



Sustainable Development Verified Impact Standard

IMPROVED COOKSTOVES IN LIBERIA

CARBONIBUS

ENVIROFIT
SMARTER LIVING

Document Prepared by

 **Climate Secure**

Project Title	IMPROVED COOKSTOVES IN LIBERIA
Version	4.0
Date of Issue	18-Apr-2024
Project Location	The Republic of Liberia
Project Proponent(s)	Carbonibus S.r.l Via Giacomo Leopardi 26 20123 Milan, Italy Email: info@carbonibus.org Website: https://www.carbonibus.org/ Telephone: +231778441873
Assessor Contact	Carbon Check (India) Private Ltd. Regd. Off: 2071/38, 2nd Floor, Naiwala, Karol Bagh, New Delhi – 110005 E-mail: info@carboncheck.co.in / projects@carboncheck.co.in Contact #: +91 (120) 4373114
Project Lifetime	15 May 2023 – 14 May 2044; 21-year lifetime
History of SD VISTA Status	No previous attempts at SD VISTA certification made to date
Other Certification Programs	VERRA Verified Carbon Standard (4219)
Expected Future Assessment Schedule	First verification anticipated in 2024-25

CONTENTS

1	SUMMARY OF SDG CONTRIBUTIONS.....	3
2	PROJECT DESIGN	5
2.1	Project Objectives, Context and Long-term Viability	5
2.2	Stakeholder Engagement.....	13
2.3	Project Management.....	29
3	BENEFITS FOR PEOPLE AND PROSPERITY	30
3.1	Condition of Stakeholders at Project Start.....	30
3.2	Expected Impacts on Stakeholders.....	32
3.3	Stakeholder Monitoring Plan.....	34
3.4	Net Positive Stakeholder Well-being Impacts.....	36
4	BENEFITS FOR THE PLANET	37
4.1	Condition of Natural Capital and Ecosystem Services at Project Start.....	37
4.2	Expected Impacts on Natural Capital and Ecosystem Services.....	38
4.3	Natural Capital and Ecosystem Services Monitoring Plan.....	39
4.4	Net Positive Natural Capital and Ecosystem Services Impacts.....	39
	APPENDIX A: CAUSAL CHAIN	40

1 SUMMARY OF SDG CONTRIBUTIONS

Table 1: Summary of Project SDG Contributions

Row number	Estimated Project Contribution by the End of Project Lifetime	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Section Reference	Claim, Asset or Label
1)	Household expenditures on purchased cooking fuel will get reduced with usage of project ICS owing to its increased efficiency. Thus, project ICS shall result in money savings in beneficiary households. The project will distribute ICS in Liberia and will lead to reduction of poverty in the beneficiary households. Quantifiable contribution: ~978 LRD monthly savings on purchased cooking fuel after switching to project ICS	1.4	Project Specific Indicator – Average monthly household savings due to reduction in expenditure on purchase fuel after shifting to project technology	Implement activity to Increase	3.2 #1	Claim
2)	The indoor pollutants emissions attributed to inefficient burning of solid biomass fuels in the beneficiary households will be reduced. The project ICS shall aid improved combustion of solid biomass fuel thereby reducing smoke and Particulate matter (PM) emissions. The project will free the beneficiary households from exposure to smoke / PM associated with traditional cooking. Quantifiable contribution: >75% beneficiaries reporting reduced exposure to smoke / PM emission after switching to project ICS	3.9	Project Specific Indicator – % users reporting Reduction in Smoke/PM emissions	Implement activity to increase	3.2 #2	Claim
3)	The project activity is targeting to provide formal and/or non-formal education and training to resources	4.3	4.3.1 Participation rate of youth and adults in formal and non-formal	increase	3.2 #3	Claim

	involved in the project activity. Quantifiable contribution: 50 people provided with formal and/or non-formal education or training.		education and training in the previous 12 months, by gender.			
4)	The project ICS shall save time in cooking activities (by faster cooking) as well as save time in fuel procurement (reduced collection time or reduced fuel purchase trips to market) due to reduced fuel consumption. This shall save time spent by the women involved in these activities (unpaid work) to be utilized in more productive and income generating tasks. The project will lead to helping beneficiary households in saving time in cooking activities (by faster cooking) as well as fuel procurement (reduced collection time or reduced fuel purchase trips to market). Quantifiable contribution: Time Spent in cooking/ fuel procurement in Baseline Scenario: ~5-6 hrs/day Time Spent in cooking/ fuel procurement in Project Scenario: ~3 hrs/day up to 2-3 hours saved per day per household from cooking / fuel procurement activities	5.4	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age, and location	decrease	3.2 #4	Claim
5)	The project activity by distributing ICS will provide access to clean cooking with primary reliance on clean fuels and technology. The project ICS will be made available free of cost to beneficiary households. The project will lead to project households getting access to clean cookstoves (ICS) by the end of its lifetime.	7.1	7.1.2 Proportion of population with primary reliance on clean fuels and technology.	Increase	3.2 #5	Claim

	Quantifiable contribution: 0.5 million ICS distributed, >75% usage rate					
6)	The project will create local employment opportunities in operational and management roles, as well as in manufacturing, distribution, and logistics. Quantifiable contribution: 25 jobs created	8.5	Project Specific Indicator – Number of Jobs Created	Increase	3.2 #6	Claim
7)	The project by replacing the inefficient traditional stove with the energy-efficient ICS will reduce GHG emissions. Quantifiable contribution: 11,392,289 tCO ₂ e of GHG emission reductions over the crediting period of 7 years.	13.0	Tonnes of greenhouse gas emissions avoided or removed	Decrease	VCS validation report	SD VISta-labeled VCU
8)	The project will help in reduction of the use of non-renewable biomass from forests, thus assisting in conserving existing forest stock and the protection of natural forest eco-systems and wildlife habitats. Quantifiable contribution: average ~2.51 tonnes of non-renewable biomass saved per HH/year.	15.2	15.2.1 Progress towards sustainable forest management.	Increase	4.2 #2	Claim

2 PROJECT DESIGN

2.1 Project Objectives, Context and Long-term Viability

2.1.1 Summary of Project Sustainable Development Objective(s)

The purpose of this project is to disseminate energy-efficient improved cookstoves (ICS) to replace existing traditional cooking device in domestic households and communities in Liberia. The implementation of the project activity will result in the reduction of fuel consumption & consequent emissions from inefficient combustion of solid biomass fuel attributed to cooking on traditional Cookstoves.

This project activity will contribute to social, environmental, and economic benefits in the country. A summary of the Sustainable Development objectives is provided in the following table:

Impact Category	SDG Targeted	Sustainable Development Objectives
Economic Well-Being	SDG 1	Increase access to basic services (i.e., reduced expenditures on purchased cooking fuel)
	SDG 8	Increase local employment opportunities in operational and management roles, as well as in manufacturing, distribution, and logistics.
Social Well-Being	SDG 4	Increase formal and/or non-formal education and training to individuals
	SDG 5	Decrease Proportion of time spent on unpaid domestic and care work for women in beneficiary households.
	SDG 7	Increase Proportion of population with primary reliance on clean fuels and technology (i.e. clean cooking via project ICS)
Environmental well-being	SDG 3	By distributing ICS, reducing exposure to smoke / PM attributed to inefficient traditional modes of cooking.
	SDG 13	Decrease greenhouse gas emissions per year
	SDG 15	Increase sustainable forest management (by reducing the consumption of non-renewable biomass fuel)

2.1.2 Description of the Project Activity

The purpose of this large scale project is to disseminate energy-efficient improved cookstoves (ICS) to replace existing traditional Cookstoves in domestic households and communities in Liberia.

Traditional cooking methods prevalent across Liberia, contribute to greenhouse gas (GHG) emissions due to inefficient combustion of unsustainably sourced, non-renewable biomass (NRB) fuel. The use of such fuels in host country is one of the major drivers of deforestation. In 2021 alone, Liberia lost 128kha of natural forests, widespread usage of NRB for meeting thermal energy needs reduces the ability of forests to sequester carbon, thereby causing GHG emissions.

Technology/Measure

The ICS disseminated under the project is designed to improve fuel combustion and heat transfer. It results in the reduction of fuel consumption and improvement in levels of indoor air pollution for project users (reducing smoke, black soot, and PM). The reduction in consumption of cooking fuel also reduces GHG emissions attributed to the use of non-renewable biomass.

The project activity includes dissemination of CH2200, CH5300, and M5000 improved stoves¹. Specification of these example ICS is given below²:

Stove Model	CH2200 /EcoSaver Charcoal	CH5300/SuperSaver Charcoal	M5000/SuperSaver Wood
-------------	------------------------------	-------------------------------	--------------------------

¹ Stoves are sold based on potential customer demands and preferences. Other models may be included in the PA subsequently, provided they meet the methodological requirements.

² Project ICS may be distributed with or without pot-skirt depending upon PP discretion in future. In case where pot-skirts are being distributed, the same shall be duly captured and recorded at the time of distribution. Accordingly, the corresponding thermal efficiency of the ICS with/without pot skirt shall be used for ER calculations. In such case, ex-post monitoring shall assess (on sampling basis) the continuity of usage of pot skirt and shall calculate ERs accordingly discounting for any drop off of pot skirts.

Photo			
Thermal Efficiency	52.4%	56.2%	38.3%
Estimated Life ³	7 Years	7 Years	7 Years
Unit Size (h x w x d)	15.4 x 31.3 x 22.9 cm	36.6x31.5x26 cm	28.0 x 26.5 x 26.5 cm
Unit Weight	2.3kg	5.0 kg	4.2 kg
Fixed/Portable	Portable	Portable	Portable
Grate/Chimney	Grate	Grate	Grate

In the absence of this project activity, households would cook primarily using traditional inefficient stoves, perpetuating environmental and health degradation.

The project intends to access carbon finance to mitigate one of the main barriers (price) for end users towards adopting clean cookstoves.

Sustainable Development Benefits

Impact Category	SDG Indicator	Justification of achieving the Sustainable Development Benefits
Economic Well-Being	1.4 Average monthly household savings due to decrease in expenditure on purchased fuel after shifting to project technology.	Household expenditures on purchased cooking fuel will get reduced with usage of project ICS owing to its increased efficiency. Thus, project ICS shall result in money savings in beneficiary households.
	8.5 Number of Jobs Created	The project will create local employment opportunities in operational and management roles, as well as in manufacturing, distribution, and logistics.
Social Well-Being	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by gender.	The project activity is targeting to provide formal and/or non-formal education and training to resources involved in the project activity.
	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age, and location	The project ICS shall save time in cooking activities (by faster cooking) as well as save time in fuel procurement (reduced collection time or reduced fuel purchase trips to market) due to reduced fuel consumption. This shall save time spent by the women involved in these activities (unpaid work) to be utilized in more

³ In case of estimated life of project devices is less than the crediting period (7 years renewable twice), then either these devices will be replaced after the end of their expected lifetime span or otherwise, emission reductions will be claimed only till the end-of-life span of the project devices.

Environmental well-being		productive and income generating tasks.
	7.1.2 Proportion of population with primary reliance on clean fuels and technology.	The project activity by distributing ICS will provide access to clean cooking with primary reliance on clean fuels and technology. The project ICS will be made available free of cost to beneficiary households.
	3.9 - % users reporting reduction in Smoke/PM emissions	The indoor pollutants emissions attributed to inefficient burning of solid biomass fuels in the beneficiary households will be reduced. The project ICS shall aid improved combustion of solid biomass fuel thereby reducing smoke and Particulate matter (PM) emissions.
	13.0 - Tonnes of greenhouse gas emissions avoided or removed	The project by replacing the inefficient traditional stove with the energy-efficient ICS will reduce equivalent GHG emissions for meeting similar thermal energy needs as that in the baseline.
	15.2.1 Progress towards sustainable forest management	The project will help in reduction of the use of non-renewable biomass from forests, thus assisting in conserving existing forest stock and the protection of natural forest eco-systems and wildlife habitats.

The following Operational Plan and Implementation Framework will be used:

1. PP will coordinate with different manufacturers to produce ICSs. PP will provide guidelines for manufacturing including material and other specifications, serial identification, and quality standards of the cookstoves.
2. The distribution of the ICS will be managed via PP's own distribution network or with local distribution partners.
3. The PP shall communicate the project beneficiaries during distribution that PP retains exclusive and unconditional rights to the carbon credit generated by project ICS.
4. The PP shall maintain and update the ICS distribution database continuously. The required data collection includes, but is not limited to, the following.
 - (a) Date of distribution,
 - (b) Geographic area of distribution,
 - (c) Model/type of project ICS distributed,
 - (d) Quantity of project ICS distributed,
 - (e) Name of the beneficiary, address, and telephone number (if available),
 - (f) Unique serial number for each project ICS,
 - (g) Primary Baseline fuel / technology being replaced.

5. The information collected will be stored in the ICS distribution database which will serve as the project database for ex-post project sampling and monitoring purposes. Also, this shall serve to avoid any double counting and duplicity of data.
6. The PP will coordinate ex-post monitoring activities as follows:
 - (a) Implement the monitoring plan,
 - (b) Determine the sample size as per sampling plan and identify the samples to be monitored (the sampling plan is detailed below)
 - (c) Ex-post monitoring - the data will be collected using survey questionnaires designed by experts. The surveys will be carried out by external parties or by project implementer teams experience / trained to conduct such surveys. PP will be responsible for ensuring that staff responsible for monitoring and reporting have received adequate training, as applicable.
 - (d) Ensure the quality of monitoring data (QA/QC) as per section 5.2 of VCS PD, the monitoring results and statistical robustness will be reviewed internally and approved by competent staff.
 - (e) Use the data collected for emissions reduction calculations.

The aforesaid plan shall ensure that the project is implemented and operated in a standardized manner.

2.1.3 Implementation Schedule

Date	Milestone(s) in the Project's Development and Implementation
February 2023	Local Stakeholder Consultation of SD VISta
March 2023	Initiation of Validation for VCS PD
March 2023	Pipeline Listing for SD VISta PD
March 2023	Validation for SD VISta PD
15 May 2023	Start Date of Project Activity
August 2023	Registration of project activity under SD VISta
January 2024	First Verification by assessor

2.1.4 Project Proponent

Organization Name	Carbonibus S.r.l
Role in the Project	Project Proponent
Contact Person	Ekaterina Bakal
Title	Head of Sales & Marketing
Address	Via Giacomo Leopardi 26 20123 Milan, Italy
Telephone	+231778441873
Email	info@carbonibus.org

2.1.5 Other Entities Involved in the Project

Organization name	Envirofit International
Role in the Project	Project Implementer
Contact person	Nathan Lorenz
Title	CTO

Address	19 Old Town Square, Suite 238, Fort Collins, Colorado, 80524, USA
Telephone	+1 9703722874
Email	info@envirofit.org

Organization name	Climate Secure
Role in the Project	Entity Completing the Project Description Document
Contact person	Rohit Lohia
Title	Director
Address	P.O. Box 515000, Sharjah Media City, Sharjah, UAE
Telephone	+91 9717093552
Email	rohit.lohia@climate-secure.com

2.1.6 Project Type

The project is not a grouped project. This is a non-AFOLU (energy efficiency – demand side) project.

2.1.7 Project Location

The project location will be the geographical boundary of the Republic of Liberia. The geographical coordinates of Monrovia, capital of Liberia is 6°18'2.7864" N 10°47'49.7760" W⁴. The map of Liberia, for reference purpose, is as follows:



Geographical boundary: Liberia⁵

⁴ <https://www.latlong.net/place/monrovia-liberia-444.html>

⁵ <https://www.nationsonline.org/>

2.1.8 Baseline Scenario

In Liberia, the simplest of traditional cookstoves commonly feature open wood or charcoal fires underneath pots supported by steel rails or traditional charcoal clay pots and/or traditional 3-stone firewood.

In Liberia, 98.0% of households use solid fuel for cooking with firewood being the primary source of solid fuel (54.1% of household use)⁶. There is differential in cooking fuel use in between rural & urban areas of Liberia. The rural households have reported using wood as the primary cooking fuel, being used by 86.8% of households, followed by charcoal being used by 11.9% of households. On the other hand, urban households have reported using charcoal as the primary cooking fuel, being used by 73.6% of households, followed by wood being used by 20.5% of households.

Traditional cooking methods are prevalent across the host country. The use of these traditional inefficient biomass stoves is a significant driver of deforestation. Widespread usage of unsustainably sourced, non-renewable biomass (NRB) for cooking results in equivalent GHG emissions attributed to use of non-renewable biomass.

According to Global Forest Watch (database by World Resources Institute) ⁷, from 2001 to 2021, Liberia lost 2.05Mha of relative tree cover, equivalent to a 22% decrease since 2000 and 0.47% of the global total. In 2021 alone, Liberia lost 128kha of natural forest, equivalent to 75.3Mt of CO₂ emissions. Detailed description has been provided in section 3.1 and 4.1 below.

Thus, the ICS disseminated under the project is designed to improve fuel combustion and heat transfer. It results in the reduction of fuel consumption and improvement in levels of indoor air pollution for project users (reducing smoke / PM). The reduction in consumption of cooking fuel also reduces GHG emissions attributed to the use of non-renewable biomass.

2.1.9 Causal Chain(s)

Refer appendix A for the Causal Chain.

2.1.10 Threats to the Project

Nature-Induced threats

- Threat: Climate Crisis / Natural disasters triggers displacement and migration that leads to households getting relocated.

Solution: ICS distributed under the project activity are portable and light weighted. Hence the project ICS can be carried by the ICS user easily, should the need to relocate arise.

⁶ Liberia DHS 2019-20 published in April 2021, table 2.4, page 25, link: <https://dhsprogram.com/publications/publication-FR362-DHS-Final-Reports.cfm>

⁷ <https://www.globalforestwatch.org/dashboards/country/LBR>

- Threat: Climate change and deforestation can lead to biomass fuel scarcity and an untenable source of biomass.

Solution: The project ICS shall significantly reduce the woody biomass demand in the project households owing to increased efficiency of project stoves relative to the baseline stoves. Thus, the project shall contribute towards reduction in biomass fuel scarcity and reduction in deforestation attributed to reduced demand for woody biomass in project households.

- Threat: Pandemics like COVID-19 etc. might affect the implementation and operation of the project in future.

Solution: In such cases, PP will operate as per the regulatory guidelines and mandates applicable to ensure that the project staff involved in implementation and operation are at reduced risk.

Human-Induced threats

- Threat: Carbon-finance sponsored stove distribution may result in poor household adoption rate post distribution.

Solution: The PP will coordinate with local distribution partners to identify deserving beneficiaries to ensure that project stove usage rate remains significant. The target users will also be made aware on the benefits of using improved cookstoves for effective adoption rate.

- Threat: Many households cannot afford the new improved cookstoves because of financial constraints

Solution: PP is distributing ICS free of cost to end-users to counter this threat.

Stakeholder Participation threats

- Threat: The longevity of Project Long Life may pose a challenge to maintaining stakeholder engagement or stakeholders' willingness to continue using the improved cookstoves.
- Solution: The project has implemented a robust mechanism to ensure continuous stakeholder engagement over its project lifetime as explained in section 2.2.4 below.

Additionally, the usage of project technology shall be monitored over the project lifetime on sampling basis. Thus, any reduction to project stove usage shall be accounted in the impact quantification accordingly.

2.1.11 Benefit Permanence

The purpose of this large-scale project activity is to disseminate energy-efficient improved cookstoves (ICS) to replace existing traditional Cookstoves in domestic households and communities in Liberia.

The project ICS will consume less fuel to generate equivalent thermal energy as that in the baseline traditional inefficient stoves. Reduction in fuel consumption will help beneficiaries in reducing fuel expense and saving time in cooking activities (by faster cooking) as well as fuel procurement (reduced collection time or reduced fuel

purchase trips to market). This shall free the women involved in these activities (unpaid work) to utilize the time saved in more productive and income generating tasks.

The project ICS shall aid improved combustion of fuel thereby reducing smoke and Particulate matter (PM) emissions. The project will have long-term positive influences on the health of end-users, especially the women and girls who mainly undertake the cooking in the households.

The forest saved by the project through the reduction of non-renewable biomass consumption will protect the environment and biodiversity for a long time.

The Project ICS lifetime is > 5 years. This time period is sufficient enough for a beneficiary's behaviour change and transition from cooking on traditional stove to improved efficient ICS. Thus, after the end of life of project ICS, the beneficiary is not expected to shift back to traditional cooking practice, thereby ensuring benefit permanence event after the end of life of project devices.

The project beneficiary optionally may choose to replace the expired project device with another project device (as agreed with PP) or may graduate to even higher technology(ies) in the energy ladder.

2.2 Stakeholder Engagement

2.2.1 Stakeholder Identification

The PP followed a systematic approach and locally appropriate methods to identify relevant stakeholders, in line with the Section 2.2 of SD VISta Standard ver 1.0. The identification process involved a two-step approach:

1. **Mapping of Relevant Stakeholders Groups:** Stakeholders groups likely to be impacted (direct / indirect) by the project were identified as follows:
 - **A** - Local people, communities and or representatives who are directly or indirectly affected (beneficiaries or adversely affected) by the project or may have an interest in the project.
 - **B** - Stakeholders with land-tenure rights for any area directly affected by the implementation of the project (i.e., within the project boundary).
 - **C** - Local policy makers and representatives of local authorities.
 - **D** - National government officials or National Focal bodies responsible for the project in the host country, for example, Designated National Authority (DNA).
 - **E** - Local non-governmental organisations (NGOs), Women Groups working on topics relevant to the project or working with communities who are likely to be affected by the project.
 - **F** - Relevant international Non-Governmental Organizations (NGOs) supporters, with a representation in the region of the project.
 - **G** - Representatives from Verra
 - **H** - Project Parties i.e. Project Implementer, Investor, Manufacturer, Distributor, Monitoring Personnel etc.
2. **Stakeholder Representation:** Based on PP's experience and professional judgement, representative individuals / institutions, as applicable from each stakeholder group were invited (via email, phone calls, in person etc.) to ensure

comprehensive representation. Throughout the stakeholder identification process, careful consideration was given to include individuals and groups who might be directly or indirectly affected by project activities.

3. The list of identified stakeholders is as illustrated below. The contact details (phone/ email) has been removed for data privacy considerations.

Group	Name of invitee	Designation, Organisation (if relevant)	Means of invitation	Invitation Sent on	Reminder issued on	Closure Communication	Participation Confirmation received (Y/N)
D	Makenneh Keita	Presidential Special Projects	Phone Call	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Khwima Nthara	World Bank Group, Country Manager	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Valerie S Toby	Rural and Renewable Energy Agency of Liberia	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Bah F.M. Saho	ECOWAS Centre for Renewable Energy and Energy Efficiency	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Rebecca Benson	Daughters of Bomi Liberia	Phone call	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Dorlah Bolongei	Liberia Rural Children Development Organization	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Mr. Kris Natt	Youth Engagement Service - (YES LIBERIA)	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Joe Gator (LinkedIn)	Society for the Conservation of Nature in Liberia	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Lydia M. Saykay-Roberts	BRAC Liberia	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Charlyn Davis Worzie	Food and Agriculture Org, UN	Email	13-Feb-23	24-Feb-23	06-Mar-23	Yes
E	Richard Damania	WORLD BANK GROUP	Email	12-Feb-23	24-Feb-23	06-Mar-23	No
E	Patricia Flanagan	Private Enterprise Officer, (USAID)	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Lorenzo Nimley	USAID	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Oniel Bestman	Liberia Red Cross	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Thomas Boweh	Association of Vegetable producers	Phone call	15-Feb-23	24-Feb-23	06-Mar-23	No
E	Mohammed Kamara	Association of Rice producers	Phone call	15-Feb-23	24-Feb-23	06-Mar-23	No
E	Gus Roberts	Association of Cassava producers	Phone call	15-Feb-23	24-Feb-23	06-Mar-23	No
E	David Diggs Dennis	Conservation International Liberia	Phone call	15-Feb-23	24-Feb-23	06-Mar-23	No
C	Parley Jacob	Ministry of Commerce and Industry	Email	14-Feb-23	24-Feb-23	06-Mar-23	No
E	Ikem Eronini	mfgap Liberia	Phone call	13-Feb-23	24-Feb-23	06-Mar-23	No
H	Rodney D. Sieh	FrontPageAfrica	Phone call	13-Feb-23	24-Feb-23	06-Mar-23	No
F	H.E. Michael ROUX	Embassy of France Mamba Point	Phone call	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Benedict Kanu	African Development Bank Group	Phone call	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Silas Siakor	Country Manager, IDH	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Charles T.O. King	(LFTC) Liberia Finance and Trust Corporation	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
D	Saah A David Jr.	Forestry Development Agency of Liberia	Email	13-Feb-23	24-Feb-23	06-Mar-23	No

Group	Name of invitee	Designation, Organisation (if relevant)	Means of invitation	Invitation Sent on	Reminder issued on	Closure Communication	Participation Confirmation received (Y/N)
H	William Reide Dennis II	BSC Monrovia	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Lasana Donzo	Ministry of Commerce and Industry	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
D	Augustus Flomo	Ministry of Finance, Planning and Development	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	S. Benedict Dossen	The Carter Center	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Jonas Mva Mva	IDH Africa Regional Director	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
H	Sam Herring	Sttlein tours	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Duarzon	Foundation for Community Initiatives	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
D	Christopher B. Kabah	EPA	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Medecy Hessou	Liberian Geological Agency	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
D	Lawrence Taylor	Ministry of Finance and Development Planning (Liberia)	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
H	Cassandra Hampton	Golden Touch Corporation	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Hartlieb Euler	Energising Development Programm	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Mr. Benedict Sorie Kanu	African Development Bank Group	Phone call	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Hady Sherif	Center for Sustainable Energy Technology	Phone call	13-Feb-23	24-Feb-23	06-Mar-23	No
E	-	Community Empowerment for Change	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	-	Sister Aid Liberia	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
F	Neil Bradley	British Embassy	Phone call	13-Feb-23	24-Feb-23	06-Mar-23	No
F	Kate Thomson	British Embassy Montrovia	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
H	Richard van Hoolwerf	Emergi	Email	14-Feb-23	24-Feb-23	06-Mar-23	No
H	Eline Terneusen	Emergi	Email	14-Feb-23	24-Feb-23	06-Mar-23	No
H	Muhd Farrish Ishak	Bursa Malaysia	Email	14-Feb-23	24-Feb-23	06-Mar-23	No
F	Jessica De Clerck	Potential Energy	Email	14-Feb-23	24-Feb-23	06-Mar-23	Yes
F	Yang Xuan	South Pole	Email	14-Feb-23	24-Feb-23	06-Mar-23	No
F	Lea	South Pole	Email	14-Feb-23	24-Feb-23	06-Mar-23	No
E	Alice Kostrzewa	World Hope International, Liberia	Email	15-Feb-23	24-Feb-23	06-Mar-23	Yes
E	Moqim Azizi	UNDP	In person	12-Feb-23	24-Feb-23	06-Mar-23	No
E	Vladimir Ivanov	UNIDO	Email	15-Feb-23	24-Feb-23	06-Mar-23	No
C	Øyvind Dahl	Policy Director, Norwegian Ministry of Climate and Environmen	Email	12-Feb-23	24-Feb-23	06-Mar-23	No
H	Dr. LeRoy Boikai	Village Improvement Project, Inc.	Email	12-Feb-23	24-Feb-23	06-Mar-23	No
E	Colleagues	AID AFRICA	Email	12-Feb-23	24-Feb-23	06-Mar-23	No

Group	Name of invitee	Designation, Organisation (if relevant)	Means of invitation	Invitation Sent on	Reminder issued on	Closure Communication	Participation Confirmation received (Y/N)
E	Christian Widmann	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	Email	12-Feb-23	24-Feb-23	06-Mar-23	No
C	Jeroen Witkamp	Delegation of the EU to Liberia	Email	13-Feb-23	24-Feb-23	06-Mar-23	Yes
E	Amaziah Tardeh	Liberia Red Cross	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Paul Oliver	U.S. Agency for International Development	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	John Pasch, Director	USAID	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Julia Chalphin	USAID	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Oswald Tweh	Liberian American Chamber of Commerce (LACC)	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
H	Samuel Thompson	Association of Business Service Providers	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E		Sustainable Energy for All (SEforALL)	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
C		United Nations Framework Convention on Climate Change	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
H	Neil Porteous	Environmental Finance	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Robert Mcvicar	ACUMEN GLOBAL PARTNERS	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
F	Mark Wilson	1GCX Carbon Offsets Exchange	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
F		T3 Research	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
F		International Energy Agency	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E		HIVOS	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E		AFRICARE	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Fairnoh Gbilah	UNDP	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E		DGB Group	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
F		Rubicon Carbon	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
C	Dr. Foday Moriba Jaward Minister	Minister, Ministry of Environment and Climate Change of Sierra Leone	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
F	Dr. Ma Jun	Hong Kong Green Finance Association	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
F		Integrity Council for the Voluntary Carbon Market	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Ms. Sheila Oparaocha	ENERGIA, International Network on Gender and Sustainable Energy	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
F	Bboxx	Bboxx Ltd	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Ms. Monika Rammelt	GIZ	Email	12-Feb-23	24-Feb-23	06-Mar-23	No
F	Ms. Esther Boudewijns	Dutch Spark for Clean Cooking Solutions	Email	12-Feb-23	24-Feb-23	06-Mar-23	No

Group	Name of invitee	Designation, Organisation (if relevant)	Means of invitation	Invitation Sent on	Reminder issued on	Closure Communication	Participation Confirmation received (Y/N)
F		Dutch Spark for Clean Cooking Solutions	Email	12-Feb-23	24-Feb-23	06-Mar-23	No
F	Mr. Fred Colgan	Institutional Stove Solutions	Email	12-Feb-23	24-Feb-23	06-Mar-23	No
E	Roger R. Müller	Enabling Capital Ltd.	Email	12-Feb-23	24-Feb-23	06-Mar-23	No
C	Joseph Nyuma Tamba Jr	Ministry of Commerce and Industry	Email	13-Feb-23	24-Feb-23	06-Mar-23	No
E	Steve Gaye	Network of Microfinance Institutions (NEMIL)	Phone call	15-Feb-23	24-Feb-23	06-Mar-23	No
F	Johan	Swedish Embassy	Email	15-Feb-23	24-Feb-23	06-Mar-23	No
F		Brokers Carbon	Web site form	15-Feb-23	24-Feb-23	06-Mar-23	No
C	Sekouba Kamara	Ministry of Mines and Energy	Email	15-Feb-23	24-Feb-23	06-Mar-23	No
H	Joetta Watson	UBA Bank Liberia	Email	15-Feb-23	24-Feb-23	06-Mar-23	No
A	Shadi Saleh	Caspian Holdings	Email	15-Feb-23	24-Feb-23	06-Mar-23	No
H	Alyssa Barry	IR Lab	Email	15-Feb-23	24-Feb-23	06-Mar-23	No
H	Miro	Minamar Group	Email	15-Feb-23	24-Feb-23	06-Mar-23	No
H	Christoph Schaaf	Climate Nuts	Email	16-Feb-23	24-Feb-23	06-Mar-23	No
A	Samuel K. Johnson	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Gayflor Massaquoi	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Abraham Tono	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Jalloh Massaly	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Aaron Zayo	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Stephen Gogoh	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Theo O. Robert	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Fayiah B. Joseph	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Ansu Trawally	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Joyce Momo	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Moses P. Gballe	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Fomba	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Josephus Glay	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Roland Krom	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Ramcy F. Tumbey	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Lily O. Saab	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Royston Gbelia	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Joe B. Tarpeh	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Rozette Jacobs	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes

Group	Name of invitee	Designation, Organisation (if relevant)	Means of invitation	Invitation Sent on	Reminder issued on	Closure Communicat ion	Participation Confirmation received (Y/N)
A	Emmanuel Saywon	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Euodia T. Gbatoe	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Saney Williams	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Lossene V. T.	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Folley Rogers	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Jack Karmo	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Amara M. Keita	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Lansanah Jarl Alberto	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
A	Garguah Capehart	Representative from the local community	In person	12-Feb-23	24-Feb-23	06-Mar-23	Yes
C	Federico Foti	The Delegation of the European Union to Liberia	In person	12-Feb-23	24-Feb-23	06-Mar-23	No
E	Laura Montagnon	MSF (Médecins Sans Frontières/Doctors Without Borders)	In person	12-Feb-23	24-Feb-23	06-Mar-23	No
H	Yash Dinani	Source IT Liberia	In person	12-Feb-23	24-Feb-23	06-Mar-23	No
E	Roisin Timmons	UN Resident Coordinators Office	In person	12-Feb-23	24-Feb-23	06-Mar-23	No
G		VERRA	Email	16-Feb-23	24-Feb-23	06-Mar-23	No

Besides, above, the stakeholder event was broadcasted on via posters and newspaper notices confirming open invitation to the stakeholder event to ensure maximum participation from other interested stakeholders who could not be directly invited. Refer section 2.2.3 for details.

2.2.2 Stakeholder Description

The stakeholders identified through the process described in section 2.2.1 above can be generally grouped under two broad categories as follows:

A) Directly Affected Parties

1. Local people, communities and or representatives who are directly or indirectly affected (adversely affected or beneficiaries) by the project or may have an interest in the project: These are individuals or group of people who are directly impacted by the project, such as end-users, local communities' representative, ICS manufactures etc. Before the start of the project, users were cooking on traditional cookstoves (open wood or charcoal fires) and not aware about clean cooking technology.

The project ICS will consume less fuel to generate equivalent thermal energy as that in the baseline. Reduction in fuel consumption will help beneficiaries in reducing fuel expense and saving time in cooking activities (by faster cooking) as well as fuel procurement (reduced collection time or reduced fuel purchase trips to market). This shall free the women involved in these activities (unpaid work) to utilize the time saved in more productive and income generating tasks.

The project ICS shall aid improved combustion of fuel thereby reducing smoke and Particulate matter (PM) emissions and reducing exposure to IAP to the primary cook in the beneficiary household.

The project shall generate employment opportunities for those involved in the distribution and logistics of the stoves as well as monitoring activities ex-post.

PP operates with various distributing partners /various to distribute the technology to the household and communities. implementing partners. These partners are traditionally well-established organizations with community networks and knowledge of local customs which gives them an extra edge in implement the project as local people and communities are familiar with their presence. The implementing partners are directly benefited through knowledge, employment, and monetary gains resulting from project implementation.

2. Stakeholders with land-tenure rights for any area directly affected by the implementation of the project (i.e., within the project boundary): The project activity involves distribution of improved cookstoves to individual households and communities and it does not involve rights to lands, territories and/ or resources.

B) Indirectly Affected Parties

1. Local policy makers and representatives of local authorities: The project is expected to have indirect benefits for local authorities by improving the livelihoods of the people in the project area and reducing deforestation, thereby promoting overall development and better living conditions in the region.
2. National government officials or National Focal bodies responsible for the project in the host country, for example, Designated National Authority (DNA), Department of Forest Department, Focal Point of EPA, Rural and Renewable Energy Agency etc.

3. Local non-governmental organisations (NGOs), Women Groups working on topics relevant to the project or working with communities who are likely to be affected by the project: These organizations operate within the same geographical areas as PP's projects and may have similar sectoral projects. Their involvement would include identifying beneficiaries, managing distribution and logistics, as well as providing training, education, and capacity building.
4. Relevant international Non-Governmental Organizations (NGOs) supporters, with a representation in the region of the project: These organizations are comparable to those described in point 3, but they are international NGOs with a presence in the host region and may participate in the project in a similar capacity.
5. Representatives from Verra: As the project is being developed under Verra, hence, Verra representatives were also invited to participate in the local stakeholder consultation event using the contact information available on Verra's website (<https://verra.org/contact/>).

2.2.3 Stakeholder Consultation

- a) *Methods used for engaging local stakeholders (e.g., dates of announcements or meetings, periods during which input was sought):*

The stakeholders (both direct and indirect) were invited through various means such as email invitations, newspaper advertisement, invitation letters, phone calls, social media ads, posters advertisement at public places, etc. to maximize the stakeholder's participation and to collect their feedback on the project. The stakeholders were provided the option to either participate in the event physically or virtually. Thus, all stakeholders were provided equal opportunity to participate in the local stakeholder consultation event, not constrained by logistics or location.

Email invitations were sent to various direct and indirect stakeholders (Local Communities, Government officials, NGOs, local association leaders etc.) during 12/02/2023 - 22/02/2023 along with the non-technical summary of the project and stakeholder feedback form. Stakeholders were allowed to submit their feedback within 2 weeks from the date of receipt of the email through the feedback form provided. Sample snapshot of email invitation is given below:

CARBONIBUS

Kate Bakal <kate.bakal@carbonibus.org>

Fwd: Invitation to the public stakeholder consultation for the Improved Cookstoves in Liberia project

Vlad Duba <vlad.duba@carbonibus.org>
 To: Kate Bakal <kate.bakal@carbonibus.org>

Mon, Mar 20, 2023 at 1:44 PM

----- Forwarded message -----

From: Vlad Duba <vlad.duba@carbonibus.org>
 Date: Sun, Feb 12, 2023 at 12:52 PM
 Subject: Invitation to the public stakeholder consultation for the Improved Cookstoves in Liberia project
 To: <izboik@gmail.com>

Dear Dr. Boikai!

Carbonibus S.r.l. has initiated a new project (VCS + SD VISta Large Scale Project) titled "Improved Cookstoves in Liberia", which envisages the distribution of improved cookstoves in Liberia.

This initiative will promote the efficient use of new technologies to considerably reduce greenhouse gas emissions by replacing inefficient traditional cookstoves with improved cookstoves. Among other things, improved cookstoves allow to

- Reduce deforestation and land degradation caused by solid biomass production industry,
- Improve families' health conditions due to maintaining fast cooking speed with less smoke,
- Reduce household spending on solid biomass for cooking

As part of the project, we cordially invite you to participate in the public stakeholder consultation event that forms an important part of the implementation and certification processes of the Improved cookstove carbon program under Verra (VCS + SD VISta Large Scale Project). The purpose of this stakeholder consultation is to inform relevant stakeholders about the specifics of the project and the technologies used.

As a valued stakeholder in the project, you are invited to participate in the Local Stakeholder Consultation to give your kind feedback and suggestions. The meeting will be held on **27th February 2023** at the iCampus (The Wologisi Mountain Hall), Carey Street, Monrovia at **11 am**.

In case you are unable to attend the event in person, there is also an opportunity to join online – please, register using contact details below.

Additionally, please find attached the Non-Technical Summary (NTS) and the Stakeholder Feedback Form annexed to this email/letter. We welcome your thoughts and suggestions and cordially request you to bring with you the duly filled **Stakeholder Consultation Feedback Form** to the event.

In case you cannot participate in the event (physically) due to your busy schedule, you are kindly requested to provide us with your valuable feedback using the feedback forms attached herewith within 30 days from the date of receipt of this email/letter.

If you have any questions, please don't hesitate to ask.

Kindly confirm attendance/register for a virtual participation via:

- liberia@carbonibus.org
- Phone: +231 77 543 2009

Best regards,

Vladislav Duba

CARBONIBUS

Head of operations
 Carbonibus S.r.l.
 Phone/WhatsApp: +231 77 625 6552
 www.carbonibus.org

2 attachments

- 2. Non Technical Summary - Carbonibus_v1.1.pdf
 298K
- 3. Verra VCS Stakeholder Feedback Form_v1.1.docx.pdf
 328K

Further follow up mails were also sent to the stakeholders both before and after the event in order to collect their feedback.

Sample snapshot of follow up email before the event is given below:

CARBONIBUS

Kate Bakal <kate.bakal@carbonibus.org>

Fwd: Follow-up: Invitation to the public stakeholder consultation for the Improved Cookstoves in Liberia project

Vlad Duba <vlad.duba@carbonibus.org>
 To: Kate Bakal <kate.bakal@carbonibus.org>

Mon, Mar 20, 2023 at 2:10 PM

----- Forwarded message -----

From: Vlad Duba <vlad.duba@carbonibus.org>
 Date: Fri, Feb 24, 2023 at 1:09 PM
 Subject: Follow-up: Invitation to the public stakeholder consultation for the Improved Cookstoves in Liberia project
 To: <contact@green-earth>

Dear colleagues!

We hope this email finds you well.

We are kindly following up on the invitation we sent you for the upcoming Local Stakeholder Consultation Meeting for the Improved Cookstoves in Liberia project. The meeting will take place on **27th February (Monday) 2023 at 11 am** at **iCampus (The Wologisi Mountain Hall)**, Carey Street, Monrovia.

As earlier elaborated, the project aims to distribute Improved Cookstoves to households across Liberia to reduce families' charcoal consumption and exposure to smoke as well as minimize correspondent greenhouse gas emissions.

In case you are unable to attend the event in person, there is also an opportunity to join online via the following link: <https://zoom.us/j/98123161326>

Best regards,

Vladislav Duba

On Mon, Feb 13, 2023 at 5:42 PM Vlad Duba <vlad.duba@carbonibus.org> wrote:

Dear colleagues!

Carbonibus S.r.l. has initiated a new project (VCS + SD VISta Large Scale Project) titled "Improved Cookstoves in Liberia", which envisages the distribution of improved cookstoves in Liberia.

This initiative will promote the efficient use of new technologies to considerably reduce greenhouse gas emissions by replacing inefficient traditional cookstoves with improved cookstoves. Among other things, improved cookstoves allow to

- Reduce deforestation and land degradation caused by solid biomass production industry.

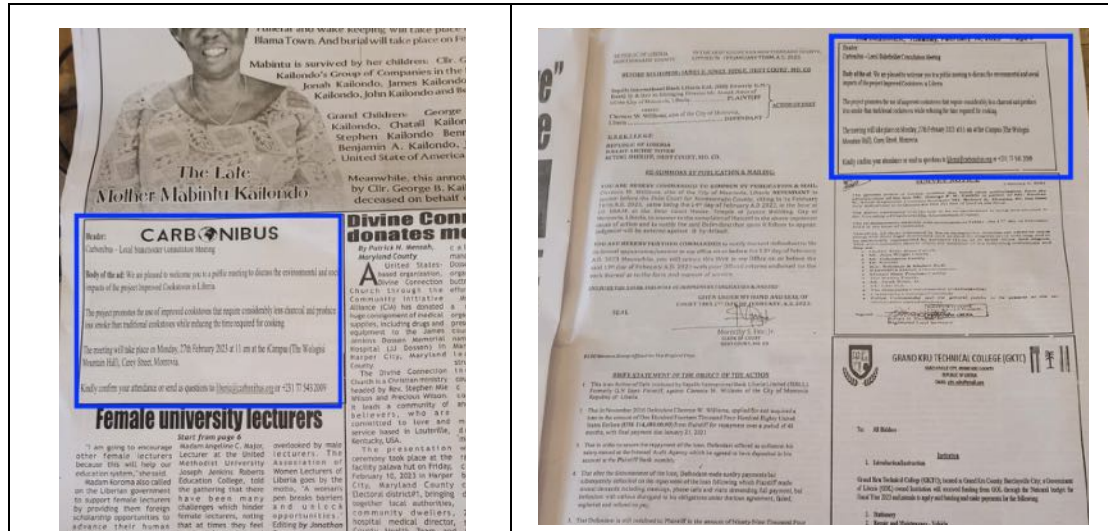
Sample snapshot of follow up email after the event is given below:



Further, notices were hosted physically at places of public interest nearby the physical location of the stakeholder meeting (bus stops, schools, shopping centres) to inform the local communities and people about the stakeholder meeting. Sample poster snapshots are as shown below:



Additionally, notices were published in leading newspapers on 14/02/2023. The notices provided information on the physical location of the stakeholder consultation process. Sample notices in newspapers are shown below:

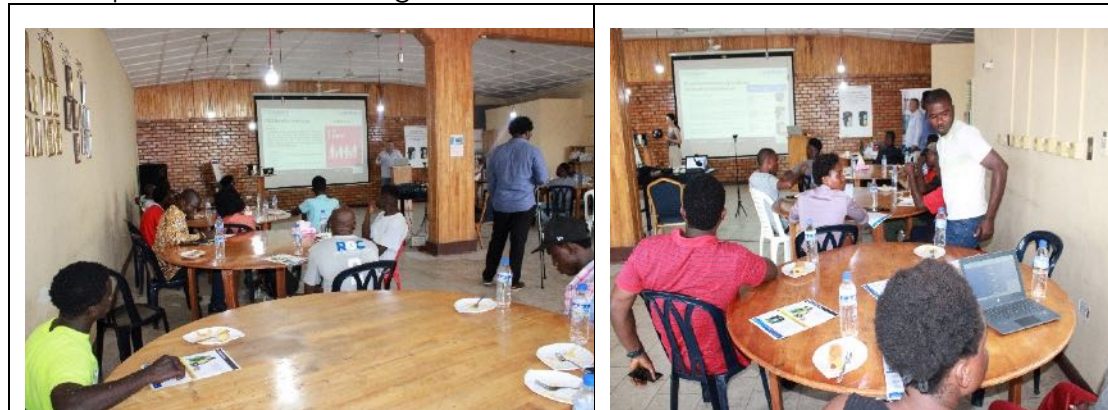


b) Methods used for documenting the outcome of LSC:

The local stakeholder consultation (LSC) was conducted on 27 February 2023 in Liberia as follows:

Date of LSC	27 February 2023
Time (Local Time)	11:00 am – 2:00 pm
Venue	iCampus (The Wologisi Mountain Hall), Carey Street, Monrovia
Attendance	28 Physical

The snapshots of the meeting are as below:



The meeting had the presence of all categories of stakeholders (both direct and indirect identified), with the sessions being quite productive and engaging. Stakeholders present during the meeting were provided with a non-technical summary of the project and a brief about the project and its components (including costs, risks, and benefits). The representatives of Carbonibus and Climate Secure were also present to address any questions/queries from the participating stakeholders. During the meeting, important aspects of the proposed project activity were discussed including technology/measure, baseline, grievance mechanism, SDG benefits, transfer of ownership of credits etc. Special attentions have been paid to the direct affected parties under the project and they have been encouraged to use of ICS by describing them the benefits of ICS technology as compared to traditional stoves.

Stakeholder feedbacks were collected via question-and-answer session during the consultation as well as a feedback form designed specifically to collect stakeholder opinion and rating on various aspects of the project.

c) Mechanism of on-going communication with local stakeholders.

As a part of on-going communication with local stakeholders, end users were informed about the grievance register which is maintained at the local office locations of the PP. Thus, it was explained during the meeting that end users/stakeholders are free to voice grievances regarding the project activity in the grievance register. Any relevant concern received during operation of project activity, will be addressed according to its merit.

d) Accounting of inputs received during the consultation:

Question/concerns raised during the physical stakeholder event by the participating stakeholders, and answers provide are given below for reference:

Question/ Concern Raised	Response Provided
What is the start of the delivery time?	The first batch of cookstoves is on the way to Liberia; and plan to start distribution at the in mid of May 2023.
What are the maintenance requirements?	ICSs under the project activity do not require any special treatment. After using it, remove the ash and wipe it with the tissue when cooled. Greasing with some palm oil is recommended to prevent rusting.
Is the Project for Montserrado county only or for the whole of Liberia?	The project activity has targeted to disseminate ICS in all the regions of Liberia.
Who's the actual owner of the cookstoves?	Customers are the sole owner of the cookstoves and Carbonibus owns the carbon credits that are being generated by the usage of ICS. Carbonibus will also be ensuring quality control, monitoring, training, guiding, and providing instructions to local sales and distribution partners. The ICS are provided by Carbonibus at free of cost.

Summary of feedback received via "stakeholder feedback form" during the physical meeting or virtually from invited stakeholders are given below:

Stakeholder Feedback - General

S. No.	Question	Summary of Feedback received
1	What are your views on system of waiver of ownership of carbon credits by end users?	The stakeholders acknowledged and expressed no issues on the system of ownership of carbon credit by end-users to Carbonibus.
2	Kindly express your views on the Continuous grievance / feedback mechanism explained above?	The stakeholders expressed that the mechanism of grievance/feedback register to raise any grievances is a standard procedure.
3	What recommendations do you have for monitoring procedures	The stakeholders recommended focusing on data collection to enhance accuracy by

	discussed above regarding the SDG indicators?	building a survey app, acknowledging that statistical data may not be perfect.
4	What recommendations do you have for betterment of the project (improvement in implementation framework, interaction with other initiatives in region etc.)?	The stakeholders recommended Carbonibus to build a commercial stove.
5	Any other comment (technology, geographical spread/location etc.)	The stakeholders expressed their interest in project and stated that they have technology to roll and assemble ICS in Liberia.

Local Stakeholder Consultation – Overall Evaluation

Question: What is your impression of the Stakeholder Consultation?	The stakeholders have a positive impression of the stakeholder consultation, considering it as a responsible action by carbonibus, fulfilling, and valuable due to the direct feedback received
Question: What do you like about the project?	Stakeholders like various aspects of the project, including its energy, cost, health, and environmental benefits, the stakeholder consultation process, the project's ability to solve multiple issues, and its positive impact on Liberia.
Question: What do you not like about project?	No significant concerns were raised.

In general, the participating stakeholders were appreciative of the initiative taken by Carbonibus and welcomed the project. Stakeholders acknowledged the features of project i.e., the reduction in Indoor air pollution / GHG and employment generation features of the project. No negative comments were raised during the Question session and feedback round. Thus, no change in project design is deemed required.

2.2.4 Continued Consultation and Adaptive Management

As a part of on-going communication with local stakeholders, end users were informed about the grievance register which is maintained at the local office locations of the PP. Stakeholders living close to the local offices of PP can express their grievances in the grievance books.

Other stakeholders not having direct access to the grievance books can escalate their grievance via PP field staff and/or distribution agents in their respective zones to PP. Any relevant concern received during lifetime of project activity, will be addressed according to its merit.

Additionally, contact information including phone numbers and email address of PP is available to end users/stakeholders for lodging grievances if needed. The contact details are available on PP's website as well as were explained during the LSC meeting to all participants, offering free access to voice grievances during the lifetime of the project.

Furthermore, the PP may conduct LSC at the time of crediting period to ensure continued consultation and engagement with stakeholders.

This multi-faceted approach shall ensure that end users, regardless of their location, are consulted throughout the lifetime of the project.

2.2.5 Anti-Discrimination

PP fosters an environment of mutual respect where employees and business partners can work together without fear of harassment, discrimination, or infringement on human rights. The project activity does not endorse any form of discrimination based on gender, sexual orientation, religion, race etc. PP will make sure that no discrimination based on gender, race, religion, sexual orientation, or other habits or sexual harassment with respect to the project.

ICS under the project activity will be distributed to deserving beneficiaries within the project boundary without any discrimination. The project will have positive impact on beneficiary households considering that they will spend less money / time on fuel procurement and cooking.

2.2.6 Worker Training

Training will be provided to the employees involved in distribution, maintenance, operation, and monitoring activities of the project. The agenda of training will be to aware employees to identify eligible beneficiaries, registration of the stoves, monitoring of the project, data collection, data assessment etc. Further, educational material (handouts or pamphlets or instructions sheet/manual) will be provided to stove beneficiaries (including vulnerable people) about the project technology usage and its benefits.

2.2.7 Equal Work Opportunities

PP is dedicated to make sure that all stakeholders, will be given equal opportunity to contribute both in volunteer and working positions. All the workers under the project activity will be treated equally. The workers will be selected based on their merit (Education, skills, and experience). Women unions may be used in distribution and capacity building activities.

2.2.8 Workers' Rights

The host country is a member of the ILO (International Labour Organization) convention. The project activity does not involve any forced labour and the PP, and its local partners ensures that all employment is in compliance with all national laws, local labour regulations and laws. PP has policies to ensure this as a part of employment contract with all employees. PP is committed to promoting the highest standards of ethical business conduct and to compliance with all applicable laws, rules, and regulations.

2.2.9 Occupational Safety Assessment

The project follows all relevant local and national laws. The project does not threaten human health or environment and does not adversely affect the health of the workers and the community. The employment opportunities generated through this

project, or the use of the project stoves do not increase the safety risks that are already present in the landscape of the country. During the distribution of ICS, there may be transport-related accidents which are potential occupational safety hazard. To minimize these risks and unintended potential occupational safety hazards, PP takes precautions by contracting workers who have lived in the community for several years and have experienced for the work assigned. Furthermore, the PP will make provisions to ensure that unintended occupational safety hazards are mitigated.

2.2.10 Feedback and Grievance Redress Procedure

The project participant has a grievance mechanism in place, and the same has been explained to the stakeholders during consultation process. The users of ICS can register any complain through local representative involved in distribution and responsible for operation and maintenance of ICS or also through grievance register placed at the local offices.

2.2.11 Feedback and Grievance Redress Procedure Accessibility

The contact details for the grievance redressal procedure were announced to all stakeholders during the stakeholder consultation and grievance book is available at the local offices of each project activity site.

The same has also been communicated to the PP field staff and distribution team to collect any grievance received from the user as the time of distribution and post distribution visits (if any).

Additionally, contact information including phone numbers and email address of PP is available to end users/stakeholders for lodging grievances if needed.

Thus, a feedback and grievance redress procedure accessibility is ensure at all times for all shareholders alike.

The customer's grievance is first noted once received. Post that, based on the possible solutions, the customer is advised relevant solutions. As necessary, the grievance redressal team contacts the stakeholder to ensure a smooth resolution.

2.2.12 Stakeholder Access to Project Documentation

During stakeholder consultation a non-technical summary of the project along with the feedback form was circulated. During the meeting, the project details were explained, and stakeholders were requested to give their feedback on any concern related to project. The details on project have also been shared with them during stakeholder consultation. The project documentation will be uploaded on VERRA website and the same has been informed to stakeholders. Additionally, stakeholder can also visit to the local office for hard copies of the project documents.

2.2.13 Information to Stakeholders on Assessment Process

The detailed process for registration under VCS (GHG programme) and SD VISta was explained to the stakeholders during local stakeholder consultation meeting. During the ex-post monitoring, the project ICS user shall have an option to provide feedback on the project if any, to the surveyor. Also, the assessor visit timing shall be

informed⁸ to the identified stakeholders and interviews will be facilitated between assessors and stakeholders during validation audits.

2.3 Project Management

2.3.1 Avoidance of Corruption

The project participant and its distribution partners are neither involved nor complicit in any form of corruption, such as bribery, embezzlement, fraud, favouritism, cronyism, nepotism, extortion, and collusion.

PP is committed to promoting the highest standards of ethical business conduct and to compliance with all applicable laws, rules, and regulations. As part of this commitment, all Carbonibus employees worldwide, including individuals employed by or acting on behalf of Carbonibus or its subsidiaries, are required to comply with the antibribery laws and local laws.

2.3.2 Statutory and Customary Rights

Not Applicable. The project activity involves distribution of improved cookstoves to individual households and communities and it does not involve rights to lands, territories and/ or resources.

2.3.3 Recognition of Property Rights

Not Applicable. The project activity involves distribution of improved cookstoves to individual households and communities and it does not require acquisition of property, hence no impact on any property rights.

2.3.4 Free, Prior and Informed Consent

The project activity involves distribution of improved cookstoves to individual households and communities and it does not require acquisition of property. It is a completely voluntary activity and households participating are free to choose whether they take part or not. The beneficiaries transfer their right on ownership of credits arising out of use of the product at the time of ICS distribution.

2.3.5 Restitution and/or Compensation for Affected Resources

Installation of an ICS does not affect any party's access to resources or their lands; no negative effects have been identified.

2.3.6 Property Rights Removal/Relocation of Property Rights Holders

Not Applicable. The project activities do not involve the removal or relocation of property rights holders from lands or territories, nor do they force rights holders to relocate activities.

2.3.7 Identification of Illegal Activities

⁸ The Evidence will be provided to the validating entity.

The project activity involves distribution of improved cookstoves to individual households. The distribution of the ICS will be monitored and recorded by the Project Participant and no illegal activities have been identified in project implementation and operation.

2.3.8 Ongoing Conflicts or Disputes

Not Applicable. The project activity involves distribution of ICSs to individual households only and it does not require acquisition of property. There is no ongoing or unresolved conflicts or disputes over rights to lands, territories and resources and any disputes that were resolved during the last twenty years.

2.3.9 National and Local Laws and Regulations

There are no enforced laws, statutes and/or regulatory framework in Liberia that mandate / stipulate the use / distribution of improved biomass stoves.

Thus, the project is a voluntary effort by the project proponent.

2.3.10 Project Ownership

For each PAI, the ownership of the instance shall be clearly demonstrated by virtue of the following:

- Declaration / agreement with end users transferring the ownership rights of the carbon credits generated from the project ICS to the project proponent.

Thus, all VCUs generated from the project instances shall be owned by the Project Proponent.

2.3.11 Grouped Projects

The proposed project is being developed as a large-scale project and not a grouped project; hence this is not applicable.

3 BENEFITS FOR PEOPLE AND PROSPERITY

3.1 Condition of Stakeholders at Project Start

Directly Affected Parties

These are individuals or groups of people who are directly impacted by the project, such as end-users, local communities' representatives, ICS manufactures etc. Before the start of the project, users were cooking on traditional cookstoves (open wood or charcoal fires) and not aware about clean cooking technology. Also, the local communities' representatives lack information about clean cooking technology.

The pre-project scenario in Liberia is the use of simplest of traditional biomass cookstove commonly feature traditional 3-stone fires and/or traditional charcoal stoves.

Despite efforts to increase global access to clean cooking, the Tracking SDG 7: Energy Progress Report 2022, Chapter-2⁹ points to 2.4 billion people still without access to clean cooking as of 2020. Further, as per the same report, the number of people without access to clean cooking in Sub-Saharan Africa is set to increase by almost 20 million every year this decade, rising from 923 million in 2020 to over 1.1 billion in 2030, as small gains in the percentage of people with clean cooking fail to keep pace with population growth and *Liberia alone, has more than 5 million people that access deficit toward clean cooking fuels and technologies.*

In Liberia, 98.0% of households use solid fuel for cooking with firewood being the primary source of solid fuel (54.1% of household use). There is differential in cooking fuel use in between rural & urban areas of Liberia. The rural households have reported using wood as the primary cooking fuel, being used by 86.8% of households, followed by charcoal being used by 11.9% of households. On the other hand, urban households have reported using charcoal as the primary cooking fuel, being used by 73.6% of households, followed by wood being used by 20.5% of households¹⁰.

Furthermore, the use of solid biomass fuels (e.g., wood) and charcoal in inefficient traditional stoves and/or open fires releases large amounts of particulate matter (PM), creating hazardous levels of indoor air pollution (IAP). For the year 2019, Liberia has reported 2,714 deaths that are attributed to Household air pollution from solid fuels. The smoke that emanates from cooking contributes to several chronic illnesses and acute health impacts such as early childhood pneumonia, emphysema, lung cancer, bronchitis, cardiovascular disease, and low birth weight.

Thus, traditional cooking methods are prevalent across the host country. The use of these traditional inefficient biomass stoves is a significant driver of deforestation. Widespread usage of unsustainably sourced, non-renewable biomass (NRB) for cooking results in equivalent GHG emissions attributed to use of non-renewable biomass.

Additionally, the use of solid biomass fuels (e.g., wood) in inefficient traditional stoves and/or open fires releases large amounts of particulate matter (PM), creating hazardous levels of indoor air pollution (IAP). IAP generated by inefficient and poorly ventilated stoves burning biomass fuels is responsible for the deaths of an estimated 3.2 million people annually. Almost half of these deaths occur among children under five years of age. Exposure is high among women and children, who spend the most time near the domestic hearth. Reliance on polluting fuels and technologies also requires significant time for cooking on an inefficient device and gathering and preparing fuel. In developing countries with high mortality rates overall, indoor air pollution ranks fourth in terms of the risk factors that contribute to disease and death (World Health Organization)¹¹.

⁹ <https://trackingsdg7.esmap.org/downloads>

¹⁰ <https://dhsprogram.com/pubs/pdf/FR362/FR362.pdf>

¹¹ <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health>

The project ICS will consume less fuel to generate equivalent thermal energy as that in the baseline. Reduction in fuel consumption will help beneficiaries in reducing fuel expense and saving time in cooking activities (by faster cooking) as well as fuel procurement (reduced collection time or reduced fuel purchase trips to market). This shall free the women involved in these activities (unpaid work) to utilize the time saved in more productive and income generating tasks.

The project ICS shall aid improved combustion of fuel thereby reducing smoke and Particulate matter (PM) emissions and reducing exposure to IAP to the primary cook in the beneficiary household.

The project shall generate employment opportunities for those involved in the distribution and logistics of the stoves as well as monitoring activities ex-post.

Indirectly Affected Parties

These are the individuals or groups of people who are indirectly involved such as NGOs, local authorities, etc.

NGOs: Before the start of the project, the local NGOs had little information about ICS technologies and its impact on different social aspects of local people's lives. The NGOs would be involved in the beneficiary identification, distribution, and logistics. NGOs will also be involved in training, education, and capacity building to know about clean cooking technology.

Local authorities: The local authorities shall be indirectly benefited as the project shall help improve the livelihood conditions in the project area, reduced deforestation in the project area resulting in overall development of the living conditions in the area. Before the start of the project, they also have lack of information about the clean cooking technology based on biomass.

Interactions between the stakeholder Groups: Prior to the implementation of the project, there was minimal communication among the local peoples, communities, NGOs, partners, and other stakeholders. However, once the project is implemented, all of these stakeholders will have the opportunity to interact with one another. For instance, local NGOs and distribution partners who are involved in distributing ICS or raising awareness will interact with the local people during the distribution process. Additionally, these stakeholders will receive training as part of the project implementation.

3.2 Expected Impacts on Stakeholders

Impact #1	Average monthly household savings due to reduction in expenditure on purchase fuel after shifting to project technology
Type of Impact	Positive, Predicted, Direct
Affected Stakeholder Group(s)	End user households

Resulting Change in Well-being	Household expenditures on purchased cooking fuel will be reduced with the use of the ICS as it shall reduce the fuel consumption by virtue of its increased efficiency. Thus, project ICS shall result in money savings in beneficiary households.
Impact #2	% Users reporting reduction in smoke/PM after shifting to ICS in project.
Type of Impact	Positive, Predicted, Direct
Affected Stakeholder Group(s)	End user households, especially women and children
Resulting Change in Well-being	The emission of indoor pollutants from inefficient burning of solid biomass fuels in the beneficiary households will be reduced. The project ICS shall aid improved combustion of fuel thereby reducing smoke and Particulate matter (PM) emissions.
Impact #3	Number of people receiving formal and/or non-formal education and training.
Type of Impact	Positive, Predicted, Direct
Affected Stakeholder Group(s)	End user households, especially children and adults
Resulting Change in Well-being	The project activity is targeting to provide formal and non-formal education and training to local people under the project activity. This will lead to ensure equal access for all women and men to affordable, quality technical, vocational, and tertiary education.
Impact #4	The average time saving associated with cooking and fuel collection time due to adoption of project technology / measures.
Type of Impact	Positive, Predicted, Direct
Affected Stakeholder Group(s)	End user households, especially women and children

Resulting Change in Well-being	The project ICS shall save time in cooking activities (by faster cooking) as well as save time in fuel procurement (reduced collection time or reduced purchase trips to market) due to reduced fuel consumption. This shall free the women involved in these activities (unpaid work) and utilize the same in more productive and income generating tasks.
---------------------------------------	---

Impact #5	Proportion of population with primary reliance on clean fuels and technology
Type of Impact	Positive, Actual, Direct
Affected Stakeholder Group(s)	End user households
Resulting Change in Well-being	The project involves installation and dissemination of clean, modern technology for cooking. The project ICS shall be made available free of cost to beneficiary households.

Impact #6	Number of male / female Jobs created by project
Type of Impact	Positive, Predicted, Direct
Affected Stakeholder Group(s)	Implementing partner staff
Resulting Change in Well-being	The project will create local employment opportunities in operational and management roles, as well as in manufacturing, distribution, and logistics.

3.3 Stakeholder Monitoring Plan

Due to the large number of ICS envisaged to be distributed in the programme, it is not economically feasible to monitor each beneficiary household.

Therefore, representative sampling will be undertaken in line with the requirements of the methodology applied and the Standard: Sampling and surveys for CDM project activities and programmes of activities, version 9.0.

Sample sizes will be sufficient to ensure that the precision of the sample means/proportions are in accordance with the methodological / standard requirements. In cases where survey results indicate that desired precision is not achieved, the lower bound value of the corresponding confidence interval of the parameter value may be used as an alternative to repeating the survey.

During sampling, there may be non-response from the target population. Over-sampling may be used to avoid non-response; however, sampling may be ceased once required confidence/precision is met.

The sampling methodology will be in accordance with the representative sampling methods provided by the sampling guidelines and standards as indicated along this section, with the applied methodology having precedence.

Sampling Methodology

Sampling Objective – The sampling objective for each parameter is to determine, via sampling survey, Sustainable Development (SD) impacts will be monitored for SDG 1, SDG3, SDG4, SDG 5, SDG 7, SDG 8, SDG 13, and SDG 15 which are quantifiable and monitored. **Target population and sampling frame** – The target population is the total population served under the project, and the sampling frame consists of aggregated data of end-users of the ICS as recorded in the PA Databases.

Sample method –Sampling will be conducted using stratified random sampling techniques over the sampling frame, and detailed calculations are provided below as per CDM guidelines “Sampling and surveys for CDM project activities and programmes of activities” the ICS in the sampling frame shall be stratified as per parameter requirements.

Stratified Random Sampling will be used to select samples from the Project Database for monitoring parameters.

Optionally, other sampling approaches may be used in accordance with Standard “Sampling and surveys for CDM project activities and programmes of activities” and Guideline for Sampling and Surveys for CDM Project Activities and Programme of Activities when sampling techniques or statistical analysis necessitates it.

Alternatively, a simplified approach proposed in option (b) under Section 8.4 of methodology may be used for determining the minimum sample size in which case compliance with required confidence/precision is not obligatory.

The following table summarizes the monitoring approach and monitoring frequency for each SDG (other than SDG 13 and 15 which are discussed in next section):

Impact#	SDG Indicator	Monitoring parameters	Monitoring Approach	Monitoring frequency
Impact #1	1.4	Average household money savings due to decrease in expenditure on purchased fuel after shifting to project technology.	Monitoring survey	Annual / Biennial
Impact #2	3.9	% Users reporting reduction in smoke/PM after shifting to ICS in project.	Monitoring survey	Annual / Biennial
Impact #3	4.3.1	Number of people receiving formal and/or non-formal education and training.	Education & Training Records	Annual / Biennial
Impact #4	5.4.1	Average time saving associated with cooking and fuel collection time due to adoption of project technology / measures.	Monitoring survey	Annual / Biennial

Impact #5	7.1.2	Number of Beneficiaries under the project i.e., Number of ICS distributed under the project.	Sales database record	Annual / Biennial
Impact #5	7.1.2	% Users reporting operational project stove	This parameter will be monitored under VCS program. No separate sampling or monitoring will be undertaken under SD VISta program.	Annual / Biennial
Impact #6	8.5	Number of male / female Jobs created by project	HR records	Annual / Biennial

3.4 Net Positive Stakeholder Well-being Impacts

Improved cookstove is a necessity for a healthy and productive life. The project activity will replace the traditional inefficient cook stoves with the higher efficient project ICS technology in Liberia. The emission of indoor pollutants from inefficient burning of solid biomass fuels in the beneficiary households will be reduced. The project ICS shall aid improved combustion of fuel thereby reducing smoke and Particulate matter (PM) emissions.

The project ICS shall reduce the household expenditures on purchased cooking fuel and save time in cooking activities (by faster cooking) as well as save time in fuel procurement (reduced collection time or reduced purchase trips to market) due to reduced fuel consumption.

This shall free the women involved in these activities (unpaid work) and utilize the same in more productive and income generating tasks.

The implementation of the project will also create local employment opportunities in operational and management roles, as well as in manufacturing, distribution, and logistics. The distribution of ICS under project activity will lead to the following net positive impact:

	Target beneficiary	SDG Indicator	Parameter	Impact
Economic Well-Being	End user households	1.4	Average monthly household savings due to decrease in expenditure on purchased fuel after shifting to project technology/ measures.	Positive
	Employees hired during various stages of project implementation & operation	8.5	Number of male / female Jobs created by project.	Positive
Social Well-Being	Children and Adults	4.3.1	Number of people receiving formal and/or non-formal education and training.	Positive
	Women and Children	5.4.1	Average time saving associated with collecting fuel and cooking	Positive
	End user households	7.1.2	Number of ICS distributed under the project.	Positive
	End user households	7.1.2	% Users reporting operational project stove	Positive

Environmental well-being	End user households with focus on women who are primary cooks	3.9	% Users reporting reduction in smoke/PM after shifting to ICS in project.	Positive
---------------------------------	---	-----	---	----------

4 BENEFITS FOR THE PLANET

4.1 Condition of Natural Capital and Ecosystem Services at Project Start

According to Global Forest Watch (database by World Resources Institute) ¹², from 2001 to 2021, Liberia lost 2.05Mha of tree cover, equivalent to a 22% decrease in tree cover since 2000. In 2010, Liberia had 9.16Mha of natural forest, extending over 97% of its land area. In 2021, it lost 128kha of natural forest equivalent to 75.3Mt of CO₂ emissions.

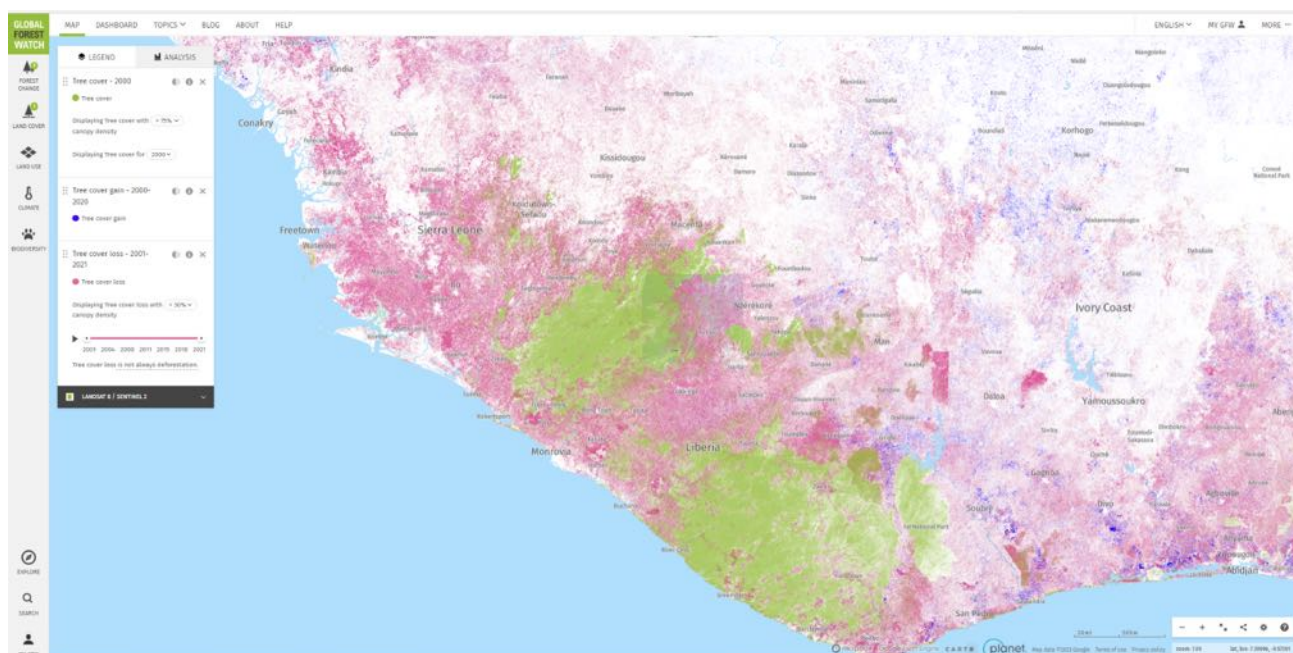
While as per the same, from 2000 to 2020, Liberia gained only 57.8kha of tree cover.

The 2020 SDG 7: Energy Progress Report 2022, Chapter-2¹³ points to 2.4 billion people still without access to clean cooking as of 2020. Further, as per the same report, the number of people without access to clean cooking in Sub-Saharan Africa is set to increase by almost 20 million every year this decade, rising from 923 million in 2020 to over 1.1 billion in 2030, as small gains in the percentage of people with clean cooking fail to keep pace with population growth. Liberia alone has more than 5 million people that access deficit toward clean cooking fuels and technologies.

Thus, traditional cooking methods are prevalent across the host country. The use of these traditional inefficient biomass stoves is a significant driver of deforestation. Widespread usage of unsustainably sourced, non-renewable biomass (NRB) for cooking results in equivalent GHG emissions attributed to use of non-renewable biomass.

¹² <https://www.globalforestwatch.org/dashboards/country/LBR>

¹³ <https://trackingsdg7.esmap.org/downloads>



Map of Liberia indicating tree cover loss between 2001 and 2021¹⁴
(Pink area indicated tree cover loss, blue colour shows the gain in tree cover and green colour highlight the areas with >75% tree cover)

4.2 Expected Impacts on Natural Capital and Ecosystem Services

Impact #1	Amount of CO ₂ e emissions avoided or sequestered.
Type of Impact	Positive, Actual, Direct
Affected Natural Capital and/or Ecosystem Service(s)	GHG concentration of atmosphere, climate change
Resulting Change in Condition	The project ICS requires less fuel for producing the same amount of thermal energy as compared to traditional inefficient cookstoves. The project by replacing the inefficient traditional stove with the energy-efficient ICS will reduce approximately 11,392,289 tCO ₂ e of GHG emissions over the crediting period of 7 years. Thus, reduction of GHG emissions translate to a positive impact on climate change.

Impact #2	Total non-renewable wood fuel saved after shifting to project device
Type of Impact	Positive, Predicted, Direct

¹⁴ <https://www.globalforestwatch.org/dashboards/country/LBR>

Affected Natural Capital and/or Ecosystem Service(s)	Forest area, biodiversity, water, and soil, etc.
Resulting Change in Condition	The project ICS will help beneficiary in consuming less fuel as compared to traditional inefficient stoves. It will save approx. 2.51 tons non-renewable biomass per stove every year.

4.3 Natural Capital and Ecosystem Services Monitoring Plan

The following data and parameters will be monitored under the project to assess the impacts on the natural capital and ecosystem. The sampling approach adopted for collecting the corresponding data has been presented in section 3.3 of the PD.

Impact#	SDG Indicator	Monitoring Parameter	Monitoring approach	Frequency
Impact#1	13.0	Tonnes of greenhouse gas emissions avoided or removed	This parameter will be monitored under VCS program. No separate sampling or monitoring will be undertaken under SDVISta program.	Annual / Biennial
Impact#2	15.2.1	Total non-renewable wood fuel saved after shifting to project device	This parameter will be monitored under VCS program. No separate sampling or monitoring will be undertaken under SD VISta program.	Annual / Biennial

4.4 Net Positive Natural Capital and Ecosystem Services Impacts

The project by replacing the traditionally inefficient cook stoves with the higher efficient project ICS technology, will reduce an estimated ~11,392,289 tCO₂e GHG emissions over the Seven-year project crediting period.

It will also help in annually estimated reduction/savings of ~2.51 tons of non-renewable woody biomass/stove. The following table summarize the net positive natural impact by the project.

	Target beneficiary	SDG Indicator	Parameter	Impact
Environmental well-being	Natural Capital	13.0	Amount of CO ₂ e emissions avoided or sequestered per year	Positive
	Natural Capital	15.2.1	Total non-renewable wood fuel saved after shifting to project device.	Positive

APPENDIX A: CAUSAL CHAIN

