UPENERGY-SOCIAL AND CLIMATE IMPACT PROGRAMME- NIGERIA-1

Project title	UpEnergy - Social and Climate Impact Programme- Nigeria-1
Project ID	2673
Crediting period	07-May-2022 to 06-May-2029
Original date of issue	25-April-2025
Most recent date of issue	14-January-2026
Version	7.4
VCS Standard Version	4.7
Prepared by	UpEnergy Group

CONTENTS

1 PROJECT DETAILS

1.1 Summary Description of the Project

A summary description of the technologies / measures to be implemented by the project.

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

Through this project, the distribution and installation of approximately 500,000 ICS will be undertaken for households in Nigeria. The annual average emission reductions per year are estimated to be 542,663 tCO_2e and over a 7-years period of are approximately 3,798,640 tCO_2e.

The end user will sign or informed about carbon credit waiver with the help of sales receipt cum warranty information in advance that the use of ICS generates carbon finance which in turn is used for subsidizing the price of ICS and for recovering project implementation costs. End users will also be informed at the time of ICS distribution in the warranty card that the subsidized price of the ICS is in lieu of them generating carbon credits as well as the fact that the ownership of these credits lies with the project proponent. The key timelines and distribution information of ICS are as given in the table below,

Project Developers/Proponent: -

Project Developer	UpEnergy Group
Project Representatives	Climate Catalyst Limited

Location of the project

The project activity is being implemented in Nigeria. The details of the project location are provided in Section 1.12.

An explanation of how the project is expected to generate GHG emission reductions or removals

The project activity will distribute improved cookstoves in the project area to support low-income households. The ICS will substitute the currently common cooking on open fire. The ICS burns charcoal more efficiently thereby improving thermal transfer to pots, hence saving fuel and lowering greenhouse gas emissions.

Scenario existing prior to the implementation of project activity

Prior to the implementation of the project activity the existing scenario recorded as the use of traditional cook stoves and the use of non-renewable biomass by the target population to meet similar thermal energy needs and which also cause high GHG emissions in absence of project activity.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Joint Validation & Verification	(07-May-2022 – 31-October-2022)	VCS	Earthood Services Private Limited	0.49
Methodology change assessment cum Verification[1]	(01-November-2022 – 31-October-2024)	VCS	SustainCERT	2

1.3 Sectoral Scope and Project Type

Sectoral scope[2]	03 Energy Demand.
Project activity type	Type II Energy Efficiency Improved Projects

The project is a grouped project.

1.4 Project Eligibility

1.4.1 General eligibility

Grouped Project and Project Activity Instances

The GP falls within the scope of the VCS Program as it is in line with the VCS Standard v 4.7 section 2.1.1. The Grouped project includes reduction of carbon dioxide emissions which is one of the seven Kyoto Protocol greenhouse gases included under the scope of VCS program. This grouped project is supported by a methodology approved under the VCS Program through the

[1] The validation has been done since the PD has changed the methodology following "Procedure to Change Methodology through a Project Description Deviation" : https://verra.org/wp-content/uploads/2024/10/VCS-Methodology-Change-Project-Deviation-Procedure-v4.0-1.pdf (last accessed on 08/APR/2025)

[2] Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes (last accessed on 08/APR/2025)

methodology development and review process. The project does not involve use of ozone depleting substances, jurisdictional or nested REDD+ programs and does not use a VCS methodology.

Further, the project has not generated GHG emissions primarily for the purpose of their subsequent reduction, removal or destruction.

The project does not fall under the category of excluded projects in Table 1 of section 2.1.3 of the VCS Standard v4.7 and is therefore eligible under the scope of the VCS Program:

Table 1: Excluded Project Activities under VCS

Excluded Activity	Applicability
Grid-connected electricity generation using hydroelectric power plants.	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of electricity.
Grid-connected electricity generation activities using wind, geothermal, or solar photovoltaic (PV) power plants.	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of electricity.
Activities recovering waste heat for combined cycle electricity generation, or to heat/cool via cogeneration or trigeneration.	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of heat for producing electricity.
Activities generating electricity and/or thermal energy for industrial use from the combustion of non-renewable biomass, agro-residue, or forest residue biomass.	N/A: The GP reduces GHG emissions due to energy efficiency measures by introducing improved cookstoves and does not involve generation of heat for producing electricity.
Activities generating electricity and/or thermal energy using fossil fuels, and activities that involve switching from a higher to a lower carbon content fossil fuel.	N/A: The GP activities do not include the generation of electricity and/or thermal energy using fossil fuels, and activities that involve switching from a higher to a lower carbon content fossil fuel.
Activities replacing electric lighting with more energy-efficient electric lighting, such as the replacement of incandescent electrical bulbs with compact fluorescent lights (CFLs) or light emitting diodes (LEDs).	N/A: The GP activities do not include the replacement of electric lighting with more energy efficient lighting.
Activities installing and/or replacing electricity transmission lines and/or energy efficient transformers.	N/A: The GP activities do not include the installation and/or replacement of electricity transmission lines and/or energy efficient transformers.
Activities that reduce hydrofluorocarbon-23 (HFC-23) emissions.	N/A: The GP reduces GHG emissions (Carbon, Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), Carbon Monoxide (CO)) due to energy efficiency measures by introducing improved cookstoves.

Table 2: Demonstration of Project's eligibility under VCS program

Applicability condition	Project compliance
To list a project as under validation, the following shall be submitted to Verra: - A project description - Proof of contracting of the validation - A listing representation	N/A: The project is already registered and has issued VCUs, currently undergoing a methodology change in accordance with "Procedure to Change Methodology through a Project Description Deviation"
The validation/verification body shall ensure that the project is listed on the project pipeline with a status of under validation before the opening meeting with the project proponent, such opening meeting representing the beginning of the validation process. Further, validation shall not begin until the 30-day public comment period has begun, and the validation/verification body shall not complete validation until after the 30-day public comment period has ended.	N/A: The project is already registered and has issued VCUs, currently undergoing a methodology change through a Project Description Deviation. As per the VCS "Procedure to Change Methodology through a Project Description Deviation", the project will undergo the assessment by VVB.
Methodology eligibility: Project shall apply methodologies eligible under the VCS Program. Methodologies shall be applied in full, including the full application of any tools or modules referred to by a methodology,	The project is applying "VM0050 Energy Efficiency and Fuel-Switch Measures in Cookstoves, v1.0" methodology, which is active and eligible under the VCS program. Methodology will be applied in full without any deviations.

1.4.2 AFOLU project eligibility

As the project activity is not an AFOLU project, thus, this section is not applicable.

1.4.3 Transfer project eligibility

As the project activity is not a transfer project and has been developed and implemented under the VCS Program from its inception, adhering to all relevant VCS requirements, thus, this section is not applicable. The project activity has not been registered, nor is it seeking registration under any other GHG program.

1.5 Project Design

Indicate if the project has been designed as:

☐ Single location or installation

☐ Multiple locations or project activity instances (but not a grouped project)

☒ Grouped project

1.5.1 Grouped project design

The below table enumerates the eligibility criteria for this grouped project in line with section 3.6.16 of VCS standard Version 4.7

No.	Eligibility Criterion	How the project activity instances to comply
1	Meet the applicability conditions set out in the methodology applied to the project	The project activity instances (ICS) added to this grouped project will meet the applicability conditions set out in Section 3.2 of this document, where the target end-users are households and the thermal efficiency of the stoves deployed is at least 25%.
2	Use the technologies or measures specified in the project description.	The project activity instances added to this grouped project are efficient improved cookstoves (ICS) being distributed within the project's pre-defined geographical boundary.
3	Apply the technologies or measures in the same manner as specified in the project description.	The project activity instances added to this grouped project are Improved Cookstove being distributed in the project scenario to replace traditional cookstoves in households. All the project technologies distributed under the project will have a unique identification serial number in order to curb double counting of the stoves under the project.
4	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The project activity instances added to this grouped project will take place within Nigeria only and subject to the same baseline scenario determined in Section 3.4.
5	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area	This project activity instances added to this grouped project will be distributed at subsidized value and more details on additionality and NPV have been added in the section 3.5 below.

The below table enumerates the inclusion criteria for the new project activity instances in accordance to the section 3.6.17 of VCS standard Version 4.7

No.	Criterion to include new project instances	How the new project activity instances to comply
1	Occur within one of the designated geographic areas specified in the project description	The new project instances to be added to this grouped project will be only within Nigeria
2	Conform with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial conformance with multiple sets of eligibility criteria is insufficient.	The new project activity instances (ICS) added to this grouped project will comply with all the eligibility criteria as outlined in the previous table
3	Be included in the monitoring report with sufficient technical, financial, geographic, and other relevant information to demonstrate conformance with the applicable set of eligibility criteria and enable evidence gathering by the validation/verification body.	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
4	Be included in an updated project description, with updated project location information (as set out in Section 3.11), which shall be validated at the time of verification against the applicable set of eligibility criteria.	The new project instances to be added to this grouped project will be only within Nigeria as highlighted in section 1.12. Further the geographical coordinates of new project instances will be furnished in the project distribution database.
5	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 began reducing or removing GHG emissions).	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
6	Have a start date that is the same as or later than the grouped project start date	The start date of the new project activity instance shall be either same as the start date of this grouped project i.e., 07-05-2022 or later.

No.	Criterion to include new project instances	How the new project activity instances to comply
7	Be eligible for crediting from the start date of the project activity instance through to the end of the project crediting period (only).	The crediting period for the new project activity instances will only be eligible to start on 07-05-2022 and end till 06-05-2029 in the first crediting cycle. (Crediting period will be renewed maximum for 2 times) – Please refer section 1.9 for further details
8	Only eligible for crediting from the start of the verification period in which they were added to the grouped project.	The VER crediting for the added new project instances will be only on or after the start date of verification period depending on the date of distribution
9	Not be or have been enrolled in another VCS project.	The new project instances added to this grouped project will have unique identification serial number and shall not be enrolled in any VCS or other Carbon Standards, thus avoiding double counting of credits generated. No double counting declaration has been duly provided by the project proponent
10	Where a capacity limit applies to a project activity included in the project, no project activity instance shall exceed such limit. Further, no single cluster of project activity instances shall exceed the capacity limit, determined as follows: 1) Each project activity instance that exceeds one percent of the capacity limit shall be identified. 2) Such instances shall be divided into clusters, whereby each cluster is comprised of any system of instances such that each instance is within one kilometer of at least one other instance in the cluster. Instances that are not within one kilometer of any other instance shall not be assigned to clusters. 3) None of the clusters shall exceed the capacity limit and no further project activity instances shall be added to the project that would cause any of the clusters to exceed the capacity limit.	Not applicable, since it is a large-scale project.

1.6 Project Proponent

Organization name	UpEnergy Group
Contact person	Anantha Karthik Rajagopalan
Title	Vice President of Carbon Programme
Address	19 Cybercity, 10th Floor, Raffles Tower Ebene, Mauritius
Telephone	T: +230-404-6000
Email	anantha@upenergygroup.com

1.7 Other Entities Involved in the Project

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

1.8 Ownership

The project ownership is with UpEnergy Group.

A voluntary and irrevocable agreement in the form of warranty card signed by the end user (cookstove user) conferring project ownership to the project proponent shall be the evidence of project ownership.

Each ICS shall have a unique serial number linking it to the project activity 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 installation/distribution that the ICS will be discounted on account of them generating carbon credits and also the fact that these credits belong to project proponent. The end user will be required to sign the

carbon waiver form cum warranty card as required by the project proponent to surrender their rights to carbon credits generated by the project.

1.9 Project Start Date

Project start date	07-May-2022
Justification	The earliest date of commissioning date of a batch distributed for first project activity instance.

1.10 Project Crediting Period

Crediting period	☒ *Seven years, twice renewable* ☐ *Ten years, fixed* ☐ *Other (state the selected crediting period and justify how it conforms with the VCS Program requirements)*
Start and end date of first or fixed crediting period	07-May-2022 to 06-May-2029

1.11 Project Scale and Estimated GHG Emission Reductions or Removals

☐ < 300,000 tCO_2e/year (project)

☒ ≥ 300,000 tCO_2e/year (large project)

Calendar year of crediting period	Estimated GHG emission reductions or removals (tCO_2e)
07-May-2022 to 31-December-2022	34,108
01-January-2023 to 31-December-2023	225,724
01-January-2024 to 31-December-2024	520,902
01-January-2025 to 31-December-2025	694,537
01-January-2026 to 31-December-2026	694,537

01-January-2027 to 31-December-2027	694,537
01-January-2028 to 31-December-2028	694,537
01-January-2029 to 06-May-2029	239,758
Total estimated ERRs during the first or fixed crediting period	**3,798,640**
Total number of years	**07**
Average annual ERRs	**542,663**

1.12 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). UpEnergy will implement the programme in partnership with local partners and would ensure the last-mile distribution/installation of the Improved Cookstoves to the beneficiaries.

Through this project, the distribution and installation of approximately 500,000 ICS will be undertaken for households in Nigeria. It is intended that under this project residential users with improved cooking technologies such as energy- efficient biomass Improved Cookstoves (ICS) will be distributed with the aim to reduce greenhouse gas (GHG) emissions from the burning of non-renewable biomass-based charcoal for cooking. The end user will be informed in advance that the use of ICS generates carbon finance which in turn is used for subsidizing the price of ICS and for recovering project implementation costs.

The ICS will burn fuel more efficiently thereby improving thermal transfer to pots, hence saving fuel and equivalent greenhouse gas emissions. Not only this will reduce the rapidly progressing rate of deforestation (From 2001 to 2021, Nigeria lost 1.14 Mha of tree cover, equivalent to a 11% decrease in tree cover since 2000, and 587 Mt of CO_2e emissions[3]) in Nigeria but will also reduce health hazards from indoor smoke pollution and women and children will have to spend less time on cooking and fuel purchase.

The baseline study conducted by Project Proponent at Nigeria in January 2022 has revealed the major dependency on solid biomass for cooking applications at both urban and rural households. Around 93%

[3] https://gfw.global/42mhFpm (last accessed on 08/APR/2025)

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's vulnerable to respiratory ailments.

On the other hand, Fuel gathering consumes 1.7 hours[4] 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.

This project will replace conventional inefficient traditional stoves with higher efficiency ICS to residential users by leveraging resources provided by the PoA. Therefore, 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.

Technical Specifications of Smart Home Pro Cook Stoves distributed during the first monitoring period are as follows:

Brand	**UpEnergy**
Model	**Smart Home Pro (SHS 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**

The manufacturer / model of stove may change for future project activity instances and same will be transparently reflected during verification.

Project Developers/Representatives: -

Project Developer	UpEnergy Group

[4] https://documents1.worldbank.org/curated/en/164241468178757464/pdf/98664-REVISED-WP-P146621-PUBLIC-Box393185B.pdf (last accessed on 08/ APR /2025)

Project Representatives	Climate Catalyst Limited

Data collection of ICS end-user: -

Project proponent must gather the necessary information to identify households using its ICS during the course of the project. To facilitate this process, each ICS will be assigned a unique serial number. The respective stove serial numbers will be recorded during the distribution process, together with the following information (as appropriate and as available in the dedicated project database):

- Name of ICS user or head of the household
- Address/ Village name of ICS household
- Geographical coordinates of the household
- Contact Details of the household
- Baseline cooking technology & fuel
- Stove model Distributed
- Date of distribution/installation
- ICS serial number (Unique identification alpha/numeric ID for each device that is distributed)

The information collected will be stored in the electronic database excel sheet which will serve as project database for project monitoring and sampling purposes. The traditional cook stoves were operational and this was the scenario prior to the implementation of project.

1.13 Project Location

The project will be located within the boundary of Nigeria having the geographical coordinates 9° 4'55.2'' latitude and 8°40'31'' longitude. It is part of Africa and the northern hemisphere.[5]

[5] https://www.geodatos.net/en/coordinates/nigeria (last accessed on 08/ APR /2025)

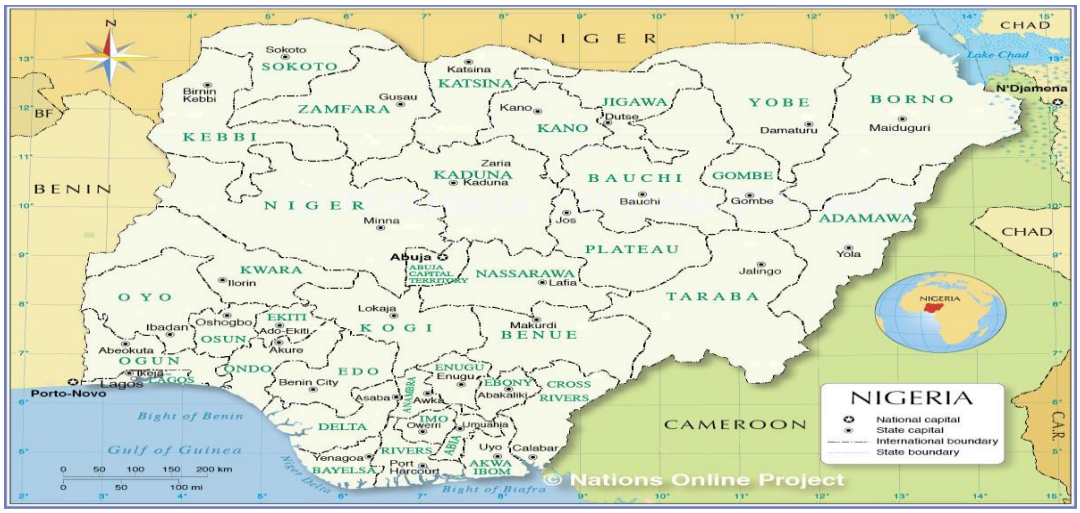

Figure 1 Nigeria Map

1.14 Conditions Prior to Project Initiation

Prior to the implementation of the project activity the existing scenario recorded as the use of traditional cookstoves and the use of non-renewable biomass by the target population to meet similar thermal energy needs and which also cause indoor air pollution (IAP) in absence of project activity.

Majority of people in the host country still use traditional cookstoves for cooking purposes. The continued use of traditional cookstoves also contributes to increased indoor air pollution levels and related health risks. The current scenario is the same as the conditions prior to project initiation, i.e., continuation to use traditional cookstoves to meet thermal energy demand for cooking.

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 587 Mt 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.

1.15 Compliance with Laws, Statutes and Other Regulatory Frameworks

There are no mandatory laws or regulations in the host country for 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[7]

1) National Environmental Standards and Regulation Enforcement Agency (NESREA) Act 2007
2) Environmental Impact Assessment (EIA) Act. Cap E12, LFN2004
3) The Nigerian Urban and Regional Planning Act Cap N138, LFN 2004

[6] https://gfw.global/42mhFpm (last accessed on 08/ APR /2025)

[7] https://esrmqa.worldbank.org/program-countries/overview-environmental-legislation (last accessed on 08/APR /2025)

4) National Clean Cooking Policy, 2024[8]
5) Nigeria's Nationally Determined Contribution (NDC 3.0)[9]

As per National Clean Cooking Policy 2024, In Nigeria nearly 30 million households use biomass fuels as their primary fuel for cooking. The goal of this policy is to achieve universal access to clean cooking energy solutions for households and institutions by 2030 and assist Nigeria to improve health, create jobs, build livelihoods, protect the environment, and help families, institutions and businesses save time and money through the promotion of clean cooking solutions.

Nigeria's Updated Nationally Determined Contribution (2025) priorities by supporting the development and introduction of affordable clean cooking options and by facilitating access through affordable financing mechanisms targeted at women and low-income households.

1.16 Double Counting and Participation under Other GHG Programs

1.16.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.16.2 Registration in Other GHG Programs

Has the project registered under any other GHG programs?

☐ Yes ☒ No

Is the project active under the other program?

☐ Yes ☒ No

1.16.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ No

[8] https://fscluster.org/sites/default/files/2024-05/National%20Clean%20Cooking%20Policy%20v2_113112.pdf (last accessed on 12/DEC /2025)

[9] https://unfccc.int/sites/default/files/2025-09/Nigeria%20NDC%203.0%20-%20Transimission%20Version%202.pdf (last accessed on 12/DEC /2025)

1.17 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.17.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.17.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.17.3 Supply Chain (Scope 3) Emissions

Do the project activities specified in Section 1.12 affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

Has the project proponent(s) or authorized representative posted a public statement on their website saying, "Carbon credits may be issued through Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities]."

☐ Yes ☒ No

1.18 Sustainable Development Contributions

Project's contribution to Sustainable Development: The contributions of proposed project activity towards sustainable development are explained with indicators viz. social, economic, environmental, technological well-being and legislative as follows:

Environmental well-being: The project activity will result in the reduction of firewood consumption and emission of greenhouse gases and thus conserve forest and biodiversity.

Social well-being: The project activity will pave the way for development and increases the social status and living conditions and the prevailing living standard in the vicinity of the project activity and thus results in empowering the nearby. Also, it will contribute to a small increase in the local employment by employing skilled and unskilled personnel for operation and maintenance of the equipment. The project will reduce the drudgery of women, time saving and the use of saved time for other productive activities.

Economic well-being: The project has created a business opportunity during construction phase for local stakeholders such as suppliers, contractors etc. contributing to economic well-being aspects. Further, the project also influences creation of employment opportunities for local people, which would enhance their social status. Sufficiently enhance indoor air quality thereby improving health of women and children and reducing incidences of smoke and fire related injuries and therefore result in saving of health-related expenses.

Technological well-being: The proposed project activity will promote improved cook stoves that result in reduced fuel consumption and emissions due to cooking and heating water in homes.

Legislative: The Project Proponent has obtained all the relevant approvals required for the establishment and operation of the project activity.

Table 1: Summary of Project SDG Contributions

Goal No	SDG Target	Estimated Project Contribution by the End of Project Lifetime	Monitoring Indicator	Unit	Net Impact on SDG Indicator
1	1.1	The distribution of energy efficient stoves helps save 0.17 $ per day per HH for the given project activity	Average household savings i.e., decrease in expenditure on basic service such as cooking	$ / day / HH	Implemented activities to increase
	1.4	The distribution of 427,500 energy efficient stoves under the project helps in providing basic service access to household	Number of households having access to improved cooking technology due to project activity	no of HH	Implemented activities to increase
5	5.1	This project activity promotes employment to women, thus helps eradicating gender-based discrimination and provides socio-economic parity	% of Female employees	%	Implemented activities to increase
	5.4	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	Average time saving associated with cooking time	hours / day / HH	Implemented activities to increase

Goal No	SDG Target	Estimated Project Contribution by the End of Project Lifetime	Monitoring Indicator	Unit	Net Impact on SDG Indicator
	5.5	This leadership of the project activity to an extent 50% is held by women employees	Proportion of women serving in managerial/ leadership /ownership role	%	Implemented activities to increase
7	7.1	The distribution of 427,500 energy efficient stoves under the project helps in providing basic service access to household	Number of households having access to improved cooking technology due to project activity	no of HH	Implemented activities to increase
8	8.b	The project activity provides training and skill development program for youth population, thus increasing their employability	Number of Trainings conducted in a year	nos	Implemented activities to increase
	8.5	The project activity generates employment for marketing / sales and distribution / technical employees	Number of jobs created	nos	Implemented activities to increase
12	12.2	Reduce the consumption of non-renewable biomass in participant households by as much as 45%, depending on stove model	Decrease in specific fuel consumption	tonnes of eq.firewood / annum / HH	Implemented activities to decrease
13	13.0	3,798,640 tCO_2e of greenhouse gas emissions will be avoided over a 7-year period	Tonnes of greenhouse gas emissions avoided or removed	tCO_2e/annum	Implemented activities to increase
15	15.1	The Project will reduce 5,540,535 tonnes of Non-renewable biomass over a 7-year period in participant households and will contribute towards reducing deforestation	Amount of Non-renewable biomass saved	tonnes of eq.firewood /annum	Implemented activities to increase

1.19 Additional Information Relevant to the Project

1.19.1 Leakage Management

Leakage has been considered as default 0.95 as per the methodology.

1.19.2 Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

1.19.3 Further Information

The Project Proponent has obtained all the relevant approvals required for the establishment and operation of the project activity.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	Stakeholders have been identified based on the criteria outlined in Section 3.18 of the VCS 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 current and potential beneficiaries implementing partners, etc. Indirect Stakeholders- group of people who are indirectly involved such as NGOs and business, academia, media, local vendors, women, young girls, children, government authorities etc. The project activity involves distribution of improved cookstoves to individual households in rural/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.
Legal or customary tenure/access 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.
Stakeholder diversity and changes over time	There is no change expected in the make-up of stakeholders over time.
Expected changes in well-being	The expected changes in stakeholder well-being include:

	• Reduced indoor air pollution from energy-efficient improved cookstoves (ICS), leading to health benefits for beneficiaries. • Time savings in cooking and fuel procurement, allowing beneficiaries to engage in other productive or income-generating activities. • Cost savings due to lower fuel consumption required by the project ICS. • Increased local employment opportunities in operations, management, implementation, and logistics related to the ICS project.
Location of stakeholders	The geographical boundary of the project is located in urban/rural regions of Nigeria. The project activity has no impact outside the project boundary.
Location of resources	The project involves the installation and distribution of new improved cookstoves (ICS) to participating households and does not utilize resources owned by the stakeholders.

2.1.2 Stakeholder Consultation and Ongoing Communication

Date of stakeholder consultation	23-Jun-2022
Stakeholder engagement process	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, improve the surrounding environment from further degradation. 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
Consultation outcome	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 Stove, SmartHome Electric Pressure Cooker and Domestic & Institutional Safe Drinking Water System were 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. **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), Safe Water System (SWS), Electric Pressure Cooker (EPC) 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.

Overall, both stakeholders and beneficiaries unanimously acknowledged the benefits of the improved cookstove design and features and there was a considerable amount of positive feedback. The report of the local stakeholder consultation has been shared during the VVB during the time of validation and reassessment.

Ongoing communication

The mechanism for ongoing communication with stakeholders is as follows:

	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 Limited, 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- toll free number(optional)	1. +2347041007012 2. +2347011111384	
Internet/email access (optional)	technical@upenergygroup.com	
Nominated Independent Mediator (optional)		
Other		

PP will ensure that regular monitoring is carried out by field staff and/or project managers in order to gather feedback from the local stakeholders. During the implementation of project activity, any stakeholders' concerns (both positive or negative) will be taken due care by the project proponent and necessary actions would be taken to resolve their queries.

Stakeholder input

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, mitigating gender inequality and money saving.	Yes	Generic comment; requires no action

2.1.3 Free Prior and Informed Consent

Obtaining consent	Local Stakeholder Consultation was conducted in the project boundary, during which the Project Proponent invited the primary stakeholders that might get potentially affected by the project. Also, these stakeholders were evaluated based on how deeply affected they may be by the Project, and those most impacted have been included in the stakeholder engagement. The Stakeholder Consultation included all categories of stakeholders, i.e., direct as well as indirect stakeholders. During the Local Stakeholder Consultation meeting, there were no negative comments received. As of the current monitoring period, there are no ongoing or unresolved conflicts related to the project.
Outcome of FPIC	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. UpEnergy team will distribute/install the ICS only at the property owner's invitation. After the delivery and payment, the distributed is the sole property of the owner. We will confirm that all property rights are recognized, respected, and supported. 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.

2.1.4 Grievance Redress Procedure

Development process	Stakeholders register grievances through the Continuous Input/Grievance Expression Process Book, 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 expression concerns / grievances are also able to share their concerns / feedback. Additionally, the end users always have an option to revert the

	salesperson (representative distribution/retail partners etc.) in case of a feedback / complaints with the product post distribution. The PD regularly conducts awareness campaigns and training sessions to provide practical guidance on stove use, troubleshooting commonly faced issues, and carrying out minor repairs. These sessions shall be complemented by the distribution of printed guides and in-person demonstrations delivered in local languages to ensure effective reach and clarity.
Grievance redress procedure	The formal grievance redress procedure requires the grievance to be filled in the grievance register, available at the office and collected by the Climate Catalyst Limited's Field Coordinator. If literacy is a barrier, or other barriers exist such as distance to the office, a telephone call to the Climate Catalyst Limited's Field Direct office in Nigeria is recommended where the grievance will be captured and recorded in written form by a staff member at the office. 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; Our In-person grievance redressal mechanism ensures solving disputes or complaints, usually through face-to-face communication and interaction with the end users. When a grievance is raised in person by the end users, the customer care executive/distribution agent provides the requisite resolution & ensures that the end user is satisfied with the given resolution. The executive assesses the quantum of grievance & records it in the grievance register, if needed.

2.1.5 Public Comments

There are no comments received during 30 days public comment period. Hence no further explanation required in this section.

Link to the project: https://registry.verra.org/app/projectDetail/VCS/2673

Comments received	Actions taken
Not Applicable	Not Applicable

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

UpEnergy management has vast experience in developing the carbon projects across several Sub-Saharan African countries under both Gold Standard, CDM and VERRA registries.

2.2.2 Risk Assessment

	Risks identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing	No risk identified	The adoption of improved cookstoves (ICS) will enable households to reduce their fuel consumption, contributing to the mitigation of deforestation and soil erosion, thereby decreasing the risk of natural disasters. Additionally, these stoves will save cooking time and enhance health conditions by reducing indoor air pollution, ultimately improving the well-being of stakeholders.
Risks to stakeholder participation	No risk identified	The project activity involves distributing improved cookstoves within the project boundary at a subsidized rate, making them more affordable than the usual market price. This ensures that all stakeholders can participate without facing financial constraints.
Working conditions	No risk identified	The adoption of improved cookstoves (ICS) will enable households to reduce their fuel consumption, save their cooking

		time, and improve their health conditions by reducing indoor air pollution. This will enable the community members to engage in other productive and income-generating activities, thereby improving overall working conditions.
Safety of women and girls	No risk identified	The project activity focuses on distributing improved cookstoves to households within the project boundary, and does not pose any risk to the safety of women and girls.
Safety of minority and marginalized groups, including children	No risk identified	The project activity focuses on distributing improved cookstoves to households within the project boundary, and does not pose any risk to the safety of minority and marginalised groups, including children.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	No risk identified	The project activity focuses on distributing improved cookstoves within the project boundary, which will thereby reduce indoor air pollution. Hence, no risk is identified.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

	Risks identified[10]	Mitigation or preventative measure(s) taken
Discrimination	No risk identified	UpEnergy is committed to providing the best possible climate

[10] The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

		for maximum development and goal achievement for all its employees and contractors. UpEnergy believes that discrimination in all its forms (gender, race, religion, sexual orientation, or other habits) and sexual harassment and assault have no place within the development sector and more specifically at UpEnergy, our employees, contractors, and third-party individuals, and within the projects we design and execute. Specifically, our project activities are designed to reduce or eliminate, where culturally possible, discrimination, sexual harassment, and sexual assault where it exists within the societies where we work.
Sexual harassment	No risk identified	UpEnergy is committed to providing the best possible climate for maximum development and goal achievement for all its employees and contractors. UpEnergy believes that discrimination in all its forms (gender, race, religion, sexual orientation, or other habits) and sexual harassment and assault have no place within the development sector and more specifically at UpEnergy, our employees, contractors, and third-party individuals, and within the projects we design and execute. UpEnergy prohibits any form of discrimination, harassment, or assault, all being grounds for dismissal of employment,

		termination of the contract, an immediate discreet investigation of the reported incident, and where warranted, reports to the applicable authorities.
Equal pay for equal work	No risk identified	The project proponent ensures fair and non-discriminatory compensation by providing equal pay for equal work. Additionally, UpEnergy seeks to mirror the percentage of women/men in the country in its in-country workforce, making all efforts to hire women candidates for all levels of positions.
Gender equity in labor and work	No risk identified	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 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.
Forced labor	No risk identified	The project is carried out with the full consent of participating households, ensuring it is voluntary and free from forced labour. UpEnergy prioritizes hiring local community members that is locals residing in area of project implementation and offers new opportunities to project beneficiaries as UpEnergy

		expands operations and job openings arise.
Child labor	No risk identified	All individuals involved in the project, whether in volunteer or employment roles, are engaged in compliance with labour regulations, ensuring no involvement of child labour.
Human trafficking	No risk identified	The project proponent ensures a transparent and ethical recruitment process, guaranteeing that all staff are hired voluntarily and are not victims of human trafficking.

2.3.2 Human Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	The project activity focuses on distributing improved cookstoves within the project boundary. 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 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. The host country Nigeria is also a member of the ILO convention since 1962 and has been implementing various programs, in collaboration with the ILO tripartite constituents (government, workers' and employers' organizations). In order to ensure that all employees are aware of the prevailing work and employment rights, all employees are required

	to sign the policy handbook available on our human resources portal.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No risk identified	The project activity focuses on distributing improved cookstoves within the project boundary. It does not cause any harm to Indigenous people or cultural heritage in the project area.

2.3.4 Property Rights

Risks identified	Mitigation or preventative measure(s) taken
No risk identified	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. UpEnergy Sales team will distribute/install the ICS only at the property owner's invitation. After the delivery and payment, the distributed is the sole property of the owner. We will confirm that all property rights are recognized, respected, and supported.
No risk identified	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.

2.3.5 Benefit Sharing

Not applicable, as the project activity focusses on distribution of improved charcoal stove to the end users thereby improving the end-user's health with reduced fuel consumption and reduced smoke / emissions. The end users have been informed at the time of ICS installation/distribution that the ICS are discounted on account of them generating carbon credits and also the fact that these credits belong to the project proponent. The end users are required to sign the carbon waiver form cum warranty card as required by the project proponent to surrender their rights to carbon credits generated by the project.

2.4 Ecosystem Health

	Risks identified	Mitigation or preventative measure(s) taken
Impacts on biodiversity and ecosystems	No risk identified	
Soil degradation and soil erosion	No risk identified	
Water consumption and stress	No risk identified	

2.4.1 Rare, Threatened, and Endangered Species

Is the project located in or adjacent to habitats for rare, threatened, or endangered species?

☐ Yes ☒ No

Not applicable, as the project activity is distribution of improved charcoal stove to the end users thereby improving the end users health with reduced fuel consumption (reduced smoke) and reduced emissions.

2.4.2 Introduction of Species

Not applicable, as the project activity is distribution of improved charcoal stove to the end users thereby improving the end users health with reduced fuel consumption (reduced smoke) and reduced emissions.

2.4.3 Ecosystem Conversion

Not applicable, as the project activity is distribution of improved charcoal stove to the end users thereby improving the end user's health with reduced fuel consumption (reduced smoke) and reduced emissions.

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	VM0050	VM0050 Energy Efficiency and Fuel-Switch Measures in Cookstoves, v1.0	1.0[11]
Corrections & Clarifications	-	Correction and Clarifications to VM0050 Energy Efficiency and Fuel -Switch Measures in Cookstoves, v1.0	1.0[12]
CDM Tool	Tool 33	TOOL 33 Default values for common parameters EB 125, Annex 2 v3.0	3.0[13]
CDM Guideline	-	Sampling and surveys for CDM project activities and programmes of activities	9.0[14]
Tool	Tool VT0008	Tool VT0008 Additionality Assessment	1.0[15]

3.2 Applicability of Methodology

Methodology ID	Applicability condition	Justification of compliance
VM0050	1) The project activity corresponds to:	The proposed instances will distribute more efficient improved charcoal cookstoves for thermal application, which will replace inefficient traditional charcoal cookstove

[11] https://verra.org/wp-content/uploads/2024/10/VM0050-EE-and-Fuel-Switch-Measures-in-Cookstoves-v1.0.pdf

[12] https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf

[13] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-33-v3.pdf

[14] https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf

[15] https://verra.org/wp-content/uploads/2024/10/VT0008-Additionality-Assessment-v1.0.pdf

Methodology ID	Applicability condition	Justification of compliance
	a) Replacement of non-renewable biomass (e.g., firewood, charcoal) fired cookstoves with any of the following: i) More efficient project devices that use the same fuel as in the baseline; ii) Efficient project devices fired by renewable biomass or bioethanol; iii) Efficient project devices fired by liquefied petroleum gas (LPG); or iv) Electric-powered project devices. b) Replacement of solid or liquid fossil fuel (e.g., coal, kerosene) fired cookstoves with any of the following: i) Efficient project devices fired by renewable biomass or bioethanol; ii) Efficient project devices fired by LPG; or iii) Electric-powered project devices.	leading to saving of non-renewable biomass. The ICS to be distributed under the project activity are Smart Home Pro. All ICS in this project will replace existing only traditional charcoal stoves; therefore, no greenfield installations are included. Further, the project activity will utilize non-renewable biomass under project scenario. This criterion will be checked from data recorded on the baseline stove used prior to ICS installation. Evidence – Distribution Receipts & Database The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	2) Project devices are used in households, communities, institutions, or small or medium enterprises (SMEs), collectively referred to in this methodology as the "target population."	The proposed instances involve distribution of ICS in households. Evidence – Distribution Database The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing

Methodology ID	Applicability condition	Justification of compliance
		verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	3) Where renewable biomass is used, it is exclusively renewable and qualifies as one of the following: a) A by-product, residue, or waste stream from agriculture, forestry, and related industries; b) Originating from dedicated plantations that comply with all relevant applicability conditions in the most recent version of CDM TOOL16.	Not applicable. The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of only non-renewable biomass. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	4) Where biomass residues are used, they would have been left to decay or burned without energy recovery before implementation of the project activity, and their use does not involve a decrease in carbon pools – in particular of dead wood, litter, or soil organic carbon – on the land areas from which the biomass residues originate.	Not applicable. The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of only non-renewable biomass. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	5) Where biomass residues from a production process are used, project implementation does not result in an increase in the processing capacity of raw input or any other substantial changes (e.g., product change) in this process.	Not applicable. The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of only non-renewable biomass. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently

Methodology ID	Applicability condition	Justification of compliance
		undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	6) Where more than one type of renewable biomass is used, each of the biomass types used complies with the applicability conditions.	Not applicable. The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of only non-renewable biomass. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	7) Where project activities introduce renewable biomass as charcoal, it is renewable charcoal produced by efficient charcoal production processes (e.g., retort sedentary kilns, improved sedentary kilns, Casamance kilns). Methane produced during the charcoaling process is captured and destroyed or combusted for energy purposes.	Not applicable. The proposed instances will distribute high efficiency improved cook stove for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of only non-renewable biomass. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	8) Project devices using renewable biomass (fuel-switch) or non renewable biomass (improved efficiency) are single-pot, multi-pot portable, or in-situ cookstoves with an initial thermal efficiency of at least 25%.	Improved Cookstoves planned to be distributed under this project are SmartHome Pro stove that have an efficiency of 37.9% as per the manufacturer's technical specifications. Evidence – ICS Technical Specification The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring

Methodology ID	Applicability condition	Justification of compliance
		period (01-November-2022 to 31-October-2024),
	9) Project devices using LPG or bioethanol are single-pot, multi-pot portable, or in-situ cookstoves with an initial thermal efficiency of at least 30%.	Not applicable. The proposed instances involve distribution of improved charcoal cookstoves within the project boundary. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	10) Electric project devices meet the maximum risk factor score of 15 on the Cookstove Durability Protocol and have the following minimum thermal efficiency: a) Hot plates and electric hobs: 40% b) Induction stoves and other electric stoves: 70%	Not applicable. The proposed instances involve distribution of improved charcoal cookstoves within the project boundary.
	11) Project devices using LPG comply with all of the following conditions: a) The baseline fuel either includes non-renewable biomass or is a more carbon-intensive fossil fuel (demonstrated by the baseline survey, see Section 6.2); b) The project has a provision for metering LPG supplied to each consumer at the LPG filling station, in order to determine	Not applicable. The proposed instances involve distribution of improved charcoal cookstoves within the project boundary. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),

Methodology ID	Applicability condition	Justification of compliance
	household LPG consumption; and c) The project does not seek to issue any carbon credits for periods after 31 December 2045.	
	12) Electric project devices use the following electricity sources: a) Decentralized renewable energy systems: Decentralized energy systems using fossil fuels are not eligible, except for backup generators that supply less than 1% of the annual electricity of the decentralized renewable energy system. b) Self-generated renewable electricity (with a maximum of 20% electricity from non-renewable sources for backup); or c) National or regional electricity grid.	Not applicable. The proposed instances involve distribution of improved charcoal cookstoves within the project boundary. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	13) The project proponent designs incentive mechanisms to reduce the use of inefficient baseline devices and practices that can be replaced by the project devices and describes these mechanisms in the project description.	The project activity encourages full adoption of project stove distributed to individual beneficiary households and reduce use of baseline devices throughout the crediting period by implementing an incentive scheme. This includes providing a full-year extended warranty in addition to the 5 years initial warranty in exchange for the disposal of a household's traditional stove, verified at the time of ICS distribution. To ensure ongoing replacement and use of project stoves, the project conducts regular monitoring to confirm the continued non-use of inefficient baseline

Methodology ID	Applicability condition	Justification of compliance
		stoves and provides customer support to address any issues with ICS adoption during the crediting period. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	14) Where a project device has ended its technical life, the project proponent either replaces it with a comparable or better project device or retrofits its essential components to continue meeting the minimum service level requirements (i.e., thermal energy generation), otherwise no further emission reductions may be claimed for the project device.	When the project device has ended its technical life, the project proponent either replaces the stove or shall not claim credits in-line with the methodology, The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	15) Project proponents implement a method for the distribution and identification of project devices that avoids double counting of emission reductions by other mitigation actions and includes unique product identification on the stove itself at the time of distribution/sale (e.g., program logo, alpha/numeric ID, and end-user location, such as geographic coordinates, complete address information).	Each ICS in the project activity will be identified by a unique combination of customer name and geographical location, as well as a serial number. The serial number will be a unique number which will allow for a clear distinction between the stoves. No individual serial number can be repeated within the project, thus ensuring that each stove is counted only once in the proposed project. In addition, the project has been cross-checked against other CDM project activity operating in the country using the UNFCCC, the Gold Standard, and other relevant voluntary carbon schemes to ensure that the ICS is not included in any other CDM project activity or voluntary project activity.

Methodology ID	Applicability condition	Justification of compliance
		The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	16) The project complies with any national, sub-national, or local regulations or guidance for the installation, commercialization, distribution, and use of improved cookstoves and/or fuel supply and use for the target population. National, regional, and local regulatory frameworks for the provision of the type of thermal energy services provided by the project activity must be documented.	The project activity complies with the host country's regulations for the use of improved cookstoves in Nigerian households. The project is a voluntary effort by the project proponent. A review is made on Nigeria environmental laws and regulations as below[16]: 1) National Environmental Standards and Regulation Enforcement Agency (NESREA) Act 2007 2) Environmental Impact Assessment (EIA) Act. Cap E12, LFN2004 3) The Nigerian Urban and Regional Planning Act Cap N138, LFN 2004 There is no specific concern made on improved cookstoves project from the above law and regulation. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	17) Where project activities reduce emissions from non-renewable biomass, including firewood and charcoal, the risk of double counting is assessed on a national basis by evaluating at validation and crediting	Since the project activity involves reducing emissions from non-renewable biomass i.e., charcoal, an assessment was conducted to identify any overlapping of project boundary REDD+ projects that are currently are active or have been implemented within the project boundary to date.

[16] https://esrmqa.worldbank.org/program-countries/overview-environmental-legislation (last accessed on 05/05/2023)

Methodology ID	Applicability condition	Justification of compliance
	period renewal whether there are REDD+ projects or jurisdictional REDD+ programs whose project boundary overlaps with the expected fuel source area of the project. The project proponent must report on the findings of this assessment for informational purposes in the project description.	Currently there is no REDD+ projects have been identified as active or implemented within the project boundary i.e., Nigeria till date with any major Carbon Registries viz., VERRA, GS & CDM. While there are two REDD+ projects currently under development under VERRA, but they are not registered and yet operational. Therefore, there are no overlapping boundaries with any active REDD+ projects. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	Clarification 1) As a cross-check, baseline fuel consumption results must be compared with data from reputable sources, including government publications, peer-reviewed literature, third-party studies, or official data and statistics. The sources must be relevant to the context of the project activity, reflecting baseline cookstove types, types of users, and cooking practices. Where used for cross-checks, these sources must reflect data collected no more than five years ago.	The baseline fuel consumption results have been compared with data from reputable sources. A recent scientific research work by Ibrahim Sufiyan, Muhammad K.D, Umar Musa U (2021)[17] establishes the per capita charcoal consumption as 224.4 kg/capita/annum, this translates to 6.05 tonnes wood equivalent for charcoal/HH/annum considering the average HH size of Nigeria to be 4.5 capita/HH[18]. Hence the baseline fuel consumption value of 3.64 tonnes / HH/ annum, determined through the baseline KPT study conducted by the PP and by applying a conservative wood to charcoal conversion factor (CF) as 4, the value is found to be conservative as compared with scientific studies. The grouped project activity is already registered with VCS program and has done the

[17] https://jwbm.com.my/archives/1jwbm2021/1jwbm2021-22-26.pdf last accessed on 13-June-2025

[18] https://www.africageoportal.com/maps/fbb3c5c5fa9f4429be56af8b11ef4643/about last accessed on 13-June-2025

Methodology ID	Applicability condition	Justification of compliance
		issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	For projects using direct measurement techniques (such as stove use monitors or electricity meters), usage rates are not capped. For projects employing surveys, the usage rate is capped at 90% where all of the following customer support actions are undertaken across the entire target population and demonstrated at verification: 1) Selection of technologies and fuels that fully meet the cooking needs of the target population, demonstrated by citing robust research or conducting an investigation of cooking practices and attitudes 2) Implementation of support activities to assist the target population in effectively operating and maintaining their cookstoves. These may include providing materials (print, in-person, or video) on how to operate the cookstove to prepare common local foods, how to troubleshoot common operational issues, and how to make minor repairs (including obtaining necessary replacement parts). All such	According to Clarification 2 of VM0050 v1.0 Corrections and Clarifications, the project activity shall adopt SUMs or usage survey-based monitoring during the course of verification. While utilizing survey-based monitoring, the usage rate will be capped at 90% and all of the following customer support actions shall be implemented as outlined below: 1.The project activity involves the distribution of efficient improved charcoal cookstoves that will replace inefficient traditional charcoal stoves across the project boundary. In Nigeria, where nearly 30 million households uses biomass fuels as their primary fuel for cooking as per National Clean Cooking Policy 2024, the proposed project activity promotes ICS as a practical and culturally accepted solution to replace traditional stoves. The stove “Smart Home Pro” model have been shown through field research and pilot studies to significantly reduce charcoal consumption, lower cooking times, and improve household air quality. With features like insulated combustion chambers and better airflow control, they meet the cooking needs of Nigerian families preparing staples. User feedback from various on-field activities indicates strong acceptance and willingness to continue use, citing cost savings and ease of use. Locally manufactured and widely available, these stoves not only support health and environmental goals by reducing emissions and deforestation but also create

Methodology ID	Applicability condition	Justification of compliance
	communications and materials must be provided in local language(s) commonly used in the project area. 3) Provision of a commonly used, toll-free communications channel through which the target population can contact the project proponent to access support (e.g., maintenance and repair services) For projects employing surveys and that do not implement all of these customer support actions across the entire target population, the usage rate is capped at 75%.	local jobs and align with Nigeria's climate commitments. 2. The project activity shall implement support activities to assist the target population in effectively operating and maintaining their Improved Cookstoves (ICS). Awareness campaigns and training sessions shall be conducted to provide guidance on operating the cookstoves for preparing common local foods, troubleshooting operational issues, and performing minor repairs. Materials, including printed guides and in-person demonstrations shall be distributed in local language, to ensure accessibility and understanding. These efforts are ongoing to support sustained ICS adoption and maintenance throughout the project duration. 3. The project has implemented a toll-free communications channel to support the target population in accessing assistance for their Improved Cookstoves (ICS). A dedicated toll-free number has been established and widely communicated to households, enabling them to contact the project proponent for maintenance, repair services, and other support needs. This channel is operational and accessible, ensuring effective communication and ongoing support throughout the project duration. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	For usage rate monitoring, the project proponent must collect	The project activity shall capture photographs of the project stove ICS, its components, and the cooking areas as part of the monitoring surveys

Methodology ID	Applicability condition	Justification of compliance
	photographic evidence in the following manner: Take photographs of the stove(s), its components, and the cooking areas. The physical condition of the stove(s) and the cooking areas will help determine stove functionality and use.	during verification stage. These photographs shall be shared with VVB as evidence to help determine stove functionality and use. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	The project stove efficiency ($\eta_{new,avg,y}$) must be determined using one of the following methods (options 1–3 prescribed in the methodology) and the corresponding documentation must be provided: 1) Water Boiling Test campaigns achieving 90/10 confidence and precision levels as per the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities 2) Manufacturer-certified value that is determined via the Water Boiling Test, with the test results made available for validation by a VVB 3) Certification from the host country's national standards body or certifying agency based on the Water Boiling Test For all three options, cookstove efficiency must be determined	The project activity shall determine the stove efficiency ($\eta_{new,avg,y}$) of the Improved Cookstoves (ICS) using either of the options 1 and 2, as prescribed in the methodology. Corresponding documentation shall be provided during verification to comply with the methodology's requirements. The project activity is already VCS approved till MP1 and VCUs issued by VERRA. It is currently under 2nd monitoring period (01-November-2022 to 31-October-2024),

Methodology ID	Applicability condition	Justification of compliance
	based on the Water Boiling Test following the most recent version of the Water Boiling Test Protocol or equivalent national standard/protocol. While carrying out the tests, the low and high power (not simmer) efficiencies must be used to calculate the average thermal efficiency.	
	The following requirements must be applied in addition to the Controlled Cooking Test Protocol when conducting Controlled Cooking Tests (CCTs): 1) A minimum of 15 CCTs by five different cooks (three repeats per cook) must be conducted per cookstove model. 2) The CCTs must be alternated between the baseline and project cookstoves to limit potential bias caused by increased cook efficiency over repeats. For artisanal cookstoves, at least three randomly selected samples of each cookstove model must be tested.	The project activity involves the distribution of Improved Cookstoves (ICS) to households; thus, this clause is not applicable to this project activity. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	The following values of equivalent standard male adults must be applied when determining the parameters Hh_i and $Hh_{j,k}$ (instead of the references provided in Section 9.1 of VM0050, v1.0, parameter table for Hh_i and $Hh_{j,k}$):	The project activity shall apply the specified values of equivalent standard male adults when determining the parameters Hh_i and $Hh_{j,k,}$. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring

<table>
<tr><th>Methodology ID</th><th>Applicability condition</th><th>Justification of compliance</th></tr>
<tr><td></td><td><table><tr><th>Gender and age</th><th>Fraction of standard adult</th></tr><tr><td>Child 0–14 years</td><td>0.5</td></tr><tr><td>Female over 14 years</td><td>0.8</td></tr><tr><td>Male 15–59 years</td><td>1.0</td></tr><tr><td>Male over 59 years</td><td>0.8</td></tr></table></td><td>period (01-November-2022 to 31-October-2024),</td></tr>
<tr><td></td><td>For the wood-to-charcoal conversion factor (CF), in addition to government approved/ endorsed national or regional values, the following source of data is accepted for claiming values of up to six tonnes of dry wood input per tonne of charcoal output:

• Published, peer-reviewed literature specific to the project region and context</td><td>The project activity shall apply a wood-to-charcoal conversion factor (CF) in accordance with the methodology's requirements. Although several scientific literatures has confirmed the CF in Nigeria is more than 6 tonnes of dry wood input per tonne of charcoal output, however in compliance with CCP requirement and the methodology default as most conversative CF value of 4 has been applied in the project activity.

The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),</td></tr>
<tr><td></td><td>Footnote 35 must be read as follows:

35 The project proponent may rephrase the question keeping in mind the objective (i.e., whether or not the project cookstove is in good condition).</td><td>The project activity shall adhere to the requirements outlined in footnote 35 of the methodology. During monitoring, the project proponent shall assess whether or not the project stove is in good condition, based on appropriately phrased questions as part of the monitoring survey questionnaire. Any project stove, if found not in good condition, shall be</td></tr>
</table>

Methodology ID	Applicability condition	Justification of compliance
	Where the project cookstove is not in good condition, the project proponent must exclude such stoves from the project database for the whole crediting year and subsequent years. The project proponent may include such stoves again on replacing them with new cookstoves of similar efficiency.	replaced with new cookstoves of similar efficiency. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),
	The third paragraph on page 14 should be read as follows: The initial baseline survey must be performed prior to validation. The project proponent may employ local third-party agencies to carry out the baseline survey. Follow-up baseline surveys must be conducted at most every five years from the date of the last survey in control households that do not participate in the project. The project proponent may conduct additional surveys at any time, including at crediting period renewal.	The project activity shall comply with the revised baseline survey requirements outlined in the third paragraph on page 14 of the methodology and its subsequent Correction 1[19]. An initial baseline survey was conducted prior to validation, and follow-up baseline surveys shall be performed at most every five years from the date of the last survey in control households that - are identified during the initial baseline KPT study - do not participate in the project. Additional surveys may be conducted as needed, including at crediting period renewal. The grouped project activity is already registered with VCS program and has done the issuance till MP1 from VERRA. It is currently undergoing verification for 2nd monitoring period (01-November-2022 to 31-October-2024),

3.3 Project Boundary

The project will be located within the boundary of Nigeria having the geographical coordinates 9°''55.2 latitude and 8°40.517 longitude. It is part of Africa and in the northern hemisphere.[20]

[19] https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf (last accessed on 23/SEP/2025)

[20] https://www.geodatos.net/en/coordinates/nigeria (last accessed on 21/MAR/2025)

The defined project boundary covers the entire territory of Nigeria and includes all Improved Cookstoves (ICS) distributed to households, as well as the baseline devices, which are traditional charcoal stoves. Both the ICS and the baseline cookstoves are located within this boundary. In addition, the fuels used in both the baseline and project scenarios are entirely sourced within Nigeria, ensuring that the project remains in full alignment with the applicable methodological requirements for project boundaries.

Source		Gas	Included?	Justification/Explanation
Baseline	Source 1 Thermal Energy Generation	CO_2	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		CH_4	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		N_2O	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		Other	No	No other source identified
Project	Source 1 Thermal Energy Generation	CO_2	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		CH_4	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		N_2O	Yes	Important source of emissions released during partial or incomplete combustion of fuel.
		Other	No	No other source identified
	Source 2 Transport of fuel (where applicable)	CO_2	Not applicable	-
		CH_4	Not applicable	-
		N_2O	Not applicable	-
	Source 3 Production of fuel (where applicable)	CO_2	Not applicable	-
		CH_4	Not applicable	-
		N_2O	Not applicable	-

Source		Gas	Included?	Justification/Explanation
	Source 4 Self-generated electricity (non-renewable energy for backup)	CO_2	Not applicable	-
		CH_4	Not applicable	-
		N_2O	Not applicable	-
	Source 5 Grid electricity generation and distribution	CO_2	Not applicable	-
		CH_4	Not applicable	-
		N_2O	Not applicable	-

A representation of the baseline Scenario and project scenario are given as below Figure 3:

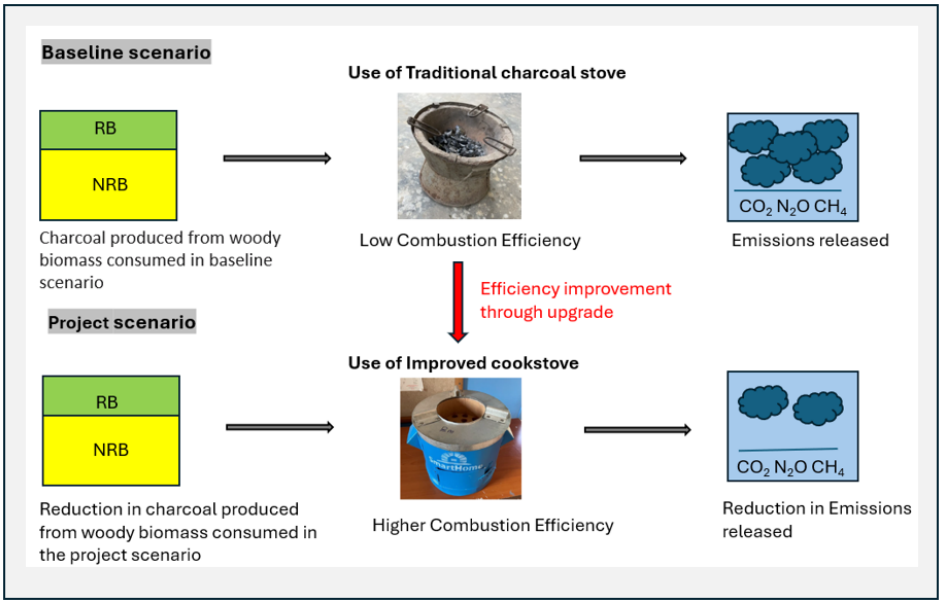

Figure 2 Baseline & Project scenario

3.4 Baseline Scenario

In line with the applied methodology, the baseline scenario is the continued use of non-renewable biomass fuel (charcoal) by the target population to meet similar thermal energy needs as provided by project cookstoves in absence of project activity.

Step 1: Identify Alternative Baseline Scenarios

The following alternative baseline scenarios have been identified based on cookstove unit type, thermal energy service, fuel type and source, and associated greenhouse gas (GHG) sources. These alternatives provide comparable thermal energy outputs for cooking to the target population:

1) Continued use of traditional cookstoves with non-renewable biomass (firewood and charcoal): This represents the predominant baseline practice, involving inefficient cookstoves that emit GHGs such as CO_2 and CH_4 from the combustion of firewood and charcoal.

2) Use of cookstoves with fossil fuels (e.g., kerosene, coal): This includes cookstoves using solid or liquid fossil fuels, emitting GHGs such as CO_2, with potential use by a small subset of households.

3) The project activity itself (distribution of improved cookstoves) without being registered as a project activity under a GHG program: This considers the adoption of improved cookstoves (ICS) without carbon finance, emitting fewer GHGs due to higher efficiency.

The baseline study conducted by Project Proponent to determine the baseline scenario at Nigeria are of three folds,

1) Baseline Assessment of Cookstove and Fuel Usage
2) Baseline KPT Survey (Charcoal)
3) Baseline WBT Survey (Charcoal Stoves)

1) Baseline Assessment of Cookstove and Fuel Usage

A comprehensive survey has been conducted by the PP to determine the baseline stove usage at Nigeria in collaboration with International Centre for Energy, Environment and Development (ICEED) in January 2022. The study focuses in capturing the as-is scenario of cooking technology deployed, cooking fuels, stove usage pattern, cooking practices, quantitative and qualitative assessment on the challenges faced with the existing cooking technology etc.

The baseline survey[21] has been conducted on 165 households spread across rural, semi-urban and urban areas in Nigeria and targeting all the key geographical areas of Nigeria, i.e, Northern Region,

[21] Baseline assessment conducted by PP submitted to the VCS VVB during prior validation stage under VMR0006 Energy Efficiency and Fuel Switch Measures in Thermal Applications, v1.2. A Baseline Reassessment is not required as per Correction 1 of "Corrections and Clarifications to VM0050 Energy Efficiency and Fuel Switch Measures in Cookstoves, V1.0", follow-up baseline surveys must be conducted at most every five years from the last survey date. As the initial baseline survey was

Southwest Region and Southeast Region. To fully understand the household cooking patterns with a view to ascertaining possible improved cookstoves interventions that can be introduced, UpEnergy has conducted the baseline assessment of households in Kano, Lagos and Ebonyi states belonging to the above-mentioned regions. The choice of region for baseline study is strategic and reflects the meeting points of the various regions across Nigeria. Kano is the converging point for all regions in Northern Nigeria, Lagos is the converging point for all of Southwest and parts of South South region, while Ebonyi is the converging point for all of South East and most parts of South South Nigeria. The sample selection of households from the identified key localities was done through a combination of stratified and random sampling. In line with the urban / rural demographic breakup of Nigeria[22], the considered 165 samples were split into 2 strata i.e., 47% sampled from urban areas, and rest 53% sampled from rural areas.

The baseline study has revealed the major dependency on solid biomass for cooking applications at both urban and rural households along with the use of inefficient cooking technologies viz., traditional charcoal stoves and three stone firewood stoves. 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%). As an outcome of the study PP envisages a high potential for saving the non-renewable biomass and the associated CO_2 emissions through distribution of fuel-efficient charcoal/firewood stoves in the project boundary.

2) Baseline KPT (Charcoal stoves)

PP has conducted Kitchen Performance Tests (KPTs) to determine the baseline fuel consumption (B_{old}) values for charcoal using households., since the project activity intent to displace inefficient / traditional charcoal stoves with improved charcoal. The sample size for baseline KPT has been determined using the "Sampling and surveys for CDM project activities and programmes of activities, Version 09.0" which adopts the Student's t-distribution method done since the parameter of interest is a numeric mean value. The sample size requirement for baseline KPTs was calculated to be 27 for the charcoal households. Hence PP has conducted KPTs for 45 households for charcoal households in-line with the CDM sampling requirement. The sample households for KPTs were picked within the 165 households those underwent baseline survey by adopting a combination of spatial distribution and random sampling approach. The results obtained from the baseline KPT study have met the reliability criteria of 95/10 for large scale project activities and the resulted B_{old} values for charcoal households and reliability calculations are given the below tables,

conducted in January, 2022, so a baseline reassessment is not needed at this point. Also, as per footnote 3 in section 2.1.3 of the "Procedure to Change Methodology through a Project Description Deviation", a baseline reassessment is not required for the project activity, which involves distribution of improved cookstoves across the project boundary.

[22] https://population.un.org/wup/Publications/Files/WUP2014-Highlights.pdf last accessed on 08/ APR /2025

Baseline Fuel	Fuel Consumption (tonnes/y/capita)	National Average HH Size	$BC_{b,l,y}$ (tonnes/y/HH)	$BC_{b,l,y}$ in Eq. fuel wood (tonnes/y/HH)
Charcoal	0.203	4.5[23]	0.91	3.64*

* Wood to charcoal conversion factor of 4 kg of firewood per kg of charcoal is used in line with the applied methodology.

Reliability Analysis for B_{old} Value RELIABILITY CALCULATIONS	Value	Unit
Sample Mean	0.203	(tonnes/y/capita)
Sample Size (valid count)	45	-
Standard Deviation	0.056	-
Standard error	0.008	-
Confidence (%) (90 or 95)	95%	
Margin of Error (%)	10%	
Z Value for 95/10 rule	1.95	
What is the precision attained?	8.10%	-
Does the result satisfy the 95/10 rule?	YES	-
Fuel consumption	Use Mean Value	-
Mean value	0.203	(tonnes/y/capita)
Higher bound	-	(tonnes/y/capita)

3) Baseline WBT Survey (Charcoal Stoves)

PP has carried out Water Boiling Tests (WBTs) to understand the thermal efficiency of charcoal stoves in Nigerian market. The tests were conducted using the Laboratory Emissions Monitoring System at the ICEED-owned Clean Cookstoves Development and Testing Laboratory in Ebonyi State, Nigeria. The sample size required for baseline WBT for charcoal stoves is determined to be 12 by adopting Student's t-distribution method in line with the "Sampling and surveys for CDM project activities and programmes of activities, Version 09.0", hence PP has conducted WBTs for 14 baseline stoves (3 tests / stove) following the requirement of WBT protocol and obtained results have met the reliability criteria of 95/10. The average thermal efficiency of the baseline charcoal stoves works out to 16.5%.

The ex-ante η_{old} value and reliability calculations are given in the subsequent tables below,

Baseline Stove	η_{old}	Source
Charcoal	16.5%	Baseline WBT survey

Reliability Analysis for η_{old} Value

[23] https://hub.arcgis.com/maps/esri::average-household-size-in-nigeria/about

RELIABILITY CALCULATIONS	Value	Unit
Sample Mean	16.5%	%
Sample Size (valid count)	14	-
Standard Deviation	0.031	-
Standard error	0.008	-
Confidence (%) (90 or 95)	95%	
Margin of Error (%)	10%	
Z Value for 95/10 rule	1.95	
What is the precision attained?	9.75%	-
Does the result satisfy the 95/10 rule?	YES	-
Fuel consumption	Use Mean Value	-
Mean value	16.5%	%
Higher bound	-	%

Step 2: Consider Existing and Forthcoming Government Policies and Legal Requirements

No mandatory legal or regulatory requirements in Nigeria were identified that would eliminate any of the alternative baseline scenarios. While policies promoting cleaner cooking technologies may exist, the continued reliance on traditional cookstoves by 30 million households in Nigeria indicates that such regulations, if present, are not systematically enforced. This is supported by National Clean Cooking Policy 2024. Therefore, all alternative scenarios remain under consideration.

Step 3: Assess Financial, Institutional, and Information Barriers

The following realistic and credible barriers, based on the project context and geographic area (Nigeria), were assessed:

- Financial Barriers: Improved cookstoves have higher upfront costs compared to traditional stoves, which are often free or low-cost. Fossil fuels like kerosene are more expensive and less affordable than locally available biomass, especially in rural areas.

- Institutional Barriers: Limited distribution networks and lack of infrastructure hinder access to improved cookstoves or alternative fuels.

- Information Barriers: Low awareness of the benefits of improved cookstoves or fossil fuel alternatives, combined with cultural preferences for traditional cooking methods, restricts adoption.

These barriers apply to:

- The project activity without registration: Adoption of ICS faces financial constraints, lack of distribution support, and limited awareness.

- Use of fossil fuels: High costs, limited availability in rural areas, and cultural preferences impede this scenario.

The continued use of traditional cookstoves with non-renewable biomass faces no significant barriers, as it reflects the established practice among the target population.

Eliminating alternatives with barriers leaves the continued use of inefficient cookstoves with non-renewable biomass (firewood and charcoal) as the remaining baseline scenario.

The project excludes households using fuels other than non-renewable biomass or fossil fuels, ensuring compliance with the methodology. The baseline reflects the inefficient stoves' low thermal efficiency, high smoke emissions, and associated environmental and health impacts, as noted in the baseline assessment.

3.5 Additionality

3.5.1 Regulatory Surplus

Is the project located in an UNFCCC Annex 1 or Non-Annex 1 country?

☐ Annex 1 country ☒ Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

☐ Yes ☒ No

If the project is located inside a Non-Annex 1 country and the project activities are mandated by a law, statute, or other regulatory framework, are such laws, statutes, or regulatory frameworks systematically enforced?

☐ Yes ☒ No

3.5.2 Additionality Methods

As defined by VM0050 section 7, the activity method is used to demonstrate additionality.

Step 1: Regulatory Surplus

Justification:

National Clean Cooking Policy 2024–2030 launched by the Government of Nigeria aims for around 80% of households in Nigeria to adopt clean cooking technologies by 2030. However, since this target is not legally mandated, there is no legal requirement to distribute improved cookstoves in the country. Therefore, the project activity qualifies as a regulatory surplus.

Participation in the project is entirely voluntary for households. It is thus confirmed that the proposed initiative is a voluntary and coordinated effort led by UpEnergy.

Step 2: Positive list

The applicability conditions of this methodology represent the positive list. The project activity must meet both of the following conditions to qualify for the positive list:

1. The project activity introduces:

   a) Efficient biomass-fired cookstoves that replace inefficient biomass-fired cookstoves;

   b) Efficient solely renewable biomass-fired cookstoves that replace fossil fuel-fired cookstoves; or

   c) Electric cookstoves that replace inefficient biomass-fired or fossil fuel-fired cookstoves.

2. The project activity installs or distributes improved cookstoves at zero cost to the end user and has no revenue source[24] other than from the sale of verified carbon units (VCUs).

As per the applied methodology the projects that pass the regulatory surplus test (Step 1) and are on the positive list (Step 2) are deemed additional and are not required to apply Step 3.

Justification (1 & 2): Although the project introduces efficient biomass-fired cookstoves that will replace inefficient biomass-fired cookstoves, the project does not provide ICS installation to households free of charge and is not included in government schemes or supported by multilateral funds. So, the project activity passes the regulatory surplus test (Step 1) but is not on the positive list (Step 2). Thus, PP has demonstrated additionality through step 3 project method as detailed below.

Step 3: Project method – Investment Analysis "Tool VT0008 Additionality Assessment[25]

VM0050 requires to conduct an investment analysis to "Determine whether the proposed project activity is:

(a) less financially attractive; or

(b) not economically or financially feasible, without the revenue from the sale of verified emission reductions (VCUs)."

PP selects Investment Analysis to demonstrate additionality under Step 3, as per the most recent version of VT0008.

Since the project activity for commercial approach generates revenues other than VCU sales related income, PP has selected "Option 1: Investment Comparison Analysis" as an investment analysis type as

[24] Including revenues from selling of firewood, charcoal, LPG, bioethanol, or any relationship with fuel providers

[25] https://verra.org/wp-content/uploads/2024/10/VT0008-Additionality-Assessment-v1.0.pdf

per VT0008 to demonstrate that the project activity is less financially attractive in the absence of carbon credits.

Investment Comparison Analysis

1. Identify a financial indicator, such as internal rate of return (IRR), net present value (NPV), cost-benefit ratio, or levelized cost, suitable for the project type and decision-making context.
2. Calculate the financial indicator for all alternative scenarios.
3. Present a clear comparison of the financial indicator for all alternative scenarios and rank the alternative scenarios according to the financial indicator.
4. Demonstrate that the project activity would not be the most economically attractive scenario in the absence of carbon credit revenues.
5. Conduct a sensitivity analysis to demonstrate that the condition in (4) is met under reasonable variations in the critical assumptions.

The ICS in the project instances have been distributed at a subsidized price therefore the project proponent has adopted "Project method" to demonstrate additionality of the project. In line with the methodology requirement, the project proponent has applied investment analysis method set out in the CDM Tool for the Demonstration and Assessment of Additionality ("Tool for demonstration and assessment of additionality" Version-7.0.0) to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible.

The below table summarizes the key financial parameters and indicators followed by a detailed NPV analysis for evaluation of project feasibility

Project Revenue and Costs: Over 7-year period.

Date of Investment Decision: 15th April 2022

Project Costs	**USD $**
Stove manufacturing cost	8,582,436
Implementation cost	4,018,154
Cost on account of defective stove/breakdown	742,603
Costs involving software/database maintenance	13,947,906
Overhead costs	16,502,287
Project Management	3,800,000
Total costs	**47,593,386**
Project Revenue	
ICS Distribution Revenue	2,690,000

Total Revenue	**2,690,000**
Discounted cash flow	
Discounted Project Cost	(22,904,397)
Discounted annual revenue	1,801,852
Net Present value eexcluding VCUs Revenue (USD)	**(-) 21,102,545)[26]**

Key considerations

1) Project ICS are planned to be distributed at a subsidized price up to $5 to promote clean cooking technology at Nigerian Households; the initial pilot distribution (about 5% of the projected ICS volume) has been planned to be distributed at $12.6
2) Discount rate is considered as 20% adopted as per the company level benchmark
3) Inflation rate (18.8%) is sourced from the data provided by International Monetary Funds
4) Other operational costs / overheads are considered based on project's financial feasibility report & relevant management assumptions and are in-line with the actual company financial reports and also vetted by independent financial auditor.

A sensitivity analysis has also been carried out to understand and analyze the variations in the NPV with respect to the select key financial parameters viz. Cost of Manufacturing, ICS Distribution Cost and Inflation rate. These key financial parameters are selected for the sensitivity analysis considering the dynamics involved in market situation and economic conditions at the project location.

The key outcome of the sensitivity analysis is tabulated below,

	Project NPV in $		
Parameter / Variation	**10%**	**0%**	**-10%**
Manufacturing Cost	(21,688,127)	(21,102,545)	(20,516,963)
Inflation Rate	(21,997,188)	(21,102,545)	(20,248,749)
ICS Distribution Cost[27]	(21,817,003)	(21,102,545)	(22,177,373)

[26] PP has made a corollary approach (Additionality Model-Naira v1.0) for evaluating the additionality in the local currency Naira in order to avoid the uncertainties due to FOREX rates and also hypothetically removing the global cost components (project management, software development and data management costs), since these costs are denominated in USD. The additionality model in local currency also resulted in negative NPV, thus demonstrating project's additionality in both USD & Local Currency.

[27] ICS distribution cost in the sensitivity analysis has been considered as weighted average of pilot and full-scale distribution i.e., $5 & $12.6

As can been seen in the above table, the Project NPV is found to be negative in all iterations with respect to +/- 10% variations in the key financial parameters. This proves the project is additional in all scenarios and strongly indicates that the carbon revenue is vital for sustenance of the project

For the present project instances, additionality is demonstrated through the investment barrier. As described, the assessment of additionality of project instance implemented under the project activity is deemed to be additional if it can establish that it is financially unviable. This shall be done by providing an analysis that the Net Present Value (NPV) of investments made by the project instance implementer is negative. As evidenced by the accompanying cashflow analysis, The NPV for this project is projected to be (-) $21,102,545 without VCU revenue. This is because the cost of manufacturing, shipping and distribution of the product exceeds the cost of sale, so the gross margin for the product is negative without carbon finance. Hence, the project faces investment barrier and is considered to be additional.

Step 4: Common Practice Analysis

PP has followed the steps provided in VT0008 tool to demonstrate the Common Practice Analysis for the project activity.

Step 4a: Determining Procedure for Common Practice Analysis

The project activity belongs to category 2) Switch of technology with or without change in energy source (e.g., energy efficiency improvements, power generation based on renewable energy), hence PP applies Step 4b for the common practice analysis.

Step 4b: Common Practice Analysis for Measure Listed in Step 4a

1) The intended ICS distribution target at the time of project listing with the VCS is 500,000 units, so the +/- 50% range of projects selected for the analysis is 250,000 to 637,500 units.

2) None of the projects identified met all the criteria as mentioned in Step 5.5.2 (2) of the VT0008 tool as of the project's start date, resulting in no similar projects identified. Please refer to the Common Practice Analysis Tool submitted for reference.

3) N_{all} represents the number of similar projects not registered, submitted for registration, or undergoing validation under the VCS program based on the above listed projects. Only a single similar project was identified, $N_{all} = 1$.

4) N_{diff} represents the number of projects in N_{all} that differ by energy source, feedstock, investment climate, or other features. As $N_{all} = 1$, $N_{diff} = 0$.

5) Based on the above points, Factor F is calculated as follows:

   $F = (1 - N_{diff} / N_{all})$

   With $N_{diff} = 0$ and $N_{all} = 1$, $F = 1$ (or 100%).

The proposed project activity resulting to factor F is greater than 20% and $N_{all} - N_{diff}$ is greater than 3.. hence the proposed project activity is not a common practice as per the tool.

Additionality conclusion

The investment analysis was conducted with conservative hypothesis and clearly showed impracticability from an economical and financial point of view. Furthermore, the proposed project activity is not a common practice as determined above based on the recent version of tool VT0008. It is therefore concluded that the project activities are additional.

3.6 Methodology Deviations

PP has updated the applied methodology for this project activity from the "VMR0006: Methodology for installation of high efficiency firewood cookstove; Version: 1.1" to "VM0050: Energy Efficiency and Fuel-Switch Measures in Cookstoves, v1.0[28]". PP has followed the procedures for the methodology change in line with the "Procedure to Change Methodology through a Project Description Deviation, version 4.0".

4 QUANTIFICATION OF ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

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Baseline emissions are calculated by applying equations 1 and 2 as per the methodology:

$$BE_y = \sum_{i,j,k} EC_{i,y} \times N_{j,k,y} \times n_{j,k,y} \times (EF_{b,i,CO2} \times f_{NRB,y} + EF_{b,i,nonCO2}) \quad (1)$$

Where:

BE_y = Baseline emissions during year y (tCO_2e)

$EC_{i,y}$ = Average energy consumption of baseline device type i in year y (TJ)

$N_{j,k,y}$ = Number of commissioned project devices of type j from batch k in year y

[28] https://verra.org/wp-content/uploads/2024/10/VM0050-EE-and-Fuel-Switch-Measures-in-Cookstoves-v1.0.pdf (last accessed on 10-MAR-2025)

$n_{j,k,y}$ = Proportion of commissioned project devices of type j from batch k that remain operating in year y (fraction)

$EF_{b,i,CO2}$ = CO_2 emission factor for fuel used by baseline device type i in the baseline scenario (t CO_2/TJ)

$f_{NRB,y}$ = Fraction of woody biomass that is established to be non-renewable used by baseline device in year y; this variable is not considered for fossil fuels (fraction)

$EF_{b,i,nonCO2}$ = Non-CO_2 emission factor for fuel used by baseline device type i in the baseline scenario (t CO_2e/TJ)

i = Baseline device type and its respective fuel type

j = Project device type and its respective fuel type

Average Energy Consumption of Baseline Device (ECi,y)

The average energy consumption of baseline device type i is calculated as follows:[29]

$EC_{i,y}$ = $BC_{b,i,y} \times NCV_{b,i}$ (2)

Where:

$BC_{b,i,y}$ = Fuel used per baseline device type i during year y (tonnes)[30]

$NCV_{b,i}$ = Net calorific value of baseline fuel for baseline device type i (TJ/tonne)

The quantity of fuel that would be used in the baseline scenario will be determined by using Option 1: Measurement campaign based on Kitchen Performance Tests, as specified in section 8.1.1 of the applied methodology.

Cross-check of $EC_{i,y}$ to address stove stacking

The stove stacking (continued use of pre-project devices in project households) shall be addressed by the project developer by comparing the quantity of baseline energy consumption determined by both options above ($EC_{i,y}$) to energy used in the project scenario ($EC_{p,y}$) using back-calculation. Where the results indicate that baseline consumption ($EC_{i,y}$) is higher than that

[29] Where charcoal is used as the fuel by baseline and/or project devices, the average energy consumption (derived from the average quantity of charcoal fuel used) in the baseline and/or project scenario may be determined by using a wood to charcoal conversion factor (CF) instead of the fuel emission factor.

[30] This parameter corresponds to $BC_{ex\text{-}ante,b,i}$ for the first five years and where the follow-up baseline survey campaign shows that there are no significant changes in baseline fuel consumption. Otherwise, it corresponds to $BC_{b,i,y}$.

indicated by back calculation from the project scenario ($EC_{est,y}$) then stove stacking is occurring (as $EC_{p,y}$ is unable to completely capture household energy consumption from cooking due to the presence/use of pre-project devices). The back-calculation results ($EC_{est,y}$) must be applied in Equation (1) as a conservative cap, except where project devices are electric cooking devices with efficiency of 70% or higher.

$$EC_{est,y} = EC_{p,y} \times \frac{\eta_{new,avg,y}}{\eta_{old,avg}} \quad (3)$$

Where:

$EC_{est,y}$ = Back-calculated energy consumption of the potential mix of devices and fuels in the baseline in year y (TJ)

$EC_{p,y}$ = Energy used in project scenario by project devices during year y (TJ)

$\eta_{new,avg,y}$ = Weighted average efficiency of project devices in year y (fraction)

$\eta_{old,avg}$ = Weighted average efficiency of baseline devices that are replaced by project devices (fraction)

$EC_{p,y}$ must be determined as follows, using the parameters determined as per Section 4.2 of this document.

$$EC_{p,y} = \sum_{j,k} BC_{p,j,k,y} \times NCV_{p,j} \quad (4)$$

Where:

$BC_{p,j,k,y}$ = Average quantity of fuel used by project device type j from batch k during year y (tonnes or m^3)

NCVp,j = Net calorific value of project fuel used in project device type j (TJ/tonne or TJ/m^3)

4.2 Project Emissions

Project emissions are calculated as follows:

$$PE_y = PE_{energy,y} + PE_{others,y} \quad (5)$$

Where:

PE_y = Project emissions during year y (t CO_2e)

$PE_{energy,y}$ = Project emissions from energy consumption of project devices in year y (t CO_2e)

$PE_{others,y}$ = Project emissions from other sources in year y (t CO_2e)

$PE_{energy,y}$ from Biomass, Fossil Fuels, or Bioethanol

Project emissions from energy consumption of project devices using biomass, in year y are calculated as follows:

$$PE_{energy,y} = \sum_j \sum_k BC_{p,j,k,y} \times N_{j,k,y} \times NCV_{p,j} \times n_{j,k,y} \times (EF_{p,j,CO2} \times f_{NRB,y} + EF_{p,j,nonCO2}) \quad (6)$$

Where:

$EF_{p,j,CO2}$ = CO_2 emission factor for fuel used by project device type j in the project scenario (t CO_2/TJ)

$EF_{p,j,nonCO2}$ = Non-CO_2 emission factor for fuel used by project device type j (t CO_2e/TJ)

$BC_{p,j,k,y}$ for Project Devices

Option 1: Kitchen Performance Test

A measurement campaign following the Kitchen Performance Test Protocol shall be designed, carried out, and analyzed in compliance with the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities. The campaign must achieve a confidence and precision of 95/10 for the target parameter of average daily fuel consumption per adult equivalent. Only the results for project stove fuel consumption are used to calculate project emissions. The result shall be scaled appropriately using the average household size ($Hh_{j,k}$) to obtain the value of $BC_{p,j,k,y}$. Where the project does not achieve the target precision in a monitoring period, the project proponent must apply an appropriate conservativeness deduction as per the most recent version of CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.

4.3 Leakage Emissions

Leakage emissions associated with reduced or avoided use of non-renewable biomass:

a) Use of non-renewable biomass by other users and other types of GHG reversals[31]

b) Reuse outside the project boundaries of baseline devices that were replaced by project devices

An adjustment factor of 0.95 is applied to the GHG emission reductions in Equation (7) of this document (i.e., 0.95 × (BE_y − PE_y)).

[31] Other non-permanence risks, such as fires

This project activity involves distribution of high efficiency improved cookstoves for thermal application, which will replace inefficient traditional charcoal cookstove leading to saving of non-renewable biomass. So, option 1 applies for this project activity, thereby applying an adjustment factor of 0.95 to the GHG emission reductions in Equation (7) below.

4.4 Estimated GHG Emission Reductions and Carbon Dioxide Removals

The net reduction in GHG emissions is calculated based on the absolute emissions in baseline and project scenario along with the applicable leakage rate.

Net GHG emission reductions are calculated as follows:

$ER_y = (BE_y - PE_y) \times 0.95 - LE_{RB,Y}$ (7)

Where:

ER_y = Emission reductions during year y (t CO_2e)

$LE_{RB,y}$ = Leakage emissions associated with use of renewable biomass during year y (t CO_2e)

$LE_{RB,y}$ = 0 for this project activity, since this project focusses on distribution of improved cookstoves within the project boundary, which will replace inefficient traditional charcoal stoves in the Nigerian households.

Emission reduction calculation for year 2022:

Baseline Emissions

$BC_{b,i,y}$ = 5.46 tonnes wood eq/year/HH

$EC_{i,y}$ = $BC_{b,i,y} \times NCV_{b,i}$

$EC_{i,y}$ = 3.64 * 0.0156

= 0.0568 TJ/year/HH

Project Emissions

$BC_{p,j,k,y}$ = 1.638 tonnes wood eq/year/HH

$n_{j,k,y}$ = 0.90

PEothers,y = 0 (Since there is no other project emissions associated with this project activity)

PE_y = $PE_{energy,y} + PE_{others,y}$

PE_y = $\sum_{i,j,k} BC_{p,j,k,y} \times N_{j,k,y} \times NCV_{p,j} \times n_{j,k,y} \times (EF_{p,j,CO2} \times f_{NRB,y} + EF_{p,j,nonCO2})$

PE_y = 1.638 * 75,000 * 0.0156* 0.90 * (112 * 0.38 + 9.46) *0.33 (year equivalent fraction)

= 29,376 tCO_2e

Cross-check of $EC_{l,y}$ to address stove stacking

BCp,j,k,y = 1.638 tonnes wood eq/year/HH

$\boldsymbol{EC_{p,y}}$ = $\sum_{j,k} BC_{p,j,k,y} \times NCV_{p,j}$

ECp,y = 1.638 * 0.0156

= 0.0256 TJ/year/HH

ηnew,avg,y = 37.9%

ηold,avg = 16.5%

$\boldsymbol{EC_{est,y}}$ = $EC_{p,y} \times \frac{\eta_{new,avg,y}}{\eta_{old,avg}}$

ECest,y = $0.0256 \times \frac{37.90\%}{16.50\%}$

ECest,y = 0.0587 TJ/year/HH

Since Eci,y is greater than ECest,y, the applicable value for Eci,y in the equation (1) is 0.0852 TJ/year/HH.

BE_y = $\sum_{i,j,k} EC_{i,y} \times N_{j,k,y} \times n_{j,k,y} \times (EF_{b,i,CO2} \times f_{NRB,y} + EF_{b,i,nonCO2})$

BE_y = 0.0568 *75,000 * 0.90 * (112 * 0.38 + 9.46) * 0.33 (Year equivalent fraction)

= 65,279 tCO_2e

Emission Reduction

ERy = (65,279 – 29,376) * 0.95

= 34,108 tCO_2e (Round down values)

Vintage period	Estimated baseline emissions (tCO_2e)	Estimated project emissions (tCO_2e)	Estimated leakage emissions [32](tCO_2e)	Estimated reduction VCUs (tCO_2e)	Estimated removal VCUs (tCO_2e)	Estimated total VCUs (tCO_2e)[33]
07-May-2022 to 31-December-2022	65,279	29,376	*0*	29,376	*0*	34,108
01-January-2023 to 31-December-2023	432,008	194,404	*0*	194,404	*0*	225,724

[32] The leakage emissions are directly accounted in the net emission reduction calculation considering a factor of 0.95 in line with applied methodology

[33] The estimated total VCUs has been separately determined for CCP compliance scenario in Ex-Ante ER Sheet v3.0

01-January-2024 to 31-December-2024	996,942	448,624	*0*	448,624	*0*	520,902
01-January-2025 to 31-December-2025	1,329,257	598,165	*0*	598,165	*0*	694,537
01-January-2026 to 31-December-2026	1,329,257	598,165	*0*	598,165	*0*	694,537
01-January-2027 to 31-December-2027	1,329,257	598,165	*0*	598,165	*0*	694,537
01-January-2028 to 31-December-2028	1,329,257	598,165	*0*	598,165	*0*	694,537
1-January-2029 to 6-Mayl-2029	458,867	206,490	*0*	206,490	*0*	239,758
Total	**7,270,123**	**3,271,556**	*0*	**3,271,556**	*0*	**3,798,640**

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	$BC_{ex\text{-}ante,b,j}$
Data unit	Tonnes
Description	Ex-ante annual average quantity of fuel used per baseline device type i
Source of data	Calculated through Baseline survey assessment (conducted in November 2021) & KPTs (conducted in February 2022)
Description of measurement methods and procedures applied	The KPTs have been used to calculate this value, as per the KPT protocol under typical household and stove usage conditions, thereby capturing the typical HH fuel consumption.

	KPTs are done for 3 consecutive normal days (as in no weekend, festivals, gatherings, etc), thereby representing the typical / normal cooking pattern. For the Baseline KPTs, 45 Households which used charcoal has been selected from the different districts of Nigeria. The No of KPTs Samples is in line with CDM Standard "Sampling and surveys for CDM project activities and programmes of activities" Version 9.0 . The Sampling approach adopted by the PP has met the reliability requirement of 95/10 as per the CDM Standard "Sampling and surveys for CDM project activities and programmes of activities" Version 9.0
Value applied	Option1 as per the methodology has been used to estimate this parameter. Charcoal – 0.91 tonnes/year/HH Further the ex-ante annual average quantity of fuel used per baseline device type has been derived based on "CF" value of "4" in line with the applied methodology and also for the VCU issuance with CCP compliance. Hence this translates to the baseline consumption in terms of fuelwood equivalent as, $BC_{ex\text{-}ante,b,j}$ – 3.64 tonnes
Justification of choice of data or description of measurement methods and procedures applied	The KPTs have been used to calculate this value, as per the KPT protocol[34] under typical household and stove usage conditions, thereby capturing the typical HH fuel consumption. KPTs are done for 3 consecutive normal days (as in no weekend, festivals, gatherings, etc), thereby representing the typical / normal cooking pattern. For the Baseline KPTs, 45 Households which used charcoal has been selected from the different districts of Nigeria. The No of KPTs Samples is in line with CDM Standard "Sampling and surveys for CDM project activities and programmes of activities" Version 9.0[35]. The Sampling approach adopted by the PP has met the reliability requirement of 95/10 as per the CDM Standard "Sampling and surveys for CDM project activities and programmes of activities" Version 9.0.
Purpose of data	Calculation of baseline emissions

[34] https://cleancookstoves.org/binary-data/DOCUMENT/file/000/000/604-1.pdf (last accessed on 11-APR-2025)

[35] https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20210531160756223/Meth_Stan05.pdf (last accessed on 11-APR-2025)

Comments	Parameter $BC_{ex\text{-}ante,b,j}$ once determined shall remain fixed ex-ante for the entire crediting period. Follow-up baseline surveys will be conducted at most every five years from the date of the last survey in control households that do not participate in the project. This has been determined in line with the Correction 1 provided in the "Correction and Clarifications to VM0050 Energy Efficiency and Fuel Switch Measures in Cookstoves, v1.0[36], Where charcoal is used by baseline devices, a default wood to charcoal conversion factor "CF" of 4 Kg of firewood per kg of charcoal will be used. The baseline KPT conducted is in accordance with the KPT Protocol.

Data / Parameter	$f_{NRB,y}$
Data unit	Fraction
Description	Fraction of woody biomass that is established to be non-renewable used by baseline device in year y
Source of data	One of the following sources shall be used: 1) The most recent national default value(s) published by UNFCCC 3) Default value of the most recent version of CDM TOOL33
Value applied	Option 3: 0.38 (in compliance with CPP labelling)
Justification of choice of data or description of measurement methods and procedures applied	This parameter is fixed ex-ante.
Purpose of data	Calculation of baseline and project emissions
Comments	Equation (1) and (6)

Data / Parameter	EFb,i,CO_2 EFp,j,CO_2
Data unit	t CO_2/TJ
Description	CO_2 emission factor for fuel used by baseline device type i in the baseline scenario

[36] https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf

	CO_2 emission factor for fuel used by project device type j in the project scenario
Source of data	The following data sources may be used, listed in descending order of preference: • Option 1: Project-specific value • Option 2: Regional or national default values • Option 3: Default value from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	112
Justification of choice of data or description of measurement methods and procedures applied	IPCC Default Value PP may use emission factors based on charcoal during later stage of project.
Purpose of data	Calculation of baseline and project emissions
Comments	For ex-ante estimation, default values from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories has been used. Equation (1) and (6)

Data / Parameter	$EF_{b,i,nonCO2}$ $EF_{p,j,nonCO2}$
Data unit	t CO_2e/TJ
Description	Non-CO_2 emission factor for fuel used by baseline device type i in the baseline scenario Non-CO_2 emission factor for fuel used by project device type j in the project scenario
Source of data	The following data sources may be used, listed in descending order of preference: • Option 1: Project-specific value • Option 2: Regional or national default values • Option 3: Default value from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	For ex-ante estimation, default values from the most recent version of the IPCC Guidelines for National Greenhouse Gas

	Inventories has been used. 9.46
Justification of choice of data or description of measurement methods and procedures applied	IPCC Default Value PP may use emission factors based on charcoal during later stage of project.
Purpose of data	Calculation of baseline and project emissions
Comments	Equation (1) and (6)

Data / Parameter	CF
Data unit	Unitless
Description	Wood-to-charcoal conversion factor
Source of data	CDM TOOL33 Methodological tool Default values for common parameters Version 03.0
Value applied	4 tonnes of dry wood input per tonne of charcoal output
Justification of choice of data or description of measurement methods and procedures applied	• The methodology default CF value of 4 has been applied in compliance with CCP labelling requirements[37].
Purpose of data	Calculation of baseline and project emissions
Comments	Equation (1) and (6)

Data / Parameter	$NCV_{b,I}$ $NCV_{p,j}$
Data unit	TJ/tonne
Description	Net calorific value of baseline fuel for baseline device type i Net calorific value of project fuel for project device type j

[37] https://verra.org/wp-content/uploads/2024/12/CCP-Label-Guidance-Document-v1.1-Final.pdf (last accessed on 14/JAN/2026)

Source of data	Use of default values from the most recent version of the IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	0.0156
Justification of choice of data or description of measurement methods and procedures applied	IPCC Default value
Purpose of data	Calculation of baseline and project emissions
Comments	Equations (2), (4) and (6)

Data / Parameter	$\eta_{old,avg}$
Data unit	Fraction
Description	Weighted average efficiency of baseline devices that are replaced by project devices
Source of data	Calculated based on Baseline Water Boiling Test (conducted in December 2021)
Value applied	0.165
Justification of choice of data or description of measurement methods and procedures applied	Water Boiling Test surveys in compliance with the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities;
Purpose of data	Calculation of baseline emissions
Comments	The Baseline WBTs have been conducted to determine the parameter, and the same will be shared with the VVB. Equation (3)

Data / Parameter	Hhi
Data unit	Equivalent standard male adults
Description	Average household size of the target population using device type i
Source of data	Baseline survey (conducted in November 2021)

Value applied	4.64
Justification of choice of data or description of measurement methods and procedures applied	This parameter has been determined ex ante via the baseline survey in based on the adult equivalent method in line with the Clarification 6 provided in the "Correction and Clarifications to VM0050 Energy Efficiency and Fuel Switch Measures in Cookstoves, v1.0[38]
Purpose of data	Estimation of average energy consumption when applying Option 1: Measurement campaign
Comments	Equations - Input to ECi,y, BCb,i,y, and BCp,j,k,y

Gender and age	Fraction of standard adult
Child 0–14 years	0.5
Female over 14 years	0.8
Male 15–59 years	1.0
Male over 59 years	0.8

5.2 Data and Parameters Monitored

Data / Parameter	$N_{j,k,y}$
Data unit	Number
Description	Number of commissioned project devices of type j from batch k in year Y
Source of data	Sales Database
Description of measurement methods and procedures to be applied	-
Frequency of monitoring/recording	Continuous
Value applied	ICS distribution during 1st Crediting period:

[38] https://verra.org/wp-content/uploads/2025/02/CC_VM0050_v1.0_Feb2025.pdf, last accessed on 08- APR -2025

	Year 1	75,000
	Year 2	175,000
	Year 3	250,000
	Year 4	0
	Year 5	0
	Year 6	0
	Year 7	0
	Total	**5,00,000**[39]
Monitoring equipment	Distribution Records	
QA/QC procedures to be applied	N/A	
Purpose of data	Calculation of baseline and project emissions	
Calculation method	N/A	
Comments	The number of project devices must be recorded in a database, distribution record, or similar to ensure transparency. Equation (1) and (6)	

Data / Parameter	$n_{j,k,y}$
Data unit	Fraction
Description	Proportion of commissioned project devices of type j from batch k that are still being used regularly in year y
Source of data	Monitoring survey
Description of measurement methods and procedures to be applied	For ex-ante estimation, option 2 (surveys) will be applied to determine this parameter. Sampling standard will be used for determining the sample size to achieve 95/10 confidence precision, according to the latest version of CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.

[39] The PP has not planned any distributions after the 3rd year

	According to Clarification 2 of VM0050 v1.0 Corrections and Clarifications, for our project utilizing surveys, the usage rate is capped at 90% and all of the following customer support actions shall be implemented as outlined below: 1. The proposed project activity promotes ICS as a practical and culturally accepted solution to replace traditional stoves. The stove "Smart Home Pro" model have been shown through field research and pilot studies to significantly reduce charcoal consumption, lower cooking times, and improve household air quality. With features like insulated combustion chambers and better airflow control, they meet the cooking needs of Nigerian families preparing staples. User feedback from various on-field activities indicates strong acceptance and willingness to continue use, citing cost savings and ease of use. Locally manufactured and widely available, these stoves not only support health and environmental goals by reducing emissions and deforestation but also create local jobs and align with Nigeria's climate commitments. 2. The project has established a toll-free communication channel, enabling the target population in accessing assistance for their Improved Cookstoves (ICS). A dedicated toll-free number has been established and widely communicated to households, enabling them to contact the project proponent for maintenance, repair services, and other support needs. This channel is operational and accessible in local languages, ensuring effective communication and ongoing support throughout the project duration
Frequency of monitoring/recording	Option 1 (SUMs): Continuous Option 2 (surveys): Annually
Value applied	For ex-ante estimation, the value of 0.9[40] has been applied in line with the methodology cap as per Option 2 (usage).
Monitoring equipment	Option 1 (SUMs): Stove Use Monitors will be adopted. Option 2 (surveys): Not applicable as the usage rate has been determined through monitoring survey
QA/QC procedures to be applied	Thorough data analysis and Compliance with the Standard for sampling and surveys for project activities and programme of activities.
Purpose of data	Calculation of baseline and project emissions

[40] An estimated 0.25% year-over-year (YoY) decrease in usage is assumed.

Calculation method	-
Comments	Equation (1) and (6)

Data / Parameter	$BC_{b,i,y}$
Data unit	Tonnes
Description	Fuel used per baseline device type i during year y[41]
Source of data	Option1 as per the methodology (using Kitchen Performance Test) will be used to estimate this parameter. (conducted in February 2022)
Description of measurement methods and procedures to be applied	Option 1: Follow-up baseline surveys will be conducted every five years in control households that do not participate in the project, established prior to validation as statistically equivalent to the pre project conditions of project households regarding baseline fuel consumption. Sampling will be carried out in compliance with the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.
Frequency of monitoring/recording	Every five years
Value applied	For ex-ante estimation, this parameter corresponds to the value of For ex-ante estimation, this parameter corresponds to the consumption value of Charcoal – 0.91 tonnes/year/HH Further the annual average quantity of fuel used per baseline device type has been derived based on “CF” value of “4” in line with the methodology default and also for the VCU issuance with CCP compliance. Hence this translates to the baseline consumption in terms of fuelwood equivalent as, $BC_{ex\text{-}ante,b,j}$ – 3.64 tonnes
Monitoring equipment	-
QA/QC procedures to be applied	The campaign shall achieve a confidence and precision of at least 90/10 for the target parameter of average daily fuel consumption per adult equivalent. Where the project does not achieve the target precision in a monitoring period, the project proponent

[41] This parameter corresponds to BCex-ante,b,i for the first five years and where the follow-up baseline survey campaign shows that there are no significant changes in baseline fuel consumption. Otherwise, it corresponds to BCb,i,y.

	must apply an appropriate conservativeness deduction as per Section 4 of the most recent version of the CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.
Purpose of data	Calculation of baseline emissions
Calculation method	-
Comments	For all sampled parameters where the 90/10 precision level is suggested by the VM0050 methodology, however a 95/10 precision level will be applied in accordance with the CDM guidelines for large-scale projects. Equation (2) In line with the methodology requirements for establishing control households, PP confirms that all the 45 households assessed during the validated baseline surveys have been designated as the control group. The follow-up baseline surveys shall be conducted in these control households every five years. These baseline households are appropriate to be considered as the control group, as they were non-participant households at the time of the survey (i.e., they had not received project ICS). Moreover, these are already validated baseline survey records and fully complies with requirements stated in section 6 of VM0050 v1.0, including all the requisite details as per the binding questionnaire of VM0050 v1.0. This is also further explained in point 1 above. To minimize the risk of control households receiving project stoves, the PP shall exclude these households from project distribution campaigns. However, PP cannot withhold their right to access clean energy stoves. If some control households independently acquire an improved stove - whether from this project or another initiative, that will get captured during the following baseline reassessment campaign. Also, if certain households become untraceable or relocate at the time of baseline reassessment, new control households may be added to the control group as needed, to make the baseline reassessment statistically valid and representative. Alternatively, baseline reassessment shall be carried out only on the available and traceable control households that provide consent to participate.

Data / Parameter	$\eta_{new,avg,y}$

Data unit	Fraction
Description	Weighted average efficiency of project devices in year y
Source of data	Monitoring
Description of measurement methods and procedures to be applied	For the project activity, efficiency of the device will be monitored using option 1, i.e., conducting water boiling test (WBT) annually with each monitoring period. Sampling standard will be used for determining the sample size of Water Boiling Test campaigns to achieve 95/10 confidence precision, according to the latest version of CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities.
Frequency of monitoring/recording	Annually
Value applied	For ex-ante calculation, the value of 37.90%, which is as per the manufacturer technical specifications has been applied.
Monitoring equipment	-
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of baseline and project emissions
Calculation method	WBT tests will be conducted as per the latest available WBT Protocol.
Comments	Equation (3)

Data / Parameter	$BC_{p,j,k,y}$
Data unit	Tonnes
Description	Average quantity of fuel used by project device type j from batch k during year y
Source of data	Monitoring survey & KPT Assessment
Description of measurement methods	Option 1, i.e., Kitchen Performance Test (KPT) will be used to determine the average quantity of fuel used by project device.

and procedures to be applied	Sampling standard will be used, following the Kitchen Performance Test Protocol, for determining the sample size to achieve 95/10 confidence precision, according to the latest version of CDM Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities. The sampling calculation will achieve a confidence and precision of 95/10 for the target parameter. The value will be scaled appropriately using the average household size to obtain the value of BCp,j,k,y.
Frequency of monitoring/recording	Biennial
Value applied	For ex-ante estimation, following value has been used: 1.638
Monitoring equipment	N/A
QA/QC procedures to be applied	-
Purpose of data	Calculation of baseline and project emissions
Calculation method	The average quantity of fuel used by project device type j from batch k during year y is calculated as per the below method, $BC_{p,j,k,y} = BC_{p,j,k,y} * (H_{hi} * H_{hj,k})$ Where, $BC_{p,j,k,y}$ determined based on KPT in project scenario H_{hi} determined based on KPT in baseline scenario $H_{hj,k}$ determined based on KPT in project scenario
Comments	The kitchen performance test (KPT) will be used to calculate this value, as per the KPT protocol under typical household and stove usage conditions, thereby capturing the typical HH fuel consumption. KPTs are done for 3 consecutive normal days (as in no weekend, festivals, gatherings, etc), thereby representing the typical / normal cooking pattern. The value is calculated as given below: Equation (4) and (6)

5.3 Monitoring Plan

The methods used for generating/measuring, recording, storing, aggregating, collating and reporting data and parameters set out in the above section 5.2 are detailed here:

1. **Total Distribution Record:** The total distribution record documents the information as listed below for the technologies implemented. A carbon waiver including a warranty card will be distributed with each stove distributed. PP shall be having two copies of the warranty card cum carbon waiver receipt, while one of the copies shall be handed over to the End User and the other copy is kept in the records of CME either in physical and electronic format. Further from 2023 onwards CME has moved the distribution process completely digital and the carbon waiver and warranty shall be recorded digitally rather than in physical format. Also, physical copy of warranty card cum carbon waiver receipt will be handover to End User for their reference. The total distribution record will be kept electronically and with supporting evidence from paper records and/or electronic records and will be provided to the VVB at verification.

   The Total Distribution Record contains:

   a) Project / Project Instance ID

   b) Unique identification of stove using stove serial number

   c) Address, GPS coordinates and telephone (as available)

   d) Date of distribution and model/type of project technology distributed

   e) Cooking technology and fuel used in baseline scenario

   f) Quantity of project technology distributed as evidenced by invoices

   Frequency: Ongoing

2) **Project Database:** Each project will have a specific Project Database that records each ICS crediting in that project instance. Every ICS listed in the Total Distribution Record will be transferred into the Project Database of the respective project instance as needed to expand the number of ICS deployed, until the maximum threshold for the project instance is reached. In addition to the information provided in the Total Distribution Record, the project instance specific Project Database will record user details (enough for end-user identification and follow-up) for all, or a subset of all, appliances deployed.

   End-user details recorded are:

   a) Name

   b) Telephone, or address (as available)

c) Type of stove (stove model & serial number) and fuel the ICS is replacing: Example – traditional or improved baseline stoves, or wood or charcoal fuel.

3) **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 was 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. Proportion of commissioned project devices of type j from batch k that are still being used regularly in year y ($\mathbf{n_{j,k,y}}$)
2. Average quantity of fuel used by project device type j from batch k during year y ($\mathbf{BC_{p,j,k,y}}$)
3. Weighted average efficiency of project devices in year y ($\mathbf{\eta_{new,avg,y}}$)

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 ($\eta_{new,avg,y}$), Average quantity of fuel ($\mathbf{BC_{p,j,k,y}}$)and proportion of operational stoves ($\mathbf{n_{j,k,y}}$), the ICS population will be stratified based on the stove models and vintage, which are part of the project. It is expected that the geographical locations do not have influence on the parameters of interest that are $n_{j,k,y,}$ $BC_{p,j,k,y}$ and $\eta_{new,avg,y}$. Therefore, these parameters can be assumed to be homogeneous regardless of how the end user group and distribution/installation location is defined since the end users shall always be households and geographical location is restricted to the project boundary. Since all stoves are of the same type, all stoves can be grouped into a homogeneous sampling frame.

Sampling Method: The sampling was conducted using stratified random sampling technique over the aforesaid sampling frames created. The ICS population in each stratum was arranged by date of distribution, assigning them a sampling serial number. Random numbers were 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, were picked for sampling. This approach ensured that each ICS listed in the database has an equal chance of being selected. A slightly higher number of samples were picked than that needed to be monitored to cover for non-responses.

Sampling Size: The required sample sizes were derived using equation (1), (2), (3), (4) and (9) of Appendix 3 of the Guideline: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0 for monitoring parameter as follows:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where:

n = number of ICS to be sampled

N = Total number of ICS in the population

z = Constant referring to level of confidence (1.95 for 95% confidence)

Precision = Required precision (e.g., 10% = 0.1)

$$V = \frac{SD^2}{\bar{p}^2}$$

Where (for proportion parameters):

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * p_i * (1 - p_i)}{N}$$

$$\bar{p} = \frac{\sum_{i=1}^{k} g_i * p_i}{N}$$

Where:

g_i = weight of strata i in the population

p_i = expected proportion of strata i in the population

k = total number of strata in the population

and Where (for mean parameters):

$$SD^2 = \frac{\sum_{i=1}^{k} g_i * SD_i^2}{N}$$

$$Mean = \frac{\sum_{i=1}^{k} g_i * m_i}{N}$$

Where:

SD_i = expected standard deviation of strata i in the population.

m_i = expected mean of strata i in the population.

Stratified Random Sampling was applied by dividing the population into various strata. The expected parameter values were determined based on project developer's knowledge and experience as per para 13(b) and 13(c) of the "Standard: Sampling and surveys for CDM project activities and Programmes of activities".4

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 (eg. 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

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 μ_y 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.

APPENDIX 1: TECHNICAL SPECIFICATION

Technical Specification of SmartHome Pro

Model	**Smart Home Pro a k a SHS 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**

APPENDIX 2: NO DOUBLE COUNTING DECLARATION

UpEnergy

23rd May 2023

Ref. Declarations by CME for the project VCS - 2673

Dear Sir/Madam,

With reference to the above subject, UpEnergy Group confirms that the grouped project VCS 2673 (UpEnergy - Social and Climate Impact Programme- Nigeria-1)

- Is not registered with any other carbon standard
- Is a voluntary effort by the project proponent and not mandated by Nigerian law
- All the distributed ICS are unique to this project with unique identification serial numbers, hence there will be no double counting of stoves within the project or with any other projects.

UpEnergy Group also confirms in the project VCS 2673 (UpEnergy - Social and Climate Impact Programme- Nigeria-1) at any stage of project design or implementation

- No ODA has been used to support the development or implementation of the project, or that no entity is providing ODA to the host country and thus isn't liable in future to benefit directly or indirectly from the carbon credits generated from the above-mentioned project.

Sincerely,

Name: Anantha Karthik Rajagopalan
Title: Director of Carbon Programme
Company Name: UpEnergy Group

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