



IMPROVED COOKSTOVE DISTRIBUTION IN GHANA BY EKI



Document Prepared by - EKI Energy Services Limited

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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The main purpose of the project is the distribution of fuel-efficient improved cook stoves (ICS) in the Republic of Ghana (Ghana). The Improved cookstove stove distributed through this project has replaced the low-efficient baseline cookstove.

In rural Ghana, a large portion of households rely on charcoal-based mud or three-stone stoves for daily cooking. In addition to having a relatively low thermal efficiency, these mud or three-stone stoves also contribute to health risks from indoor air (smoke) pollution.

Through this project, the distribution, and installation of high thermal efficient improved cook stoves (ICS) has been undertaken for households. The ICS burns charcoal more efficiently thereby improving thermal energy transfer to pots, hence saving charcoal and greenhouse gases. Not only will this halt the rapidly progressing deforestation but also reduce health hazards from indoor air (smoke) pollution and time & money of participating household now have to spend less time in the procurement of charcoal.

As the target populations are unable to afford these stoves (ICS), project proponent have distributed ICS free of cost. The end-user has been informed in advance that the use of ICS generates carbon finance which in turn is used to cover the price of ICS and for recovering project implementation costs. The project locations for initial Project Activity Instances are in Republic of Ghana (Ghana) and it may expand further in other parts of Africa. EKI has distributed 209,380 ICS till the end of this monitoring period i.e., 31-January-2024.

. EKI has considered one cookstove as one project activity instance for this group project activity. The first project activity instance was implemented on 16-January-2023 under this grouped project activity.

In accordance with the registered joint PD&MR, with the addition of 189,278 ICS during the second monitoring period to the 20,102 ICS, the revised estimated average annual GHG emission reductions for the group project activity are projected to reach 750,256 tCO_{2e}. Consequently, the revised total GHG emission reductions over the entire crediting period are expected to amount to 5,251,790 tCO_{2e}.

The last ICS distribution during the current monitoring period was done on 25-August-2023. The 2nd monitoring survey for the grouped project activity was conducted from 04-September-2023 to 28 September 2023. The project results in a total emission reduction of 545,780 tCO_{2e} at actual over the monitoring period of 01-March-2023 to 31-January-2024 (inclusive of both the dates).

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation & Verification	16-January-2023 – 28-February-2023	VCS	RINA Services S.p.A (RINA)	0.12 years
Verification	01-March-2023 – 31-January-2024	VCS	LGAI Technological Center, S.A (Applus+ Certification)	0.92 years

1.3 Sectoral Scope and Project Type

Sectoral scope ¹	03 – Energy Demand
Project activity type	Type: II – Energy efficiency improvement projects

1.4 Project Proponent

Organization name	EKI Energy Services Limited
Contact person	Manish Dabkara
Title	Managing Director & Chief Executive Officer
Address	Office No 201, Plot No 48, Scheme 78, Vijay Nagar Part- II, Indore 452010, India
Telephone	+91- 9907534900
Email	manish@enkingint.org and registry@enkingint.org

1.5 Other Entities Involved in the Project

Organization name	Sustainable Energy Technologies Limited (SETECH)
Role in the project	Distributor
Contact person	Lovans Owusu - Takyi
Title	Executive Director
Address	University Box 658, University of Ghana, Legon, Accra

¹ 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>

Telephone	0244108268, 0248737439
Email	info@setechghana.com

Organization name	Jackgk Trust Enterprise
Role in the project	Distributor
Contact person	-
Title	-
Address	P.O Box YB 495 Asuoyeboah, Kumasi
Telephone	+233 553225353 / 020 056 7700
Email	Gloriaojo3@gmail.com

Organization name	Nasam Brand Enterprises
Role in the project	Distributor
Contact person	Bismark Asamoah Asante
Title	Chief Executive Officer
Address	Kasoa, Accra
Telephone	(00233) 24 915 4011
Email	Bismarkasamoah88@gmail.com

Sustainable Energy Technologies Limited (SETECH) and Jackgk Trust Enterprise were involved in the Monitoring Period 1 and Monitoring Period 2. Whereas, Nasam Brand Enterprises was involved in Monitoring Period 2.

1.6 Project Start Date

Project start date	16-January-2023
Justification	The date reflects the earliest commissioning date of the 1 st Project Activity Instance in Ghana. Hence, this date adheres to the

	definitional requirements for the 'Project Start Date' of VCS Standard 4.6.
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1.7 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	16-January-2023 to 15-January-2030.

1.8 Project Location

All the project activity instances in the proposed grouped project activity have been located within the geographical boundaries of Africa.

For the initial project activity instance, the geographical area is in Republic of Ghana though it may expand in different countries of Africa.

The geographical boundary for projects located in Republic of Ghana is delineated in the form of extreme geographic coordinates of Ghana as follows²:

Latitude: 8°2' 5.5608" N

Longitude: 1°18' 47.8512" W

²

<https://www.google.com/maps/place/Ghana/@0.5907892,11.6986528,3z/data=!4m5!3m4!1s0xfd75acda8dad6c7:0x54d7f230d093d236!8m2!3d7.946527!4d-1.023194>



1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	VMR0006 ³	Methodology for Installation of High Efficiency Firewood Cookstoves	1.1
Methodology	AMS II.G. ⁴	Energy efficiency measures in thermal applications of non-renewable biomass	13.0
Tool	TOOL 30 ⁵	Calculation of the fraction of non-renewable biomass	4.0

³ <https://verra.org/wp-content/uploads/2021/07/VMR0006-Methodology-for-Installation-of-High-Efficiency-Firewood-Cookstoves-v1.1.pdf>

⁴ <https://cdm.unfccc.int/UserManagement/FileStorage/6TOUCX21D08HNVIRZFWMEKALY94GS7>

⁵ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-30-v4.0.pdf>

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

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

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

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

1.11.1 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

1.11.2 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

1.11.3 Supply Chain (Scope 3) Emissions

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

☐ Yes ☒ No

1.12 Sustainable Development Contributions

The project includes the distribution of fuel-efficient ICS thereby replacing the use of inefficient cookstoves. The project's SD contribution on the local environment and the country as follows:

Social:

Reduces health hazards from indoor air pollution, cooking time and thus drudgery to women

Environmental:

- Reduce rate of degradation of forests and deforestation
- Reduce GHG emissions by reduction in non-renewable biomass usage.

Economic:

- Employment opportunities for local communities
- Reduces purchase of wood

Technological:

Introduction of new technology to the rural communities

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	1.1	1.1.1 Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural)	Implemented activities to decrease	The project has increased the 308 participants' total daily income to GHS 1,200 to 1,800 per month, bringing them above the international poverty line	The project has successfully raised the daily income of 388 individuals involved in manufacturing, distribution, and monitoring activities by at least GHS 1,200 per month, elevating them above the international poverty line.

2)	3.9	Project-specific indicator: Number of households experiencing reduction in particulate matter.	Implemented activities to decrease	As the project ICS is designed to reduce emission of the particulate matter in comparison to the traditional cook stove⁶, the measurement of the indicator is based on the information collected during the annual monitoring surveys on the number of improved cookstoves operating. The monitoring survey for the current period indicates that all 209,380 distributed Integrated Cookstoves (ICS) are functional. Consequently, 209,380 households, including 189,278 that received ICS in this period, are benefiting from reduced particulate emissions during cooking. This reduction is contributing to improved health outcomes and a decreased disease burden.	209,380 households experiencing reduction in particulate matter emitted during cooking, thereby improving overall health outcomes and reducing burdens of disease.
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⁶ According to the Methodology VMR0006 V 1.1, traditional cookstoves belong to Tier 0-1 with respect to emissions, while the project cookstoves belong to Tier 3-4. This fact can be verified from the test certificates of the project cookstoves.

3)	7.1	7.1.2 Proportion of population with primary reliance on clean fuels and technology	Implemented increase	activities	to	Increase access to clean cooking technology with ICS installations in 189,278 households under the project activity	Increase access to clean cooking technology with ICS installations in 209,380 households under the project activity
4)	8.3	Project specific indicator: Total Number of jobs created.	Implemented increase	activities	to	Project activity created a total of 413 new job positions in different roles for manufacturing and distribution of ICS and post-implementation monitoring activity.	The project activity has created job opportunities for 506 heads in the ICS manufacturing unit
5)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented increase	activities	to	Contribute to greenhouse gas emission reduction of 545,780 tCO ₂ e	Prevented the release of 550,071 tCO ₂ e into the atmosphere
6)	15.2	15.3.1 Proportion of land that is degraded over total land area	Implemented decrease	activities	to	Contribute to the reduction of deforestation of 324,791 tonnes of biomass from forests surrounding the communities and reducing pressure on forest reserves.	Reduced deforestation of 327,346 tonnes of biomass from forests surrounding the communities and reduced pressure on forest reserves.

1.13 Commercially Sensitive Information

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

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	“Stakeholder make up has not changed since validation” so it is not applicable.
Legal or customary tenure/access rights	Not applicable
Stakeholder diversity and changes over time	Stakeholders identified for this project activity are diverse in nature – in terms of socio-economic status, age and gender wise and the diversity is unlikely to change over time.
Expected changes in well-being	Expected changes 1. Economic well-being – the project activity is likely to provide employments to the locality thus economic well beings are expected. 2. Environmental well-being – as this project activity reduces the rate of degradation of forests and deforestation it will bring environmental well-being in the locality.
Location of stakeholders	Eastern Ashanti Region and Central region of Ghana
Location of resources	Not applicable

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	End users have the option of directly contacting a well-trained representative from a distribution channel partner who typically resides in proximity to the beneficiary communities and visits the beneficiaries periodically, for the purpose of recording their complaints. Stakeholders' consultation is a continuous process and hence a feedback register is kept at the project site office where any stakeholder can come and share his/her feedback. The feedback irrespective of the type is taken care by PP with utmost priority. The end user approaches the Assembly Man (Village Head) in case of any complaint/ issues with the distributed cookstove. The Assembly man further conveys it to the distributor and distributor inform this to the local agent. The local agent communicates to EKI Energy Services Limited (EKIESL). A person from EKIESL attend this complaint/ issue and get it rectified. End user is requested to fill up a form upon satisfactory resolution of the complaint/ issue. In addition, the project proponent also proactively communicated with stakeholders through a focused meeting before each verification event. This meeting aimed to keep stakeholders informed about project status and address any potential concerns they might have.
Date(s) of stakeholder consultation	Date of Public Notice – 23-February-2024 Date of stakeholder consultation/communication meeting – 05-March-2024
Communication of monitored results	The monitoring results were communicated from the distributors to the end users through the distributor's representatives. Also, during the stakeholder communication meeting the monitoring results were also shared with the attendee stakeholders.
Consultation records	The Feedback register as well as the consultation/communication meeting MoM are used to document the outcomes of the stakeholder consultation.

Stakeholder input	There has been not any feedback received for the current monitoring period neither through the feedback register nor during the stakeholder consultation/communication meeting which may require any action. There has been no complaints/replacements request received by end-users during the verification period.
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2.1.3 Free, Prior, and Informed Consent

Consent	Following clause 3.18.8 of VCS standard v.4.6, the project proponent has disclosed 1. The minimum information, including the nature, size, pace, reversibility, and scope of the cook stove project activity; 2. The reason/purpose of the project, which is to efficiently use non-renewable biomass fuel and reduce other environmental and health hazards for the community; 3. The duration of the project activity, set at 7 years; 4. The locations that will be affected, primarily some regions (Ashanti, Eastern, Central, Northern & Greater Accra) in Ghana; and 5. A preliminary assessment of the likely economic, social, cultural, and environmental impact, including potential risks and fair and equitable benefit sharing in a context that respects the precautionary principle. The stake holders were invited with prior intimation to them and gathered at the stake holder consultation venue on the stipulated date. Stakeholders were briefed verbally that the project would bring solely positive effects on economic, social, cultural, or environmental aspects, including savings in non-renewable biomass fuel and increased employment opportunities. 6. Moreover, information regarding personnel likely to be involved in the execution of the project, including Indigenous Peoples, private sector staff, research
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	institutions, government employees, and others, was shared with stakeholders, clarifying that they would be the end-users/beneficiaries of the project activity. Hence, it is evident that the affected community was informed prior to the operational date of the project activity.
Outcome of FPIC	The potential of carbon credit that could be generated due to the project was informed and discussed with local stakeholder during stake holder consultation meeting. “As the project device is installed in the household of the beneficiaries on their own will and PP is having transparent agreement with these concerned. Thus, it can be said that the project has not encroached on land, relocated people without consent, and forced physical or economic displacement.”

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
There have been no grievances received for the current monitoring period.	<i>Existing Grievance Redress Procedure:</i> The end user approaches the Assembly Man (Village Head) in case of any complaint/ issues with the distributed cookstove. The Assembly man further conveys it to the distributor and distributor inform this to the local agent. The local agent communicates to EKI Energy Services Limited (EKIESL). A person from EKIESL attend this complaint/ issue and get it rectified. End user is requested to fill up a form upon satisfactory resolution of the complaint/ issue. <i>Since no grievances were reported, no resolution is necessary for the current monitoring period.</i>

2.1.5 Public Comments

Summary of comments received	Actions taken
No comments received	No comments received

2.2 Risks to Stakeholders and the Environment

	Risk identified	Mitigation or preventative measure taken
Risks to stakeholder participation	No risk identified	There are no exclusions, lack of communication or barriers in the project activity, that might prevent stakeholders from engaging or participating.
Working conditions	No risk identified	Using ICS is a safer way for cooking as compare to the traditional cookstove thus it will be rather reducing the safety risk.
Safety of women and girls	No risk identified	Reducing the charcoal consumption has reduced the number of trips required for charcoal collection hence increasing the safety of women and girls.
Safety of minority and marginalized groups, including children	No risk identified	Using ICS is a safer way for cooking as compare to the traditional cookstove thus it will rather enhance the safety of minority and marginalized groups, including children
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	No risk identified	Due to the project activity, there is no risk due to generation of pollutants (noise, discharges to water, generation of waste, release of hazardous materials). Rather this project activity ensures better air quality through its efficient charcoal combustion technology.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Discrimination and sexual harassment	PP has provided declaration that no discrimination or sexual harassment has occurred or will occur. There has been no reports of discrimination and sexual harassment for this monitoring period.
Management experience	Below are selected partners for manufacturing and distribution of cook stove in Ghana. PP selected companies on the basis of their experience and ability to manufacture and distribution of cook stove,

	The details of management experience for selected partners are mentioned below. 1. JACGK TRUST Enterprises: - The company has a team of professionally qualified and well experienced persons for production and distribution of newly improved stove. The company conducts its business with ethics and integrity and also put in great effort into research and development. 2. NASAM BRAND ENTERPRISE: - Nasam Brand Enterprise is a Ghanaian clean stove manufacturer which designs and manufactures clean wood stoves, gas stoves and charcoal powered cookstoves for urban and rural households in Ghana and the rest of Africa. 3. Sustainable Energy Technologies Limited (SETECH): - SETECH is a social enterprise that designs, produces and sells innovative, climate-smart renewable energy solutions with focus on advanced clean cooking technologies to households and women dominated agro-industries in rural and peri-urban communities to contribute to sustainable development.
Gender equity in labor and work	The PP strictly follows the gender equality in labor and work. The same salary range is being paid to other male employees for the same job role.
Human trafficking, forced labor, and child labor	The PP strictly follows the national laws prohibiting human trafficking, forced labor and child labor. There have been no reports of human trafficking, forced labor and child labor during this monitoring period.

2.3.2 Human Rights

The following demonstrations show how the project is committed to safeguard the rights of Indigenous People (Ips), Local communities (LCs), and customary right holders, while following the international human rights law⁷, the UNDRIP⁸ and ILO Convention 169-

⁷ <https://www.ohchr.org/sites/default/files/Documents/Publications/fs9Rev.2.pdf>

⁸ https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

- **Free, Prior, and Informed Consent (FPIC):** The project activity has obtained the FPIC from the local stakeholders including the IPs, LCs and customary right holders, ensuring their unforced consent before the project operation, respecting their right to make decisions.
- **Non-discriminatory Participation in the Project Activity-** The project distributed devices without cultural or social biases, safeguarding the rights of IPs, LCs, and customary rights holders to be free from discrimination. The project proponent while distributing the improved cook stoves had given preference to the weaker economical section of rural population, who generally uses a conventional three stone cook stove,
- **Employment due to the Project Activity-** The project activity also leads to the employment of 1 person from for IPs, LCs and customary right holders, enabling them to exercise their right to fair treatment in employment and salary.

Right to maintain, control, protect and develop the cultural heritage- The project activity is not implemented or developed on any tangible cultural heritage, and also, doesn't affect the intangible cultural heritage of the IPs, LCs and customary right holders. Instead, it promotes the cultural harmony through collective engagement of IPs, LCs and customary right holders.

2.3.3 Indigenous Peoples and Cultural Heritage

Since, the project activity involves the production and distribution of cook stoves, entirely manufactured outside the beneficiary's land, hence, no tangible cultural heritage has been hampered for the project activity.

There have been no negative impacts of the project activity on the non-tangible cultural heritage⁹ of the stakeholders, instead it fosters cultural harmony by involving diverse groups, without affecting their customs, traditions or beliefs.

Hence, the project continues to preserve and protect cultural heritage as part of their project activity.

2.3.4 Property Rights

Since the project activity does not involve any acquisition or usage of property belonging to IPs, LCs, or any customary rights holders, this section is not applicable.

Disputes over rights to territories and resources	N/A
Respect for property rights	N/A

⁹ Non-tangible cultural heritage consists of nonphysical intellectual wealth, such as folklore, customs, beliefs, traditions, knowledge, and language.

2.3.5 Benefit Sharing

As the project doesn't impact property rights as described in Section 2.5.4 above, the table below is not applicable

Summary of the benefit sharing plan	Not Applicable
Benefit sharing during the monitoring period	Not Applicable

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	This project activity doesn't result in adverse effects; instead, it positively impacts on the biodiversity and ecosystem by decreasing deforestation due to traditional gathering of fuel and promoting more efficient use of firewood.
Soil degradation and soil erosion	No risk identified	The project activity mitigates soil degradation and erosion by minimizing the extensive need for wood gathering, thereby reducing deforestation and soil exposure
Water consumption and stress	No risk identified	Water consumption will be of moderate level and hence stress is not likely to be caused.
Usage of fertilizers	No risk identified	No fertilized is used.

2.4.1 Rare, Threatened, and Endangered species

The following table is not required for this project as no species involved in the Grouped project activity, thus this section has been left as "Not Applicable".

Species or habitat	Not Applicable
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2.4.2 Introduction of species

The following tables are not required for this project as there is no planting or species introduction, thus this	Classification	Justification for use	Adverse effects and mitigation
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section has been left as “Not Applicable”. Species introduced			
Not applicable	Not applicable	Not applicable	Not applicable

Existing invasive species	Mitigation measures to prevent spread or continued existence of invasive species
Not Applicable	Not Applicable

2.4.3 Ecosystem conversion

This section is not required as this project is not an ARR, ALM, WRC or ACoGS project, hence this section is not applicable

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

Till the end of the monitoring period, 209,380 project activity instances (ICS) were deployed under this grouped project. There are 209,380 project activity instances out of which 20,102 were included in the 1st monitoring period at the time of registration (joint validation – verification) of the project and 189,278 are implemented during the current monitoring period. The details are given below,

- 1) Gyapa cookstove – 104,920 nos
- 2) Obaapa clean stove - 58,810 nos
- 3) Gyapa (Stove A) – 25,548 nos

Three stove models (Gyapa cookstoves, Obaapa Clean Stove and Gyapa (Stove A)) was distributed in the project till this monitoring period.

The other Entities Involved in this monitoring period were as follows: -

1. Sustainable Energy Technologies Limited (SETECH),
2. Jacgk Trust Enterprises
3. Nasam Brand Enterprises

The technical specification of cook stove model is described in the below table:

Technical Details of GYAPA, GYAPA (STOVE A) & OBAAPA Models				
A)	Cook Stove Type/Category	Type:- GYAPA, GYAPA (STOVE A) & OBAAPA MODELS		
		Category - Natural Draft		
B)	Secondary Air Supply	Through Natural Draft		
C)	Stove Material Used	Body	Aluzinc Sheet	
		Body Material Thickness	0.5mm	
D)	Physical Structure	External Dimension	Width: - 290mm	
			Height: - 260mm	
E)	Feeding Process	Continuous Feeding Front Loading		
F)	Expected life of the stove	7 Years		
G)	Guarantee /Warranty Period	1 Year		
H)	Thermal Efficiency	GYAPA	GYAPA (STOVE A)	OBAAPA
		37%	36%	36%

VCS methodology VMR0006, version 1.1 allows the use of a correction factor of 0.95 applied to the overall emissions reductions to account for any possible leakage. This factor has been applied to the emission reductions presented in this report.

During the current monitoring period, no incident or event occurred, that could affect GHG emissions reduction and the approved monitoring plan. There are no any other changes i.e project proponent or other entities occurred during the current monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

The project activity does not apply any methodology deviations.

3.2.2 Project Description Deviations

Deviation 1

In section 6.1 of the approved joint PD & MR (14.06.2023 PD MR_VCS 3801 .pdf), The value of efficiency of the Gyapa (Stove A) model (η_{p3}) was not mentioned, The Gyapa (Stove A) model is newly added in this monitoring period.

Thus, the details of efficiency of the Gyapa (Stove A) model are now added under the table for “Data and Parameters Available at Validation” under the section 4.1 of this MR.

This deviation doesn’t impact the applicability of the methodology, additionality or appropriateness of the baseline scenario or the emission reduction calculations. The nature of deviation is permanent and this change shall be applicable for the subsequent verifications as well.

Deviation 2

The actual procedure followed for grievance/ feedback is deviated from the details provided in the registered VCS PD hence a deviation is applied.

The actual procedure followed by the end user is given below.

Joint PD&MR	Deviation required	Impact of the deviation on the methodology’s applicability conditions, and the project’s baseline and additionality
Section 2.2	Section 2.1.4	
As part of PP’s ongoing communication efforts, PP provided end users with the contact information of the on-ground team members deployed in their respective localities. The on-ground team shall diligently report any grievances received from the end users on a daily basis to the distributors they are accountable to. These distributors shall then document all the grievances in a dedicated	The end user approaches the Assembly Man (Village Head) in case of any complaint/ issues with the distributed cookstove. The Assembly man further conveys it to the distributor and distributor inform this to the local agent. The local agent communicates to EKI Energy Services Limited (EKIESL). A person from EKIESL attend this complaint/ issue and get it rectified. End	The Grievance Redress Procedure is not included in the applicability conditions of the VMR 0006, v1.1 methodology, nor is it part of the applicability criteria numbers 8 and 9 outlined in Section 2.2 of AMS II.G,

register and provide regular updates to our PP representative. PP maintains regular communication with the distributor to ensure that all grievances are promptly addressed on an urgent basis. This process reflects PP's commitment to maintaining continuous stakeholder communication through an effective grievance mechanism.	user is requested to fill up a form upon satisfactory resolution of the complaint/issue	version 11.1. Consequently, this deviation has no impact on the methodology's applicability conditions. • The Project's Baseline is independent of the Grievance Redress Procedure. Therefore, this deviation does not affect the established Project Baseline. • The Project's additionality demonstration is unrelated to the Grievance Redress Procedure. As such, this deviation has no bearing on the Project's additionality status.
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Deviation 3

In the section 3.4 of the registered joint PD&MR there was mention of wood as baseline fuel which was a typographical error as it was established through baseline survey that the baseline for this project is the ongoing use of non-renewable charcoal as fuel in traditional cookstoves or three-stone fire stove within the project region. Same had been validated by VVB at the time of joint validation and verification. Thus, a deviation is being applied here to confirm that for the project activity, the baseline scenario is the continued use of non-renewable fuel (i.e. charcoal) by the target population to meet similar thermal energy needs as provided by project cookstoves in the absence of project activity.

This correction aligns the document with the established baseline scenario of charcoal use, as determined through a comprehensive baseline survey and validated by the VVB during joint validation and verification. Importantly, this deviation does not impact the methodology's applicability, the project's additionality, the appropriateness of the baseline scenario, or the emission reduction calculations. This is because the error was purely typographical, and the correct baseline fuel (charcoal) is consistently mentioned throughout the registered Joint PD&MR, particularly in Section 1.13. The VVB's validation of charcoal as the baseline fuel is evidenced in Section 3.4.4 of the final Joint Validation & Verification Report. The deviation formally confirms that the project's baseline scenario is the continued use of non-renewable charcoal by the target population. This correction is permanent and will apply to all subsequent verifications, ensuring documentation consistency while maintaining the integrity of the established baseline and emission reduction calculations. In essence, this deviation rectifies a documentation discrepancy without altering the fundamental, validated aspects of the project.

Deviation 4

At the time of validation, only 20,102 ICS were distributed and an average annual GHG emission reductions for the group project activity were expected to be 72,030 tCO₂e which was less than or equal to 300,000 tCO₂e/ year. However, due to increase in the number of improved cookstove distributed after the first monitoring period, the project has been shifted to large projects as the amount of average annual GHG emission reductions are now greater than 300,000 tCO₂e/ year. This is permanent type of deviation and doesn't has any impact on the applicability of the methodology, VMR 0006, v 1.1.

Deviation 5

In the section 1.6 of the registered joint PD&MR, the name of the other entities who were involved in the distribution process were inadvertently missed out. Same is now mentioned in section 1.5 of this MR.

Materiality requirements for verification are also adopted as per the large projects, as set out in VCS standard v4.6, Section 4.1.10.

3.3 Grouped Projects

New project activity instances included under this grouped project ensure that it meets the eligibility criteria below; new project activity instances were included under current monitoring period.

The details of activity instances are as such-

S No.	Monitoring period	Number of cook stoves distributed	Total cookstoves distributed
1		Gyappa	18,893

	Monitoring period 1 st From 16-January-2023 to 28-February-2023	Obaapa	1,209
		Gyappa (Stove A)	0
2	Monitoring period 2 nd From 01-March-2023 to 31-January-2024	Gyappa	104,920
		Obaapa	58,810
		Gyappa (Stove A)	25,548

The distribution details of cookstove models are mentioned in the below table: -

Sl. No.	Model	Start date	End Date
1	Gyappa	16- Jan-2023	25-Aug-2023
2	Obaapa	22- Jan-2023	16-Aug-2023
3	Gyappa (Stove A)	21-Apr-2023	23-Jul-2023

The activity instances added are as such-

S No.	Parmeter	Activity instances Number
1	Total cook stoves distributed in 1 st monitoring period	20,102
2	Total cook stoves distributed in 2 nd monitoring period	189,278
Total		209,380

No.	Criterion	How the new project activity instances comply the requirement
1	Meet the applicability conditions set out in the methodology applied to the project. Applicability conditions which were set out in Section 3.2 of registered joint PD & MR:	New project activity instances (Energy Efficient Cookstoves) were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana. All instances meet the applicability conditions which were set out in Section 3.2 of registered joint PD & MR, as shown below:

	a) Project activities shall be implemented in domestic premises or community-based kitchen b) The project stove shall have specified high-power thermal efficiency of at least 25% per the manufacturer's specifications and shall exclusively use woody biomass and can be single-pot or multi-pot	a) All project activity instances included in this monitoring period is implemented in households i.e. in domestic premises. b) The Improved Cookstoves (ICS) deployed in this project meet or exceed the minimum thermal efficiency requirement of 25%. The thermal efficiencies of the distributed cookstove models are as follows: - Gyapa: 37.00% - Obaapa: 36.00% - Gyapa (Stove A): 36.00% The technical specification of these stoves are added in section 3.3 of this MR and third party test certificates are submitted to the VVB.
2	Use the technologies or measures specified in the project description.	The technology used for the project activity is energy-efficient cookstoves. Only energy efficient cook stoves are to be adopted in the project by replacing traditional cookstoves in households.
3	Apply the technologies or measures in the same manner as specified in the project description.	New project activity instances which were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period have used only energy efficient cookstoves adopted in the project by replacing traditional cookstoves in household and same have been provided at free of cost.
4	Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	The new project activity instances, specifically the Improved Cookstoves (ICS), meet the eligibility criteria for inclusion as outlined in Section 1.4 (point 4) of the registered Project Description and Monitoring Report (PDMR). These instances are installed within Ghana, which falls within the defined geographical boundary of the grouped project. Consequently, they are subject to the same baseline scenario as determined in Section 3.4 of the registered PDMR, namely the use of a three-stone fire with charcoal as fuel.

5	Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	New project activity instances which were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period are using the below activity method for demonstration of additionality. Step 1: Regulatory Surplus There is no mandated government programme or policy in host country of this project ensuring the distribution of new energy efficient cookstoves for each project activity instances. Step 2: Positive List The inclusion of new project activity instances will comply with the positive list as it satisfies criterion 1 where it meets all the applicability conditions of the methodology because the ICS will be distributed free of cost to the end users and project has no other source of revenue other than the sale of GHG credits. Thus, it is evident that the newly added instances share the same additionality characteristics and are consistent with the initial instances for the specified project activity and geographic area.
6	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: Each project activity instance that exceeds one percent of the capacity limit shall be identified.	New project activity instances which were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period does not exceed the applicable limit, which is 180 GWh_{th}/y. Since the project activity instances have same model, hence expected annual energy saving for each instance is 0.0191 GWh_{th}/y which is less than 0.02% of the threshold limit.

	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. 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. (Ref. section 3.6.8 of the VCS standard v4.6)	As the annual energy saving is below 1% of the limit, therefore no project activity instance is identified and divided into clusters.
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Along with above points, the Project Activity Instances follows below criteria

No.	Criterion	How the new project activity instances comply the requirement
1	Occur within one of the designated geographic areas specified in the project description	New project activity instances which were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period. These regions are all located within the geographic boundaries of Ghana, as specified in registered joint PD & MR.
2	Comply with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial compliance with multiple sets of eligibility criteria is insufficient.	New project activity instances which were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period are included in the project activity instances comply with complete set of eligibility criteria as mentioned above.
3	Be included in the monitoring report with sufficient technical,	Sufficient technical, financial, geographic and other relevant information on the new

No.	Criterion	How the new project activity instances comply the requirement
	financial, geographic and other relevant information to demonstrate compliance with the applicable set of eligibility criteria and enable sampling by the validation/verification body.	project activity instances which were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period instances information have been included in the current monitoring report to demonstrate compliance with the applicable set of eligibility criteria and enable sampling by the validation/verification body
4	Be validated at the time of verification against the applicable set of eligibility criteria	New project activity instances which were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period have been included by validating eligibility criteria as mentioned in section 3.3 of this monitoring report
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)	All new project activities, added Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period, have documented ownership by the project proponent (end user agreement) from their respective start dates.
6	Have a start date that is the same as or later than the grouped project start date	Start date of each of the new project activity instances which were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period has been included in the project activity instances are after the start date of grouped project activity i.e 16-January 2023. As per distribution data base submitted to VVB the start date of each of the new project activity instances included in the project activity instances are after the start date of grouped project activity.

No.	Criterion	How the new project activity instances comply the requirement
7	Be eligible for crediting from the start date of the instance through to the end of the project crediting period (only). Note that where a new project activity instance starts in a previous verification period, no credit may be sought for GHG emission reductions or removals generated during a previous verification period (as set out in Section 3.4.4 of VCS standard version 4.1) and new instances are eligible for crediting from the start of the next verification period	New project activity instances which were added in Ashanti, Eastern, Central, Northern & Greater Accra regions of Ghana in the current monitoring period are eligible to claim credits from start date of the instance through to the end of the project crediting period (only).
8	Only eligible for crediting from the start of the verification period in which they were added to the grouped project.	New project activity instances will adhere to this criterion by being eligible for crediting only from the beginning of the verification period in which they are included in the grouped project i.e. 01-March-2023.
9	Not be or have been enrolled in another VCS project.	New project activity instances will not be previously registered or currently enrolled in any other VCS project.
10	Adhere to the clustering and capacity limit requirements for multiple project activity	In line with section 3.6.8 of the VCS standard v4.6 all singular project activity instances within ten kilometres of another instance of this project activity with EKI Energy Services Limited will be consider within this current project activity only Project ID 3801).

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$F_{NRB,y}$
Data unit	Fraction
Description	Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass
Source of data	PP has calculated f_{NRB} by determining the share of renewable and non-renewable woody biomass in the total quantity of woody biomass consumption for the country/region.
Value applied	0.8197 (calculated as per meth tool)
Justification of choice of data or description of measurement methods and procedures applied	This parameter is determined ex-ante. The default value as per the Methodological tool: Calculation of the fraction of non-renewable biomass (Tool 30 version 4.0. As per of methodological tool, the value is calculated as per the following Equation (1), $f_{NRB,y} = NRB/(NRB+RB)$
Purpose of data	Calculation of emission reduction
Comments	If the future project activity instances are expanded in other parts of Africa (other than Ghana), then this parameter value will be calculated during future project activity instances inclusion.

Data / Parameter	$NCV_{wood\ fuel}$
Data unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted or reduced
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction
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 emission reduction
Comments	-

Data / Parameter	EF_{wf, CO_2}
Data unit	tCO ₂ /TJ
Description	CO ₂ emission factor for the use of wood fuel in baseline scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
Value applied	112
Justification of choice of data or description of measurement methods and procedures applied	IPCC default value
Purpose of data	Calculation of emission reductions
Comments	-

Data / Parameter	$EF_{wf, non-CO_2}$
Data unit	tCO ₂ /TJ
Description	Non-CO ₂ emission factor for the use of wood fuel in baseline scenario
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion
Value applied	26.23
Justification of choice of data or description of measurement methods and procedures applied	IPCC default value
Purpose of data	Calculation of emission reductions
Comments	-

Data / Parameter	η_{p1}
Data unit	Percentage
Description	The efficiency of the Gyapa project stove at the start of the project activity.
Source of data	Manufacturer's specification
Value applied	Efficiency of Gyapa Project stove = 37.00%
Justification of choice of data or description of	This parameter has been determined ex-ante

measurement methods and procedures applied	
Purpose of data	Calculation of $\eta_{new,y,i,j}$
Comments	This efficiency is for the cook stove model considered for initial project activity instances. If manufacturer or cook stove model changes, the respective model efficiency will be considered for ER calculations.

Data / Parameter	η_{p2}
Data unit	Percentage
Description	The efficiency of the project stove at the start of the project activity.
Source of data	Manufacturer's specification
Value applied	Efficiency of project Obaapa clean stove = 36%
Justification of choice of data or description of measurement methods and procedures applied	This parameter has been determined ex-ante
Purpose of data	Calculation of $\eta_{new,y,i,j}$
Comments	This efficiency is for the cook stove model considered for initial project activity instances. If manufacturer or cook stove model changes, the respective model efficiency will be considered for ER calculations.

Data / Parameter	η_{p3}
Data unit	Percentage
Description	The efficiency of the project stove at the start of the project activity.
Source of data	Manufacturer's specification
Value applied	Efficiency of project Gyapa (Stove A) stove = 36.00%
Justification of choice of data or description of measurement methods and procedures applied	This parameter has been determined ex-ante
Purpose of data	Calculation of $\eta_{new,y,i,j}$
Comments	This efficiency is for the cook stove model considered for initial project activity instances. If manufacturer or cook stove model

	changes, the respective model efficiency will be considered for ER calculations
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Data / Parameter	DF_n
Data unit	Fraction
Description	Discount factor to account for efficiency loss of project cookstove per year of operation (fraction).
Source of data	As per methodology, default value of 0.99 efficiency loss per year
Value applied	0.99
Justification of choice of data or description of measurement methods and procedures applied	This parameter has been determined ex-ante
Purpose of data	Calculation of $\eta_{new,y,i,j}$
Comments	-

Data / Parameter	Leakage factor
Data unit	Fraction
Description	Discount factor to account for leakage
Source of data	Methodological default value
Value applied	0.95
Justification of choice of data or description of measurement methods and procedures applied	In-line with the applied methodology VMR0006, ver. 1.1 Section 8.3.
Purpose of data	Calculation of emission reductions
Comments	-

4.2 Data and Parameters Monitored

Data / Parameter	$N_{y,j,j}$
Data unit	Number
Description	Number of project devices of type I and batch j operating during year y
Source of data	Monitoring
Description of measurement methods	Measured directly or based on a representative sample. As per methodology, the minimum sample size will be determined in

and procedures to be applied	which case compliance with 90/10 confidence precision is not obligatory. The monitoring survey is conducted at least once every two years, and sampling is undertaken to acquire target households (samples). The monitoring process is then executed on these selected samples for acquiring the number of project devices ($N_{y,j,j}$, with the results remaining valid for a duration of 2 years. The last monitoring survey was conducted from 04-September-2023 to 28-September -2023, results of which will be valid up till 27- September -2025. Thus, for the current monitoring period, results from the same survey have been used.																															
Frequency of monitoring/recording	At least once every two years.																															
Value monitored	209,380 (20,102 ICS in 1st Monitoring Period + 189,278 ICS add on in 2nd monitoring Period) <table border="1"> <thead> <tr> <th rowspan="2">Sl. No.</th><th rowspan="2">Model</th><th colspan="3">Cookstove Distributed in each Monitoring period</th></tr> <tr> <th>1st Monitoring period from 16-January-2023 to 28-February-2023</th><th>2nd Monitoring period from 01-March-2023 to 31-January-2024</th><th>Total Cookstove distributed</th></tr> </thead> <tbody> <tr> <td>1</td><td>Gyapa</td><td>18,893</td><td>104,920</td><td>123,813</td></tr> <tr> <td>2</td><td>Obaapa</td><td>1,209</td><td>58,810</td><td>60,019</td></tr> <tr> <td>3</td><td>Gyapa(Stove A)</td><td>0</td><td>25,548</td><td>25,548</td></tr> <tr> <td colspan="2">Total Cookstove distributed</td><td>20,102</td><td>189,278</td><td>209,380</td></tr> </tbody> </table>				Sl. No.	Model	Cookstove Distributed in each Monitoring period			1 st Monitoring period from 16-January-2023 to 28-February-2023	2 nd Monitoring period from 01-March-2023 to 31-January-2024	Total Cookstove distributed	1	Gyapa	18,893	104,920	123,813	2	Obaapa	1,209	58,810	60,019	3	Gyapa(Stove A)	0	25,548	25,548	Total Cookstove distributed		20,102	189,278	209,380
Sl. No.	Model	Cookstove Distributed in each Monitoring period																														
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3	Gyapa(Stove A)	0	25,548	25,548																												
Total Cookstove distributed		20,102	189,278	209,380																												
Monitoring equipment	Sample Survey																															
QA/QC procedures to be applied	-																															
Purpose of the data	Calculation of emission reductions																															
Calculation method	The proportion of operational stoves obtained from the survey is multiplied by the total commissioned stoves to arrive at this value. The details of monitoring survey are mentioned in section 4.3 of MR.																															

Comments	PP has distributed one ICS per household and the same is followed for each project activity instance																
Data / Parameter	$\eta_{new,y,i,j}$																
Data unit	Fraction																
Description	The efficiency of the improved cook stove type i and batch j (i.e Gyapa project stove, Obaapa Clean stove and Gyapa (Stove A) respectively) determined as per equation 5 of methodology during year y																
Source of data	Calculation																
Description of measurement methods and procedures to be applied	Select Option V from the methodology i.e “Efficiency of the improved cookstoves can also be estimated ex-ante using equation 5 above where loss in efficiency per year is calculated, and therefore this parameter does not need to be monitored”. However, the grouped project activity provides the option to use a different model of cookstoves for new future project activity instances to be included, hence this parameter value may vary based on a different model of future instances. Efficiency of ICS depends on the installation date of the ICS. Thus, for each of the newly added ICS the efficiency was calculated from year 1 of ex ante.																
Frequency of monitoring/recording	Once at the time of project stove installation																
Value monitored	For ex-ante calculation, the value of - Gyapa project stove below is applied <table border="1"> <thead> <tr> <th>Year(y)</th><th>$\eta_{new,y,i,j}$</th></tr> </thead> <tbody> <tr><td>1</td><td>34.78%</td></tr> <tr><td>2</td><td>34.43%</td></tr> <tr><td>3</td><td>34.09%</td></tr> <tr><td>4</td><td>33.75%</td></tr> <tr><td>5</td><td>33.41%</td></tr> <tr><td>6</td><td>33.08%</td></tr> <tr><td>7</td><td>32.74%</td></tr> </tbody> </table> - Obaapa Clean stove below is applied	Year(y)	$\eta_{new,y,i,j}$	1	34.78%	2	34.43%	3	34.09%	4	33.75%	5	33.41%	6	33.08%	7	32.74%
Year(y)	$\eta_{new,y,i,j}$																
1	34.78%																
2	34.43%																
3	34.09%																
4	33.75%																
5	33.41%																
6	33.08%																
7	32.74%																

	Year(y)	$\eta_{new,y,i,j}$
	1	33.84%
	2	33.50%
	3	33.17%
	4	32.83%
	5	32.51%
	6	32.18%
	7	31.86%
Gyapa (Stove A) below is applied		
	Year(y)	$\eta_{new,y,i,j}$
	1	33.84%
	2	33.50%
	3	33.17%
	4	32.83%
	5	32.51%
	6	32.18%
	7	31.86%
Monitoring equipment	Not Applicable	
QA/QC procedures to be applied	Not applicable	
Purpose of the data	Calculation of emission reductions	
Calculation method	The calculation is to be performed using the equation below: $\eta_{new,y,i,j} = \eta_p \times (DF_n)^{y-1} \times 0.94$	
Comments	A default value of 0.99 efficiency loss per year can be considered In case of ICS model changes for new project activity instances, the efficiency of the new ICS model should be determined during the verification and the same will be considered for that project activity instance.	

Data / Parameter	$B_{y=1,new,i,j,survey}$										
Data unit	Tonnes										
Description	Annual quantity ¹⁰ of fuel wood used by improved cook stoves in tonnes per device of type i and batch j, determined in the first year of the implementation of the project through a sample survey.										
Source of data	Monitoring survey										
Description of measurement methods and procedures to be applied	The sample size was selected in line with the guidelines provided in methodology Section 8.4 option (b). Determined in the first year of the introduction of the devices (e.g., during the first year of the crediting period, $y=1$) through measurement campaigns at representative households and/or sample surveys.										
Frequency of monitoring/recording	Determined in the first year of project implementation										
Value monitored	1. For Gyapa project stove – 8.55 kg/device/day or equal to 3.119 tonnes/device/year. 2. For Obaapa Clean stove – 8.36 kg/device/day or equal to 3.051 tonnes/device/year. 3. For Gyapa (Stove A) – 6.62 kg/device/day or equal to 2.415 tonnes/device/year.										
Monitoring equipment	Weighing scale										
QA/QC procedures to be applied	Calibration of weighing scales used for measuring the charcoal was done in-house before start using on site. Calibration detail of equipment is mentioned in the below table <table><tr><th>Sr. No</th><th>Location</th><th>Equipment</th><th>Date of purchase</th><th>Calibration date</th></tr><tr><td>1</td><td>Ghana</td><td>Weighing Scale 50 kg</td><td>24-April-2023</td><td>28-April-2023</td></tr></table>	Sr. No	Location	Equipment	Date of purchase	Calibration date	1	Ghana	Weighing Scale 50 kg	24-April-2023	28-April-2023
Sr. No	Location	Equipment	Date of purchase	Calibration date							
1	Ghana	Weighing Scale 50 kg	24-April-2023	28-April-2023							
Purpose of the data	Calculation of emission reductions										
Calculation method	This is monitored value										
Comments	-										

¹⁰ A default wood to charcoal conversion factor of 6 kg of firewood per kg of charcoal has been used in line with paragraph 35 of AMS II.G, version 11

Data / Parameter	$\eta_{old,i,j}$
Data unit	Fraction
Description	The efficiency of baseline cookstove
Source of data	Methodological default value
Description of measurement methods and procedures to be applied	During the baseline survey, it is observed that the baseline device was a three-stone fire using charcoal, or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney, hence default value of 0.2 is considered for Efficiency of the baseline cookstove in line with the applied methodology.
Frequency of monitoring/recording	Fixed for each individual household at the time of project implementation.
Value monitored	0.2
Monitoring equipment	NA
QA/QC procedures to be applied	NA
Purpose of the data	Calculation of emission reductions
Calculation method	NA
Comments	-

Data / Parameter	Life span
Data unit	Year
Description	Operating lifetime of project device for projects opting Equation 5 for determining project stove efficiency
Source of data	Manufacturer's specification
Description of measurement methods and procedures to be applied	Measured directly or based on a representative sample. As per methodology, the minimum sample size will be determined in which case compliance with 90/10 confidence precision is not obligatory.
Frequency of monitoring/recording	Once at the time of the new model of Project stove installation
Value monitored	7 (Applicable for Gyapa, Obappa & Gyapa (stove A) models)
Monitoring equipment	NA

QA/QC procedures to be applied	NA
Purpose of the data	Calculation of emission reductions
Calculation method	NA
Comments	-

4.3 Monitoring Plan

For measurement/monitoring of two parameters based on a representative sample. The simplified approach proposed in option (b) under Section 8.4 of the methodology have been used for determining the minimum sample size in which case compliance with 90/10 confidence precision is not obligatory.

Monitored Parameters

The project involves implementation of improved cook stove as energy efficiency measures:

No.	Monitoring Parameters	Monitoring Approach	Sampling parameters	Parameter type	Monitoring frequency
1	$N_{y,i,j}$ Number of project devices of type i and batch j operating during year y	Physical interview of sample population using structured questionnaire and visual inspection of improved Cookstoves	Proportion of ICS still in operation.	Proportion	Biennially (once in two years)
2	$B_{y=1,new,i,j,survey}$ Quantity of woody biomass used by project devices in tonnes per device of type i. and batch j	Measured value using weighing scale	Daily consumption of charcoal biomass per ICS	Mean value	Determined in the first year of project implementation
3	Life Span	-	Manufacturer's specification	Number of Years	Once at the time of the new model of Project stove installation

Sampling Approach

Target Population

The target population was the complete set of appliances (ICS) deployed under the project.

Sampling Method

The project involves distribution of ICS throughout the project area thereby replacing traditional cooking devices. PP have stratified the entire population into three groups based on cookstove models, considering that efficiency varies between models. Within each group, PP employed a simple random sampling technique to select samples for the monitoring survey. This approach allows them to capture variations in performance and usage patterns specific to each cookstove model.

PP's sampling method considered the entire population of beneficiary households rather than stratifying by batches. They adopted this approach due to the continuous nature of the ICS deployment since its inception, which made it challenging to clearly delineate distinct batches. This comprehensive approach provides a representative sample of the project population.

Regarding geographical considerations, PP determined that stratification based on location was not necessary for the project. The project area in rural Ghana comprises a homogeneous population, with all beneficiaries belonging to the Below Poverty Line (BPL) category. This homogeneity suggests that key characteristics, such as biomass consumption per household, are likely similar across our project area.

All the instances (ICS) implemented under this project were considered as the total population to determine the sample size and a single survey was undertaken to collect data. Samples were drawn by using the random number generator.

To determine the parameters, sampling involved the following approaches (outcome in brackets):

$N_{y,i,j}$	Visual inspection of the premises to see if ICS is operational and in use. Interview with end user if required to verify that ICS is still in use (Yes/No)
$B_{y=1,new,i,j,survey}$	Interview with end user and estimate the daily consumption of woody biomass of ICS (Daily consumption of charcoal biomass)

Sample Size:

For each type of stove, Minimum 100 samples were targeted to conduct the survey in accordance to the section 8.4 (b) of the applied methodology. Therefore, more than 100 samples were selected considering probable non-response using random sample selection method.

The survey team has surveyed samples each on the ground from the selected samples as per the below table. The objective was to obtain reliable and unbiased estimates of the monitoring parameters.

S. No.	Model	Survey samples
--------	-------	----------------

1	Gyapa	139
2	Obaapa	154
3	Gyapa(Stove A)	135

The project proponent has chosen to use the same sample to monitor both parameters. According to the Standard for sampling and surveys for VCS project activities and programme of activities, if there is more than one parameter to be estimated, then a sample size calculation should be done for each of them. Then either the largest number for the sample size is chosen as a sampling effort with one common survey, or separate sampling efforts and surveys are undertaken for each parameter. Therefore the project proponent have sample a combination of two parameters i.e. $N_{y,j,j}$ and $B_{y=1,new,l,j,survey}$ in the same sample. Sampling more than one parameter within the same sample (household) helps reduce travel needs for monitoring and the associated costs.

Oversampling is strongly encouraged, not only to compensate for any attrition, outliers or non-response associated with the sample, but also to prevent a situation at the analysis stage where the required reliability is not achieved and additional sampling efforts would be required. Therefore, project proponent has selected more than 20% over samples during samples selection.

Sampling Frame

The sampling frames has been defined as per below. In overall, each ICS has same group of end users which is household users with similar cooking need and geographical location, thus it is confirmed that the geographical locations do not have influence on the parameter of interest. Therefore, all monitoring parameters can be assumed to be highly homogeneous for each ICS model regardless of how the end user group and distribution/installation location is defined.

Monitoring Survey: -

The details of Monitoring surveys conducted for Gyapa, Obaapa & Gyapa(Stove A) is as follows:

Sl. No.	Model	Monitoring Survey start date	Monitoring Survey end date
1	Gyapa	04- September- 2023	28- September- 2023
2	Obaapa	05- September- 2023	26- September- 2023

3	Gyapa(Stove A)	12- September- 2023	28- September- 2023
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Data to be collected as apart of sampling:

Field Measurement:

The table below summarizes field measurement data requirements:

Parameter	Timing (indicative)	Results	Methods to be applied	Comments on seasonal fluctuation
$N_{y,i,j}$	04- September- 2023 to 28- September- 2023	100%	Visits to the premises, visual inspection and interview with ICS end-user.	Not affected due to any seasonal fluctuation.
$B_{y=1,new,i,j,survey}$	1 st monitoring Survey (16-January-2023 to 28-February-2023)	1. For Gyapa – 1.424 Kg/day/device. 2. For Obaapa Clean stove – 1.393 Kg/day/device.	Visits to the premises, visual inspection, interview with ICS end-user and estimation of the daily consumption of charcoal biomass of ICS.	Not affected due to any seasonal fluctuation.
	2 nd monitoring Survey (04- September- 2023 to 28- September- 2023)	For Gyapa (Stove A) – 1.103 Kg/day/device		

Surveys have been carried out by a mobile app, and hence soft copies of the surveys have been kept and the database has been backed up A back-up of the project database is stored in an electronic medium. All data monitored and required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of credits for the project activity, whichever is later.

Quality Assurance/Quality Control

The project proponent has applied measures to ensure the sampling requirement for each sampled parameter is met, allowing for non-response and the possible removal of outliers from the sample, as part of a Quality Control/Quality Assurance system. The choice of measure applied to each parameter is depended on the cost of each data collection approach and logistics

required. The project proponent determined the most effective measure for each parameter from the following list:

- Oversampling: Randomly drawn a sample more than the calculated number 20%) and collect data from the entire population.
- Buffer Group: Randomly drawn additional samples (20%) and collected data from the selected samples meeting the minimum numbers of ICS as per sample size calculation.

The sampling plan has the following procedures in place to ensure good quality data. The project proponent ensured that field personnel have reviewed, understood and have agreed to follow the monitoring plan procedures, including provisions for maximizing response rates, documenting out-of-population cases, refusals and other sources of non-response. A quality control and assurance strategy were documented. Quality control and assurance strategies included addressing non-sampling errors, such as non-response or bias from interviewer. The project proponent with the proper skills was trained the monitoring personnel on how to properly survey households to prevent bias from interviewer. In the case a household refuses to participate, another household was chosen at random. To reduce interviewer bias, good questionnaire design and well-tested questionnaires was used.

Monitoring questionnaires

The distributing entities recorded each sample ICS user's contact information and pertinent data on standardized monitoring questionnaires concerning the corresponding serial number of the ICS that was distributed.

The interviewer filled out the monitoring questionnaire manually or using an app-based electronic device (e.g., mobile phone) at each sample household. Data recorded through a manual process will be recorded and transferred into the electronic database.

Stoves Users are requested to provide the required information to the interviewer. Users shared their background information in several ways, including by speaking directly with designated focal points who may reside in their communities. This includes:

- Stove Serial No. /Unique ID, Date of ICS Receipt/onset of usage, Address, Beneficiary Name, etc.
- Improved Cookstove Specific Information such as the functioning of ICS, benefits observed from the use of improved cook stoves
- Traditional Cookstove Specific uses information
- Other Cooking fuel-specific information – LPG, Kerosene, etc.
- Fuel use pattern of your household – Purpose of fuel use
- Fuel Details – Quantity, sources, Cost, Quantity, Problem in collecting fuel, etc.

Calibration procedures for monitoring equipment:

To measure the weight of charcoal consumed by the project stove in a day/week, weighing scales are being used. The weighing scales used for monitoring purposes are being calibrated before

starting the survey, as per the national/international standard, or as specified in the user manual of the respective weighing scale.

Data Review and Tabulation

At the first step data related to users/beneficiary information and result of survey was reviewed /triangulated and thereafter tabulated in database/excel spreadsheet by the teammembers of distributor / operational Team (Local Representative) member from the user agreement and survey schedule respectively.

At the next step the database/excel spreadsheet containing beneficiary/ survey information was cross verified by EKI Energy Services Limited (EKIESL) team member with hard copy of end user agreement and survey schedule to ensure correctness of data transfer.

Analysis

The project proponent managed a project database that includes the following data that can be directly attributable to each instance within the project, thereby allowing unambiguous determination of the emission reductions attributable to each project:

- A list of households participating in the project, including name, community/location, distribution/installation date and unique serial number;
- Where replacements are made, assurance that the efficiency of the new ICS is similar to the specified.

Data obtained from the samples was used to estimate proportions and mean values for the parameters described above. The values were then factored into the emissions reduction calculations and result in the request for issuance of VERs. The parameters are applied for emission reduction calculations. The stoves that are not in use will be excluded from emissions reductions calculations and will not be counted towards the total number of ICS in operation during the monitoring period.

Internal Audit

Project Proponent has constituted the team for internal audit as a part of quality control and quality assurance mechanism towards ensuring data completeness (including triangulation and verification of monitored data/parameters and correctness of data transfer from user agreement and structured interview schedule to database/excel) in conformance with monitoring and reporting guidelines as well as maintenance of data to avoid any risk of error in estimation of emission reduction. This purpose of internal audit includes

1. Cross verification of the information obtained as part of sample survey to identify outliers /erroneous data if any
2. Random review of data transfer between beneficiary database and end user agreement
3. Random review of data transfer between survey schedule/ structured questionnaire and monitoring excel spreadsheet (used for emission reduction estimation)
4. Cross check of improved cookstoves usage through calling of beneficiaries in addition to periodic survey

5. Internal audit of emission reduction estimation

6. Internal audit of the record of training undertaken

This internal audit to be conducted to identify discrepancies/ nonconformities if any and if identified, will be included in the audit findings and appropriate measures are undertaken immediately. Report on internal audits done, discrepancies/ nonconformities identified and corrective action taken is maintained and kept for external auditing (verification).

The internal audit will also identify scope for potential improvements to procedures to improve monitoring and reporting. If such improvements are proposed these will be reported to the VVB.

Implementation

The project proponent followed the simple random sampling approach and the minimum sample size determined as per the following guidelines:

- Project target population < 300: Minimum sample size 30
- Project target population 300 – 1000: Minimum sample size 10% of group size
- Project target population > 1000: Minimum sample size 100

The simplified approach is used for determining a minimum sample size of 100 for parameters available at validation and parameter to be monitored in which case it is not requisite for the sample compliance with 90/10 confidence precision is not obligatory.

These parameters are as below:

- Number of project devices of type i and batch j operating during year y
- Quantity of charcoal biomass used by project devices in tonnes per device of type i.
- Baseline cookstoves usage along with the project stove

Sampling for the purpose of emission reduction calculation and elaboration of the monitoring report was conducted in the month of September 2023 for current monitoring period. This sampling was conducted by trained personal from project proponent. The credentials and/or training materials for the sampling personal will be provided to the VVB at verification. The maximum length of one monitoring period will be two years (duration, not calendar years), with option for bi-annual monitoring. The project proponent is responsible for managing household data collection and entry into the project database. Field personnel have received the training on how to properly deal with surveying techniques and reduce errors and ensured that there is no conflict of interest of those involved in data collection and analysis. The project database has the record of the implementation date and end user name and address of each ICS installed.

Appropriate record keeping procedures has been implemented to ensure that each monitoring period data set can be transparently attributed to its corresponding project, preventing any occurrences of double counting. An internal review of the project database is able to determine the current status of each ICS — the duration of previous monitoring periods, the households delivering monitoring data, and current verification activities.

(i) Assessment for Leakage

The methodology provides a net to gross adjustment factor of 0.95 to account for leakages, hence the surveys are not required to determine leakage.

The other source of leakage occurs if equipment currently being utilised is transferred from outside the boundary to the project activity. All ICS in the project are newly manufactured/assembled or newly installed, thus no leakage is applicable.

(ii) Disposal of Low Efficiency Appliances and Use of Baseline Stoves

When an ICS is installed, the end user receives information explaining that conventional open fire appliance must no longer be used. Follow-up meetings with end users ensured that those who have received an ICS are using it properly and that the conventional open fire is no longer in use.

(iii) Monitoring Reporting

The project proponent assessed all monitoring data and produced a monitoring report for the VVB to verify corresponding to the preceding monitoring period. This report presents the data relating to the emission reductions generated by those project activity instances during the monitoring period.

The purpose of the monitoring plan is to ensure successful monitoring of the emission reductions of the proposed project during its crediting period. The overall monitoring will be managed by the project implementer EKI Energy Services Ltd. (EKIESL)

Activities and performance related to emissions reduction are monitored by EKIESL. The PP proposed the following roles and responsibilities for data monitoring, collection, data archiving and calibration of equipment for these project activity instances. The team comprise will follow the below participators.

The monitoring activities will involve data collection during distribution as well as usage information post distribution. The data collected during distribution also involves information about the stove, the end user and location to enable one to uniquely identify each ICS unit and avoid double counting.

Repair and Maintenance - EKIESL/it's representative established service center at project location where end users can repair the cookstoves and can use further. The repair and maintenance will be followed as per manufacturer recommendation. This will ensure that cook stove will operate for longer period. After 7 years of lifetime, a report from Maintenance Company will be provided to confirm the extended life of cook stove. The project will claim credits beyond 7 years only for balanced year till cook stove is replaced by new cookstoves.

Biomass consumption of new cookstove has been checked. Data collection & handling has been conducted in a transparent way to secure high quality of recording and storing of data. Data collected and monitored are stored electronically in a secure and retrievable manner for at least two years after the end of the project crediting period. Uncertainty related to data handling (if

any) would be rectified, if necessary, by revising monitoring procedures. The changes would be approved by a Validation & verification body.

Roles and responsibilities of different participators are proposed to be as follows:

Entity/Person	Roles & Responsibilities
EKIESL	✓ VCS documentation development ✓ Communicate with VERRA for all VCS related matters ✓ Communicate with VVBs for validation & verification ✓ Identify local partners for local representation and support ✓ Identity suitable ICS manufacturers ✓ Design the distribution plan for on ground implementation of ICS ✓ Design the monitoring system (including data collection in an electronic database) ✓ Training and development of local resources (as may be required) ✓ Regular Monitoring and quality assurance of data ✓ Monitor & Supervise on-ground distribution, etc. ✓ Annual Review meeting with Local Teams and other associated entity in order to ensure continuous improvements of the project activity
Distributor / Operational Team (Local Representative)	✓ To support & assist EKIESL in achieving the stated goal of the project activity ✓ Assist and facilitate EKIESL in baseline data collection, efficiency testing, data of biomass consumption for new ICS through sampling survey etc. ✓ To be the local representative and communicate, act and engage in implementation activities of project activity ✓ To identify and deploy suitable local team and resources for ICS distribution, data collection, regular spot-check at households etc. ✓ Assist and facilitate EKIESL during training of the Operational Team and capacity building across the end users. ✓ To bridge any gap in between end users of ICS and EKIESL in order to ensure smooth operation of the program to achieve overall objective of the project activity ✓ ICS Distributor(s)-who will be responsible for deploying the ICS at household and register the end user in the digital tool. They will also be responsible for giving demonstration of ICS use, discussing with the end users on its benefits and educate them on continued use of ICS and discontinuation of the use of conventional/traditional open firing practice. They will also conduct periodic check at households to gather feedback, address to any technical concerns, collect necessary data and transmit the information.
ICS Manufacturer or Supplier	✓ To design and develop ICS as per required standard ✓ To provide technical parameters and manufacturer's efficiency etc. at the time of supply ✓ To educate and train EKIESL team on the installation (delivery), uses, handling etc. of the ICS at households.

Monitoring Responsibility

Data/Parameters	Monitoring Responsibility
Date of commissioning of batch j	1. Distributor / Operational Team (Local Representative) member is responsible for signing of end user agreement with beneficiary being hand overed with the improved cookstoves. The beneficiary information in the end user agreement will be transferred by Distributor / Operational Team (Local Representative) member in excel database/spreadsheet including the information relating to the commissioning. 2. The beneficiary as well as the commissioning data/information in the beneficiary database/excel spreadsheet will be cross verified by EKIESL team member with the hard copy of the end user agreement to ensure correctness of data transfer.
N_{y,i,j} Number of project devices of type i and batch j operating during year y	1. EKIESL team member will be responsible for developing of the structured interview schedule/questionnaire, training of surveyors and cross verify the tabulated data with the original information schedule. 2. The information will be collected by the team members of the Distributor / Operational Team (Local Representative) through sampling survey. The team members will also be responsible for data triangulation and data tabulation in excel spreadsheet. 3. The survey data/information in the excel/spreadsheet will be cross verified by EKIESL team member with the hard copy survey schedule to ensure correctness of data transfer.
B_{y=1,new,i,j,survey} Quantity of woody biomass used by project devices in tonnes per device of type i. and batch j	1. EKIESL team member will be responsible for developing of the structured interview schedule/questionnaire, training of surveyors and cross verify the tabulated data with the original information schedule. 2. The information will be collected by the team members of the Distributor / Operational Team(Local Representative) through sampling survey. The team members will also be responsible for data triangulation and data tabulation in excel spreadsheet. 3. The survey data/information in the excel/spreadsheet will be cross verified by EKIESL teammember with the hard copy survey schedule to ensure correctness of data transfer.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The methodology does not account for baseline emissions separately, but instead quantifies net emission reductions achieved by the project. Please refer Section 5.4 of this MR.

5.2 Project Emissions

The methodology does not account for project emissions separately, but instead quantifies net emission reductions achieved by the project. Please refer to Section 5.4 of this MR.

5.3 Leakage Emissions

Leakage shall be considered as default 0.95 in accordance with methodology.

5.4 GHG Emission Reductions and Carbon Dioxide Removals

The below calculations are represented for project activity:

The improved cookstove is introduced as energy efficiency measure in the grouped project activity, therefore equations 1 and 2 of VMR006 methodology will be applied to calculate the net GHG emission reductions

$$ER_y = \sum_i \sum_j ER_{y,i,j}$$

Where:

i = Indices for the situation where more than one type/model of improved cookstove is introduced to replace three-stone fire

j = Indices for the situation where there is more than one batch of improved cookstove of type i

ER_y = Emission reductions during year y in t CO₂e

ER_{y,i,j} = Emission reductions by improved cookstove of type i and batch j during year y in t CO₂e

$$ER_{y,i,j} = B_{y,savings,i,j} \times NCV_{wood\ fuel} \times f_{NRB,y} \times (EF_{wf,CO2} + EF_{wf,non\ CO2}) \times N_{y,i,j} \times 0.95$$

Where:

- $B_{y,savings,i,j}$ = Quantity of woody biomass that is saved in tonnes per improved cookstove of type i and batch j during year y
- f_{NRB} = Fraction of woody biomass that can be established as non-renewable biomass (f_{NRB})
- $NCV_{wood\ fuel}$ = Net calorific value of the non-renewable woody biomass that is substituted or reduced (IPCC default for wood fuel, 0.0156 TJ/tonne)¹¹
- EF_{wf,CO_2} = CO₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 112 tCO₂/TJ)¹²
- $EF_{wf,non\ CO_2}$ = Non-CO₂ emission factor for the use of wood fuel in baseline scenario (IPCC default for wood fuel, 26.23 tCO₂/TJ)¹³
- $N_{y,i,j}$ = Number of improved cookstoves of type i and batch j operating during year y
- 0.95 = Discount factor to account for leakage

The quantify of woody biomass saved due to implementation of improved cookstoves to be estimated using equation below (Equation 4 of methodology)

$$B_{y,savings,i,j} = B_{y=1,new,i,survey} \times \left(\frac{\eta_{new,y,i,j}}{\eta_{old}} - 1 \right)$$

Where

- η_{old} = Efficiency of baseline cookstove
- $\eta_{new,y,i,j}$ = Efficiency of the improved cookstove type i and batch j determined through water boiling test (WBT) during year y

Alternatively, efficiency may be determined using below Equation

¹¹ 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 1 Introduction

¹² 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

¹³ 2006 IPCC Guidelines for National Greenhouse Gas Inventories; Volume 2 Energy, Chapter 2 Stationary Combustion

$$\eta_{new,y,i,j} = \eta_p \times (DF_n)^{y-1} \times 0.94 \quad \text{Equation (1)}$$

Where

- η_p = Efficiency of project stove (fraction) at the start of project activity.
- $(DF_n)^{y-1}$ = Discount factor to account for efficiency loss of project cookstove per year of operation (fraction). This value may be based on actual monitoring or based on manufacturer's declaration on expected loss in efficiency or through publicly available literature on relevant industry standards. Alternatively default value of 0.99 efficiency loss per year can be considered.
- 0.94 = Adjustment factor to account for uncertainty related to project cookstove efficiency test

$B_{y=1,new,i,j,survey}$ = Annual quantity of woody biomass used by improved cookstoves in tonnes per device of type i and batch j, determined in the first year of the implementation of the project through a sample survey.

The Actual ER calculations for sample project activity instance are as below.

PP has calculated the emission reduction for each ICS installed under the project activity separately. In this section example for ER calculation of one ICS (stove serial number EKIGH-22/L1/0001446) is provided:

Date of installation: 16-January-2023

Location: Ghana

Cookstove Model: Gyapa

For the year 2024, vintage for the stove: Vintage 2

No. of days for vintage 2: 337 (01-March-2023 to 31-January-2024) (inclusive of both the dates)

Year fraction: $337/365 = 0.92$

Determination of efficiency of ICS during year y

$$\eta_{new,y,i,j} = \eta_p \times (DF_n)^{y-1} \times 0.94$$

Where,

$$\eta_p = 37\%$$

$$DF_n = 0.99$$

Example of calculation for Gyapa:

If $y = 2$

$$\eta_{new,y,i,j} = 37\% \times (0.99)^{1(2-1)} \times 0.94$$

$$= 34.43\%$$

Determination of the quantity of charcoal that is saved in tonnes per ICS during year y for Gyapa stove model

$$B_{y,savings,i,j} = B_{y=1,new,i,survey} \times \left(\frac{\eta_{new,y,i,j}}{\eta_{old}} - 1 \right)$$

$$\text{If } y = 1,$$

$$B_{y=1,j,survey} = 1.424 \text{ Kg / device / Day (Charcoal)}$$

$$B_{y=1,j,survey} = 1.424 \times 6^{14} \text{ Kg / device / Day}$$

$$= 8.55 \text{ Kg / device / Day (Converted as wood from Charcoal)}$$

$$B_{y=1,j,survey} = [(8.55 \times 365) / 1000] \text{ tonnes / device / year}$$

$$= 3.119 \text{ tonnes / device / year}$$

$$B_{y,savings,i,j} = 3.119 \times [(0.3443/0.2) - 1]$$

$$= 2.25 \text{ tonnes}$$

Period	$B_{y=1,new,i,survey}$	$\eta_{new,y,i,j}$	η_{old}	$B_{y,savings,i,j}$
01-March-2023 to 31-January-2024 (inclusive of both the dates)	3.119	34.43%	0.2	2.25

Determination of emission reductions for Gyapa stove model

$$ER_{y,i,j} = B_{y,savings,i,j} \times NCV_{wood\ fuel} \times f_{NRB,y} \times (EF_{wf,CO_2} + EF_{wf,non\ CO_2}) \times N_{y,i,j} \times 0.95$$

Where,

$$NCV_{wood\ fuel} = 0.0156 \text{ TJ/tonne}$$

$$f_{NRB,y} = 0.8197$$

¹⁴ A default wood to charcoal conversion factor of 6 kg of firewood per kg of charcoal has been used in line with paragraph 35 of AMS II.G, version 11

$$EF_{wf,CO_2} + EF_{wf,non\ CO_2} = 112 + 26.23 = 138.23 \text{ tCO}_2/\text{TJ}$$

If $y = 2$

$$ER_{y,i,j} = 2.25 \times 0.0156 \times 0.8197 \times 138.23 \times 1 \times 0.95$$

$$= 3.78 \text{ tCO}_2\text{e}$$

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCU (tCO ₂ e)	Removal VCU (tCO ₂ e)	Total VCUs (tCO ₂ e)
01-Mar-2023 to 31-Dec-2023	480,925	0	0	480,925	0	480,925
01-Jan-2024 to 31-Jan-2024	64,855	0	0	64,855	0	64,855
Total	545,780	0	0	545,780	0	545,780

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Mar-2023 to 31-Dec-2023	628,982	480,925	-23.54%	All the project ICS were not installed on the first date of monitoring
01-Jan-2024 to 31-Jan-2024	63,720	64,855	1.78%	In the ex-ante calculation, the newly added cookstove is assumed to be operational from the beginning of the crediting period. Therefore, during the monitoring period, they had already experienced some loss of efficiency. But in reality, instances with the new stove model were installed at later dates during the crediting period, thus retaining their efficiency without any loss. Consequently, a higher emission reduction value is being achieved than the ex-

				ante emission reduction for this period
Total	692,702	545,780	-21.21%	

APPENDIX 1: COMMERCIALLY SENSITIVE INFORMATION

There is no commercially sensitive information in the monitoring report

Use the table below to describe the commercially sensitive information included in the monitoring report to be excluded in the public version.

Section	Information	Justification
NA	NA	NA

APPENDIX 2: SUPPORTING EVIDENCE

1. Employment Declaration (Distributor)

1) Jacgk Trust Enterprises



JACGK TRUST ENTERPRISE

P.O.BOX YB 495 ASUOYEBOAH, KUMASI Email: gloriajo3@gmail.com Tel: +233 553225353 / 020 056 7700

Date: 16-02-2024

TO WHOMSOEVER IT MAY CONCERN

This is to declare Jacgk Trust Enterprises that has employed 41 for improved cookstove Distribution to execute Enking orders for the VCS Project 3801 of improved cook stoves for the monitoring period of (01-03-2023 to 31-01-2024).

Details of same is as below:

Blue collar Workers: - 29 (18 male and 11 Female), Average salary GHS 12000 to 16000 per month.

Staff: - 12 (07 Male and 05 Female), Average salary GHS 16000-19000 per month.



Some of quality agricultural products, inputs and general merchant



JACGK TRUST ENTERPRISE

P.O.BOX YB 495 ASUOYEBOAH, KUMASI Email: gloriajo3@gmail.com Tel: +233 553225353 / 020 056 7700

Date: 16-02-2024

TO WHOMSOEVER IT MAY CONCERN

This is to declare Jacgk Trust Enterprises that has employed 98 for improved cookstove Manufacturing to execute Enking orders for the VCS Project 3801 of improved cook stoves for the monitoring period of (01-03-2023 to 31-01-2024).

Details of same is as below:

Blue collar Workers: - 79 (51 male and 28 Female), Average salary GHS 12000 to 15000 per month.

Staff: - 19 (13 Male and 6 Female), Average salary GHS 18000-21000 per month.



Home of quality agricultural products, inputs and general merchant

2) Nasam Brand Enterprise



NASAM BRAND ENTERPRISE

Improved CookStoves design, Engineering, Construction and Marketing

Tel: (00233) 24 915 4011 Email: bismarkasamoah88@gmail.com

Address: Cape Coast – C/R

Address: c/o Raymond Livingstone Kusorghor, Ghana Alliance For Clean Cook Stove (GHACCO) –

P. O. Box CT 7928, Cantonments, Accra.

Date: 16-02-2024

TO WHOMSOEVER IT MAY CONCERN

This is to declare Nasam Brand Enterprise that has employed 23 for improved cookstove Distributor to execute Enking orders for the VCS Project 3801 of improved cook stoves for the monitoring period of (01-03-2023 to 31-01-2024).

Details of same is as below:

Blue collar Workers: - 0 (0 male and 0 Female), Average salary GHS 00 to 00 per month.

Staff: - 23 (17 Male and 6 Female), Average salary GHS 17000-20000 per month..

For Nasam Brand Enterprise.



Bismark Asamoah Asante



NASAM BRAND ENTERPRISE

Improved CookStoves design, Engineering, Construction and Marketing

Tel: (00233) 24 915 4011 Email: bismarkasamoah33@gmail.com

Address: Cape Coast – C/R

*Address: c/o Raymond Livingstone Kuorghor, Ghana Alliance For Clean Cook Stove (GHACCO) –
P. O. Box CT 7923, Cantonments, Accra.*

Date: 16-02-2024

TO WHOMSOEVER IT MAY CONCERN

This is to declare Nasam Brand Enterprise that has employed 63 for improved cookstove Manufacturing to execute Enking orders for the VCS Project 3801 of improved cook stoves for the monitoring period of (01-03-2023 to 31-01-2024).

Details of same is as below:

Blue collar Workers: - 44 (31 male and 13 Female), Average salary GHS 12000 to 16000 per month.

Staff: - 19 (12 Male and 7 Female), Average salary GHS 17000-20000 per month.

For Nasam Brand Enterprise.



Bismark Asamoah Asante

3) Sustainable Energy Technologies Limited



SUSTAINABLE ENERGY TECHNOLOGIES LIMITED

Engineering, Manufacturing and Distribution of Renewable Energy and Agricultural Technologies (Household & Commercial Clean cookstoves, Solar Lighting and installation, Water Filters, Biogas Systems & Agricultural Machinery)

University Box 658, University of Ghana, Legon, Accra

TELEPHONES: 0244108268 / 0248737439. Email: info@setechghana.com

Date: 16-02-2024

TO WHOMSOEVER IT MAY CONCERN

This is to declare SETECH that has employed 72 for improved cookstove Distributor to execute Enking orders for the VCS Project 3801 of improved cook stoves for the monitoring period of (01-03-2023 to 31-01-2024).

Details of same is as below:

Blue collar Workers: - 59 (33 male and 26 Female), Average salary GHS 13000 to 18000 per month.

Staff: - 13 (9 Male and 4 Female), Average salary GHS 21000-23000 per month.

Yours Faithfully,



Lovans Owusu-Takyi

Executive Director

For Sustainable Energy Technologies (SETECH)

**SUSTAINABLE ENERGY TECHNOLOGIES LIMITED**

Engineering, Manufacturing and Distribution of Renewable Energy and Agricultural Technologies (Household & Commercial Clean cookstoves, Solar Lighting and installation, Water Filters, Biogas Systems & Agricultural Machinery)

University Box 658, University of Ghana, Legon, Accra

TELEPHONES: 0244108268 / 0248737439. Email: info@setechghana.com

Date: 16-02-2024

TO WHOMSOEVER IT MAY CONCERN

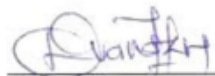
This is to declare SETECH that has employed 116 for improved cookstove Manufacturing to execute Enking orders for the VCS Project 3801 of improved cook stoves for the monitoring period of (01-03-2023 to 31-01-2024).

Details of same is as below:

Blue collar Workers: - 97 (66 male and 31 Female), Average salary GHS 18000 to 20000 per month.

Staff: - 19 (12 Male and 7 Female), Average salary GHS 22000-24000 per month.

Yours Faithfully,



Lovans Owusu-Takyi

Executive Director

For Sustainable Energy Technologies (SETECH)

2. Training Declaration (Distributor)

1) Jacgk Trust Enterprises



JACGK TRUST ENTERPRISE

P.O.BOX YB 495 ASUOYEBOAH, KUMASI Email: gloriojo3@gmail.com Tel: +233 553225353 / 020 056 7700

Date:- 16-02-2024

TO WHOMSOEVER IT MAY CONCERN

This is to declare that EKI Energy Services Limited has trained Jacgk Trust Enterprises Distribution team for the project VCS 3801.

We hereby confirm that in addition to distribution of ICS to beneficiaries have been carried out the following activity during or after the handover of ICS to beneficiaries:

1. Detailed briefing about the project activity and undertaking of the user's Registration.
2. User's / Beneficiaries awareness regarding the social and health benefits of ICS usage.
3. Training and sensitization of users / beneficiaries regarding the ICS usage including fuel feeding and ICS cleaning process, process of reporting grievance and registering complaint for maintenance.
4. Educating on the warranty cards.
5. Training the Distributor's team on different modules of EKI, In EKI application. (Monitoring Survey, Distribution module)

We hereby confirm that the aforesaid activities have been trained by EKI Energy Services Limited to Jacgk Trust Enterprise



Home of quality agricultural products, inputs and general merchant

2) Nasam Brand Enterprise



NASAM BRAND ENTERPRISE

Improved CookStoves design, Engineering, Construction and Marketing

Tel: (00233) 24 915 4011 Email: bismarkasamoah88@gmail.com

Address: Cape Coast – C/R

*Address: c/o Raymond Livingstone Kusorgbor, Ghana Alliance For Clean Cook Stove (GHACCO) –
P. O. Box CT 7928, Cantonments, Accra.*

Date: 16-02-2024

TO WHOMSOEVER IT MAY CONCERN

This is to declare that EKI Energy Services Limited has trained Nasam Brand Enterprises Distribution team for the project VCS 3801 We hereby confirm that in addition to distribution of ICS to beneficiaries have been carried out the following activity during or after the handover of ICS to beneficiaries:

1. Detailed briefing about the project activity and undertaking of the user's registration.
2. User's / Beneficiaries awareness regarding the social and health benefits of ICS usage.
3. Training and sensitization of users / beneficiaries regarding the ICS usage including fuel Feeding and ICS cleaning process, process of reporting grievance and registering complaint for maintenance.
4. Educating on the warranty cards.
5. Training the Distributor's team on different modules of EKI, In EKI application. (Monitoring Survey, Distribution module)

We hereby confirm that the aforesaid activities have been trained by EKI Energy Services Limited to Nasam Brand Enterprise's Team.

For Nasam Brand Enterprise.



Bismark Asamoah Asante

3) Sustainable Energy Technologies Limited

**SUSTAINABLE ENERGY TECHNOLOGIES LIMITED**

Engineering, Manufacturing and Distribution of Renewable Energy and Agricultural Technologies (Household & Commercial Clean cookstoves, Solar Lighting and installation, Water Filters, Biogas Systems & Agricultural Machinery)

University Box 658, University of Ghana, Legon, Accra

TELEPHONES: 0244108268 / 0248737439. Email: info@setechghana.com

Date: 16-02-2024

TO WHOMSOEVER IT MAY CONCERN

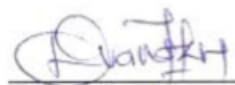
This is to declare that EKI Energy Services Limited has trained SETECH distribution team for the project VCS 3801.

We hereby confirm that in addition to distribution of ICS to beneficiaries have been carried out the following activity during or after the handover of ICS to beneficiaries:

1. Detailed briefing about the project activity and undertaking of the user's registration.
2. User's / Beneficiaries awareness regarding the social and health benefits of ICS usage.
3. Training and sensitization of users / beneficiaries regarding the ICS usage including fuel feeding and ICS cleaning process, process of reporting grievance and registering complaint for maintenance.
4. Educating on the warranty cards.
5. Training the Distributor's team on different modules of EKI, In EKI application. (Monitoring Survey, Distribution module)

We hereby confirm that the aforesaid activities have been trained by EKI Energy Services Limited to SETECH's Team.

Yours Faithfully,



Lovans Owusu-Takyi

Executive Director

For Sustainable Energy Technologies (SETECH)