Sustainable Development Verified Impact Standard

UPENERGY-SOCIAL AND CLIMATE IMPACT PROGRAMME- NIGERIA-1

UpEnergy

Document Prepared by UpEnergy Group

Project Title	UpEnergy-Social and Climate Impact Programme- Nigeria-1
Version	1.6
Date of Issue	24/July/2024
Project Location	Nigeria
Project Proponent(s)	UpEnergy Group, 19 Cybercity, 10th Floor, Raffles Tower, Ebene Mauritius. T: +230-404-6000 E: info@upenergygroup.com W: www.upenergygroup.com
Assessor Contact	Earthood Services Private Limited Regd. Office: 1203-1205, 12th Floor, Tower B, Emaar Digital Greens, Sector 61, Gurugram, Haryana, India 122011 T:: +91 124 420 4599 E: info@earthood.in W: www.earthwood.in
Project Lifetime	07/May/2022 – 06/May/2043; 21-year lifetime

History of SD VISta Status	Presently the project is undergoing its first validation and no previous attempts at SD VISta certification made to date
Other Certification Programs	VERRA Verified Carbon Standard (2673)
Expected Future Assessment Schedule	Initial validation/verification anticipated in 2023

CONTENTS

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)	The distribution of energy efficient stoves helps save 0.22 $[1] per day per Household (HH)	1.1	Project Specific Indicator: Average savings realized due to decrease in expenditure on basic service such as cooking	Increase	3.3	SD VISta labeled VCUs
2)	The distribution of 500,000 energy efficient stoves under the project helps in providing basic service access to household	1.4	Project Specific Indicator: Number of households having access to improved cooking technology due to project activity	Increase	3.3	SD VISta labeled VCUs
3)	This project activity promotes employment to women, thus helps eradicating gender-based discrimination and provides socio-economic parity	5.1	Project Specific Indicator: % of female employees	Increase	3.3	SD VISta labeled VCUs

[1] Source for average price of charcoal in project area: https://www.betaprices.com/charcoal-for-sale-in-nigeria (last accessed on 19.06.2023)

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
4)	In the poorest communities, the burden of collecting and/or purchasing fuel often falls on women and children. By reducing cooking time, the program provides women in project households with more time to invest in other productive economic development activities Approximately 1 Hour/day/HH cooking time can be saved from the project activity	5.4	Project Specific Indicator: Average time saving associated with cooking time	Decrease	3.3	SD VISta labeled VCUs
5)	This project activity encourages participation of women in leadership / managerial role.	5.5	Project Specific Indicator: Proportion of women serving in managerial/ leadership /ownership role	Increase	3.3	SD VISta labeled VCUs
6)	The project activity involves promotion and distribution of 500,000 improved cooking stoves (ICS) in the households of Nigeria.	7.1	Project Specific Indicator: Number of households having access to improved cooking technology due to project activity	Increase	3.3	SD VISta labeled VCUs
7)	The project activity provides training and skill development program for youth population, thus increasing their employability.	8.b	Project Specific Indicator: Number of Trainings conducted in a year	Increase	3.3	SD VISta labeled VCUs

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
8)	The project activity generates employment for marketing / sales and distribution / technical employees	8.5	Project Specific Indicator: Number of jobs created	Increase	3.3	SD VISta labeled VCUs
9)	11,436,117 tCO_2e of greenhouse gas emissions will be avoided over a 7 year period	13.0	Project Specific Indicator: Tonnes of greenhouse gas emissions avoided	Increase	VCS Joint Validation/Verification Report & Ex Ante Estimation	SD VISta-labeled VCU
10)	Reduce the consumption of non-renewable biomass in participant households by as much as 50%, irrespective of the stove model	12.2	Project Specific Indicator: Decrease in specific fuel consumption	Decrease	VCS Joint Validation/Verification Report & Ex Ante Estimation	SD VISta labeled VCUs
11)	The Project will reduce 6,202,768 tonnes of Non-renewable biomass over a 7-year period in participant households and will contribute towards reducing deforestation.	15.1	Project Specific Indicator: Amount of Non-renewable biomass saved	Increase	VCS Joint Validation/Verification Report & Ex Ante Estimation	SD VISta labeled VCUs

2 PROJECT DESIGN

2.1 Project Objectives, Context and Long-term Viability

2.1.1 Summary of Project Sustainable Development Objective(s)

"UpEnergy-Social and Climate Impact Programme- Nigeria-1" aims distribution of high energy efficiency cookstoves (charcoal) to Nigerian households in order to bring the positive impact on economic, social and environmental well-being.

Through the distribution and implementation of Smart Home Pro stoves, this grouped project aims to (1) increase the average household savings by reducing the expenditure on basic services such as cooking; increasing access to improved technology for participant households, (5) promotes employment to women; increase time spent on improving quality of life i.e., through economic endeavors and education, encourages participation of women in leadership; (7) Contribute to increasing access to clean cooking technology with Smart Home Pro Stove installations; (8) Generates employment for employees; skill development program for youth population/trainings; (13) Contribute to GHG emission reduction from project activity; (15/12) Reduce the consumption of non-renewable biomass in participant households.

The project is described in several thematic buckets that reflect the sustainable development objectives and impact. The project addresses the key pillars of sustainable development namely, economic well-being, human health and well-being, social equality, and environmental sustainability in the following ways:

Category	**SDG Goal Addressed**	**Target beneficiary**	**Impact envisaged through project lifetime[2]**
Economic Well Being	SDG 1	End user households	Helps save 0.22 $ per day per HH for the given project activity; Also helps in providing basic service access to household through distribution of 500,000 ICS in participant households
	SDG 8	Youth Population	Job creation for 150 employees & 5 training/year under skill development program

[2] PP has considered the project benefits for only the first crediting period i.e., 7 years, since the renewal of the project crediting period will be decided by the management on the later stage

Category	SDG Goal Addressed	Target beneficiary	Impact envisaged through project lifetime[2]
Social well-being	SDG 5	Women and girls	Promotes employment to women; Increases the women leadership from the project activity and reduces drudgery
	SDG 7	End user households	500,000 project beneficiary households who will have access to a clean technology which they would not be able to afford.
Environmental well being	SDG 13	Natural Capital	Avoided emissions to the tune of average estimated~ 11,436,117 tCO_2e for the seven-year period (500,000 ICS)
	SDG 12	Natural Capital	Project activity reduced the consumption of non-renewable biomass by 2.57 tonnes of eq. firewood/household/annum in the project lifetime.
	SDG 15	Natural Capital	Contribute an estimated reduction of deforestation of ~ 6,202,768 tons of biomass, during crediting period

Each of the SDG Goals achieved through the present project activity are discussed in detail in the following paragraphs: -

1. **Economic Wellbeing**
    - SDG 1: Household expenditures on cooking fuel will be reduced through the use of the ICS. (1.1)
    - SDG 8: The project activity provides training and skill development program for youth population, thus increasing their employability (8.b
    - SDG 8: The project activity generates employment for marketing / sales and distribution / technical employees (8.5)
2. **Social Wellbeing**
    - SDG 1 and 7: The distribution of 500,000 energy efficient stoves under the project helps in providing basic service access to household (SDG 1.1 & 7.1)
    - SDG 5: This project activity promotes employment of women, thus helps eradicating gender-based discrimination and provides socio-economic parity (5.1)

- SDG 5: In the poorest communities, the burden of cooking & purchasing fuel falls on women and children. By reducing cooking time, the program provides women in project households with more time to invest in other productive economic development activities (5.4)
- SDG 5 This project activity encourages participation of women in leadership / managerial role (5.5)

3. Environmental Well-being

- SDG 12: Reduce the consumption of non-renewable biomass in participant households by as much as 50%, depending on stove model (12.2)
- SDG 13: The distribution of energy efficient stoves reduces approximately 11,436,117 tCO_2e emission reduction over a 7-year period (13.0)
- SDG 15: The Project will reduce 6,202,768 tonnes of Non-renewable biomass over a 7-year period in participant households and will contribute towards reducing deforestation. (15.1)

2.1.2 Description of the Project Activity

The purpose of the project is to support clean cooking interventions that moves end-user and reduce greenhouse gas (GHG) emissions from the burning of non-renewable biomass-based charcoal for cooking in Nigeria.

The project is implemented by UpEnergy Group (UpEnergy/UpE) which is also the Coordinating and Managing Entity (CME). UpEnergy will implement the programme in partnership with local partners and would ensure the last-mile distribution/installation of the Improved Cook stoves to the beneficiaries.

Through this project, distribution of approximately 500,000 ICS will be undertaken for households in Nigeria. The project activity is designed to facilitate household-level improvements in cooking amenities and improved health and well-being for women, girls, and infant children with benefits to all members of the household.

This grouped project, with the primary project activity being the installation of ICSs and secondary project impacts or activities as described below, will undertake the following activities:

1. **Improved Cookstoves -** The primary project activity is the distribution and installation of the Smart Home Pro Stoves, a high-efficiency, long-life metal, more efficient cooking solutions with renewable biomass fuels.

Education and training of field staff is an important component of project implementation. UpEnergy shall implement various surveys and questionnaires to track project objectives, beneficiary information, and to monitor and evaluate implementation performance.

2. Training: -

While training trainers, UpEnergy provides a course on climate change and combustion theory, including impacts of household pollution on health and well-being, as an introductory background to the efficient cookstove intervention.

Training will generate positive impacts to community groups by enabling community members to build alternative skills and build capacity. These interventions are expected to advance socio-economic status, generate greater community capacity for sustainable livelihoods, and increase climate resilience.

3. Women's Health: -

Multiple benefits are aligned to women's and children's health with the project activity.

- Improve the overall physical health status of women of Nigeria – Time savings achieved through reduction in cooking time with the project ICS shall be utilized by the women for income generation purpose and also for recreational / relaxation activities, thus leading to the improvement in overall health and wellbeing for women in beneficiary households
- Reduction in burn risk – The project ICS is compact and well insulated thus helps avoid risk of burns for women and children unlike the traditional / three stone stoves which are quite risky while operating and handling

4.Time Savings: -

Reduce women and children's drudgery through time savings in reducing time spent cooking over toxic smoky open fires.

The ICS to be deployed under this project is energy efficient which substantially reduces fuel consumption and emissions for conducting cooking and water heating tasks in homes. The ICS improve the efficiency of combustion and thermal transfer to the pot compared with a traditional pot support or three-stone fire by incorporating energy efficient technology which provides a conducive environment for clean and efficient combustion of charcoal. The project technology under the (improved cookstoves) proposed grouped project has an average lifespan of 7 years.

In the project activity, traditional charcoal stoves are being replaced by the distribution of improved charcoal stoves. It is important to note that the project proponent has considered the

consumption of charcoal for calculating the Emission Reduction (ER) calculation for project technology that displaces charcoal.

Technical Specifications of Smart Home Pro Cook Stoves as follows: -

Model	**Smart Home Pro**
Type of Stove	Domestic
Dimension	(ø 28 * 26 H) cms
Average Unit Weight, Kg	12
Thermal Efficiency, %	37.90
Pot Type pot	Flat Bottom
Fuel Type	Charcoal
Estimated Life Span	7 Years
Average time to boil 5 liters of water	33.8 minutes

PP may introduce similar model ICS in future monitoring periods with the similar efficiency levels.

2.1.3 Implementation Schedule

Date	Milestone(s) in the Project's Development and Implementation
May 2022	Pipeline Listing
07 May 2022	UpEnergy as an organization started distributing ICS in the project area
07 May 2022	Start date of first crediting period of the project
October 2021 – January 2022	Baseline study
23 June 2022	Stakeholder Consultation Meeting
August 2022	Registration of Project activity under VCS (ongoing)
26 September 2022	Appointment of Assessor for Validation
May 2022- Apr 2025	Distribution of project instances
21 May 2023	First monitoring & verification by assessor

2.1.4 Project Proponent

Organization Name	UpEnergy Group
Role in the Project	Project Proponent
Contact Person	Anantha Karthik Rajagopalan
Title	Director of Carbon Programme
Address	UpEnergy Group, 19 Cybercity, 10th Floor, Raffles Tower, Ebene Mauritius.
Telephone	T: +230-404-6000
Email	anantha@upenergygroup.com

2.1.5 Other Entities Involved in the Project

Organization Name	Climate Catalyst, Nigeria Ltd.

Role in the Project	Project Representative
Contact Person	Mitch Sauers
Title	Director
Address	Climate Catalyst, Nigeria Ltd., Close 48, H167, VGC, Lagos, Nigeria.
Telephone	+234 706 512 8533
Email	mitch@upenergygroup.com

2.1.6 Project Type

a) Type II Energy Efficiency Improved Projects

b) The project is a **grouped** project.

Sustainable Development Verified Impact Standard Sectoral Scopes	U.N. Sustainable Development Goals
Sectoral Scope 1 - Agriculture, forestry and other land use (AFOLU)	Life on Land 15.1
Sectoral Scope 2 - Climate Change Adaptation	Climate Action 13.0
Sectoral Scope 4 – Energy	Affordable and clean energy 7.1
Sectoral Scope 10 – Livelihoods	No Poverty (1.1/1.4) Decent Work and Economic Growth/Global strategy for youth employment (8.5/8.b) Sustainable Management & efficient use of natural resources (12.2)
Sectoral Scope 14 – Women's Empowerment	Gender Equality 5.4/5.1/5.5

2.1.7 Project Location

The project will be located within the boundary of Nigeria having the geographical coordinates 9°4'55.2 latitude and 8°40.517 longitude. It is part of Africa and the northern hemisphere.[3]

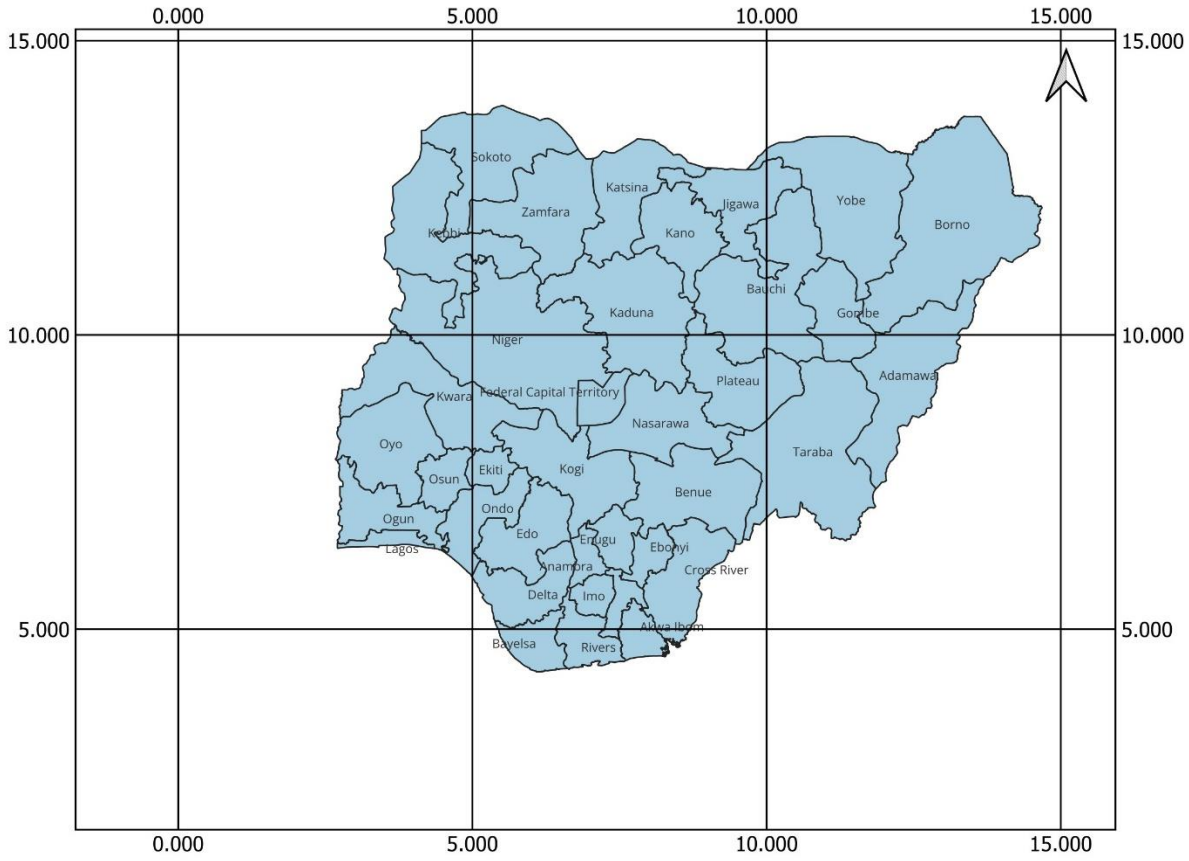


Figure 1: Map of Project Area[4]

Nigeria is divided into 37 districts (36 states + FCT). To facilitate the management, implementation, monitoring and sampling stages of the project, the project proponent divides the project boundary into 6 project regions according to the geopolitical zones of Nigeria. .

No.	Project Region	Administrative Districts
1.	North East	Adamawa, Bauchi, Borno, Gombe, Taraba, Plateau and Yobe

[3] https://www.geodatos.net/en/coordinates/nigeria (last accessed on 14/06/2023)

[4] https://energydata.info/dataset/nigeria-administrative-boundaries-2017/resource/b02a26ea-58af-4862-9b5d-b0cf9cc3987e last accessed on 04/March/2024

No.	Project Region	Administrative Districts
2.	North Central	Benue, Kogi, Kwara, Nasarawa, Niger, and Federal Capital Territory.
3.	North West	Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara
4	South East	Abia, Anambra, Ebonyi, Enugu, and Imo
5.	South South	Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers
6.	South West	Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo

The geodetics of all future sites wherein ICS distribution will take place over the course of the project lifetime would be clearly indicated in the relevant ER sheet and geodetics of ICS administrative districts will be captured in SD VISta monitoring report for each monitoring period.

2.1.8 Baseline Scenario

The recent study conducted by National Bureau of Statistics, Nigeria has revealed around 63% of persons living within Nigeria (133 million people) are multidimensionally poor. The National MPI is 0.257, indicating that poor people in Nigeria experience just over one-quarter of all possible deprivations. The study has also revealed that over half of the population of Nigeria are multidimensionally poor and cook with dung, wood or charcoal, rather than cleaner energy. High deprivations are also apparent nationally in sanitation, time to healthcare, food insecurity, and housing.[5]

The baseline study conducted by Project Proponent at Nigeria recently in January 2022 has revealed the major dependency on solid biomass for cooking applications at both urban and rural households. Around 93% of the Nigerian population rely on the non-renewable biomass for their cooking needs in which charcoal appears to be the dominant primary fuel (52%) and followed by firewood (41%). The study also highlights around 32% of the Nigerian household carryout cooking at indoor (within house), which makes the users especially women vulnerable to respiratory ailments.

Reliance on biomass fuels for cooking has implications for human health, climate change, conservation of forest resources, and the general well-being of people who rely on biomass fuels. This project will replace conventional inefficient stoves, with higher efficiency ICS to residential users by leveraging resources provided by the project activity. Therefore, it is assumed that in the absence of the project activity, the baseline scenario would be the traditional cooking technologies with use of non-renewable biomass-based charcoal for meeting similar thermal energy needs share.

5 https://nigerianstat.gov.ng/news/78#:~:text=Highlights%20of%20the%202022%20Multidimensional,quarter%20of%20all%20possible%20deprivations. Last accessed on 19-07-2023

From 2001 to 2021, Nigeria has lost 1.14 Mha of tree cover, equivalent to a 11% decrease in tree cover since 2000 and this translates to 587Mt of CO_2e emissions[6]. This can be attributed towards the dependency of solid biomass for cooking application by majority of the Nigerian population and also the use of traditional cookstove or inefficient cookstove, which inherently increases the demand of fuel input.

On the other hand, Fuel gathering consumes 1.7 hours[7] per household daily for women and children, limiting other productive activities (e.g., income generation) and taking children away from school. In less secure environments, women and children are at risk of injury and violence during fuel gathering. Reliance on non-renewable biomass fuels for cooking has implications for human health, climate change, conservation of forest resources, general well-being of people, gender specific challenges etc. Hence the current Project Activity is intended to address the aforementioned environmental, health and socio-economic issues.

2.1.9 Causal Chain(s)

The flow chart is shown in Appendix B: Causal Chain and the description for People and their Prosperity, and Planet is as given below.

Impacts related to People and their Prosperity and Planet

People and their Prosperity

- Monetary benefits due to use of energy efficient cookstove
- Increase the use of energy efficient technology
- Achieving gender parity in employment
- Reduction in cooking and fuel purchase time
- Skill development to increase employability
- Creation of Employment Opportunities for both men & women
- Increase in Women serving in managerial / leadership role

Planet

- Decrease in non-renewable biomass consumption

[6] https://gfw.global/42mhFpm(last accessed on 05/05/2023)

[7] https://documents1.worldbank.org/curated/en/164241468178757464/pdf/98664-REVISED-WP-P146621-PUBLIC-Box393185B.pdf(last accessed on 05/05/2023)

- Reduction of GHG emissions
- Slowing down the rate of deforestation

Unintended Negative Impact

- Negatively affect livelihoods of the local charcoal vendors

2.1.10 Threats to the Project

Natural Threat –

Threat: Vulnerability to natural disasters, Nigeria is prone to droughts and floods since the last few years, and this could lead to displacement and usage discontinuance of the project device arising from mass migration

Solution: The project device made available with the project activity is mobile, light weight and can be carried by the device user easily for long distance.

Threat: Climate change and deforestation can lead to firewood and charcoal scarcity. Climate change negatively affects agricultural yields, reducing reliable income streams in the local community and thus availability of funds to purchase the project device.

Solution: Although scarcity would seem to support the use of ICS technology, there can be a foreseeable future where the effort and economics behind procuring charcoal could make other fuels a more sustainable option. UpEnergy will plan regular communication with the stakeholders involved with project activity and will encourage discussion on sustainable management of natural resources.

Human Induced Threat –.

Threat: Altering the stove design or neglected maintenance of the project device can lead to reduced output from the device

Solution: UpEnergy has a dedicated sales team on ground who are duly trained with handling and mechanics of the project device who will continue to assess the condition of the project device at regular intervals to avoid the above-mentioned threat. Moreover, UpEnergy's sales team will also train and educate the beneficiary household about the working and maintenance of the project device.

Threat: Slow progress in the population's perception to adopt new technology resulting in poor sales

Solution: UpEnergy's on ground team will make efforts in the project area to explain the depth of the project in participants' native language and from their cultural perspective**,** so that they can reap all the benefits available from the undertaken project.

2.1.11 Benefit Permanence

The purpose of the project activity is to change the cooking technology of households by distributing improved cookstoves (ICS), which will enable households to reduce their fuel consumption, saves the cooking time, improve their health conditions by reducing indoor GHG emissions and enhance the employment opportunities available to them. Post project activity,

UpEnergy Group ensures the environmental and other co-benefits results due to project activity are long term and permanent in nature by undertaking the following long term aims

1. Awareness campaigns will be conducted at a regular interval to disseminate the multiple benefits on adoption of project ICS, this will include training sessions, community cooking activities, circulating brochures, documentary videos etc.
2. The warranty period of project ICS shall be extended till 5 years period to ensure maximum up taking of ICS usage and to ensure the sustenance of associated environmental, socio-economic benefits related to project activity

Nevertheless, it is envisaged that the rural and urban households will be encouraged to continue use improved cookstoves in future, due to the benefits associated with them, and thereby accrue significant environmental as well as socio-economic benefits

2.2 Stakeholder Engagement

2.2.1 Stakeholder Identification

Stakeholders have been identified based on the criteria outlined in Section 2.2 of the SD VISta Standard.

The stakeholders have been identified as individuals or groups that are potentially affected by the project. Stakeholders can be defined as:

Direct Stakeholders- these are group of people who are directly impacted by the project, such as end users, ICS manufacturers, training personnel, etc.

Indirect Stakeholders- group of people who are indirectly involved such as women self- help groups, NGOs etc.

The project activity involves distribution of improved cookstoves to individual households in rural/semi-urban areas of various territories in Nigeria. These stakeholders were further

evaluated based on how deeply affected they may be by the Project, and those most impacted have been included in the stakeholder engagement.

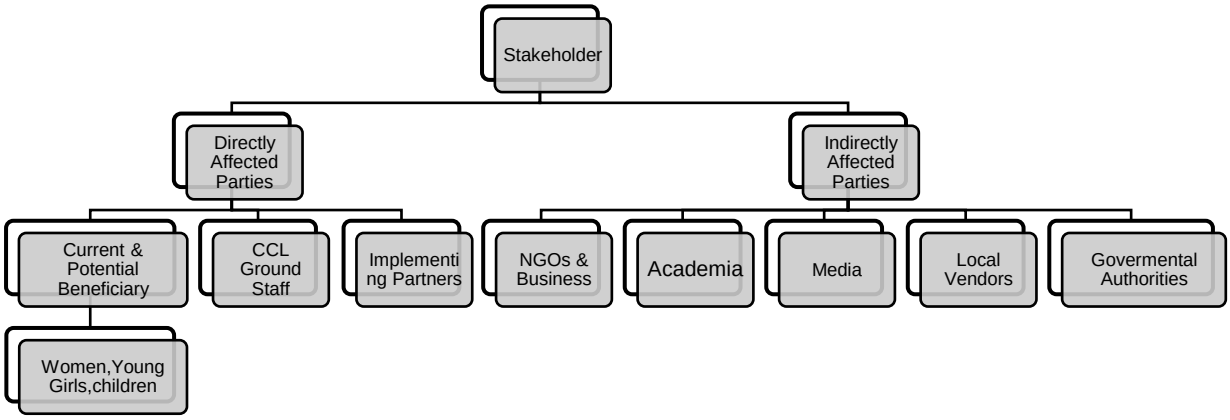


Figure 2: Stakeholder Categorization

2.2.2 Stakeholder Description

Current Beneficiaries (Registered End-users): These beneficiaries are identified as any family/individuals/women who are involved in cooking in the household done of the project area and interested to adopt the improved and cleaner technology. Beneficiary families are those living in or sharing the same family compound as project beneficiaries. During distribution of ICS, UpEnergy gives priority to the households whose extended family has already demonstrated successful adaptation to the new technology. UpEnergy intends to provide the project ICS to beneficiary HH who uses inefficient / traditional baseline stoves without any discrimination. This will be ensured through the information captured with respect to the baseline technology in sale receipt during the time of distribution. The distributed technology i.e., ICS is subsidized by the UpEnergy group to increase economic productivity and reduce the health impact due to indoor air pollution of the family.

Potential Beneficiaries (New users): UpEnergy actively seek out new beneficiaries, through some promotional events and, most importantly, word-of-mouth recommendation by current beneficiaries'/ ICS users. Current and potential beneficiaries share many similar characteristics; the primary difference is lack of awareness of our programs or financial ability to provide the co-payment for purchasing the stove. UpEnergy aims to expand its beneficiary base by publicizing and distributing the stove on subsidized price. Special attention is paid to elderly, female disabled, and otherwise vulnerable and or/marginalized individuals of this stakeholder group to

ensure our project activities are not just accessible to, but also inflicting no adverse impacts on those individuals.

Local Vendors: Local vendors are those who are involved in supplying charcoal to the project area. Project activity carried out by UpEnergy group results in reduced consumption of charcoal in the beneficiary households and thus could negatively affect livelihoods of the local vendors.

Local NGO and Business: UpEnergy works with local country partner for implementation and co-operation during the project activity that may have similar sector approach.

Government Authorities: UpEnergy always involve local government in each and every stage of the project activity for providing information and receive inputs during the project implementation.

Media: UpEnergy recognizes any national & international print media/radio station who are interested in our project.

Academic Institutions: UpEnergy always invites the academic institutions who are interested in our project for household level studies and assessment of the beneficiaries to understand the ongoing impacts during the project activity.

Others: UpEnergy always invites interest and feedback in our project activity from any interested source who have not been identified in the above stakeholder description.

2.2.3 Stakeholder Consultation

PP is implementing improved cookstove projects in Nigeria and seeking registration under VERRA. Through the distribution and installation of energy efficient cookstoves, the project aims to reduce Nigeria's population dependency on non-renewable biomass used for cooking, such as charcoal & firewood, improve the surrounding environment from further degradation.

The first round Stakeholder Consultation meetings was done on the 23rd June, 2022 with the participation of different stakeholder categories. A total of 60 stakeholders participated in the LSC meeting. The consultation process included invitation to wide range of invitees, to include effective and equal participation of both men and women. PP has sent an open initiation via National Daily Newspaper "PUNCH" on 23-May-2022, which addresses the entire population / region of Nigeria, thus enabling the participation of the common citizen across the project boundary. In addition to this, PP has invited the potential stakeholders viz., micro-entrepreneurs, NGOs, financial institutions, local distribution partners etc. via email, these group of key stakeholders works across Nigeria to address various socio-economic issues, gender equality, climate change mitigation etc. PP has also given the renumerations for the participants of the LSC meeting to cover their travel cost. By adopting the aforementioned strategies, PP has ensured the maximum participation from both the key stakeholders and common public, this makes the local stakeholder's participation a representation of entire country of Nigeria

Prior to the consultation, UpEnergy had provided with the following documents in the language that allows local stakeholders to understand and engage with the project:

- Relevant information about the project
- Summary of the economic, social and environmental impacts of the project
- Contact details/E-mail ID of the UpEnergy group

During the meeting, the Key Project Information was presented to the local stakeholders. The sustainable development indicators and the monitoring of the indicators were clearly explained, and the Blind Assessment and Consultation Feedback Forms were shared in the second half of the consultation. Additionally, a copy of the presentation was also shared with them in order to help them provide feedback to UpEnergy Group in order to maximize the benefits to end-users.

A live demonstration of Improved Cookstoves (ICS) / SmartHome Pro Stove, was conducted for the participants, it was also explained to the stakeholders that similar technologies may also be implemented by UpEnergy based on beneficiary's' feedback.

The invitation to stakeholders were sent via email and screenshots of the same have been provided. In addition to email, the CME also reached out to stakeholders locally in Nigeria to collect their feedback in person or telephonically.

- Invitation email to stakeholders was sent on 24th May, 2022[8]

[8] This grouped project activity only involves distribution of charcoal ICS to replace the baseline traditional / inefficient charcoal stoves. Hence to avoid any confusions PP has not provided the reference of Water Treatment Systems in the SD VISta Project Description.

UpEnergy Carbon Technical Team <technical@upenergygroup.com> Tue, May 24, 2022 at 4:01 PM
To: Vickars <vickars2000@gmail.com>

Dear Ms. Victoria Arafiri,

Greetings from The UpEnergy Group, Nigeria

UpEnergy Group is the Co-ordinating/Managing entity of UpEnergy – Social and Climate Impact Programme

The purpose of the programme is to provide end-users with Energy- Efficient cooking technologies and Safe water systems (WPS) with the aim to reduce greenhouse gas (GHG) emissions from the burning of non-renewable woody biomass and/or charcoal for cooking and water treatment to make it safe for consumption. Thus, the PoA supports the intended goals of reducing fuel consumption, improving health, reducing deforestation and reducing GHG emissions in Nigeria.

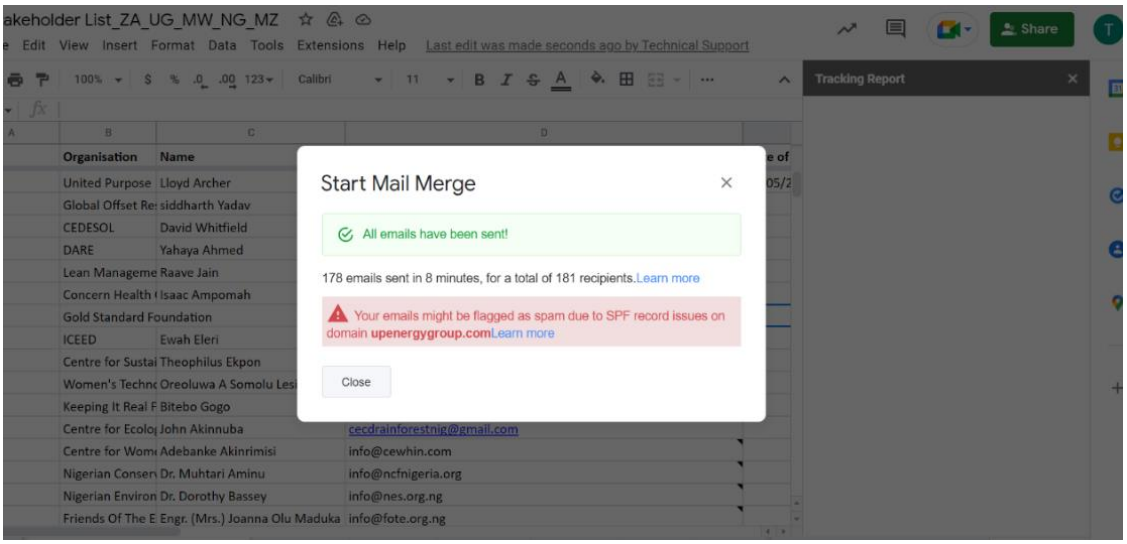
As a valued stakeholder of the PoA, you are requested to participate in the design of an initiative intended to create, register and trade carbon credits in order to fund the expanded dissemination of Improved Cooking Stoves and Water Purification Systems. The stakeholder consultation is an opportunity at the early stage, to present the projects to the relevant parties involved and include their feedback into the design of the projects.

We are currently beginning the initial stakeholder consultation process. You are requested to attend the physical meeting which will be held on **23/06/2022**, 10:00 AM, at **Denis Hotel, Plot 910 Ndjamena Crescent, Off Amino Kano Crescent, Wuse 2 Abuja, Nigeria.** We welcome your feedback and suggestions and cordially request you to fill the feedback form to share your views on this PoA.

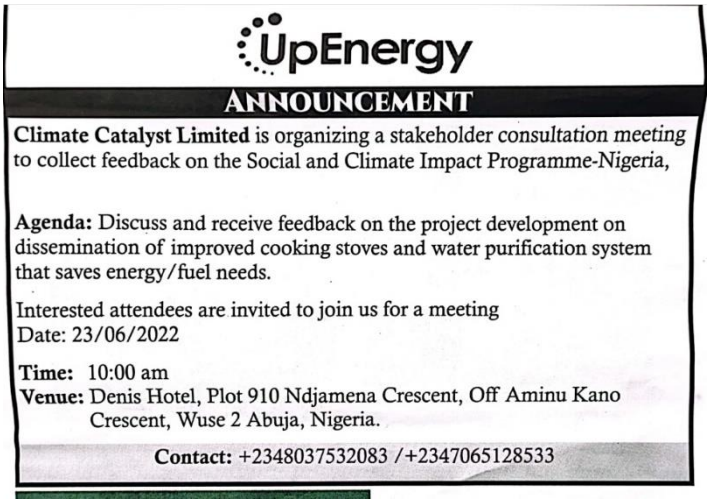
A brief non-technical description of the projects is available upon request by email, and a working draft of the Project Design Document will be also publicly available soon. The written feedback can be sent via email to technical@upenergygroup.com up to 7 days after the consultation day.

Thank you for your consideration of this request. We look forward to receiving your comments and/or having the pleasure of meeting you in person on (date)

Thanking you,
Regards
UpEnergy Group
Nigeria



Invitation via newspaper ad. published on 23rd May, 2022



UpEnergy

ANNOUNCEMENT

Climate Catalyst Limited is organizing a stakeholder consultation meeting to collect feedback on the Social and Climate Impact Programme-Nigeria,

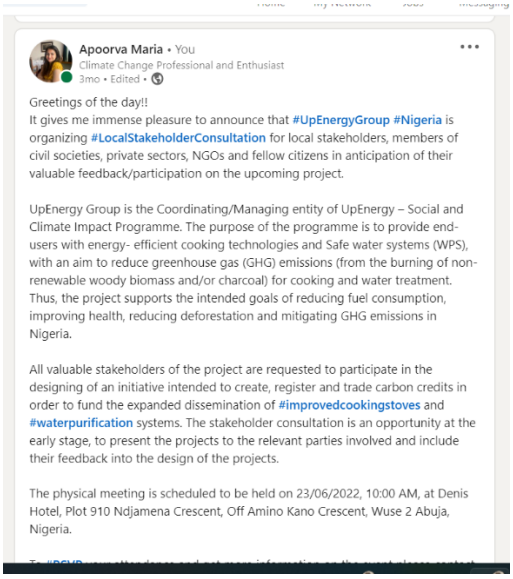
Agenda: Discuss and receive feedback on the project development on dissemination of improved cooking stoves and water purification system that saves energy/fuel needs.

Interested attendees are invited to join us for a meeting
Date: 23/06/2022

Time: 10:00 am
Venue: Denis Hotel, Plot 910 Ndjamena Crescent, Off Aminu Kano Crescent, Wuse 2 Abuja, Nigeria.

Contact: +2348037532083 /+2347065128533

Invitation via LinkedIn was published on 24th May, 2022



Apoorva Maria • You
Climate Change Professional and Enthusiast
3mo • Edited •

Greetings of the day!!
It gives me immense pleasure to announce that #UpEnergyGroup #Nigeria is organizing #LocalStakeholderConsultation for local stakeholders, members of civil societies, private sectors, NGOs and fellow citizens in anticipation of their valuable feedback/participation on the upcoming project.

UpEnergy Group is the Coordinating/Managing entity of UpEnergy – Social and Climate Impact Programme. The purpose of the programme is to provide end-users with energy- efficient cooking technologies and Safe water systems (WPS), with an aim to reduce greenhouse gas (GHG) emissions (from the burning of non-renewable woody biomass and/or charcoal) for cooking and water treatment. Thus, the project supports the intended goals of reducing fuel consumption, improving health, reducing deforestation and mitigating GHG emissions in Nigeria.

All valuable stakeholders of the project are requested to participate in the designing of an initiative intended to create, register and trade carbon credits in order to fund the expanded dissemination of #improvedcookingstoves and #waterpurification systems. The stakeholder consultation is an opportunity at the early stage, to present the projects to the relevant parties involved and include their feedback into the design of the projects.

The physical meeting is scheduled to be held on 23/06/2022, 10:00 AM, at Denis Hotel, Plot 910 Ndjamena Crescent, Off Amino Kano Crescent, Wuse 2 Abuja, Nigeria.

Brief Summary of the meeting:

- The meeting commenced at 10 AM with a round of introduction from the participants, followed by a brief overview of UpEnergy Group.
- The Carbon consultant briefed the participants about UpEnergy Group and the aspirational products that are specially designed for low-income groups. He further discussed global presence of UpEnergy group
- Functioning and usage of Improved Cookstove (ICS) was also demonstrated to the participants.

- The Project Manager discussed about the benefits of Improved Cookstoves (ICS) over the traditional charcoal stoves. She also addressed queries on price, durability and availability of ICS. She further explained the key benefits of clean cooking products being, less poverty, good health, money saving, affordable and clean energy, capacity building of women and overall contributions of the project to sustainable development goals.
- During the feedback round, the stakeholders asked queries about pricing of ICS, technicalities of carbon trading and partnership opportunities offered by UpEnergy Group.
- Mr and Mrs Mathais (Smart Home ICS End-User) shared their experiences of using the cookstove and various benefits of the usage.
- The meeting concluded at 2:30pm with about 60 participants in attendance.

Assessment of comments from all consultations above:

Gender of Stakeholder	Stakeholder comment	Was comment taken into account (Yes/ No)?	Explanation (Why? How?)
Male	Need to include health sector and academia in the LSC	Yes	UpEnergy Group has taken the feedback positively and shall include health sector and academia in its upcoming LSC and other key forums
Male	Replacement of traditional stoves by ICS reduces the amount of charcoal used, therefore leading to money saving	Yes	Generic comment; requires no action
Female	Awareness about clean technologies should be upscaled	Yes	UpEnergy Group is committed to disseminate awareness of Improved cooking technology amongst the various socio-economic strata within the project boundary by conducting awareness campaigns & workshops
Female	The project leads to fuel reduction,	Yes	Generic comment; requires no action

Gender of Stakeholder	Stakeholder comment	Was comment taken into account (Yes/ No)?	Explanation (Why? How?)
	mitigating gender inequality and money saving.		

UpEnergy Group (PP) had conducted the physical stakeholder consultation meeting on 23 June 2022 as per the requirements set in the VCS Standard version 4.2 section 3.17, which was the latest and applicable at that point in time. Additionally, the project's physical stakeholder consultation process also meets the requirements of the VCS Standard version 4.4 para 3.18.3 to 3.18.5 as applicable during the time of validation. As the project has been initially conceptualized as a VCS project and eventually extended to SD VISta program as well, there is no requirement for a separate demonstration of conformance as per the requirements set out in Section 3.18 (which includes with Local Stakeholders Consultation process) of VCS standard version 4.4. (kindly note that the VCS PD has been webhosted for public commenting period from 29 March 2023 to 28 April 2023, and the PP perceived the SD VISta labelling process for the project subsequently). As per the VCS Standard version 4.4 the local stakeholder consultation to be conducted prior to validation, which PP has complied fully therefore local stakeholders had a sufficient time and opportunity to express their feedbacks and concerns.

Further, it is to be noted that the PP has past experience in cookstove projects and trail and tested cookstove design running successfully in Sub Saharan Africa (VCS 2789, VCS 2676, GS 10967, GS 11007, GS 10970, GS 11211) and with this experience PP went ahead with the pilot distribution of project cookstove in May 2022 based on the growing demand of ICS in the geography. PP has distributed a single ICS in May 2022 and only 73 units (~4.4^% of total distribution) till 22 June 2022 before the physical stakeholder meeting as can be evidenced from the project cookstove distribution database. Further PP has not received any specific comments and feedback on design of the improved cookstove during the physical stakeholder meeting, hence original design of the project cookstove remains unchanged.

It's important to mention that the project has not received any negative feedback from any of the stakeholder, including comments related to project design till the submission of the project documents to VERRA on 07 November 2023. As the stakeholder feedback process is a continuous process, stakeholders have been provided with opportunity to raise their concerns and input their feedback at any time during the project implementation.

Further incompliance with the VCS Standard version 4.4 para 3.18.4, PP has an ongoing communication channel, wherein various local stakeholders are encouraged to register their feedback on the project's impact, design, etc. through the continuous stakeholder feedback process as highlighted in the 'mechanism for on-going communication with local stakeholders' in Section 2.2.10 of SD VISta project description, thus PP ensured the stakeholder consultation process is effective and adequate.

The mechanism for on-going communication with local stakeholders:

	Method Chosen (include all known details e.g., location of book, phone, number, identity of mediator)	**Justification of Choice (best practice)**
Continuous Input / Grievance Expression Process Book (mandatory)	Continuous input / Grievance Expression process book is available at the following office: Climate Catalyst, Nigeria Ltd., Close 48, H167, VGC, Lagos, Nigeria. Phone: +234 706 512 8533	Grievance Expression book will be placed at Climate Catalyst office in Lagos, Nigeria Stakeholders are free to voice their concerns via the Grievance Expression Book. By maintaining feedback book at the local office, it is ensured that stakeholders that don't have access to electronic media for expressing concerns / grievances are also able to share their concerns / feedback. Additionally, the end users always have an option to revert to the salesperson (representative of distribution/retail partners etc.) in case of any feedback / complaints with the product post distribution.
Telephone access (optional)	**NA**	**-**
Internet/email access (optional)	technical@upenergygroup.com	**-**
Nominated Independent Mediator (optional)	**NA**	**-**
Other	**-**	**-**

The following table provides information on how UpEnergy will conduct stakeholder consultations for the SD Vista application: -

Stakeholder Group	Identified Stakeholder (Continuously expanding)	Consultation Activities
Directly Affected Parties	Current Beneficiaries (individual, household, and community level) Potential Beneficiaries and Community Groups (individual, household, and community level) Implementing Partners (Ips) & CCL ground staff	Community Level Sensitization Activities Open Communication with implementing partner
Indirectly Affected Parties	Governmental Authorities, Environment, Health and Nutrition public-sector agencies, Academic Institutions, Local and International NGOs, and Others as applicable	-Published announcement of continuous stakeholder feedback – local newspapers -Online, Email and Phone Distanced Feedback options

2.2.4 Continued Consultation and Adaptive Management

In order to have a continuing communication and consultation between the UpEnergy group and stakeholder groups, we take Quarterly feedback and inputs from stakeholders and adapt management accordingly.

We have a dedicated sales team over the ground who oversees the day-to-day operations at the project area. The sales team has been recruited from the respective region and can be easily approached by all villagers either in person or through phone. In case of any issue faced by any community member, they can inform or discuss with the sales team which takes note of the issue and informs the senior management to act on it.

2.2.5 Anti-Discrimination

The project activity does not endorse any form of discrimination based on gender, sexual orientation, or other habits or sexual harassment. ICS will be distributed to all willing customers within the project boundary. The project will have a positive impact on women considering that they will spend less time on cooking or fuel procurement and will be able to cook in cleaner environment.

2.2.6 Worker Training

The UpEnergy workforce and staff employed for ICS manufacturing / warehouse handling receives continuous learning and training sessions which is an ongoing process on maintenance and safety of handling equipment. These trainings help the employees recruited from

communities to build new skills and develop their capacity and knowledge, thus improving their employability. Yearly review process also designed to understand the growth in knowledge and understanding which the employee has gain during the working period.

2.2.7 Equal Work Opportunities

The Project activity has equal opportunity for women, men, or any vulnerable/ marginalized community by taking inconsideration of the country law and regulations to contribute both in volunteer and working positions. UpEnergy Group also has a stipulated HR policy that takes into account participation by all forms of demographic. Further, the projects designed are implemented for equal participation by any gender, nationality, ethnicity, religion, and race.

2.2.8 Workers' Rights

The host country is also a member of the ILO convention. In Nigeria, the law that is regulating or guiding employees and employers' relationship is known as labour law which is clearly stated in the section 7(3) of the 1979 constitution of the Federal Republic of Nigeria (Obisi, 2005). The constitution provides amongst others as follows:[9]

- All citizens without discrimination on any ground whatever have the opportunity for securing adequate means of livelihood as well as adequate opportunities to secure sustainable employment.
- Conditions of work are just and humane, and that there are adequate facilities for leisure and social, religious, and cultural life.
- The health, safety, and welfare of all persons in employment are safeguarded and not endangered or abused.
- There are adequate medical and health facilities for all person
- There is equal pay for equal work without discrimination on account of sex, or on any other ground whatsoever
- Children. Young persons and the aged are protected against any exploitation whatever, and against moral and material neglect and
- Provision is made for public assistance in deserving case or other conditions of need

2.2.9 Occupational Safety Assessment

[9] https://www.ijbmi.org/papers/Vol(2)1/Version_3/M021100104.pdf last accessed on 07/06/2023

The project is in compliance with 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.

UpEnergy takes relevant mitigation measures like equipping the necessary instruments such as safety shoes, gloves, helmets, glasses etc. to protect the health and safety of the warehouse employees as per National Policy on Safety, Health and Environment at Workplace. Also, UpEnergy own dedicated safety policy which adheres to national standards. The project proponent also ensures that all workers receive regular and constant training on electrical and material safety.

2.2.10 Feedback and Grievance Redress Procedure

UpEnergy Feedback and Grievance Redress Procedure ensures that project-affected communities and individual grievances are properly prioritized and addressed. These measures are taken by UpEnergy to enhance accountability and transparency and to support the project initiatives that can help the communities to identify adverse effects to them, their communities, or their environment which had not previously been identified and mitigated by UpEnergy. The full grievance redress procedure is available upon request and detailed in short below:

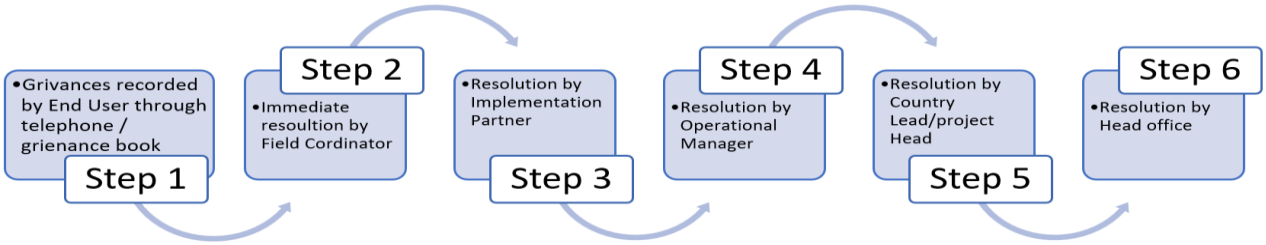


Figure 3: Grievance Redress procedure

The first step of a complaint is typically applied to the informal procedure, where the affected person discussed the identified issue or provides feedback with the Field Coordinator.

The Field Coordinator attempts to resolve the grievance immediately through the traditional conflict resolvents ways like one-to-one informal discussions, The Field Coordinator and affected person work together as immediately as possible, to solve the identified issue.

The formal process requires the grievance to be filled in written form, in the grievance expression book available at the office in Lagos, Nigeria. UpEnergy group has a dedicated toll-free customer care numbers (+234-09099999227 / 0706879780) mentioned in the ICS distribution receipts and flyers, which can be used for any complaints or maintenance if needed during the project activity and the same has been also explained to the stakeholders.

All grievances are to be assessed and an update is provided to the grievant.

Two options for procedure guide

(a) resolution is offered immediately according to the request made by the grievant;

(b) resolution is more complex and requires additional consideration or extraordinary resources will lead to the grievant invited to a meeting to discuss options.

2.2.11 Feedback and Grievance Redress Procedure Accessibility

The contact details for the grievance redressal procedure are announced to all stakeholders during the stakeholder consultation and information is available at the local office at each project activity site.

2.2.12 Stakeholder Access to Project Documentation

The printed copies of project design documentation/Project description are accessible to all stakeholders at Climate Catalyst Ltd (CCL), Lagos, Nigeria (Country Office), On the request of stakeholders, the project document can be arranged and provided by project participant.

2.2.13 Information to Stakeholders on Assessment Process

UpEnergy informs the end-users and family members that UpEnergy distributes or sell the improved cookstove/technology at a subsidized price which is part of the carbon programme. The end-users will be demonstrated the core benefits of the cookstove such as reduction in fuel consumption, cost savings, reduction in cooking and fuel purchase time etc. thus leading to climate change mitigation, availability of more productive time for women and reduction in deforestation.

UpEnergy also inform them the monitoring of all parameters to show them as evidence to prove the benefits of purchasing and using improved cookstove such as money spent on charcoal and/or time spent cooking & collecting charcoal procurement, among other indicators.

The stakeholders are initially informed during the time of ICS distribution on the project assessment protocol through the carbon waiver agreement. During the time of project assessment phase UpEnergy enumerators through help of local community coordinators will inform the stakeholders on the assessment process well in advance upon their willingness for participation in the surveys. UpEnergy will facilitate SD Vista project assessment process being the common point contact between the stakeholders and project assessor / VVB.

UpEnergy will ensure the integrity of the programme as the executives shall support after the sales, monitoring from UpEnergy team & auditors few times after implementation. As the programme progresses, the main form of communication to stakeholders will be through social media, email, telephonic, and physical visits. UpEnergy will announce participation through

capacity building community sensitization, awareness programme, social media, press release and the website.

2.3 Project Management

2.3.1 Avoidance of Corruption

UpEnergy Group always maintain highest standard of transparency and confirms that there is not any corruption involved in the project activity. We have robust and stringent internal policies that has laid provisions to prevent/identify any form of corruption, such as bribery, embezzlement, fraud, favouritism, cronyism, nepotism, extortion, and collusion.

2.3.2 Statutory and Customary Rights

UpEnergy Group operates entirely out of a private office space with installation/distribution of the ICS activities taking place in project beneficiary residence. The Sales team of UpEnergy Group enters private property only with the explicit permission of the owner. The project activity also does not require/involve any land acquisition.

2.3.3 Recognition of Property Rights

UpEnergy Sales team will distribute/install the ICS only at the property owner's invitation and does not infringe or interact with property rights.

2.3.4 Free, Prior and Informed Consent

The project activity only involves distribution of improved Cookstoves to the household. So, the activity does not require any property right or concerned land rights.

2.3.5 Restitution and/or Compensation for Affected Resources

There are no negative effects on the land or resources due to the project and hence allocation of restitution or compensation to any parties is not required.

2.3.6 Property Rights Removal/Relocation of Property Rights Holders

The project is not located on a land/territory claimed by any indigenous people, vulnerable people and the project activity does not lead to removal or relocation of property rights holders from their lands or territories, and do not force rights holders to relocate activities important to their culture or livelihood.

2.3.7 Identification of Illegal Activities

There are no illegal activities identified and associated that could affect the project's impacts and hence measures needed and designed to reduce these activities are not required.

2.3.8 Ongoing Conflicts or Disputes

This issue is not applicable to our project as the installation of ICS technology does not affect property rights or property disputes.

2.3.9 National and Local Laws and Regulations

There are no laws and regulations governing the use of improved cookstoves in Nigeria households. The project is a voluntary effort by the project proponent. A review is made on Nigeria environmental laws and regulations as below:

1. National Environmental Standards and Regulation Enforcement Agency (NESREA) Act, 2007[10]
2. Environmental Impact Assessment (EIA) Act. Cap E12, LFN 2004[11]
3. The Nigerian Urban and Regional Planning Act Cap N138, LFN 2004[12]

2.3.10 Project Ownership

The project ownership is with UpEnergy Group. A voluntary and irrevocable agreement signed by the end user (cookstove user) conferring project ownership to the project proponent shall be the evidence of project ownership. A carbon waiver agreement signed between UpEnergy & End User transfers the transfer all right, title and interest to all environmental attributes associated with emissions reductions, including without limitation carbon offsets, arising from its use to UpEnergy and hereby permanently waive any claim or right to such attributes. If such attributes are owned by ICS end user operation of law or for any other reason, End User waive such rights and assign such attributes to UpEnergy.

Each ICS shall have a unique serial number linking it to the project activity instance and shall be necessary to establish the fact that the ICS belongs to this VCS programme. End users will be informed at the time of ICS distribution that the ICS will be discounted on account of them generating carbon credits and the fact that these credits belong to project proponent. The end

[10] http://lawsofnigeria.placng.org/laws/nesrea.pdf (last accessed on 10/10/2023)

[11] https://www.placng.org/lawsofnigeria/laws/E12.pdf (last accessed on 10/10/2023)

[12] https://faolex.fao.org/docs/pdf/nig120669.pdf (last accessed on 10/10/2023)

user will be required to sign the carbon waiver form cum warranty card as required by the project proponent to relinquish their rights to carbon credits generated by the project.

2.3.11 Grouped Projects

The project is a grouped project

Eligibility Criteria

For the inclusion of new project activity instances, the project proponent shall ensure that it meets the eligibility criteria below (as per SD VISta Standard-v1.0, "Appendix 1 – Grouped Projects):

No.	Criterion	How the new project activity instances to comply
1)	Adopt and implement the project activities in the same manner as specified in the project description.	New project activity instances will be implemented in the same manner as described in the project description and will be implemented directly with beneficiaries of the Smart Home Pro, extending benefits and reinforcing project stove adoption
2)	Where appropriate, meet the applicability conditions of the SD VISta asset methodology applied to a project.	The project activity as well as the new project instances do not apply for SD VISta assets and hence this criterion is not applicable
3)	Are subject to the same scenarios at project start with respect to stakeholders' well-being as determined for initial project instance(s), where (per Section 2.1.5.2 above) the project must meet the criteria of the section above	New project activity instances will have the same baseline scenario, which was available during the start of project, i.e., usage of inefficient charcoal cookstoves in the households. Also, the instances will be designed to maximize intended impact and preserve well-being, with monitoring and ongoing stakeholder consultations to ensure impact
4)	Are subject to the same scenarios at project start with respect to natural capital and ecosystem services as determined for initial project instance(s) where (per Section 2.1.5.2 above) projects must meet the criteria of Section above.	New project instances will have the same scenario with respect to natural capital and ecosystem services as determined in the baseline scenario. All the new instances will also have households relying on fuels for meeting their daily cooking energy demands.
5)	Are subject to the same processes for stakeholder engagement described in the project description	The new project activity instances will be detailed during continuous stakeholder consultations, refresher trainings for Implementing Partners and feedback consider in secondary project activity

No.	Criterion	How the new project activity instances to comply
		design to maximize intended impact and preserve well-being
6)	Are subject to the same processes for respect for rights to lands, territories and resources – including free, prior and informed consent – described in Section above	The outlined Project Management (Section 2.3) will apply for each additional project activity
7)	Secondary projects will have similar monitoring elements to those set out in the project description	Additional projects will have equivalent monitoring plans and procedures as described in Section 3.3
8)	Be included in the monitoring report with sufficient technical, financial, geographic and other relevant information to demonstrate compliance with the applicable set of eligibility criteria and enable sampling by the VVB.	The monitoring report for this grouped project activity includes details of the new project activity instances added i.e., new ICS added to this grouped project. This includes Name of ICS user, Address/Village/ Geographical coordinates of ICS household, Contact Details, Stove model Distributed, Date of distribution/installation, Unique ICS serial, technical specification etc. Further, the monitoring report demonstrates conformance of the new project instances to the applicable set eligibility criteria such as applied technology, ICS minimum efficiency level, geography of implementation, baseline scenario and additionality criteria, thus providing requisite evidences to VVB
9)	Comply with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial compliance with multiple sets of eligibility criteria is insufficient.	The new project activity instances added to this grouped project will comply with all the eligibility criteria
10)	Be validated at the time of verification against the applicable set of eligibility criteria.	The new project instances that are included to this group project activity will be validated against the applicable set of eligibility criteria during the VCS verification
11)	Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance (i.e., the date upon which the project activity instance implemented	The distribution receipts for the new project activity instances will be made available for verification wherein the project ownership (carbon waiver) and start date of crediting period (ICS distribution / installation date) are recorded

No.	Criterion	How the new project activity instances to comply
	activities that lead to the generation of sustainable development benefits).	
12)	Have a start date that is the same as or later than the grouped project start date.	The new project activity instances will either start on the start date of this grouped project i.e., 07 05 2022 or later
13)	Be eligible for accounting for project benefits to be used as SD VISta assets, where applicable, from the start date of the instance until the end of a project's crediting period (only). Note that were a new project activity instance starts in a previous verification period, no asset may be issued for benefits created during a previous verification period unless it is of a different benefit type from the SD VISta asset that has already been issued from that period	Not applicable since PP has not opted for SD Vista assets
14)	A grouped project shall be described in a single project description, which shall include a description of the central monitoring and management system	This grouped project activity has a single project description document and also the centralized monitoring and management system is described in Section 3.3 & 5.2

3 BENEFITS FOR PEOPLE AND PROSPERITY

3.1 Condition of Stakeholders at Project Start

1. Directly Affected Stakeholder Groups

a) Beneficiaries (End-users):

The pre-project scenario is the continued use of non-renewable biomass fuel (charcoal) and inefficient charcoal stoves by the target population to meet similar thermal energy needs as provided by project cookstoves in absence of project activity.

The recent study conducted by National Bureau of Statistics, Nigeria has revealed around 63% of persons living within Nigeria (133 million people) are multidimensionally poor. The National MPI is 0.257, indicating that poor people in Nigeria experience just over one-quarter of all possible deprivations[13]. The study has also revealed that over half of the population of Nigeria are multidimensionally poor and cook with dung, wood or charcoal, rather than cleaner energy. High deprivations are also apparent nationally in sanitation, time to healthcare, food insecurity, and housing.[14]

The baseline study conducted by Project Proponent at Nigeria recently in January 2022 has revealed the major dependency on solid biomass for cooking applications at both urban and rural households. Around 93% of the Nigerian population rely on the non-renewable biomass for their cooking needs in which charcoal appears to be the dominant primary fuel (52%) and followed by firewood (41%). The study also highlights around 32% of the Nigerian household carryout cooking at indoor (within house), which makes the users especially women, who have traditionally been relegated to the duty of primary cook in the community, vulnerable to respiratory ailments. The baseline study has also revealed that the average cooking time spend by the Nigerian households is 2.45 hours / day with the traditional charcoal stove technology. Culturally, women are expected to be the ones to cook, leaving them with no spare time for themselves.

PP has conducted Kitchen Performance Tests (KPTs) to determine the baseline fuel consumption ($_{Bold}$) values for charcoal using households., since the project activity intents to displace inefficient / traditional charcoal stoves with improved charcoal. The fuel consumption in the project boundary resulted from the study is 5.46 tonnes of Eq. fuel wood / annum / HH.

b) Local Implementing Partners:

Climate Catalyst Limited (CCL), being a project representative and local entity of UpEnergy Group, collaborates with the local Implementation Partners (IPs) like Distribution Agents, Laboratories, Environmental Agencies etc. to ensure the last mile distribution of project ICS and various other project development & monitoring related activities. An appropriate IP will be chosen for a specific project related activity based on their prior experience and presence in the targeted communities. The condition of implementing partners at the start of the project varies between partner and their organizational network and structure. In general, it is observed that IPs have lack of

[13] PP has intended to distribute the project ICS in entirety of Nigeria and PP has no specific targeted area for ICS distribution as mentioned in section 2.1.7 Hence PP has given the national overview of various affected stakeholders.

[14] https://nigerianstat.gov.ng/news/78#:~:text=Highlights%20of%20the%202022%20Multidimensional,quarter%20of%20all%20possible%20deprivations. Last accessed on 19-07-2023

knowledge about benefits of improved cooking systems and access to clean cooking technology. It is also important to note that the existence of CCL will be nil without in the pre-project scenario.

c) CCL Employees in the Host Country:

The unemployment rate of Nigeria is 5.4%[15] and participation of female citizens in labour force is 43.8%[16] during the year 2021 as per the World Bank estimates. In general unemployment is one of the prevailing socio-economic challenges in Nigeria, lack of specific technical skill related trainings and self-development programs can be potential reasons behind it.

2. Indirectly Affected Stakeholder Groups[17]

a) Local Vendors:

The charcoal produced by the local manufacturers using non-renewable woody biomass is distributed to the local vendors in 50 kg bags. Further it is sold to the potential beneficiaries on a daily / weekly basis by the local vendors in a bulk / loose quantity as per the requirement. The bulk charcoal manufacturers and local vendors have benefitted in the pre-project scenario due to usage of inefficient stoves by the project beneficiaries and in project scenario they may potentially impacted negatively due to reduction in fuel consumption by usage of ICS.

b) Local NGO and Business:

UpEnergy Group's local team noticed that in pre-project scenario the local NGO & Business were less interested in the formal engagement with local companies. They also have lack of awareness about benefits of improved cooking systems and access to clean cooking technology

c) Government Authorities:

As per WHO, in 2021 over 83 % of Nigerians lacked access to clean cooking technologies, which is just above the regional average 81.5% for Sub-Saharan Africa (SSA). The Federal Government of Nigeria intents to promote the clean cooking sector through its various policies namely National Climate Change Policy, Energy Transition Plan, the revised NDC and other related energy policies[18]. In the pre-project scenario, the Nigerian government is significantly depended on the international financial support to achieve its NDC goals in clean cooking sector.

d) Media:

[15] https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=NG last accessed on 15-03-2024

[16] https://data.worldbank.org/indicator/SL.TLF.TOTL.FE.ZS?locations=NG last accessed on 15-03-2024

[17] The impact created by project activity on the indirectly affected stakeholder group cannot be monitored and quantified, since they cannot be objectively demonstrated / verified via external / internal material evidence.

[18] https://www.sciencedirect.com/science/article/pii/S2211467X24000737#bib36. Last accessed on 12-06-2024

It was observed that during the beginning of the project the local or any national & international print media/radio station were rarely interested in publishing articles on clean cooking and improved cookstove projects.

e) Academia:

The academic institutions were interested in this type of domestic energy efficiency project and related research activities on household level baseline studies and assessment of the beneficiaries to understand the impacts during the project activity. UpEnergy has collaborated with International Centre for Energy, Environment and Development Foundation (ICEED) – an institution works on poverty eradication and climate change for the baseline study of this grouped project activity.

3.2 Expected Impacts on Stakeholders

Impact #1	Access to Improved Cooking Technology
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Beneficiaries & beneficiaries' families
Resulting Change in Well-being	Since cooking is a fundamental part of life, increased access to clean cooking to the deprived sections of society will increase their access to basic services necessary to lead a healthy and productive life. The project activity aims distribution of 500,000 energy efficient stoves which helps in providing basic service to beneficiary households
Impact #2	Reduction of time spent on unpaid domestic work
Type of Impact	Positive, Predicted, Direct
Affected Stakeholder Group(s)	Beneficiaries (most notably, female, elderly, and children, primarily girls)

Resulting Change in Well-being	Females who spend a copious amount of time on unpaid domestic labor, multiplied by the double/triple burden effect, have a predicted time saving which can be redirected to income-generating activities or relaxation time, contributing to enhanced conditions for gender equity. The project ICS help reduce cooking time by ~ 1 hour/household/day, thus providing women in project households with more time to invest in other productive economic development activities

Impact #3	Enhancing Job opportunity/Women Leadership
Type of Impact	Positive impact and increase employment opportunity are predicted with the project activity
Affected Stakeholder Group(s)	Local Citizens (both Women & Men)
Resulting Change in Well-being	Help in economic growth through creating more job opportunities by implementing project activity. This project activity is expected to generate 150 jobs comprising marketing / sales and distribution / technical employees This project aims to employ 50% of women on the total jobs created due to the project activity, thus helps eradicating gender-based discrimination and provides socio-economic parity In addition to this the project activity encourages participation of women in leadership / managerial role to an extent 50% thus helping the women empowerment

Impact #4	Trainings imparted on climate change, project implementation and monitoring procedures
Type of Impact	Positive, Predicted, Indirect
Affected Stakeholder Group(s)	Implementing Partner UpEnergy Staff

Resulting Change in Well-being	Training and skill development related to community engagement, survey implementation, technical trainings like conducting Water Boiling Tests (WBT) will be provided to many stakeholder groups which is envisaged to empower their lives by not only improving their employment chances but also through increased awareness levels regarding issues related to climate change, social equity. The project activity aims to conduct 5 trainings per year training and skill development program for youth population, thus increasing their employability

Impact #5	Using enabling access to clean technology
Type of Impact	Positive, Predicted, Indirect
Affected Stakeholder Group(s)	Project Beneficiaries and their families
Resulting Change in Well-being	Decreased reliance on fuel leads to resource conservation and promotes clean technology use. The project activity aims distribution of 500,000 energy efficient stoves which helps in clean access to beneficiary households

3.3 Stakeholder Monitoring Plan

This section explains the monitoring approach that will be undertaken by the PP to monitor the impacts of the designed project activities observed on the key stakeholders associated with the project activity. The impact mapping for every stakeholder has been conducted with respect to the potential SDG claimable for that stakeholder category.

The following tables describe the mapping of project activity with impacts on stakeholder classes and the monitoring parameter that will be used to assess the intended and unintended impacts of the project activities:

Stakeholder Group Impacted	Beneficiary Household
SDG Goal	***1*** End poverty in all its forms everywhere
SDG Target	***1.1*** By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day
Impact	Increase in average household savings, hence reduced poverty
Monitoring Indicator	Average savings realized due to decrease in expenditure on basic service such as cooking

Unit of measurement	$/day/HH
Monitoring Approach	Ex Post Monitoring Survey Q 5.1 "Do you save money using the project stove compared to the baseline usage?" and to calculate the monetary saving due to reduced fuel consumption through $B_{y,savings,i,j}$
Frequency of measurement	Annually
Procedure for calculation	Quantity of woody biomass that is saved in tonnes per cookstove device per year divided by the conversion factor for fuelwood to charcoal (1:6) multiplied by the average cost of fuel used for cooking in project area. Average household savings = (By,savings,i,j /6/365) x Cost of Fuel By,savings - Quantity of woody biomass that is saved in tonnes per cookstove device per year Cost of Fuel - average cost of fuel used for cooking in project area
Sampling	Stratified Random sampling with 95 per cent confidence interval and a 10 per cent margin of error achieved for monitored parameter
Ex-ante value for this indicator:	0.22 $/day/HH
Sources	B_y,savings,$_{i,j}$ – Sourced from VCS Verification Report Cost of Fuel - Cost of Charcoal based on available literature[19]

Stakeholder Group Impacted	Beneficiary Household
SDG Goal	***1.*** End poverty in all its forms everywhere
SDG Target	***1.4*** By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.
Impact	Access to basic services
Monitoring Indicator	Number of households having access to improved cooking technology due to project activity
Unit of measurement	no of HH
Monitoring Approach	Ex post Monitoring Survey Q 4.1 Are you currently using the project stove?"
Frequency of measurement	Biennial

[19] Source for average price of charcoal in project area: https://www.betaprices.com/charcoal-for-sale-in-nigeria (last accessed on 19.06.2023)

Procedure for calculation	Number of beneficiary Households = Cumulative ICS distribution x Proportion of operational stoves (Upy)
Sampling	Stratified Random sampling with 95 per cent confidence interval and a 10 per cent margin of error achieved for proportion of operational stoves (Upy)
Ex-ante value for this indicator:	The project activity aims cumulative distribution of 500,000 ICS to beneficiary HH over 7 years of project life Around 346,786 household will get access to clean cooking technology due to this project activity considering the YoY assumed dropout rate
Sources	Cumulative ICS distribution - Sales database Proportion of operational stoves (Upy) - Household monitoring survey

Stakeholder Group Impacted	Women
SDG Goal	***5.*** Achieve gender equality and empower all women and girls
SDG Target	***5.1*** End all forms of discrimination against all women and girls everywhere
Impact	Women Empowerment by creation of employment to women population
Monitoring Indicator	Proportion of women employees in the project activity
Unit of measurement	% of female employees
Monitoring Approach	Employee list with Name & Gender obtained from HR Department
Frequency of measurement	Annual
Procedure for calculation	% of Women employees = No of Women Employees / Total Employees Strength
Sampling	Not Applicable
Ex-ante value for this indicator:	50%
Sources	Records from HR Department

Stakeholder Group Impacted	Women and young girls
SDG Goal	***5***. Achieve gender equality and empower all women and girls
SDG Target	***5.4*** Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate
Impact	Reduced drudgery

Monitoring Indicator	Average time saving associated with cooking time
Unit of measurement	hours / day / HH
Monitoring Approach	**Baseline Survey** How many hours do you cook in average per day? **Ex post Monitoring Survey** Q 4.5 How many hours did you spend on cooking per day? Q 5.7 Do you see a reduction in time taken for cooking and fuel purchase?
Frequency of measurement	Biennial
Procedure for calculation	Average time saving associated with cooking = Cooking time spent by HH in (Baseline Scenario - Project Scenario)
Sampling	Stratified Random sampling with 95 per cent confidence interval and a 10 per cent margin of error achieved for proportion of operational stoves (Upy)
Ex-ante value for this indicator:	1.00 Hours/day/Household
Sources	Baseline & Ex post monitoring surveys to be conducted to determine average time saved in project scenario

Stakeholder Group Impacted	Women
SDG Goal	***5***. Achieve gender equality and empower all women and girls
SDG Target	***5.5*** Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life
Impact	Women Empowerment
Monitoring Indicator	Number of women serving in managerial/ leadership /ownership role
Unit of measurement	% of female employees in managerial / leadership role
Monitoring Approach	Employee list with Name & Gender obtained from HR Department
Frequency of measurement	Annual
Procedure for calculation	% of Women employees in managerial / leadership role = No of Women managers / Total strength of managerial positions
Sampling	Not Applicable
Ex-ante value for this indicator:	50%
Sources	Records kept by the HR department

Stakeholder Group Impacted	Beneficiary Household
SDG Goal	***7.*** Ensure access to affordable, reliable, sustainable and modern energy for all
SDG Target	***7.1*** By 2030, ensure universal access to affordable, reliable and modern energy services
Impact	Access to cleaner energy technologies
Monitoring Indicator	Number of households having access to improved cooking technology due to project activity
Unit of measurement	no of HH
Monitoring Approach	Ex post Monitoring Survey Q 4.1 Are you currently using the project stove?
Frequency of measurement	Biennial
Procedure for calculation	Number of beneficiary Households = Cumulative ICS distribution x Proportion of operational stoves (Upy)
Sampling	Stratified Random sampling with 95 per cent confidence interval and a 10 per cent margin of error achieved for monitored parameter
Ex-ante value for this indicator:	The project activity aims cumulative distribution of 500,000 ICS to beneficiary HH over 7 years of project life Around 346,786 household will get access to clean cooking technology due to this project activity considering the YoY assumed dropout rate
Sources	Cumulative ICS distribution - Sales database Proportion of operational stoves (Upy) - Household monitoring survey

Stakeholder Group Impacted	Project Staff, Implementation Partners and Survey Agencies
SDG Goal	***8***. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
SDG Target	***8.b*** By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization
Impact	Training and skill development program for youth population, thus increasing their employability
Monitoring Indicator	Number of Trainings conducted in a year
Unit of measurement	Trainings / annum
Monitoring Approach	Training records maintained by the project team
Frequency of measurement	Annual

Procedure for calculation	Number of trainings conducted in the monitoring period
Sampling	Not Applicable
Ex-ante value for this indicator:	5 Trainings / annum
Sources	Training records maintained by the project team

Stakeholder Group Impacted	Professional, Graduates, Implementation Partners and Survey Agencies
SDG Goal	***8***. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
SDG 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.
Impact	The project activity generates employment for marketing / sales and distribution / technical employees
Monitoring Indicator	Number of jobs created
Unit of measurement	Number of jobs created
Monitoring Approach	Employee list with Name & Gender obtained from HR Department
Frequency of measurement	Annual
Procedure for Calculation	Number of jobs created in the monitoring period
Sampling	Not Applicable
Ex-ante value for this indicator:	150
Sources	Employee list with Name & Gender obtained from HR Department

UpEnergy will be responsible for conducting the sampling surveys and maintaining a database with all operating stoves.

No monitoring for leakage through competitive uses of biomass is required, as the parameter $B_{\text{old,i,j}}$ is multiplied by 95% to account for leakage.

Sampling Design: Due to the large number of ICS envisioned to be distributed as part of the project to be included in the grouped project, it is not economically feasible to monitor each individual ICS unit distributed. Therefore, representative sampling will be undertaken as part of a project-wide Sampling Plan. The Sampling shall be conducted biennially by meeting 95/10 confidence/precision.

Objectives and Reliability Requirements: The objective is to obtain an unbiased and reliable estimate of the proportion or mean value of the following parameters over the course of the monitoring period, with 95/10 for annual / biennial sampling.

1. Efficiency of the improved cook stove type i and batch j: $\eta_{new,y,i}$ (Annually monitored)
2. Proportion of operational stoves: U_{py} (Biennially monitored)
3. Baseline stove usage factor to account for use of baseline cookstoves along with improved cookstoves: μ_y (Biennially monitored)

Target Population: The target population for the three parameters stated above are all ICS recorded in the project database.

Sampling Frame: For the parameters Stove Efficiency ($\eta_{new,y,i}$) and Proportion of operational stoves (U_y), the ICS population will be stratified based on the stove models, which are part of the project. For monitoring baseline stove usage factor (μy) to account for use of baseline cookstoves along with improved cookstoves in the project scenario activity the ICS will be stratified based on the year of distribution/installation.

Sampling Method: The sampling will be conducted using stratified random sampling technique over the aforesaid sampling frames created. The ICS population in each stratum will be arranged by date of distribution, assigning them a sampling serial number. Random numbers will be generated using the online random number generator ranging from 1 to total number of ICS in a given stratum and the samples corresponding to the random numbers obtained, will be picked for sampling. This approach will ensure that each ICS listed in the database has an equal chance of being seen. A slightly higher number of samples will be picked than that needed to be monitored to cover for non-responses.

The interviews will be conducted in person by UpEnergy staff or by hired externals who would be trained before and include expert observation by the interviewer within the kitchen in question or may be conducted via telephone by interviewers on condition that they are aware of in-kitchen observational from previous experience and analysed such that typical circumstances are well understood by the telephone interviewers.

Examples of Stakeholder Monitoring Questions

The following are lines of questions that are included for stakeholder monitoring purposes and collect information on the intended direct and indirect benefits and any unidentified negative outcomes:

a. Are you currently using the Project Stove?

b. Is the project stove in good condition and is operational? (Physically check the stove)

c. If no, how long you stop using the stove?

d. Are you using the baseline stove?

e. Have you received any training or training materials (e.g. leaflets) on how to use your project stove properly?

f. Is there a maintenance service or warranty supplied with your project stove?

g. Do you see reduction in fuel consumed on project stove when compared to that traditional stove?

h. Do you save money using project stove compared to the baseline usage?

i. Do you feel there is reduction in smoke when using ICS compared to that traditional stove?

j. Do you see a reduction in time taken for cooking and fuel purchase?

The organizational structure, responsibilities and competencies of the personnel that carried out monitoring activities.

Person	Role
1) Project implementer database administrator	The database administrator is responsible for updating and maintaining all electronic databases. Required competencies include experience with data management systems (e.g., Excel, STATA, or SPSS), minimum 2 years working experience in a similar field, and at minimum a bachelor's degree from an institution of higher education.
2) Monitoring team	The monitoring team will be assigned by the project proponent to conduct the user interviews and appliance tests during the periodic sampling and reports the results to the database administrator. The skills and experience required for the data collection activities include: • Experience conducting surveys/tests • Experience conducting door-to-door surveys of biomass consumption • Local language skills (especially important for input to questionnaire design and interviewing of end users) • English language skills • Cultural awareness • Numerical proficiency • Data entry skills

The procedures used for Quality Assurance

1. **Ensuring end user awareness** - At the time of distribution, the ICS customer is made aware that they are required to participate in monitoring activities. This will be via training distribution personnel to explain the importance of monitoring to each customer.

2. **Questionnaire design** - The design of the questionnaire will ensure that the questions are non-intrusive and easy to understand for both the interviewee and interviewer. For example, when conducting sampling to estimate the parameter μy a simplified approach has been designed to avoid the need for asking customers how much money they spend on fuel.

3. **Drawing on local knowledge** - The local contractors to be hired by the project proponent in the country will play an important role in tailoring the approach to suit local circumstances. For example, in some instances, it may be essential for a local person to conduct the interview in order to obtain accurate results, e.g., to explain to the end user that their old stove will not be removed if they admit to its continued use.

4. **Quality of contractors** - Any third parties hired by the project proponent to carry out sampling will be required to demonstrate a high level of cultural awareness, local language skills and appropriate experience with data entry and data management. The project proponent will ensure that contractors are adequately trained for the tasks they are contracted for (eg. carrying out of WBTs in line with a methodology supported by an appropriate international body/standards). Training will also be provided on how to deal with non-responses, refusals and other problems should these occur.

3.4 Net Positive Stakeholder Well-being Impacts

Category	Indicator	Parameter	Impact	Monitoring Plan
Social Development	Quality of employment	Providing employment to both men and women	Positive	This will be monitored based on the employment generation during the project implementation
	Livelihood of poor	Savings in time and money for cooking, thus the project activity improves quality of life and opportunity for income in saved time	Positive	This impact will be monitored by calculating the total fuel consumption per year

Category	Indicator	Parameter	Impact	Monitoring Plan
	Access to clean technologies	Product is affordable and clean	Positive	This will be monitored based on total number of households benefitted in the project year
	Human and institutional capacity	N/A	0	N/A
Economic and technical development	Quantitative employment and income generation	Provide employment opportunities	Positive	This will be monitored based on the employment generation during the project implementation
	Technology transfer and new technological self-reliance	New technology introduced	Positive	This will be monitored based on total number of ICS distributed in the project year

4 BENEFITS FOR THE PLANET

4.1 Condition of Natural Capital and Ecosystem Services at Project Start

According to the U.N. FAO, 9.9% or about 9,041,000 ha of Nigeria is forested during 2010 and between 1990 and 2010 Nigeria lost an average of 409,650 ha or 2.38% per year. In total, between 1990 and 2010, Nigeria lost 47.5% of its forest cover, or around 8,193,000 ha[20]. This can be attributed to dependency of non-renewable biomass for cooking needs by a large amount of Nigerian population and also the use of traditional cookstove or inefficient cookstove, which inherently increases the demand of fuel input during pre-project scenario. The higher levels of GHG emissions and massive deforestation have adversely affected Nigeria's natural capital and ecosystem[21].

[20] https://rainforests.mongabay.com/deforestation/2000/Nigeria.htm (last accessed on 07/05/2023)

[21] PP has intended to distribute the project ICS in entirety of Nigeria and PP has no specific targeted area for ICS distribution as mentioned in section 2.1.7. Hence the national-level overview of deforestation scenario during the start of the project in Nigeria has been provided.

4.2 Expected Impacts on Natural Capital and Ecosystem Services

Impact #1	Reduced demand for non-renewable biomass based charcoal in the project area due to implementation of more efficient cookstoves
Type of Impact	Positive, Predicted and Direct
Affected Stakeholder Group(s)	Biodiversity, species richness, soil conservation, water conservation, wildlife conservation
Resulting Change in Well-being	Reduction in the household demand of charcoal which in turn reduce demand for woody biomass in the project area will enable slow deforestation rate which further will aid the various ecosystem services conservation. The project activity will reduce 2.57 Tonnes of equivalent firewood/annum/household, which aggregates to 6,202,768 tonnes of Non-renewable biomass over a 7 year period in participant households and will contribute towards reducing deforestation

Impact #2	Avoided emission of GHGs made possible through the use of SmartHome Pro
Type of Impact	Positive and Direct
Affected Stakeholder Group(s)	Biodiversity and Species Richness, Soil and Water Conservation
Resulting Change in Well-being	Reduced deforestation activities will lead to slow annual net change in the forest area and also possibly lead to increase in the forest area. 11,436,117 tCO_2e of greenhouse gas emissions will be avoided or removed over a 7-year period

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 VCS PD & MR.

Natural Capital Impacted	Forest Ecosystem adjoining project implementation area

Impact	Reduced demand for non-renewable biomass based charcoal in the project area due to implementation of more efficient cookstoves
SDG Goal	***12.*** Ensure sustainable consumption and production patterns
SDG Target	***12.2*** By 2030, achieve the sustainable management and efficient use of natural resources
Indicator name	Decrease in specific fuel consumption
Questions asked for indicator	Ex Post Monitoring Survey Q 5.1 Do you see reduction in fuel consumed on project stove when compared to that traditional stove?
Frequency of measurement	Annually
Procedure for calculation	Based on VMR 0006 meth version 1.1 Eq 3 & 6 By,savings,i,j = Bold,adjusted x (1 - ηold / ηnew,I,j) $Bold, adjusted = Bold \times (1 - \mu_y)$ B_{old} = Annual quantity of woody biomass that would have been used in the absence of the project activity (in tonnes per device) to generate useful thermal energy equivalent to that provided by the improved cook stove Bold = Adjusted B.4/ to account the ex post usage of firewood in baseline cookstove(s) by project households in addition to improved cookstove (in tonnes per device) ηold = Efficiency of baseline cookstove $\eta new,i,y$ = Efficiency of the improved cook stove type *i* and batch *j* determined through water boiling test (WBT)
Unit of measurement	Tonnes of equivalent firewood/annum/household
Sampling	This parameter will be monitored under VCS program for the said project with only the results obtained during corresponding SD VISta MP being considered in estimations. No separate sampling or monitoring will be undertaken under SD VISta program
Sources for aggregated data	VCS Joint PDMR
Ex-ante value for indicator	2.57 Tonnes of equivalent firewood/annum/household

Natural Capital Impacted	Atmosphere
Impact	Reduced levels of emissions and household air pollution
SDG Goal	***13.*** Take urgent action to combat climate change and its impacts
SDFG Target	***13.2*** Integrate climate change measures into national policies, strategies and planning

Indicator name	Amount of GHG emissions avoided or removed
Questions asked for indicator	N/A
Frequency of measurement	Annually
Procedure for calculation	Based on VMR 0006 meth version 1.1 Eq 2 $ER_{y,i,j} = B_{y,savings,i,j} \times f_{NRB,y} \times NCV_{wood\ fuel} \times (EF_{wf,CO2} + EF_{wf,non\ CO2}) \times N_{y,i,j} \times 0.95$
Unit of measurement	tCO_2e/annum
Sampling	This parameter will be monitored under VCS program for the said project with only the results obtained during corresponding SD VISta MP being considered in estimations. No separate sampling or monitoring will be undertaken under SD VISta program
Sources for aggregated data	VCS Joint PDMR
Ex-ante value for indicator	1,633,731 tCO_2e/annum

Natural Capital Impacted	Forest Ecosystem adjoining project implementation area
Impact	Increase in Above Ground Biomass
SDG Goal	***15.*** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
SDG Target	***15.1*** By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements
Indicator name	Amount of Non-renewable biomass saved
Questions asked for indicator	Ex Post Monitoring Survey Q 5.1 Do you see reduction in fuel consumed on project stove when compared to that traditional stove?
Frequency of measurement	Annually

Procedure for calculation	By,savings,i,j x Ny,I,j By,savings,i,j - Quantity of woody biomass that is saved in tonnes per cookstove device of type I and batch j during year y Ny,I,j - number of operational cookstoves in the monitoring period
Unit of measurement	Tonnes of equivalent firewood/annum
Sampling	This parameter will be monitored under VCS program for the said project with only the results obtained during corresponding SD VISta MP being considered in estimations. No separate sampling or monitoring will be undertaken under SD VISta program
Sources for aggregated data	VCS Joint PDMR
Ex-ante value for indicator	8,86,110 Tonnes of equivalent firewood/annum

The organizational structure, responsibilities and competencies of the personnel that carried out monitoring activities:

Person	**Role**
Project implementer database administrator	The database administrator is responsible for updating and maintaining all electronic databases. Required competencies include experience with data management systems (e.g., Excel, STATA, or SPSS), minimum 2 years working experience in a similar field, and at minimum a bachelor's degree from an institution of higher education.
Monitoring team	The monitoring team will be assigned by the project proponent to conduct the user interviews and appliance tests during the periodic sampling and reports the results to the database administrator. The skills and experience required for the data collection activities include: • Experience conducting surveys/tests • Experience conducting door-to-door surveys of biomass consumption • Local language skills (especially important for input to questionnaire design and interviewing of end users) • English language skills • Cultural awareness • Numerical proficiency • Data entry skills

4.4 Net Positive Natural Capital and Ecosystem Services Impacts

By replacing inefficient traditional cookstoves with ICS technology and performing energy efficiency improvements in existing biomass-based charcoal -fired cookstoves, the project reduces energy demand in the form of wood fuel use, thus generating net GHG reductions.

The net positive impact natural capital and ecosystem is summarized in the below table,

Category	Indicator	Parameter	Impact	Monitoring Plan
Environment	Water Quality and Quantity	Reduction in cutting trees due to charcoal savings from usage of ICS. Hence less charcoal dust to pollute rivers[22]	Positive	Will be monitored by calculating the total fuel consumption per year
	Soil Condition	Less soil erosion due to reduction in cutting trees for charcoal production through usage of project ICS[23]	Positive	Will be monitored by calculating the total fuel consumption per year
	Other Pollutants	N/A	0	N/A
	Air Quality	Less smoke will be produced due to effective burning of fuel with the project ICS[24]	Positive	This will be calculated based on estimated GHG reduction during the project year by using ICS

The project activities generate an estimated 11,436,117 tCO_2e emission reductions over the 7 years project crediting period as can been seen in the table below,

Year	Estimated GHG emission reductions or removals (tCO_2e)
2022-2023	346,553
2023-2024	1,114,977
2024-2025	2,150,419
2025-2026	2,071,765
2026-2027	1,994,007

[22] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8220176/ (Last accessed on 26-07-2023)

[23] https://forest.moscowfsl.wsu.edu/smp/docs/docs/Elliot_1-57444-100-0.html (Last accessed on 26-07-2023)

[24] https://www.sciencedirect.com/science/article/pii/S0269749121015797 (Last accessed on 26-07-2023)

Year	Estimated GHG emission reductions or removals (tCO_2e)
2027-2028	1,917,159
2028-2029	1,841,236
Total estimated ERs	**11,436,117**
Total number of crediting years	**7**
Average annual ERs	**1,633,731**

APPENDIX A: LIST OF ABBREVIATIONS

GP: Grouped Project

ICS: Improved Cookstoves

ILO: International Labour Organisation

LSC: Local Stakeholder Consultation

SDG: Sustainable Development Goals

SHS-PRO: Smart Home Pro

TSF: Three-stone fire stove

VCS: Voluntary Carbon Standard

APPENDIX B: CAUSAL CHAIN