kitchens of households and/or communities.

"Potential Energy, Inc."(PE) is the project owner of the activity. PE will manage and coordinate activities of local partners, the promotion and distribution of the ICSs, and provide all necessary marketing and promotion assistance to partners. PE is also responsible for monitoring activities of this project. Under this project activity, PE will distribute Berkeley-Darfur Stove (BDS) to replace three stone fire or low-efficiency cookstoves in Uganda. BDS is a biomass burning, high- efficiency rocket-style cookstove. It uses less the fuel and emits less the smoke as compared to open fire cooking. The PE may also distribute another stove if it matches the specifications of the BDS.

According to the actual sales records in 2018 and the sales plan for the first five years of the project, averagely around 15,900 ICSs will be distributed annually. Please find the estimated sales plan in the table below:

Table A1: Stove sales plan during the first crediting period

Year	Estimated number of stoves sold
1	12,500
2	12,000
3	15,000
4	19,000
5	21,000
Total	79,500

[1] https://www.ubos.org/onlinefiles/uploads/ubos/pdf%20documents/2017_UNHS_26092017-Final_Presentation.pdf,

With the above mentioned deployment plan, it is estimated that the project activity would lead to annual average emission reductions of around 213,600tCO_2e and total GHG emission reductions of 1,068,000tCO_2e for the first crediting period.

By using the ICSs, firewood and charcoal consumed for cooking would be greatly reduced, so that greenhouse gas emissions would be greatly reduced; simultaneously ICSs can provide co-benefits to users in the form of relief from high fuel costs, reduced exposure to health-damanging indoor air pollutions, faster cooking, and increased cleanliness and convenience. In addition, reduced firewood and charcoal demand would lead to less forest cutting, and the reduction in deforestation.

A.2. Eligibility of the project under Gold Standard

>> (Describe how the project meets the eligibility criteria as per section 3.1.1 of GS4GG Principles & Requirements document and the relevant activity requirements document)

According to 3.1.1.1 of GS4GG Principles &Requirements 'A Project type is automatically eligible for Gold Standard Certification if there are Gold Standard published Activity Requirements and/or Gold Standard Approved Methodologies associated with it or as referenced in Gold Standard Product Requirements.', the proposed project aims at distributing Improved Cook Stoves that fall under the Activity Requirements of 'Community Services Activity Requirements' with the following Eligibility Criteria.

Eligibility Criteria	Justification
1.1.1 CS Projects shall lead to climate change mitigation and/or adaptation by providing or improving access to services/resources at household or community or institution level. Eligible services include electricity and energy, water and sanitation, waste management, housing, etc.	Improved Cook Stoves will be distributed and sold at household or community level.
1.2.2 Types of project – Pre-identified, eligible CS project types are noted below. Project Developers may submit new project types to Gold Standard for approval following the Gold Standard for the Global Goals Principles & Requirements Section 3.1. *(b) End- Use Energy efficiency: Project activities that reduce energy requirements as compared to baseline scenario without affecting 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 user end. For example, efficient cooking, heating, lighting, etc.*	The project aims at improve end-user energy efficiency through the introduction of fuel-efficient cookstoves to end users to replace their low efficient traditional charcoal/firewood stoves. The technology will reduce the consumption from the baseline scenario and thus lead to an improvement of the livelihood of the communities and households.
1.2.3 Project Area, Boundary and Scale: Project Area and Boundary shall be defined in line with the applicable Methodologies or Product Requirements. *The definition of scale is the same for all Projects, except Micro-scale which is defined as:* *(a) Project issuing emission reductions less than or equal to 10,000 tCO2eq* *[…]*	The project location is the Republic of Uganda which based on the VER Product requirements 2.2.3 is an eligible host country. The project area and boundary is defined based on the *Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 3.1(TPDDTEC),* and is limited to the Republic of Uganda (refer to section A.4 of the PDD). The scale of the project is a large-scale GS VER project, since the project may issue emission reductions above 60,000 tCO_2eq per year. (refer to section A.6. of the PDD).

1.2.4 The transfer of Product ownership shall be discussed during local stakeholder consultations for regular cycle projects. For retroactive projects, the project participants shall collect stakeholder feedback through live consultations, telephone discussions, electronic mode, etc. as deemed necessary to reach out to the relevant stakeholders.	The transfer of the rights of carbon credits was discussed at the level of the Local Stakeholder Consultation. Each improved stove end user, who is the default owner of emission reductions, is notified that they waive ownership of ERs upon sale of each stove. This is done via a rights waiver that is included inside each stove at point of sale to make the customer aware of them waiving ownership rights over emission reductions. Refer to A.3 for further details.
VER Product Requirement *2.3 Eligible Greenhouse Gase: Only Carbon Dioxide (CO_2), Methane (CH_4) and/or Nitrous Oxide (N_2O) are eligible for Gold Standard crediting, provided Projects comply with Gold Standard Requirements and eligibility criteria.*	The project only considers the reduction of Carbon Dioxide (CO_2), Methane (CH_4) and/or Nitrous Oxide (N_2O) Emissions for Gold Standard crediting.
VER Product Requirement *2.5.2 ODA Declaration Form: Project Developer applying for Project located in a country named by the OECD Development Assistance Committee's ODA recipient list shall sign and submit the ODA Declaration Template.*	The project developer has signed the ODA declaration template and confirms that no ODA is provided under the condition that the credits generated by the project will be transferred, either directly or indirectly, to the donor country providing ODA support.

A.3. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

>> (Justify that project owner has full and uncontested legal ownership of the products that are generated under Gold Standard Certification and has legal rights concerning changes in use of resources required to service the Project for e.g water rights, where applicable.)

The project owner (Potential Energy, Inc.) has full and uncontested legal ownership of the emission reductions that are generated under this Gold Standard project, and has legal rights concerning changes in use of resources required to service the Project for ownership of emission reductions.

A.4. Location of project

A.4.1. Host Country

>>
The Republic of Uganda

A.4.2. Region/State/Province etc.

>>
All regions.

A.4.3. City/Town/Community etc.

>>
All cities.

A.4.4. Physical/Geographical location

>> (*Include information allowing the unique identification of this project.)*

The project boundary, target areas, and fuel collection area are defined nationally as the country of Uganda. PE and its distribution partners that are familiar with local conditions and have access to remote communities will be progressively added to the project throughout the crediting period. This model of distribution allows project technologies to reach households in all regions of the country, further enabling access to improved technologies that otherwise would not be available. The project's countrybased management team continually seeks new distribution partners to further provide access to the project's improved technologies. The project facilitates the distribution and delivery of technologies through local distribution partners, such as local NGOs, and ensures transparent and verifiable sales, as well as end-user follow-up and technical support.

The fuel collection area is also defined nationally as it follows the national pattern of deforestation that permeates all regions of Uganda. Biomass fuel is part of a national market that forms a fungible market for fuel; as demand pressures on forests grow in one region they are transferred to other regions as supply and availability of fuel wood shifts to meet the needs of the country. National data and fuel assessments are described in the non-renewability of biomass (NRB) section of the PDD.

The following coordinates shall be used as reference for the project location:
1°00'N 32°00'E

Figure A1: The project location

A.5. Technologies and/or measures

>> *(Describe the technologies and measures to be employed and/or implemented by the project, including a list of the facilities, systems and equipment that will be installed and/or modified by the project. Include information essential to understand the purpose of the project and how it will contribute positively to three SDGs.)*

The project intends to make ICS products available to the people of Uganda. PE will continually assess technology options and partnerships, with the goal of providing the highest performing, most affordable, and locally appropriate technologies to residents in the project area. The project's country-based management team continually seeks new distribution partners to further provide access to the project's improved technologies.

The Berkeley-Darfur Stove (BDS) is the first and flagship product of PE. It is a biomass burning, high-efficiency cook stove. With the base of the pan sitting inside the stove, as opposed to on top of it, it can reach a thermal efficiency of 39.5% with woody biomass. It consumes above 50% less woody biomass than the traditional low efficient stoves. Designed with the needs of rural women in mind, the BDS is versatile and user friendly since it can accommodate small to large saucepans and is very lightweight. It is optimized for wood as the primary fuel source, though charcoal, briquettes, biomass scraps and twigs can also be used.

Figure A2: Berkeley-Darfur Stove

Figure A3: Traditional three-stone fire

The project introducing the Improved Cook Stoves will contribute mainly towards the SDGs by:
SDG 7 – Affordable and Clean Energy
The clean and high efficient cook stoves distributed in the project activity consume less woody biomass than traditional low efficient stoves, such as the three-stone fires. Reduced woody biomass consumption improves the air quality of the kitchen due to less smoke would be generated by using the high efficiency project stove, and relieves the pressure on tree cutting for woody biomass so that forest can be conserved. With the support of carbon revenue from the project activity, ICSs are affordable to end users, which provide people with reliance on clean technology.

SDG 8 – Decent Work and Economic Growth

The project owner (PE) has 12 employees which are mailnly made up of female residents from local communities. They are provided with traininigs of how to produce ICSs and how to sell the stoves. Women and girls can get paid outside of agriculture through stove producing and selling. Villagers from local communities are willing to be part of the project, as they can learn skills from those trainings and also increase their incomes through stoves sales.

SDG 13 – Climate Action

The project includes conducting awareness raising sessions at the village level, which covers topics on global warming, climate change, the contribution of inefficient cooking on climate change and rapid deforestation rates. It also shares on how a transition to a clean and fuel-efficient cookstove can reduce the environmental and climate damage, in addition to improving the health and safety and economic well-being of the users.

The project is expected to reduce the greenhouse gas emissions, as the ICSs disseminated by the project have high thermal efficiency which would reduce the woody biomass burning for daily cooking.

A.6. Scale of the project

>> (Define whether project is micro scale, small scale or others. Justify the scale referring to relevant activity requirement.)

The project is a large scale project.

A.7. Funding sources of project

>> (Provide the public and private funding sources for the project. Confidential information need not be provided.)

Project financing for this project activity will not use Official Development Assistance (ODA) Funds. The project developer has signed the ODA declaration template.

A.8. Assessment that project complies with 'gender sensitive' requirements

>> (Answer the four mandatory questions included under Step 1 to 3 in "Gold Standard Gender Equality Guidelines and Requirements" available here.)

Question 1: Does the project reflect the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy? Explain how.

The project reflects the key gender issues and requirements of Gender Sensitive design and implementation.

On the design side, the project is aimed to avail households with clean cooking solutions. The project will result in reduction of firewood and charcoal comsumptions, which would generate harmful smoke and cause air pollution when burning in low efficiency and traditional stoves. In the

overwhelming majority of the households in Uganda, the kitchen chores (including sourcing fuel, cooking and cleaning) are handled by women. While getting involved most of the time with the kitchen related activities, women are more exposed to the indoor air pollution and the associated hazard. Situation is more aggravated with a fact that the women are also responsible for taking care of the children and the children who normally need mother's support to perform their activities are bound to accompany their mother in kitchen. This situation has led to enhanced exposure of the women and children to kitchen smoke and associated health consequences. Since the project aims to reduce the polluting firewood and charcoal from the kitchen, the primary beneficiary would be the women and children. Furthermore, the project is focused to the socially disadvantaged group of people, which also justifies the dimension of social inclusion in the project design.

On the implementation side, the project has trained and deployed women in the producing and marketing of the ICSs. Project implementer has provided trainings to local people, mainly are women, on how to construct ICSs and how to distribute the stoves to end users. Project implementer opines that promotional activities are better addressed with women in the forefront. During the life of the project, the project implementer believes to create a conducive environment where women are able to be trained to master a new technology, create awareness of the product and process, and in long run, to organize themselves and create business opportunities for themselves. This women prioritized mode of project development and implementation helps address gender equality issues; in the meantime, addressing issues related to environmental sustainability and natural resource management.

Question 2: Does the project align with exsiting country policies, strategies and best practices? Explain how.

The project does not involve and is not complicit in any form of discrimination based on gender, race, religion, sexual orientation or any other basis. The project aligns with all the rights to the women conferred by the constitution of the Republic of Uganda. The project has been implemented in the households where the women are the primary beneficiary. Further more, the project involves women in the forefront of the supply chain of the improved stoves, which can help fostering their entrepreneurial skills and empower them be part in social dialogue.

Question 3: Does the project address the questions raised in the Gold Standard Safeguarding Principles & Requirements document? Explain how.

The project addresses some of the questions raised in the Gold Standard Safeguarding Principle & Requirements:

1. Is there a possibility that the Project might reduce or put at risk women's access to or control of resources, entitlements and benefits?
No, on the contrary the Project increase women's access to or control of resources, entitlements and benefits.

2. Is there a possibility that the Project can adversely affect men and women in marginalised or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?

No, the Project brings positive effect on beneficiaries in terms of employment and social upliftment of the communities.

3. Is there a possibility that the Project might not take into account gender roles and the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?
No, the project does not involve in any form discrimination in any kind of form.

4. Does the Project take into account gender roles and the abilities of women or men to benefit from the Project's activities (e.g., Does the project criteria ensure that it includes minority groups or landless peoples)?
Yes, the project takes into account gender roles and abilities of women/men. Workload is allocated based on the type of work to be carried out.

5. Does the Project design contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from engaging in other activities?
No, on the contrary the project leads to increased empowerment and income of women thereby uplifiting the living standards of women.

6. Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits?
No, the project doesn't reproduce or further deepen discrimination against women.

7. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services?
No, in fact, the project leads to improved accesses of women to use and develop natural resources.

8. Is there a likelihood that the proposed Project would expose women and girls to further risks or hazards?
No, on the contract the project leads to reduced firewood and charcoal consumptions, which would reduce the exposure of women and girls to indoor air pollutions and the time for women and girls to collect fuels in hazardous surroundings.

Question 4: Does the project apply the Gold Standard Stakeholder Consultation & Engagement Procedure, Requirements & Guidelines? Explain how.

Yes. The project is currently seeking for retroactive GS registration. The 1st round Stakeholder Consultation meetings have been done in October 2018 with the participation of different stakeholder categories. During the meeting, the Key Project Information and the Input & Grievance Mechnisms have been introduced to the local stakeholders, the questionnaire regarding the sustainable development indicators and monitoring of the indicators have been explained, and meeting evaluation forms have been provided to the local stakeholders.

SECTION B. Application of selected approved Gold Standard methodology

B.1. Reference of approved methodology

>>
Project type: (b) End - Use Energy efficiency
Approved methodology applied: GS methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption（Version 3.1）"
Reference: https://www.goldstandard.org/project-developers/standard-documents
Sectoral Scope: 03

B.2. Applicability of methodology

>> (Justify the choice of the selected methodology(ies) by demonstrating that the project meets each applicability condition of the applied methodology(ies))

Justification for the choice of the selected methodology is given below in the table:

Applicability Condition	Justification
1. 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 maybe 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.	The project boundary can be and is clearly defined in section B.3 below. The ICS distributed as part of this project activity will have unique unique serial numbers engraved in the metal. This will prevent any retailers or distributors from selling the same cookstove and registering it for two or more project developers. The ICS counted in the project activity are not part of any other voluntary market or CDM project activity. To make sure there is no double counting happened, cross-checks for stoves sales dates can be made among sales records, end users databases, interviews with stove end users during monitoring surveys by third party consultants or onsite visits by DOE.
2. 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 operating 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 thermal energy supplied in the baseline scenario, the 150kW threshold applies to the displaced baseline technology.	Each stove distributed in the project activity is 0.6 kW, which is less than 150kW total useful energy output.
3. Using the baseline technology as a backup or auxiliary technology in parallel with the	After introducing the project stoves, old inefficient stoves used before can still be used

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. For example, whether the existing baseline technology is not surrendered at the time of the introduction of the improved technology, or whether a new baseline technology is acquired and put to use by targeted end users during the project crediting period. The success of the mechanism put into place must therefore be monitored, and the approach must be adjusted if proven unsuccessful. If an old technology remains in use in parallel with the improved technology, the corresponding emissions must be accounted for as part of the project emissions.	as a backup or auxiliary stove in parallel with the project stove. The project employs a system whereby end users are offered a warranty on the efficient stove if the purchase is accompanied by surrendering a functioning inefficient stove of roughly similar cooking capacity. This provides an incentive to more quickly phase out inefficient stove use. Surrendered inefficient stoves are destroyed and sold for scrap metal to avoid them being resold into the market and used again. Over time, the positive benefits of the stoves will act as an incentive for users to discontinue use of their old devices. During the annual monitoring survey, the extent to which the baseline technology is still in use would be monitored. Kitchen Performance Test (KPT) will be conducted to compare the woody biomass consumption in baseline scenario and project scenario. As emission reductions would be calculated based on fuel savings per household, here for the project activity, the corresponding project emissions due to old technology using in parallel with improved technology would already reflect in the fuel savings (more project emissions, less fuel savings).
4. 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 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	Each ICS end user, who is the default owner of emission reductions, is notified that they waive ownership of ERs upon sale of each stove. This is done via a right waiver that is included inside each stove at point of sale to make the customer aware of them waiving ownership rights over emission reductions.
5. 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	The project activity is not making use and will not make use of any new biomass feedstock in the project situation.

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. Furthermore, the following conditions apply: a. 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. b. 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 II 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 mixed combustion or seasonal variation of fuel types), (b) GHG emission, (c) evidence of CO levels not deteriorating (d) any further factors effecting emission reductions significantly.	

B.3. Project boundary

>> (Present a flow diagram of the project boundary, physically delineating the project, based on the description provided in section A.5 above.)

The project activity involves dissemination of ICSs, cutting consumption of non-renewable biomass and corresponding greenhouse gas emissions in Uganda. The geographical project boundary is the country of Uganda. In the baseline and project scenario, the traditional and improved cook stoves use woody biomass (including firewood and charcoal) that is sourced from farmlands, grasslands and forests within Uganda.

The project boundary is specified in the methodology as follows:
a. The project boundary is the physical, geographical sites of the project technologies. This boundary could also host the baseline and project fuel collection and production (e.g. charcoal, plant oil) and solid waste and effluents disposal or treatment facilities associated with fuel processing.
- The project boundary is therefore defined as the domestic kitchens in which each project technology is installed.

b. The target area is the region(s) or town(s) where the considered baseline scenario(s) are deemed to be uniform across political borders. This area could be within a single country, or across multiple adjacent countries. The target area provides an outer limit to the project boundary in which the project has a target population.
- The target area is defined in Section A.4.4, which corresponds to the boundaries of the Republic of Uganda.

Figure B1: Project boundary

c. In cases where woody biomass (including charcoal) is the baseline fuel or where the project activity introduces the use of a new biomass feedstock into the project situation, the fuel production and collection area is the area within which this woody or new biomass is produced, collected and supplied.
- The fuel production and collection area is within the target area in Section A.4.4.

Source		GHG	Included?	Justification/Explanation
Baseline	Combustion of charcoal and firewood for cooking	CO_2	Yes	Important source of emissions
		CH_4	Yes	Important source of emissions
		N_2O	Yes	Important source of emissions
	Production and transport of charcoal	CO_2	Yes	Important source of emissions
		CH_4	Yes	Important source of emissions
		N_2O	Yes	Important source of emissions
Project	Combustion of charcoal and firewood for cooking	CO_2	Yes	Important source of emissions
		CH_4	Yes	Important source of emissions
		N_2O	Yes	Important source of emissions
	Production and transport of charcoal	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

>> (Explain how the baseline scenario is established in accordance with guidelines provided in GS4GG Principles & Requirements and the selected methodology(ies). In case suppressed demand baseline is used then same should be explained and justified.)

According to the applied GS methodology, a baseline scenario is defined by the typical baseline fuel consumption patterns in a population that is targeted for adopting the new project technology.

The majority of households in Uganda still rely on woody biomass for cooking. Most households do use the three-stone-fire as their principle stove. The baseline scenario is the usage of firewood and/or charcoal in traditional low efficiency charcoal/firewood stove or three-stone fire for cooking in kitchens of households and/or communities. The baseline scenario is identified and established using the following baseline studies:

- Baseline non-renewable biomass (NRB) assessment

As woody biomass is one of the baseline fuels (firewood and charcoal), the fractional non-renewability of biomass needs to be established. The f_{NRB} of 88% sourced from ***UNFCCC Standardized Baseline*** *ASB0002-2017 Fuel switch, technology switch and/or methane destruction in the charcoal sector of Uganda* is taken for the project. According to the GS methodology, the non-renewable biomass fraction can be fixed based on the results of the NRB assessment. Over the course of a project activity the project proponent may at any time choose to re-examine renewability by conducting a new NRB assessment. In case of a renewal of the crediting period and as per GS rules, the NRB fraction must be reassessed as any other baseline parameters and updated in line with most recent data available.

Forest degradation in Uganda has been a consistent problem for decades, and non-renewable biomass has been used since before 31 Dec 1989. According to a report of the Republic of Uganda on the state of the forest, the forest cover has decreased from 24% of the total land area in 1990 to only 9% in 2015.[2] The same report concludes that almost 50% of the unprotected forests have been

[2] http://www.mwe.go.ug/sites/default/files/State%20of%20Uganda%27s%20Forestry-2015.pdf, p.47

lost in Uganda in a timespan of 25 years. In total 3.05 million hectares of forest were lost between 1990-2015. This means that the total forest cover reduced from 4.9 million hectares in 1990 to 1.8 million hectares in 2015 with an average annual reduction rate of 122,000 hectares. The loss of the forest cover was observed not only on private lands but also in protected areas. Therefore it can be concluded that the harvested forests and biomass can be considered as non-renewable.

According to official statistics, 90% of Uganda's energy requirements are satisfied by forests in form of firewood. [3] Further, governmental studies show that already in 2002 about 73% of Ugandan districts were confronted with a deficit of accessible woody biomass. [4] According to the FOSA study in Uganda, from 1988 to 1999, wood production increased by 1% faster than the population growth. In a country with already high levels of population growth, this implies an over exploitation of forest resources. [5]Therefore, considering the overall population growth in Uganda from 2002 till 2017, this situation is most likely to have become even worse until today and that firewood consumption still increases.

Altogether, after analyzing the renewability of the biomass from forests and non-forests in Uganda, there is strong evidence of the non-renewability of the biomass in Uganda, and therefore little evidence that biomass consumption by the project is demonstrably renewable.

- Baseline survey (BS) of target population characteristics

The baseline survey provides critical information on target population characteristics, baseline technology use, fuel consumption, leakage, and sustainable development indicators. The following describes the approach and findings of this survey.

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.

The Baseline survey followed the sampling guidance of the GS methodology and is representative of end users targeted in the project activity. The survey was carried out in 2019 using representative and random sampling. The target population are all woody biomass end users who use low efficient stoves in Uganda.

Following the guidelines below regarding minimum sample size:
Group size < 300: Minimum sample size 30 or population size, whichever is smaller
Group size 300 to 1000: Minimum sample size 10% of group size
Group size >1000: Minimum sample size 100

Accordingly, 100 households were sampled across the four regions of Uganda (Western, Northern, Eastern and Central). The survey included questions about basic household characteristics including the number of people living in the household, the number of meals cooked per day, stove and fuel use, and season variations of stove and fuel use patterns. Other critical information on target

[3] http://www.mwe.go.ug/sites/default/files/State%20of%20Uganda%27s%20Forestry-2015.pdf, p.57

[4] http://www.mwe.go.ug/sites/default/files/National%20Forest%20Plan%20Uganda.pdf, p.14

[5] FOSA 2001, http://www.fao.org/DOCREP/004/AC427E/AC427E07.htm#7188

population characteristics, such as the addresses or locations, telephone numbers and so on, was also collected.

For all the regions, it was found that all of the surveyed households are involved in cooking for domestic consumption. Generally, the users of low efficient stoves were using woody biomass (firewood and charcoal) as fuel. Thus, the baseline scenario is identified as the usage of firewood and/or charcoal in traditional low efficiency charcoal/firewood stove or three-stone fire for cooking in kitchens of households and/or communities. The project considers the baseline fixed by default for the first crediting period.

Additionally, whenever the project applies for a renewable crediting period, the baseline must be reassessed as per the rules on renewal of crediting periods.

A baseline or project scenario does not necessarily apply uniquely to one technology. Thus, different type of ICSs may be compared to the same baseline scenario. Additional baseline and project scenarios may be added to a project activity at any time during the project period upon approval of a request for design changes. Emission reductions will not be credited for a new project scenario or in relation to a new baseline scenario until the respective project studies or baseline studies have been conducted. Appropriate studies will be conducted prior to verification. Alternatively, adjustment factors may be applied to existing baseline and project scenarios to account for less significant variability in fuel consumption or technology, without the need to create a new baseline or project scenario.

- **Baseline field test of fuel consumption (Kitchen performance test (KPT) in case of cook stoves)**

As per the GS methodology, as the project activity is to deploy improved cook stove for the reduction of non-renewable biomass use, and the baseline fuel and project fuel are the same, sampling can be taken for KPT and the statistical analysis can be conducted with respect to fuel savings per unit.

According to the GS methodology, the field performance tests are required prior to verification, not validation. So KPT will be finished prior to the first verification. The baseline KPT data, sourced from the baseline survey, is used for project estimation. For ex-ante estimation of the project emission reduction, please refer to B.6.2.

B.5. Demonstration of additionality

>> (If the proposed project is not a type of project that is deemed additional, as stated below, then follow guidelines in section 3.5.1 of GS4GG Principles & Requirements to demonstrate additionality.)

The table below is only applicable if the proposed project is deemed additional, as defined by the applied approved methodology or activity requirement or product requirement.

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).	Activity Requirement Community based technologies: 2.5.2 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) (b) Projects located in LDC, SIDS, LLDC (c) Micro-scale projects
Describe how the proposed project meets the criteria for deemed additionality.	The proposed project is located in the Republic of Uganda which falls under the category of a LDC and LLDC. Therefore, the project meets the criteria for deemed additionality under the Activity Requirement.

B.6. Sustainable Development Goals (SDG) outcomes

B.6.1. Relevant target for each of the three SDGs

>> (Specify the relevant SDG target for each of three SDGs addressed by the project. Refer most recent version of targets here .)

Based on the most recent version of the SDG targets, the following targets have been selected for the specifics of this project:

SDGs	Targets
SDG 7 Affordable and Clean Energy Ensure access to affordable, reliable, sustainable and modern energy for all	Target: 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services Indicator: 7.1.2 Proportion of population with primary reliance on clean fuels and technology The project provides clean and high efficiency cookstoves to reduce the firewood and charcoal consumptions. Households can have access to and rely on clean technology.
SDG 8 Decent Work and Economic Growth Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Target: 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value Indicator: Indicator: 8.5.2 Unemployment rate, by sex, age and persons with disabilities. The project has engaged local villagers in paid work and provided stove manufacture and distribution trainings to them.

SDG 13 Climate Action Take urgent action to combat climate change and its impacts	Target: 13.B Promote mechanisms for raising capacity for effective climate change–related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities Indicator: 13.B.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities The project includes conducting awareness raising sessions at the village level, which covers topics on global warming, climate change, the contribution of inefficient cooking on climate change and rapid deforestation rates. It also shares on how a transition to a clean and fuel-efficient cookstove can reduce the environmental and climate damage, in addition to improving the health and safety and economic well-being of the users. The support of carbon finance is based on the emission reductions generated by the project.

B.6.2. Explanation of methodological choices/approaches for estimating the SDG outcome

>> (Explain how the methodological steps in the selected methodology(ies) or proposed approach for calculating baseline and project outcomes are applied. Clearly state which equations will be used in calculating net benefit.)

SDGs	Method
SDG 7 Affordable and Clean Energy	Target: 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services Indicator: 7.1.2 Proportion of population with primary reliance on clean fuels and technology Monitoring Parameter: Number of stoves sold Monitoring Method: Stove sales records Purpose: Aimed at gathering and analyzing stove sales data . Calculation Method: Baseline outcomes: 0 Project outcomes: Number of people reached by the project activity who have access to and can rely on affordable and clean cookstoves distributed under the project activity
SDG 8 Decent Work and Economic Growth	Target: 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value Indicator: 8.5.2 Unemployment rate, by sex, age and persons with disabilities Monitoring Parameter: Number of jobs created

	Monitoring Method: Record keeping books and contracts. Purpose: To record jobs that have been created through the project for activities such as, but not limited to, Stove Production, Stove Maintenance and Repair, Distribution. Calculation Method: Baseline outcomes: 0 Project outcomes: Number of people participating in the activities such as, but not limited to, Stove Production, Stove Maintenance and Repair, Distribution.
SDG 13 Climate Action	Target: 13.B Promote mechanisms for raising capacity for effective climate change–related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities Indicator: 13.B.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities Monitoring Parameter: GHG Emission Reduction Monitoring Method: Ongoing data collection and storage for ER calculation; and sampling monitoring surveys. Purpose: To measure emission reductions generated from replacement of old traditional low efficiency stoves with improved high efficiency stoves. The stove sales records collect and record the number of ICSs sold; The sampling surveys collect usage information from sampled households. Calcualtion Method: Baseline outcomes: 0 Project outcomes: 213,600tCO_2

Outcome for SDG 13: Take urgent action to combat climate change and its impacts

Methodological choices/approaches for GHG Emission Reductions achieved by the project under the application of Gold Standard methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 3.1 – August 2017".

The following is the summary of the baseline and project studies at the validation stage for ex-ante estimates of emission reductions. Kitchen performance test data will be available at verification.

(i) Baseline Studies and Project Studies

Non-Renewable Biomass Assessment

For the fraction of non-renewable biomass (f_{NRB}), the 88% derived from ***UNFCCC Standardized Baseline*** *ASB0002-2017 Fuel switch, technology switch and/or methane destruction in the charcoal sector of Uganda is adopted for the project* , which is fixed during the first crediting period.

Baseline and Project survey (BS and PS) of target population characteristics

The baseline survey was conducted in 2019. 100 households were ramdomly sampled from the target population, who are all woody biomass end users and use low efficient stoves in Uganda. The surveys included questions about basic household characteristics including the number of people living in the household, the number of meals cooked per day, stove and fuel use, and season variations of stove and fuel use patterns. Other critical information on target population characteristics, such as the addresses or locations, mobile telephone numbers and so on, was also collected. Project survey of target population characteristics will be done before the first verification.

Kitchen performance test (KPT) of fuel consumption

The baseline and project kitchen performance tests measure real, observed stove performance in the field. Fuel consumption must be measured with a representative sample of end users under each defined baseline scenario (in the absence of the project technology) and project scenario.

As the project activity is to deploy improved efficient cook stove for the reduction of charcoal and firewood use, the baseline fuel and project fuel are the same, and the statistical analysis can be conducted with respect to charcoal and firewood savings per stove. This test will be undertaken by using either testing a paired sample (baseline and project performance measured for same subjects) or by independent sampling (different subjects, and usually different sample sizes, for baseline and project scenarios). The baseline survey and baseline KPT can be conducted concurrently with the same end users.

The testing approach taken will accommodate the following requirements:
- It is transparent and can easily be replicated,
- It is evidently conservative,
- The sample is randomly selected so as to not introduce a material bias,
- And the impact of daily and seasonal variations on the expected average fuel consumption savings is accounted for.

There are two valid options for the statistical analysis. In all cases, sample sizes must be greater than 20:

a. 90/30 rule. When the sample sizes are large enough to satisfy the "90/30 rule", i.e. the endpoints of the 90% confidence interval lie within +/- 30% of the estimated mean, overall emission reductions can be calculated on the basis of the estimated MEAN annual emission reduction per unit or MEAN fuel annual savings per unit.
b. 90% confidence rule. When the sample sizes are such that the "90/30 rule" is not complied with, the emission or fuel saving result is not the mean (or average) test result, but a lower value, i.e. the LOWER BOUND of the one-sided 90% confidence interval.

According to the GS methodology, the field performance tests are required prior to verification, not validation. So KPT will be finished prior to the first verification. The baseline KPT data is 4.47 t/HH-year calculated based on NATIONAL CHARCOAL SURVEY FOR UGANDA 2015 and THE UGANDA NATIONAL HOUSEHOLD SURVEY 2016/17[6]. The project KPT data is calculated based on the estimated baseline KPT data, the viable sources of information on the project technology performance and the the baseline technology performance.

Table B1: Technology performance

Technology	Efficiency	Source
Baseline stove	10%	GS methodology
Project stove	39.5%	WBT test

Table B2: Fuel consumption and saving

Scenario	Firewood(t/HH-year)	Firewood (t/HH-day)
Baseline	4.47	0.01226
Project	1.13	0.00310
Saving	3.34	0.00915

(ii) Leakage

As per the GS methodology, the potential sources of leakage should be investigated:

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) Non-project users who previously used lower emitting energy sources use the non-renewable biomass or fossil fuels saved under the project activity.
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.
e) By virtue of promotion and marketing of 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.

In accordance with the methodology, leakage risks deemed very low can be ignored. The corresponding justifications are as follows.

a) No leakage. There is no evidence that the project increases the use of higher emitting technologies outside the project boundary where lower emitting technologies as in place

[6] From NATIONAL CHARCOAL SURVEY FOR UGANDA 2015, page 97-98, Household Fuelwood & Charcoal Consumption per capita =306 kgoe, in which, charcoal is concerted to firewood with that wood to charcoal conversion efficiency was estimated to be between 10-15% maximum. In addition, 1 tonne of fuelwood=0.3215 toe. From THE UGANDA NATIONAL HOUSEHOLD SURVEY 2016/17, page 24, Average Household Size=4.7 persons. Therefore, Fuelwood & Charcoal Consumption per Household = 306/0.3215*4.7/1, 000=4.47 t/HH-year.

(i.e. three-stone fires). Wood fuels remain a valuable and declining resource. This trend will not be reversed by the project activity.
The baseline technology used in Uganda is three-stone fire or traditional cookstove, which are the same type of technology that is used outside the project boundary (Uganda) i.e. Rwanda, Kenya, Tanzania, etc.
Given that the leakage assessment does not expect an increase in fuel consumption by the non-project households/users attributable to the project activity, calculations do not need to be adjusted to account for this leakage source.

b) No leakage. There is no evidence that the project increases the use of higher emission fuel outside the project boundary where lower emitting energy sources take in place. Wood fuels remain a valuable and declining resource. This trend will not be reversed by the project activity.
Moreover many users collect locally available wood for free. The free supply of wood is external to economic markets for wood and thus, to a large extent, these communities are shielded from market forces on wood fuel prices.
The baseline survey conducted provides evidence that the locals in Uganda mainly use three-stone fires and collect wood fuel for free.
Given that the leakage assessment does not expect an increase in fuel consumption by the non-project households/users attributable to the project activity, calculations do not need to be adjusted to account for this leakage source.

c) The project boundary covered in this project overlies with other CDM and VER project activities. A mechanism will be put in place to distinguish the biomass saved for each individual stove to ensure none of the project stoves are not accounted within another CDM or VER project activities as described in the monitoring plan.

d) No leakage. The climate throughout Uganda is temperate to hot. No evidence exists that the project will result in increased fuel use for heating from inefficient stoves.
If this condition changes during the crediting period and homes start requiring heating for the main home, the project stoves are capable of providing heating that is released both from the combustion chamber, as well as from residual heat captured in the liner post-combustion. In this manner the stove may in fact act as a more efficient heat source than three-stone fires. The scarcity and/or cost of fuel is an additional incentive to not use multiple stoves for heating and thus reducing the likelihood that space heating is compensated by inefficient stoves.

e) No leakage. Project stoves shift cooking fuels only from high emission to low emission cooking. The type of cooking typically done on traditional stoves is replaced with the improved stoves. Additionally, the design of the kitchen performance test captures multiple stove and fuel use.

Consequently, at this point, no leakage is identified in the project but future offset calculations will be adjusted accordingly if significant sources are later identified.

Leakage will be investigated every two years as part of the monitoring.

(iii) Calculation of Emission Reductions

Emission reductions are verified and credited by comparing the emissions for a given project scenario to the emissions for the applicable baseline scenario. As explained in this document, multiple project scenarios may be credited in comparison to different baseline scenarios, and multiple project scenarios may be credited in comparison to the same baseline scenario, as is applicable along the crediting period.

The initial emissions profile of each baseline scenario and project scenario is determined by the results of the respective baseline studies and project studies. Over the project period the results are updated and adjusted depending on results of the ongoing monitoring studies. This document also describes the requirements for the baseline studies and project studies required respectively for baseline, project scenarios and ongoing monitoring studies.

As per the GS methodology, for the project, the baseline fuel and the project fuel are the same and the baseline emission factor and project emission factor are considered the same, thus, the overall GHG reductions achieved by the project activity in year y are calculated as follows:

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

Where:

$\Sigma_{b,p}$	Sum over all relevant (baseline b/project p) couples
$N_{p,y}$	Cumulative number of project technology-days included in the project 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)
$P_{p,b,y}$	Specific fuel savings for an individual technology of project p against an individual technology of baseline b in year y, in tons/day, as derived from the statistical analysis of the data collected from the field tests
$f_{NRB,b,y}$	Fraction of biomass used in year y for baseline scenario b that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)
$NCV_{b,fuel}$	Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)
$EF_{b,fuel,CO2}$	CO_2 emission factor of the fuel that is substituted o reduced. 112 tCO_2/TJ for Wood/Wood Waste, or the IPCC default value of other relevant fuel
$EF_{b,fuel,non-CO2}$	Non-CO_2 emission factor of the wood that is reduced
$LE_{p,y}$	Leakage for project scenario p in year y (tCO_2e/yr)

For charcoal, a conservative wood to charcoal production ratio of 8 kg firewwod per kg charcoal (sourced from NATIONAL CHARCOAL SURVEY FOR UGANDA 2015[7]) is used to calculate charcoal emission factor by multiplying this value by the pertinent EF for wood.

B.6.3. Data and parameters fixed ex ante for monitoring contribution to each of the three SDGs

(Include a compilation of information on the data and parameters that are not monitored during the crediting period but are determined before the design certification and remain fixed throughout the crediting period like IPCC defaults and other methodology defaults. Copy this table for each piece of data and parameter.)

Relevant SDG Indicator	SDG 13 Climate Action
Data/parameter	NCV_b
Unit	TJ/ton
Description	Net calorific value of the fuels used in the baseline
Source of data	IPCC default value for wood. Reference: 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2
Value(s) applied	0.0156 (based on the gross weight of the wood that is 'air-dried')
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of emission reductions
Additional comment	-

Relevant SDG Indicator	SDG 13 Climate Action
Data/parameter	NCV_p
Unit	TJ/ton
Description	Net calorific value of the fuels used in the project
Source of data	IPCC default value for wood. Reference: 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2
Value(s) applied	0.0156 (based on the gross weight of the wood that is 'air-dried')
Choice of data or Measurement methods and procedures	-

[7] NATIONAL CHARCOAL SURVEY FOR UGANDA 2015, page 98, footnote 6 Wood to charcoal conversion efficiency was estimated to be between 10-15% maximum, thus, wood to charcoal production ratio =1/(10%+15%)*2=8.

Purpose of data	Calculation of emission reductions
Additional comment	-

Relevant SDG Indicator	SDG 13 Climate Action
Data/parameter	$EF_{b,CO2}$
Unit	t CO_2/TJ
Description	CO_2 emission factor arising from use of fuels in baseline scenario
Source of data	IPCC default value for wood. Reference: 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2
Value(s) applied	112
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of emission reductions
Additional comment	-

Relevant SDG Indicator	SDG 13 Climate Action
Data/parameter	$EF_{b,nonCO2}$
Unit	t CO_2/TJ
Description	Non-CO_2 emission factor arising from use of fuels in baseline scenario
Source of data	IPCC default value for wood.

		EF (kg GHG/TJ)	GWP	EF ($kgCO_2e$/TJ)
Wood/Wood Waste	CH_4	1,224=(258+2,190)/2	28	34,272
Wood/Wood Waste	N_2O	11.25=(4+18.5)/2	265	2,981.25
Source	-	2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2, Table 2.9	IPCC Fifth Assessment Report	Calculated from EF * GWP

Value(s) applied	37.25325=34.272+2.98125
Choice of data or Measurement methods and procedures	-

Purpose of data	Calculation of emission reductions
Additional comment	-

Relevant SDG Indicator	SDG 13 Climate Action
Data/parameter	$EF_{p,CO2}$
Unit	t CO_2/TJ
Description	CO_2 emission factor arising from use of fuels in project scenario
Source of data	IPCC default value for wood. Reference: 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2
Value(s) applied	112
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of emission reductions
Additional comment	-

Relevant SDG Indicator	SDG 13 Climate Action
Data/parameter	$EF_{p,nonCO2}$
Unit	t CO_2/TJ
Description	Non-CO_2 emission factor arising from use of fuels in project scenario
Source of data	IPCC default value for wood.
Value(s) applied	37.25325
Choice of data or Measurement methods and procedures	-
Purpose of data	Calculation of emission reductions
Additional comment	-

B.6.4. Ex ante estimation of outcomes linked to each of the three SDGs

>> (Provide a transparent ex ante calculation of baseline and project outcomes (or, where applicable, direct calculation of net benefit) during the crediting period, applying all relevant equations provided in the selected methodology(ies) or as per proposed approach. For data or parameters available before design certification, use values contained in the table in section B.6.3

above. For data/parameters not available before design certification and monitored during the crediting period, use estimates contained in the table in section B.7.1 below)

SDGs	Ex ante estimation of outcomes
SDG 7 Affordable and Clean Energy	Baseline outcomes: 0 Project outcomes: 15,900 stoves sold annually The estimation is based on assumptions of the improved cook stove deployment plan.
SDG 8 Decent Work and Economic Growth	Baseline outcomes: 0 Project outcomes: 12 people The estimation is based on the number of employees in PE, which is 12, including 9 full-time and 3 part-time.
SDG 13 Climate Action	Baseline outcomes: 0 Project outcomes: 213,600tCO_2 The estimation is as below.

SDG 13 Climate Action

Project estimation at the validation stage will be calculated based on following assumptions:
The number of stoves sold will be according to the implementation schedule of the project activity.

The usage rate for each technology type will be according to the implementation schedule of the project activity values are assumed at the validation stage.

The same fNRB is applicable to all technologies, both baseline and project.

Adjustment factors are deemed not necessary for the ex-ante calculations at the validation stage. Quantitative assessment and analysis of baseline and project monitoring studies before each verification will determine if adjustment factors need to be applied.

The future KPTs indicated below to be performed will quantify biomass saving distinguishing the different fuels as charcoal and firewood.

Therefore, total ex-ante calculations of emission reductions are calculated by following steps.

Step 1: Calculation of ERs per stove per year
The emission reductions per stove per year are calculated based on the following parameters:

Table B3: Parameters

Description	Unit	Value used	Remark

<table>
<tr><td>$\Sigma_{b,p}$</td><td></td><td>1</td><td colspan="5">Only firewood for ex-ante estimation, with charcoal converted to firewood-equivalent.</td></tr>
<tr><td>$N_{p,y}$</td><td>stove-days</td><td>1*365</td><td colspan="5">Assuming one project stove being used per end user in the project activity</td></tr>
<tr><td>$U_{p,y}$</td><td>%</td><td colspan="5"><table><tr><td>Age 0-1</td><td>90</td></tr><tr><td>Age 1-2</td><td>87.5</td></tr><tr><td>Age 2-3</td><td>85</td></tr><tr><td>Age 3-4</td><td>82.5</td></tr><tr><td>Age 4-5</td><td>80</td></tr></table></td></tr>
<tr><td>$P_{p,b,y}$</td><td>tons/day</td><td>0.00915</td><td colspan="5">Refer to B.6.2 for details.</td></tr>
<tr><td>$f_{NRB,b,y}$</td><td>%</td><td>88</td><td colspan="5">*UNFCCC Standardized Baseline* *ASB0002-2017 Fuel switch, technology switch and/or methane destruction in the charcoal sector of Uganda*</td></tr>
<tr><td>$NCV_{b,fuel}$</td><td>TJ/ton</td><td>0.0156</td><td colspan="5">2006 IPCC Guidelines for National GHG inventories, Volumn2</td></tr>
<tr><td>$EF_{b,fuel,CO2}$</td><td>tCO_2e/TJ</td><td>112</td><td colspan="5">2006 IPCC Guidelines for National GHG inventories, Volumn2</td></tr>
<tr><td>$EF_{b,fuel,non-CO2}$</td><td>tCO_2e/TJ</td><td>37.25325</td><td colspan="5"><table><tr><td></td><td></td><td>EF (kg GHG/TJ)</td><td>GWP</td><td>EF ($kgCO_2e/TJ$)</td></tr><tr><td>Wood/Wood Waste</td><td>CH_4</td><td>1,224=(258+2,190)/2</td><td>28</td><td>34,272</td></tr><tr><td>Wood/Wood Waste</td><td>N_2O</td><td>11.25=(4+18.5)/2</td><td>265</td><td>2,981.25</td></tr><tr><td>Source</td><td>-</td><td>2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2, Table 2.9</td><td>IPCC Fifth Assessment Report</td><td>Calculated from EF * GWP</td></tr></table></td></tr>
<tr><td>$LE_{p,y}$</td><td>Fraction</td><td>0</td><td colspan="5">Ex ante estimation</td></tr>
</table>

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

ER_y per stove-year=1 * 365 * 0.00915* 0.0156*(88%*112+37.25325) = 7.08 tCO_2e/stove-year

Step 2: Estimation and Assumption for stoves sales

Based on the actual sales records in 2018 and the PE's sales plan for the first five years of the project, averagely around 15,900 ICSs will be distributed annually. Please find the estimated sales plan in the table below:

Table B5: Stove sales plan during the first crediting period

Year	Estimated number of stoves sold
1	12,500
2	12,000
3	15,000

4	19,000
5	21,000
Total	79,500

PE made plans to secure carbon finance with a view to a major expansion effort that would allow the ICS to be sold at affordable prices to poor customers, and that might dramatically increase sales. For each year in the crediting period it is assumed that the newly sold stoves are equally distributed throughout the 12 months of first operation year, and the usage rates assumed in Table B4 are used here for the ER estimation.

The operational lifetime of each improved stove is an important factor, since greenhouse gas (GHG) emission reductions are dependent not only on the sale of an improved stove for use in a kitchen replacing an inefficient stove, but also they are dependent on the number of months or years the improved stove is in daily use. The actual usage rates would be monitored carefully by the project. Actual usage rates will be substituted for the values applied here; equally the potential drop-off in performance of aging stoves will be measured and the results applied to GHG emission reduction calculations.

Step 3: Calculation ERs for the first crediting period
Taking into account the above assumptions at the validation stage, the overall GHG reductions achieved by the project activity in year y are calculated and the results are presented as below:

	Project Year	1	2	3	4	5
Project Year	Stoves disseminated					
1	12,500	39,934	77,437	75,225	73,012	70,800
2	12,000		38,336	74,340	72,216	70,092
3	15,000			47,920	92,925	90,270
4	19,000				60,699	117,705
5	21,000					67,089
Total Annual ER		39,934	115,773	197,485	298,852	415,956
					5 years total	1,068,000
					Average	213,600

B.6.5. Summary of ex ante estimates of each SDG outcome

SDG 7 Affordable and Clean Energy

Year	Baseline estimate	Project estimate	Net benefit
Year 1	N/A	12,500	12,500
Year 2	N/A	12,000	12,000
Year 3	N/A	15,000	15,000
Year 4	N/A	19,000	19,000
Year 5	N/A	21,000	21,000
Average	N/A	15,900	15,900

SDG 8 Decent Work and Economic Growth

Year	Baseline estimate	Project estimate	Net benefit

Year 1	N/A	12 jobs created (full-time/part-time) in PE .	New jobs created

SDG 13 Climate Action

Year	Baseline estimate	Project estimate	Net benefit
Year 1	N/A	N/A	39,934
Year 2	N/A	N/A	115,773
Year 3	N/A	N/A	197,485
Year 4	N/A	N/A	298,852
Year 5	N/A	N/A	415,956
Total number of crediting years	5		
Annual average over the crediting period	N/A	N/A	213,600

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

(Include specific information on how the data and parameters that need to be monitored in the selected methodology(ies) or proposed approaches or as per mitigation measures from safeguarding principles assessment or as per feedback from stakeholder consultations would actually be collected during monitoring. Copy this table for each piece of data and parameter.)

Relevant SDG Indicator	SDG 13 Climate Action
Data / Parameter	$f_{NRB,i,y}$
Unit	Fractional non-renewability
Description	Non-renewability status of woody biomass fuel in scenario i during year y
Source of data	***UNFCCC Standardized Baseline*** *ASB0002-2017 Fuel switch, technology switch and/or methane destruction in the charcoal sector of Uganda*
Value(s) applied	88%
Measurement methods and procedures	-
Monitoring frequency	Fixed for the first crediting period, updated if necessary as specified in section 3.1 of the GS methodology
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of emission reductions

Additional comment	As applicable, NRB assessment may be used for multiple scenarios

Relevant SDG Indicator	SDG 13 Climate Action
Data / Parameter	$P_{b,y}$
Unit	ton/HH-year
Description	Quantity of fuel that is consumed in baseline scenario b during year y
Source of data	Baseline FT
Value(s) applied	4.47, sourced from NATIONAL CHARCOAL SURVEY FOR UGANDA 2015 and THE UGANDA NATIONAL HOUSEHOLD SURVEY 2016/17. No Baseline FT (KPT) has been conducted until now. KPT will be finished prior to the first verification, which is in line with the requirement of the GS methodology. Actual baseline fuel consumptions measured from the KPT prior to verification will be applied for ER calculation at verifications stage.
Measurement methods and procedures	Digital Hanging Scales
Monitoring frequency	Updated every two years
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of emission reductions
Additional comment	This parameter will be fixed for the first crediting period after actual values measured from the KPT conducted prior to the first verification, unless subsequent monitoring surveys reveal that baseline has changed.

Relevant SDG Indicator	SDG 13 Climate Action
Data / Parameter	$P_{p,y}$
Unit	ton/HH-year
Description	Quantity of fuel that is consumed in project scenario p during year y
Source of data	Project FT
Value(s) applied	1.13, calculated based on the estimated baseline KPT data, the project stove efficiency and the the baseline stove efficiency, are used for project estimation. No Porject FT (KPT) has been conducted until now. KPT will be finished prior to the first verification, which is in line with the requirement of the GS methodology. Actual project fuel consumptions measured from the KPT prior to verification will be applied for ER calculation at verifications stage.
Measurement methods and procedures	Digital Hanging Scales
Monitoring frequency	Updated every two years
QA/QC procedures	Transparent data analysis and reporting

Purpose of data	Calculation of emission reductions
Additional comment	-

Relevant SDG Indicator	SDG 13 Climate Action
Data / Parameter	$U_{p,y}$
Unit	Percentage
Description	Usage rate in project scenario p during year y
Source of data	Annual usage survey
Value(s) applied	For project estimation, usage rates assumed as below are used. Age 0-1: 90 Age 1-2: 87.5 Age 2-3: 85 Age 3-4: 82.5 Age 4-5: 80 Actual usage rates should be monitored carefully by the project. Actual usage rates will be substituted for values applied here for GHG emission reduction calculations during verification.
Measurement methods and procedures	Usage Survey (US)
Monitoring frequency	Annual
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of emission reductions
Additional comment	A single usage parameter is weighted to be representative of the quantity of project technologies of each age being credited in a given project scenario.

Relevant SDG Indicator	SDG 13 Climate Action & SDG 7 Affordable and Clean Energy
Data / Parameter	$N_{p,y}$
Unit	Project technologies credited (units)
Description	Technologies in the project database for project scenario p through year y
Source of data	Total sales record

<table>
<tr><td>Value(s) applied</td><td>For project estimation, estimated stove sales data as below are used.<table><tr><td>Year</td><td>Estimated number of stoves sold</td></tr><tr><td>1</td><td>12,500</td></tr><tr><td>2</td><td>12,000</td></tr><tr><td>3</td><td>15,000</td></tr><tr><td>4</td><td>19,000</td></tr><tr><td>5</td><td>21,000</td></tr></table>It is assumed that for each year in the crediting period the newly sold stoves are equally distributed throughout the 12 months of first operation year. So 183/365 is applied to stove numbers of newly sold stoves each year to account for equal distribution of newly sold stoves in their first operation year.</td></tr>
<tr><td>Measurement methods and procedures</td><td>Collect sales records by project owner</td></tr>
<tr><td>Monitoring frequency</td><td>Continuous</td></tr>
<tr><td>QA/QC procedures</td><td>Transparent data analysis and reporting</td></tr>
<tr><td>Purpose of data</td><td>Calculation of emission reductions</td></tr>
<tr><td>Additional comment</td><td>The total sales record is divided based on project scenario to create the project database.</td></tr>
</table>

Relevant SDG Indicator	SDG 13 Climate Action
Data / Parameter	$LE_{p,y}$
Unit	t_CO_2e per year
Description	Leakage in project scenario p during year y
Source of data	Baseline and monitoring surveys
Value(s) applied	0
Measurement methods and procedures	Leakage assessment
Monitoring frequency	Every two years
QA/QC procedures	Transparent data analysis and reporting
Purpose of data	Calculation of emission reductions
Additional comment	-

Relevant SDG Indicator	SDG 8 Decent Work and Economic Growth
Data / Parameter	Number of jobs created
Unit	Number
Description	Recorded jobs that have been created through the project for activities such as, but not limited to, Stove Production, Stove Maintenance and Repair, Distribution.
Source of data	Record keeping books and contract

Value(s) applied	Assumption for Ex-Ante calculatio: 12 jobs created with equal wages for the same position
Measurement methods and procedures	Measured through Record Keeping Overviews and contracts.
Monitoring frequency	At least once every two years (biennial)
QA/QC procedures	-
Purpose of data	Assessment of number of jobs created through the project in a given Monitoring Period.
Additional comment	-

B.7.2. Sampling plan

>> (If data and parameters monitored in section B.7.1 above are to be determined by a sampling approach, provide a description of the sampling plan.)

1. For Monitoring Surveys (MS):
The monitoring survey investigates changes over time in the project scenario of project target population using the project stoves, by surveying end users with project stoves on an annual basis. It provides critical information on year-to-year trends in end user characteristics such as stove use, fuel consumption and seasonal variations.

End users of project stoves would be selected using representative sampling techniques to ensure an adequate representation of users with project stoves of different ages. Random sampling approach would be applied for project stoves of each age group and geographic distribution would also be factored into selection criteria. The sample size would fulfil the minimum sample size requirement of the methodology (Group size > 1000 Minimum sample size 100).

According to the methodology, end users can be surveyed at any time(s) throughout the year with care taken to collect information pertaining to seasonal variations in stove and fuel use patterns. Monitoring surveys can be conducted with usage survey participants that are currently using the project stove.

2. For Usage Survey (US):
The usage survey provides a single usage parameter that is weighted based on drop off rates that are representative of the age distribution for project stoves in the total sales record. The survey would be completed annually, and on time for any request of issuance.

Prior to a verification, representative of project stoves of each age being credited would be randomly selected from the end-user databases, and the minimum total sample size is 100, with at least 30 samples for project stoves of each age being credited.

According to the methodology, the majority of interviews in a usage survey must be conducted in person and include expert observation by the interviewer within the kitchen in question, while the remainder may be conducted via telephone by the same interviewers on condition that in-kitchen

observational interviews are first concluded and analysed such that typical circumstances are well understood by the telephones interviewers.

3. For Project FT Update (PFT):
The PFT update is an extension of the project KPT and provides a fuel consumption assessment representative of project technologies currently in use every two years. It accounts for changes in the project scenario over time as project stove age and new customers are added, also as new models and designs are introduced.

As the baseline fuel and project fuel are the same (firewood and/or charcoal), paired or independently sampling would be taken to select the kitchens to visit. Based on the requirements of GS methodology, sample size should be greater than 20; and two valid options can be chosen for the statistical analysis:

- 90/30 rule. When the sample sizes are large enough to satisfy the "90/30 rule", i.e. the endpoints of the 90% confidence interval lie within +/- 30% of the estimated mean, overall emission reductions can be calculated on the basis of the estimated MEAN annual emission reduction per unit or MEAN fuel annual savings per unit.
  If this is not the case, then you can use the test data gathered so far to estimate how much larger the sample size needs to be. The mean value will always result in a larger estimate of fuel-savings than the value obtained using the second option below, but in some cases you might choose to analyse using the second option, because it is not practical or too expensive to increase the sample size sufficiently.
- 90% confidence rule. When the sample sizes are such that the "90/30 rule" is not complied with, the emission or fuel saving result is not the mean (or average) test result, but a lower value, i.e. the LOWER BOUND of the one-sided 90% confidence interval.
  This option allows you to obtain a result even if 90/30 precision is not achieved, although in a similar manner to the 90/30 rule, a minimum sample size of 30 is recommended.

The possibility to apply an Age Test instead of a PFT update to project technologies which remain materially the same year after year will be assessed along the crediting period.

B.7.3. Other elements of monitoring plan

>>
1. MONITORING OPERATIONAL AND MANAGEMENT STRUCTURE
The monitoring structure consists of three parts: i) continuous maintenance of total sales records and end user databases, responsible by the project owner; ii) on-going monitoring activities, organised by the project developer and conducted by the project owner or a third party; iii) quality assurance, quality control and evaluation, responsible by the project developer.

The project owner should maintain accurate and complete sales records and end user database with electronic backups. The total sales record should contain at least the following basic information:

- Date of sale
- Geographic area of sale
- Model/type of project stove sold
- Quantity of project stoves sold
- Name and telephone number (if available), and address:

a. Required for all bulk purchasers, i.e., retailers.
b. All end users except in cases where this is justified as not feasible. The number of end users with contact information shall be large enough, in order to ensure an adequate end user pool to which random samplings for surveys can be applied.

- Mode of use

The project database will be derived from the total sales record with project technologies differentiated by different project scenarios. The differentiation of the project database into sections is based on the results of the applicable monitoring studies for each project scenario, in order that ER calculations can be conducted appropriately section by section.

The project owner or a third party will conduct the annual Monitoring survey (MS) & Usage Survey (US) and the biennial Project FT Updates (KPTs) & Leakage Assessment. The project owner or the third party is responsible for accurate and objective data collection, and hardcopies data with electronic backups collected from surveys and tests should be well kept and provided as requirements.

All staffs involved in the database and end user management system are trained so that they can fulfill their role and responsibilities. All records and customer recordings are checked by the field staff who inserts data into the database and then cross checked by the project developer.

The project developer would collect all needed records and supporting documentation from the project owner or the third party and is responsible for quality assurance and quality control, and monitoring data analysis and evaluation of emission reductions.

2. Data collection and QA/QC procedure

The project activity has proper data collection and QA/QC procedures, which run through the whole processes during the stove sales.

All the stoves sold by sales agents or distributors would be properly recorded, and numbers of production and sales would be cross checked periodically.

The stove production and sales records, and end user databases would be sent to the project developer yearly for data cross-check and emission reduction calculation. Any faulty data would be excluded from ER calculation. The end user databases would also be used by the third party or the project owner for conducting the annual MS & US and biennial KPT, during which samples have been selected from the databases, so that another layer of quality check can also be made by the PO or the third party to see if the sales have actually happened and if any false.

3. Provisions for data archiving

Data of VERs, monitored and required for verification and issuance are kept and archived for at least two years after the end of the final crediting period or the last issuance whichever occurs later. Data are archived at the end of each month using electronic spreadsheets. The electronic files will be

stored on hard disk or CD-ROM. Physical documentation will be collected and stored by the project owner.

SECTION C. Duration and crediting period

C.1. Duration of project

C.1.1. Start date of project

>> (Specify start date of the project, in the format of DD/MM/YYYY. Describe how this date has been determined as per the definition of start date provided in section 3.4.3 of GS4GG Principles & Requirements document and provide evidence to support this date.)

01/07/2018 (first purchase order for Improved Cook Stoves)

C.1.2. Expected operational lifetime of project

>> (Specify in years)

15 years (5 years for each Design Certification Renewal Cycle and in total two Design Cerification Renewal Cycles)

C.2. Crediting period of project

C.2.1. Start date of crediting period

>> (Specify in dd/mm/yyyy. This can be start of project operation or two years prior to the date of Project Design Certification, whichever is later.)

01/07/2018 (the start date of project operation) or two years prior to the date of Project Design Cerification, whichever is later

C.2.2. Total length of crediting period

>> (Specify the total length of crediting period sought in line with GS4GG Principles & Requirements or relevant activity requirements.)

15 years (5 years for each Design Certification Renewal Cycle and in total two Design Cerification Renewal Cycles)

SECTION D. Safeguarding principles assessment

D.1. Analysis of social, economic and environmental impacts

>> (Refer the GS4GG Safeguarding Principles and Requirements document for detailed guidance on carrying out this assessment.)

Safeguarding principles	Assessment questions	Assessment of relevance to the project (Yes/potentially/no)	Justification	Mitigation measure (if required)
3.1 Human Rights	a. Is there a possibility that the Project Developer and the Project do not respect internationally proclaimed human rights and be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights?	No	The Republic of Uganda has ratified the Human Rights Convention under the United Nations on 21 June 1995[8] as well as the African Charter on Human and People Rights in 1986. [9] The project will be implemented under the laws of the Republic of Uganda and will not lead to violations of human rights in any kind.	N/A
	b. Does the Project discriminate with regards to participation and inclusion?	No	Anyone can participate and benefit from the program if PE principles and values are respected.	N/A
3.2 Gender Equality and Women's Rights	a. Is there a possibility that the Project might reduce or put at	No	The project gives women more access to resources	N/A

[8] https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-4&chapter=4&clang=_en

[9] http://www.achpr.org/states/

	risk women's access to or control of resources, entitlements and benefits?		because they spend less money buying fuel or less time collecting fuel.	
	b. Is there a possibility that the Project can adversely affect men and women in marginalised or vulnerable communities (e.g., potential increased burden on women or social isolation of men)?	No	The project targets the most vulnerable people in the country to ease access to an improved cookstove. The project aims to decrease the burden on women by reducing firewood consumption and hence time spending for firewood collection and cooking. Thus, especially women will have more time for other activities and/or economic resources since the expenses for firewood will decrease.	N/A
	c. Is there a possibility that the Project might not take into account gender roles and	No	The project principally targets women as they are normally in charge of	N/A

	the abilities of women or men to participate in the decisions/designs of the project's activities (such as lack of time, child care duties, low literacy or educational levels, or societal discrimination)?		cooking, however, men are also considered to participate and benefit from the project	
	d. Is there a possibility that the Project does not take into account gender roles and the abilities of women or men to benefit from the Project's activities (e.g., Doesn't the project criteria ensure that it includes minority groups or landless peoples)?	No	The project principally targets women as they are normally in charge of cooking however, men are also considered to participate and benefit from the project	N/A
	e. Does the Project design contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from	No	The project reduces half the time spent in cooking and firewood collection, resulting in more free time to do other things	N/A

	engaging in other activities?			
	f. Would the Project potentially reproduce or further deepen discrimination against women based on gender, for instance, regarding their full participation in design and implementation or access to opportunities and benefits?	No	The project empowers women by making easier and faster the cooking activities. They can engage in other activities and are also encouraged to become sales agents	N/A
	g. Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and priorities of women and men in accessing and managing environmental goods and services?	No	By using the Berkeley-Darfur Stove (BDS), women reduce firewood usage by above 50%, directly reducing deforestation	N/A
	h. Is there a likelihood that the proposed Project would expose women and girls	No	The project reduces the risks involved in cooking, i.e. less smoke inhalation,	N/A

	to further risks or hazards?		reduced walking time to collect firewood.	
	i.Is there a possibility that the Project shall directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women?	No	This project respect women. This project is beneficial especially to women who stay in kitchen all year round.	N/A
	j. Is there a possibility that Projects shall not apply the principles of nondiscrimination, equal treatment, and equal pay for equal work?	No	This project gives equal chance for women to participant in.	N/A
	k. Is there a possibility that the project does not refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks	No	This project considers country's national gender strategy.	N/A

3.3 Community Health, Safety and Working Conditions	Is there a possibility that the Project shall make community exposure to increased health risks and shall adversely affect the health of the workers?	No	The project reduces the risks involved in cooking, i.e. less smoke inhalation, reduced walking time to collect firewood. The Occupational Safety and Health Act from 2oo6 legislates and guides on health and safety practices in Ugandan companies.[10] PE will follow those regulations under this project as well as in terms of a safe workplace, machinery and equipment. This project would not adversely affect the workers' health.	N/A
3.4 Cultural Heritage, Indigenous Peoples, Displacement and Resettlement	a. Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible	No	Uganda is an active member of the United Nations Educational, Scientific and Cultural Organisation	N/A

[10] http://www.ilo.org/dyn/travail/docs/1822/Occupational%20Safety%20and%20Health%20Act.pdf

	forms of culture (e.g., knowledge, innovations, or practices)?		(UNESCO).[11] The cookstove is not used in sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture.	
	b. Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	The stove can be used anywhere. It does not cause physical or economic relocation of peoples.	N/A
	c. Does the Project require any change to land tenure arrangements and/or other rights?	No	The project does not require any change to land tenure arrangements and/or other rights such as resource access rights, community-based property rights and customary rights.	N/A
	d. Is there a likelihood that the indigenous peoples are not	No	Indigenous people will not be affected directly or indirectly in a	N/A

[11] http://www.unesco.org/eri/cp/ListeMS_Indicators.asp

	present in or within the area of influence of the Project and/or the Project is not located on land/territory claimed by indigenous peoples?		negative way by the project. Indigenous People have the same and equal access to the project as other community members. Indigenous people can become members to the producer organisation and also obtain an efficient cook stove.	
3.5 Corruption	a. Does the Project involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects.	No	This Project has a zero tolerance to corruption policy. Uganda ratified the United Nations Convention Against Corruption.[12]	N/A
3.6 Economic Impacts	a. Does the Project involve or is complicit in any form of forced or compulsory labor?	No	All the employees are hired according local laws. Uganda bases its legal regulations on the ratification of the following conventions: ILO N°87 (Freedom of	N/A

[12] http://www.unodc.org/unodc/en/corruption/ratification-status.html

			Association and Protection of the Right to organise convention)[13] ILO N°29 (Forced Labour Convention)[14] ILO N°98 (Right to organise and collective bargaining convention)[15] ILO N°105 (Abolition of Forced Labour Convention)[16] ILO N°111 (Discrimination (Employment and Occupation) Convention)[17] ILO N°138 (Minimum Age Convention)[18] ILO N°182(Worst Form of Child Labour Convention)[19]	
	b. Is there a likehood that workers are not	No	Workers can establish or join	N/A

[13] http://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312232

[14] http://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312174

[15] http://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312243

[16]https://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312250

[17] https://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312256

[18]https://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312283

[19]https://www.ilo.org/dyn/normlex/en/f?p=1000:11300:0::NO:11300:P11300_INSTRUMENT_ID:312327

	able to establish and join labor organizations?		labor organizations	
	c. Is there a likehood that working agreements with all individual workers are not documented and implemented?	No	All the employees are hired according local laws.	N/A
	d. Is there a likehood that the employment model applied is not locally and culturally appropriate?	No	All the employees are hired according local laws.	N/A
	e. Does the project employ or is complicit in any form of child labor?	No	No children can work for the project.	N/A
	f. Is there a likehood that the project developer does not ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and	No	The project developer would teach all the cook stove users how to use the cook stoves.	N/A

	response measures?			
	g. Is there a likehood that the Project Developer would not demonstrate the financial sustainability of the Projects implemented, also including those that will occur beyond the Project Certification period?	No	The financial sustainability of the project has been demonstrated by PE.	N/A
	Is there a likehood that the Projects would not consider economic impacts and demonstrate a consideration of potential risks to the local economy and how these have been taken into account in Project design, implementation, operation and after the Project?	No	The project is good for local economy and there is no risk to local community.	N/A
4.1 Climate and Energy	a. Will the Project increase greenhouse gas emissions over	No	The project does not lead to an increase in greenhouse gas emissions over	N/A

	the Baseline Scenario?		the baseline scenario. The efficient cook stoves will reduce the release of CO_2 emissions compared to the baseline scenario of the traditional three stone fires.	
	b. 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 BDS reduces firewood usage up to above 50% compared to cooking on open fires.	N/A
4.2 Water	a. 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	The project does not involve any use of water.	N/A

	b. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	No	The project does not involve any use of water. And this project couldn't directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion.	N/A
4.3 Environment, ecology and land use	a. Does the Project involve the use of land and soil for production of crops or other products?	No	The project does not involve any use of land or soil.	N/A
	b. Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The project is for household cook stove, and it would not be susceptible to lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other climatic conditions.	N/A
	c. Could the Project be negatively	No	The project does not involve the use of GMOs	N/A

	impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?			
	d. Could the Project potentially result in the release of pollutants to the environment?	No	The project is using high efficient cook stove to replace conventional low efficiency cook stove. This could reduce GHG emission.	N/A
	e. Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The project does not involve any use of hazardous and non-hazardous chemicals or materials	N/A
	f. Will the Project involve the application of pesticides and/or fertilisers?	No	The project does not involve any use of pesticides and/or fertilisers	N/A
	g. Will the Project involve the harvesting of forests?	No	The BDS reduces firewood usage up to above 50% compared to cooking on open	N/A

			fires, drastically reducing deforestation, and thus also the harvest rate of forests.	
	h. Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	This project does not modify the quantity or nutritional quality of food available	N/A
	i. Will the Project involve animal husbandry?	No	The project does not involve animals	N/A
	j.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	The project helps to protect the environment.	N/A
	k.Are there any endangered species identified as potentially being present within the Project boundary	No	The project does not involve or affect animals.	N/A

	(including those that may route through the area)?			
	l.Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	The project does not involve or affect animals	N/A

SECTION E. Local stakeholder consultation

E.1. Solicitation of comments from stakeholders

>> (Describe how stakeholder consultation was conducted in accordance with GS4GG Stakeholder Procedure Requirements and Guidelines.)

According to the GS4GG Stakeholder Procedure Requirements and Guidelines, Stakeholder Consultation process shall comprise of a minimum two rounds of consultation. The first round of Stakeholder Consultation shall include a physical meeting.

As per requirement, the Stakeholder Consultation process has been conducted in October 2018. Email invitation letter has been sent out to stakeholders from categories D, E and F and invited them to attend the stakeholder consultation meetings which would be held by the project owner in Uganda. Project documents such as the Key Project Information, the introduction of the continuous input & grievance mechanism, and the sustainable development assessment questionnaire have also been attached, so that stakeholders can learn about the project and provide their feedbacks or comments if they can't show up at the meeting. Project documents has also been public on project owner's website and Facebook page and stakeholders can also provide their feedbacks or comments through the webpage. The project owner has also invited stakeholders from categories A, B and C to participate in the meetings through emails, phone calls, whatsapp, public notice and verbal notifications during October 2018. The local stakeholder consultation meeting was held on October 16th in Resilient Africa Network (RAN) Plot 28, House No. 30, Upper Kololo Terrace.

In the opening of the meeting, the project owner explained the goal of the meeting and introduced the project by using the key project information; then stakeholders can ask questions and project owner can make further clarification so that stakeholders can further understand he project. Then, the 'Input & Grievance Mechanism' form and the 'Sustainable Development Assessment 'questionnaires were distributed to each participant, with the Input & Grievance Mechanism being introduced firstly and with the questions of social and environmental impacts being illustrated subsequently, and participants were asked to respond to all questions from the form and the questionnaire. Finally the project owner invited the stakeholders to fill out the 'Stakeholder Consultation Meeting Evaluation Form'. After the meeting, forms and questionnaires

have been collected, with the most responses indicating that the project would have positive impacts on environment and society.

The Stakeholder Feedback Round will be conducted once the project is Gold Standard listed and all project documents have been finalized.

E.2. Summary of comments received

>> (Provide a summary of key comments received during the consultation process.)

All stakeholders participating in the meetings are like the project and think the meetings are very good, inspiring, educative and impressive.

Stakeholders think the project will reduce the amount of money spent on fuel and the savings can be spent on food, cloths, medical bills and school fees; the project can also reduce the time of women and girls for firewood collection so that the saved time can be put into productive and income generating activities as well as allowing them to participate in public life. Improved stoves are also good for health as the hazardous air inhalation is reduced due to the use of improved stoves. Stakeholders consider that the project would empower women as the stove producer groups are mainly composed of women, and leaders of the groups are elected amongst themselves, so that the project gives women and girls a platform to make decisions and manage stove relevant affairs. Moreover, local people getting involved in the activities of improved stove production and distribution can also earn extra income to improve their financial situation of their families. Besides, stakeholders thinks it is very good that the project will save the forest by reduced cutting trees for wood energy, so that the natural water can be conserved through forest coverage.

See section E.3. for a summary of how those comments were addressed and incorportated into the design of the project.

E.3. Report on consideration of comments received

>> (Describe how the comments have been addressed by providing a clarification to the stakeholder or by altering the design of the project or by proposing to monitor any anticipated negative impacts etc.)

The following table summarizes the comments received and how they were considered and addressed by the project participants into the project design.

Stakeholder comment	Was comment taken into account (Yes/ No)?	Explanation (Why? How?)
Who are PE partners in Uganda?	Yes	We partner with several organizations and local governments such as BRAC, Nucafe, Up Energy and Adjumani District, and some international organisations.

How was the competitive analysis made?	Yes	Based on different publications by WWF and based on personal experience.
How an individual can make profit from sales?	Yes	We have independent retailers, they have a wholesale price and benefits according to the volume purchased.
Is the project subsidized?	Yes	It was subsidized in the past. At the moment is self-funded. The target is to subsidize in the future carbon financing.
The stove is expensive, hard to pay for most population	Yes	It is hard to pay upfront, that's why we partner with organizations that can offer payment options. Additionally, the savings in fuel expenses pay for the stove in 4-5 months.
The word rudimentary isn't appropriate, should find another way to describe the open fire	Yes	The word rudimentary when referring to the 3 stone fire is appropriate, that cooking method is underdeveloped, therefore rudimentary.
Why is not made in Uganda?	Yes	Since the inception of the project, the manufacturer had been the same, in India. We are currently looking for local manufacturers that can offer the same quality at a competitive price.
Students from Industrial Design should have been invited to the meeting	Yes	Will be considered for future meetings and if/when designing a new stove.
Is it possible to have branches?	Yes	Costs of having branches are too expensive. We are not planning to have branches at the moment.
How is the delivery method?	Yes	Depending on the project and distance. We deliver countrywide for one or a few stoves by commercial bus, to thousands by truck.
How is the monitoring done?	Yes	We call all customers within one month to follow up after, and in the future, the sampling monitoring survey will be conducted.
Local manufactures have machines that probably could be used to make the BDS	Yes	We are currently exploring the options to manufacture the stove locally. This includes visiting those

		manufacturers to see if they can offer the quality needed at a competitive price.
What is included in the warranty?	Yes	The 2-year warranty is against manufacture defects. PE will repair or give a new BDS to the user at no cost. If any modification has been made to the original shape or use of the stove the warranty is voided.

Appendix 1. Contact information of project participants

Organization name	Potential Energy, Inc.
Registration number with relevant authority	
Street/P.O. Box	Muyenga
Building	Plot 3A Kateeba Close
City	Kampala
State/Region	Central
Postcode	
Country	Uganda
Telephone	+256 77 6123101
Fax	N/A
E-mail	info@potentialenergy.org
Website	www.potentialenergy.org
Contact person	
Title	Managing Director
Salutation	Ms.
Last name	De Clerck
Middle name	
First name	Jessica
Department	
Mobile	+256 77 6123101
Direct fax	
Direct tel.	+256 77 6123101
Personal e-mail	jessica@potentialenergy.org

Organization name	Swiss Carbon Value Ltd.
Registration number with relevant authority	
Street/P.O. Box	Technoparkstr. 1
Building	
City	Zurich
State/Region	
Postcode	8005
Country	Switzerland
Telephone	+41 43 501 35 50
Fax	
E-mail	
Website	

Contact person	Sui Yang
Title	Project Manager
Salutation	Ms.
Last name	Yang
Middle name	
First name	Sui
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	s.yang@southpole.com

Appendix 2. Summary of post registration design changes

Not applicable

Revision History

Version	Date	Remarks
1.1	24 August 2017	Updated to include section A.8 on 'gender sensitive' requirements
1	10 July 2017	Initial adoption