CPA1 - MAN AND MAN ENTERPRISE IMPROVED COOKING STOVES PROGRAMME IN GHANA (BRONG-AHAFO REGION)

Document Prepared by: Carbon Check (India) Private Limited,

Unit No.: 1701, Logix Office Tower, Plot No.: BW - 58, Sector - 32, NOIDA (Uttar Pradesh) - 201301, India, Phone: +91 120 4373114

https://www.carboncheck.co.in

Project Title	CPA1 - Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)
Report Title	Joint Validation and Verification Report for "CPA1 - Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)"
Version	03
Report ID	CCIPL 1398/JVVR/01
Verification Period	01-January-2021 to 31-May-2022

Client	Man and Man Enterprise
Pages	81 pages
Date of Issue	26-October-2023 report issued
Prepared By	Carbon Check (India) Private Ltd.
Contact	Unit No.: 1701, Logix Office Tower, Plot No.: BW - 58, Sector - 32, NOIDA (Uttar Pradesh) - 201301, India, Phone: +91 120 4373114
Approved By	Vikash Kumar Singh, Compliance Officer
Work Carried Out By	Amit Anand (Team Leader) Anubhav Dimri (Team Member) Isaac Mensah (Local Expert) Rohit Singh (Observer) Indumathi C (Technical Reviewer)

Summary:

- **A description of the project**

The project activity "CPA1 - Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)" involves the replacement of traditional charcoal cooking stoves by affordable Improved Cooking Stoves (ICS) in the urban and peri-urban Brong- Ahafo region of Ghana. The project activity consists of 200,000 affordable Improved Cooking Stoves (ICS) implemented by Man and Man Enterprise, a Ghana- based ICS producer and seller.

The project activity thus aims to reduce non-renewable wood fuel consumption and greenhouse gas (GHG) emissions of households (hereafter also "end-users") in the urban and peri-urban Brong-Ahafo region of Ghana by selling about 200,000 affordable Improved Cooking Stoves (ICSs) in replacement of traditional charcoal cooking stoves, so-called coal pots. In the baseline scenario, households continue to be using non-renewable biomass in traditional cooking stoves. The baseline scenario is the same as the scenario existing prior to the implementation of the combined project activity.

The project activity has estimated 171,233 tCO_2 emission reductions per year on average or 1,198,634 tCO_2 over the 7-year crediting period.

During the first verification conducted for this project alongside validation, actual emission reduction in the monitoring period from 01-January-2021 to 31-May-2022, has resulted in 364,210 tCO_2e.

- **A description of the validation and verification**

Man and Man Enterprise has appointed the VVB Carbon Check (India) Private Ltd., to carry out the combined validation and verification of the project "CPA1 - Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)", in Ghana with regards to the relevant requirements of VCS Standard Version 4.5 (dated 29-August-2023). The combined validation and verification are based on the site visit, desk review of the VCS Joint PD & MR and the corresponding supporting emission reduction calculation spread sheets /04/ and other relevant supporting documents made available to the validation and verification team by the project proponent accompanied by onsite visit interviews. This verification involves the period of 01-January-2021 to 31-May-2022.

- **The purpose and scope of validation and verification**

Purpose: The purpose of validation is to have a thorough and independent assessment of the proposed project activity against the applicable VCS requirements, particularly the project's

baseline, monitoring plan, and compliance with the relevant VCS and host Party criteria. These are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions. Carbon Check's objective is to perform a thorough, independent assessment of the validation of the project activity.

The purpose of the verification is to review the monitoring results and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data, used to confirm the reductions in anthropogenic emissions by sources are sufficient, definitive and presented in a concise and transparent manner. The monitoring plan, monitoring report, and the project's compliance with relevant VCS, UNFCCC, and host party criteria are verified to confirm that the project has been implemented in accordance with previously the y registered design and conservative assumptions, as documented.

Scope of validation and verification

Validation and Verification scope is defined as an independent and objective review of the Joint PD & MR. The Joint PD & MR is reviewed against the relevant criteria and guidance documents provided by VCS which include the following: VCS Program Guide (v4.4, dated 29-August-2023), VCS Standard (v4.5, dated 29-August-2023), Program Definitions (v4.4, dated 29-August-2023), Registration & Issuance Process (v4.4, dated 31-August-2023), and in line with the VCS Validation and Verification Manual (v3.2, dated 19/10/2016)applicable at the time in order to confirm that the project meets the applicability conditions of the selected baseline and monitoring methodology AMS-II.G Ver. 08.0, and also assess the claims and assumptions made in the Joint PD and MR without limitation on the information provided by the project participants. The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The Man and Man Enterprise contracted Carbon Check (India) Private Ltd to conduct the joint validation and verification of the project. The project is covered under sectoral scope: 03 – Energy Demand based on the methodology AMS-II.G Ver. 08.0 "Energy efficiency measures in thermal applications of non-renewable biomass".

A total of 07 CLs and 04 CARs had been raised during the joint validation and verification process of the project activity. All the CLs and CARs have been closed. No FARs are raised during the validation and verification process.

- **The method and criteria used for validation and verification**

The validation consists of the following four phases:

I. A desk review of the project description documents.

- A review of data and information.
- Cross checks between information provided in PD and information from sources with all necessary means without limitations to the information provided by the project proponent.

II. Onsite interviews with project stakeholders

- Interviews with relevant stakeholders in the host country with personnel having knowledge with the project development via telephone, email, or direct on-site visits;
- Cross-checking between information provided by interviewed personnel with all necessary means without limitations to the information provided by the project proponent.

III. Secondary Information:

Reference to available information relating to projects or technologies similar to the project under validation and review based on the approved methodology being applied for the appropriateness of formulae and accuracy of calculations.

IV. Issuance of Final Validation Report

The resolution of outstanding issues and the issuance of the final validation report and opinion.

The verification consists of the following phases:

I. (a) Desk review, involving:

- Review of the data and information presented to verify their completeness.
- Review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.
- Evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

II. (b) Onsite assessment involving:

- Assessment of the implementation and operation of the proposed VCS project activity as per the VCS Joint PD & MR.
- Verification of implemented monitoring plan as per the VCS Joint PD & MR and applied baseline and monitoring methodology.
- Review of information flows for generating, aggregating, and reporting the monitoring parameters.
- Interview with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the monitoring plan in the VCS Joint PD & MR.

- A cross-check between information provided in the monitoring report and data from other sources such as inventories, purchase records, or similar data sources.
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS Joint PD & MR and the selected methodology.
- Review of calculations and assumptions made in determining the GHG data and emission reductions.
- Identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

- **The number of findings raised during validation and verification.**

  - A risk-based approach has been followed to perform this Joint Validation & Verification A total of 07 CLs and 04 CARs had been raised during the joint validation and verification process of the project activity. No FARs are raised during the validation and verification process.

  - All the raised findings have been successfully resolved by the PP.

- **Any uncertainties associated with the validation and verification.**

  There are no uncertainties associated with the joint validation & verification of the project activity. The validation and verification have been done with a reasonable level of assurance. The VCS Joint PD & MR/02/, emissions reduction calculations /02/ along with the supporting documents provided are in line with all the VCS requirements /B01/. The validation and verification team has detected no further uncertainties or quality restriction.

- **Summary of the validation and verification conclusions**

Carbon Check (India) Private Ltd has performed the validation and verification of the VCS "CPA1-Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)". The VVB has confirmed that:

- The project activity is in accordance with all relevant host country criteria (Ghana) and VCS rules and requirements;
- The project activity is in accordance with all conditions of the latest version of applied methodology AMS-II.G Ver. 08.0 – "Energy efficiency measures in thermal applications of non-renewable biomass";
- The local stakeholder's consultation has been performed in accordance with the host country and VCS requirements;
- The environmental assessment is appropriate and sufficient;
- The monitoring plan is transparent and adequate;

- All information has been consistently applied in the VCS- Joint project description and monitoring report.

The implementation of the project has been done as per the description in the VCS- Joint project description and monitoring report.

In CCIPL's opinion, the emission reductions reported for the project activity "CPA1- Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)" in the Joint project description and monitoring report are fairly and correctly stated. CCIPL is therefore able to certify that the emission reductions from the "CPA1- Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)" during the first monitoring period (01-January-2021 to 31-May-2022) are 364,210 tCO_2e.

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1 INTRODUCTION

1.1 Objective

Man and Man Enterprise has appointed the VVB, Carbon Check (India) Private Ltd. to perform a joint validation and verification of the VCS Project "CPA1 - Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)". This report summarizes the findings of validation and verification of the project activity, performed based on the VCS Program Guide (v4.4, dated 29-August-2023), VCS Standard (v4.5, dated 29-August-2023), Program Definitions (v4.4, dated 29-August-2023), Registration & Issuance Process (v4.4, dated 31-August-2023), and in line with the VCS Validation and Verification Manual (v3.2, dated 19/10/2016). Validation is required for all VCS project activities intending to register project under the VCS program. The purpose of a joint validation and verification is to have a thorough and independent assessment of the proposed project against the applicable VCS requirements, in particular, the project's baseline, monitoring plan and the project's compliance with relevant VCS and host Party criteria. These are validated and verified in order to confirm that the project design and monitoring report, as documented, is sound and reasonable and meets the identified criteria. Validation and verification is a requirement for all the VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions, VCUs.

Through this joint validation and verification activities, it is to be confirmed that:

- The project is implemented as described in the VCS Joint PD & MR /02/,
- The monitoring system is implemented and fully functional to generate emission reductions without any double counting,
- The data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reductions calculation.

The joint validation and verification followed the requirements of the current version of the VCS Standard version 4.5 and VCS program guide (version 4.4)/B01/ to ensure the quality and consistency of the joint validation and verification work and the report.

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the project description section of the joint PD & MR/02/, project design, ex-ante emission reduction calculation spreadsheet/04/, the project's baseline study and monitoring plan and other relevant documents. The joint PD & MR is reviewed against the relevant criteria and decisions by the VCS

Program, and against the approved baseline and monitoring methodology. The verification of this project is based on the Monitoring Report section of the joint PD & MR for this monitoring period, ex-post emission reduction calculation spreadsheets /02/, supporting documents made available to the validation and verification team and information collected through performing on-site interviews. Furthermore, publicly available information was considered as far as available and required. Carbon Check has employed a risk-based approach in the combined validation and verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

The combined validation and verification of this project is based on the Joint PD & MR /02/ emission reduction calculation spreadsheets /04/, supporting documents made available to the validation and verification team and information collected through performing onsite visit interviews. Furthermore, publicly available information was considered as far as available and required.

The joint validation and verification are carried out on the basis of the following requirements, applicable for this project:

- VCS Program Guide v4.4
- VCS Standard v4.5
- Program Definitions v4.4
- Registration & Issuance Process v4.4
- VCS Validation and Verification Manual v 3.2
- CDM Methodology: AMS-II.G, version 8.0, Energy efficiency measures in thermal applications of non-renewable biomass /B02/.
- Other relevant rules, including the host country legislation.

The scope of this verification, by independent checking of objective evidence, is as follows:

- To verify that the project is implemented as described in the joint VCS Joint PD & MR.
- To assess the project's compliance with other relevant rules including the host country legislation.
- To confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions without any double counting.
- To establish that the data reported are accurate, complete, consistent, transparent, and free of material error or omission by checking the monitoring records and the ex-post emissions reduction calculation.

- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- To verify that reported GHG emission data is sufficiently supported by evidence.
- The verification shall ensure that the reported emission reductions are complete and accurate in order to be certified.

The method and criteria used for verification consisted of the following phases:

1. Completeness check and desk review
2. On site interviews with stakeholders
3. Resolution of outstanding issues and issuance of final validation and verification report and applicable VCS Validation and Verification Deeds of Representation.

CCIPL conducts all its work under strict rules to safeguard impartiality and ensure the independence of the combined validation and verification team. The VVB does not provide any consulting or recommendations to the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

1.3 Reasonableness of Assumptions and Level of Assurance

The joint gap validation and verification report is based on the Joint PD & MR /02/, supporting documents made available to the Validation and Verification team and information collected through performing interviews.

The validation of the project activity has been done to determine conformance with the VCS Program rules and evaluate the reasonableness of assumptions, limitations, and methods that support a statement about the outcome of future activities.

The verification has been planned and organized to achieve a:

☒ Reasonable level of assurance as per VCS Standard (v4.5) for the verification.

☐ Limited level of assurance

The threshold for quantitative materiality with respect to the aggregate of errors, omissions, and misrepresentations, relative to the total reported GHG emission reductions and/or removals was limited to five percent (for Projects), as required by section 4.1.10 of the VCS Standard version 4.5 /B01/.The threshold thus calculated for the reported monitoring period is 18,210 tCO2e for the reported monitoring period.

1.4 Summary Description of the Project

The project activity involves the replacement of traditional charcoal cooking stoves by affordable Improved Cooking Stoves (ICS) in the urban and peri-urban Brong- Ahafo region of Ghana. The project activity consists of 200,000 affordable Improved Cooking Stoves (ICS) implemented by Man and Man Enterprise, a Ghana- based ICS producer and seller.

The project activity thus aims to reduce non-renewable wood fuel consumption and greenhouse gas (GHG) emissions of households (hereafter also "end-users") in the urban and peri-urban Brong-Ahafo region of Ghana by selling about 200,000 affordable Improved Cooking Stoves (ICSs) in replacement of traditional charcoal cooking stoves, so-called coal pots.

The project is based on sectoral scope 03: Energy Demand with AMS-II.G Ver.08.0 Energy efficiency measures in thermal applications of non-renewable biomass/B02/.

As per the estimation, the project is resulting in 171,233 tCO_2 emission reductions per year on average or 1,198,634 tCO_2 over the 7-year crediting period. The joint verification report also covers the first monitoring period from 01/01/2021 to 31/05/2022 resulting in a reduction of total of 364,210 tCO_2eGHG emissions.

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2021	257,630	0	0	257,630
2022	106,580	0	0	106,580
Total	**364,210**	**0**	**0**	**364,210**

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

Man and Man Enterprise has appointed the VVB, Carbon Check (India) Private Ltd., to carry out the joint validation and verification of the project "CPA1 - Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)", with regards to the relevant requirements of VCS Standard Version 4.5 /B01/.

The joint validation and verification include a thorough and independent assessment of the proposed project against the applicable VCS requirements/B01/, in particular, the project's baseline, additionality, monitoring plan and the project's compliance with relevant VCS and host party criteria. The validation involves assessment of the project and to confirm that the project meets the applicability conditions of the selected methodology, AMS-II.G, version 8.0 /B02/ and assess the claims and assumptions made in the Joint PD & MR /02/ without limitation on the information provided by the project participants. The overall joint validation and verification was conducted using Carbon Check's internal procedures.

The Joint validation and verification consist of the following three phases:

1. Completeness check and desk review of the joint PD & MR, monitoring plan, monitoring methodology, applicable tools in particular attention to the frequency of measurements, quality of metering equipment including calibration requirements, QA/QC procedures and other relevant documents.

2. On-site visit interviews (including follow-up interviews with project stakeholders, when deemed necessary). The on-site interviews include the following:

   - An assessment of implementation and operation of project activity with respect to joint PD & MR.

   - Review of information flows for generating, aggregating, and reporting the monitoring parameters.

   - Interview with relevant personals to determine whether the operational and data collection procedures are implemented and in accordance with the monitoring plan of the project.

   - Cross check of information and data provided in the monitoring report with purchase records or similar data sources.

   - Review of assumptions made in calculating the emission reductions (if any).

   - Implementation of QA/QC procedure in-line with the VCS joint PD & MR and methodology requirements.

3. Resolution of outstanding issues and the registration and issuance of the final joint validation and verification report and as applicable the VCS validation and verification Deeds of Representation.

2.2 Document Review

The joint validation and verification is performed primarily as a document review of the documents submitted at various stages of assessments. The review is performed by assessment team using dedicated protocols. The assessment team cross checks the

information provided in the documents (Joint Project Description & Monitoring Report/02/) and information from sources other than those used, if available, and also conducts independent background investigations. Carbon Check conducted a desk review as under:

a) A review of the data and information presented to verify their completeness;

b) A review of the monitoring plan, the monitoring methodology including applicable tool(s) and,where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;

c) An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

The list of documents referred during the course of this verification has been provided in the Appendix.

2.3 Interviews

Site visit was conducted for this validation and verification assessment on 14th October 2022.

All the relevant documents related to the Project Activity were collected via email beforehand andthe information associated with the verification of Project Activity implementation were collected through an onsite audit conducted on 14/10/2022.

The details of the key personnel interviewed during the inspection are as follows:

No.	Interviewee			Date	Topics
	Last name	First name	Affiliation		
1.	Goret	Harold	Carbon Advisor, AERA group	14/10/2022	Project Implementation and operation, Monitoring surveys, organization structure, Roles and responsibilities, Survey Records.
2.	Yaw Agyei	Michael	Man & Man	14/10/2022	Monitoring management and project

					operation
3.	Enoch Akampong	Agyei	Man & Man	14/10/2022	Site operations and monitoring management
4.	Raymond	Antoni	Man & Man	14/10/2022	Monitoring Survey, Training procedures
5.	Samkodre	Raphael	Man & Man	14/10/2022	Monitoring Survey, Training procedures
6.	Nicholas	Frimpong	Man & Man	14/10/2022	Monitoring Survey, Training procedures

The assessment team was able to procure all the relevant information related to the Project Activity through the remote survey. The project activity is also registered under CDM. So, the validation report was also referred to corroborate certain assumptions. The representative present at the project site guided the assessment team through sampling procedures, training records, etc., Through the cross-checking of the information obtained during the survey against the evidence provided the assessment team is able to give a reasonable level of assurance that the all the information related to the Project Activity is transparent and justified.

2.4 Site Visits

Onsite physical audit has been performed on 14/10/2022 in Brong Ahafo region, Ghana. The Team leader has conducted the on-site inspection and in particular the acceptance sampling.

CCIPL conducted interviews with relevant stakeholders and end users of ICS during such on-site visits, as well as an assessment of project-related documents provided by project participants. Members of the validation team also interviewed Man and Man Enterprise, which are also ICS distribution partners, to confirm selected information and resolve issues identified during the desk review of documents.

The following are the main topics discussed during the interviews:

- Project overview
- Project design and adopted technology
- Demonstration of baseline and additionality
- Project implementation timeline and any risk of delay
- GHG emission reduction calculations

- Application of the monitoring methodology as well as expected design and application of the monitoring and managing plan
- Local Stakeholder Consultation process
- Sampling Approach

The details of the key personnel interviewed during the inspection are as follows:

No.	Interviewee			Date	Topics
	Last name	First name	Affiliation		
1.	Goret	Harold	Carbon Advisor, AERA group	14/10/2022	Project Implementation and operation, Monitoring surveys, organization structure, Roles and responsibilities, Survey Records.
2.	Yaw Agyei	Michael	Man & Man	14/10/2022	Monitoring management and project operation
3.	Enoch Akampong	Agyei	Man & Man	14/10/2022	Site operations and monitoring management
4.	Raymond	Antoni	Man & Man	14/10/2022	Monitoring Survey, Training procedures
5.	Samkodre	Raphael	Man & Man	14/10/2022	Monitoring Survey, Training procedures
6.	Nicholas	Frimpong	Man & Man	14/10/2022	Monitoring Survey, Training procedures
7.	Boahen	Agnes	Stove ID CDM3012	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
8.	Torkyiwaa	Comfort	Stove ID CDM1079	14/10/2022	Monitoring Survey Questionnaire, SDG parameters

9.	Issaka	Adisa	Stove ID CDM91	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
10.	Hafsa	Assaka	Stove ID CDM999	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
11.	Kumi	Francisca	Stove ID CDM54433	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
12.	Joyce	Obiri	Stove ID 4M3401	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
13.	Twumwaa	Afia	Stove ID 4M19672	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
14.	Amoyah	Hemetta	Stove ID 3M11993	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
15.	Ferkaa	Jennifer	Stove ID 4M51410	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
16.	Amimfa	Yaa	Stove ID 3M4750	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
17.	Yeboah	Monica	Stove ID 3M13895	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
18.	Serwaa	Abena	Stove ID 3M5916	14/10/2022	Monitoring Survey Questionnaire, SDG parameters
19.		Zurata	Stove ID CDM7668	14/10/2022	WBT Surveys
20.	Arhin	Yvette	Stove ID CDM661	14/10/2022	WBT Surveys
21.	Akua	Nana	Stove ID CDM1327	14/10/2022	WBT Surveys

22.	Leticia	Nkansah	Stove ID CDM45630	14/10/2022	WBT Surveys
23.	Grace	Obuobi	Stove ID 2M CDM18302	14/10/2022	WBT Surveys
24.	Manu	Lucy	Stove ID 2M CDM1603	14/10/2022	WBT Surveys
25.	Martha		Stove ID 3M CDM11195	14/10/2022	WBT Surveys
26.	Boateng	Sterling	Stove ID 3M CDM26910	14/10/2022	WBT Surveys
27.	Akua	Anima	Stove ID 2M CDM27228	14/10/2022	WBT Surveys
28.	Seidu	Salamatu	Stove ID CDM15138	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
29.	Issaka	Adisa	Stove ID CDM91	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
30.	Kwaa	Monica	Stove ID CDM3791	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
31.	Mary	Pokuaa	Stove ID CDM1527	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
32.	Kyeraa	Ama	Stove ID CDM7986	27/09/2023	Monitoring Survey Questionnaire, Stoves under

					other programme/ project
33.	Tamyiah	Asana	Stove ID CDM5924	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
34.	Tiwaa	Cynthia	Stove ID CDM2639	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
35.	Donkor	Rebecca	Stove ID CDM1092	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
36.	Suleman	Ayishetu	Stove ID CDM1265	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
37.	Shaibu	Ramatu	Stove ID CDM15951	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
38.	Musah	Fuseina	Stove ID CDM20177	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
39.	Boahen	Agnes	Stove ID CDM3012	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project

40.	Florence	Yaa	Stove ID CDM2846	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
41.	Amelah	Grace	Stove ID CDM19100	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
42.	Abubakari	Mariama	Stove ID CDM39882	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
43.	Alhassan	Anda	Stove ID 2M750	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
44.	Suley	Saude	Stove ID 2M6319	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
45.	Mary	Adjaa	Stove ID 3M48600	27/09/2023	Monitoring Survey Questionnaire, Stoves under other programme/ project
46.	Addo-Aryitey	Gloria	SUDRA	02/10/2023	Duplicate sticker issue
47.	Titiati	Atsu	SUDRA	02/10/2023	Duplicate sticker issue, Purpose of the exercise, Confirmation that the stoves do indeed belong to Man and Man project

2.5 Resolution of Findings

The findings may be of the following types: CAR- Corrective Action Request, CL- Clarification Request and FAR- Forward Action Request.

During the reported validation and verification, 07 CLs and 04 CARs had been raised. All CAR and CLs raised by Carbon Check during this joint validation & verification have been resolved by the PP.

The list of findings and their resolution are presented in the Appendix IV of this verification report. The section also includes the response, if provided, by the project participants and an assessment by the verification team on the closure of the findings.

2.5.1 Forward Action Requests

A forward action request (FAR) should be issued, where:

Forward Action Request (FAR) is to be raised when the monitoring and reporting require attention and/or adjustment for the next verification period. FARs VVBs not relate to VCS requirements for issuance of ERs achieved during subject monitoring.

CCIPL has not raised any FAR during this joint gap validation and verification.

3 VALIDATION FINDINGS

3.1 Project Details

The Project Activity "CPA1 - Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)" consists of the distribution of 200,000 affordable Improved Cooking Stoves (ICS) in the urban and peri-urban Brong-Ahafo region of Ghana. The project activity is off-taken and distributed by the Man and Man Enterprise, thereby replacing the dependency on the traditional charcoal cooking stoves significantly. The project resulting in 171,233 tCO_2 emission reductions per year on average or 1,198,634 tCO_2 over the 7-year crediting period.

The project proponent of the project activity is the Man and Man Enterprise and the other entity involved in the Project is AERA Group.

As per the desk review, onsite visit observations, and collected evidence, it was possible to assess that, in general, the project activity has been implemented as described in the Joint VCS PD and MR/02/.

There is no material discrepancy between the monitoring plan set out in the Joint project description & Monitoring report/02/ and the applied methodology/B02/.

Some of the characteristics of the PA are mentioned below:

- Project Proponent: Man and Man Enterprise
- Other entities involved: AERA Group
- Project Category: Project, since the emission reductions are 171,233 tCO_2e per year and less than 300,000 tCO_2e per year.
- Estimated GHG reductions: 171,233 tCO_2e reductions on an average per year and 1,198,634 tCO_2e reductions during the entire crediting period of 7 years as checked from the ER sheet/15/. The calculations in the ER sheet were found to be accurate and appropriate. The value of the emission reductions has changed from the CDM registered CPA-DD/B04/. CME has justified the same based on the number of stoves sold to date and the future projections of the stoves. Since the estimated ERs have reduced compared to the ex-ante estimates, it has been accepted by the validation and verification team.
- Start date: 20/10/2017
- Crediting period: The project crediting period starts on 20/10/2017 and lasts 7 years (renewable), until 19/10/2024.
- VERs Ownership: Man and Man Enterprise
- Project Location: The project is situated in the Brong- Ahafo region, of Ghana consisting of 21 Districts.
- Conditions prior to project initiation: Households continue to use non- renewable biomass in traditional cooking stoves. The project activity involves dissemination of higher efficiency biomass fired cook stoves use as household appliances for cooking purpose. This will contribute to the reduction of non-renewable biomass consumption which would have been otherwise consumed by traditional three stone open firing, less efficient cook stoves.
- Compliance with applicable laws, statutes and other regulatory frameworks: There are no laws and regulations governing the use of ICSs in Ghana. The project is a voluntary effort by Man and Man and AERA Group.
- Emissions trading programs and other binding limits: there is no compliance with

an emission trading program or to meet binding limits on GHG emissions for this project activity. The project activity has been registered as a CPA under a CDM PoA (Ref. 10430) and GHG emission reductions and removals generated by the project will not be used for any compliance under any programs or mechanism, except CDM. The project activity under VCS shall not claim emission reductions for the same period that has been/will be covered under CDM as a part of the registered PoA. Thus, there will not be any possibility of double accounting of emission reductions.

- Other forms of environmental credit sought or received and eligible to be sought or received: The project has not received nor sought any other form of environmental credit.
- Participation under other GHG programs: The project activity has already been registered under Clean Development Mechanism (CDM) of UNFCCC, under Kyoto Protocol. This project is a Component Project Activity (CPA) under a registered Programme of Activities (CDM PoA). The details are as follows:
  CDM-PoA Registration number : 10430

  Title: Man and Man Enterprise Improved Cooking Stoves CDM Programme in Ghana supported by Republic of Korea

  Weblink:
  https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/KQXLWC1G6IEY8OHVDFU9S27T5ZNMRP/view

  CPA Reference number : 10430-P1-0001-CP1

  Title: Improved Cooking Stoves Programme in Burundi supported by Republic of Korea CPA1

  Weblink:
  https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/R71MGTX26FAZ93OE4BWKI80VSUPHCJ/view

  The project will never verify nor claim ER from both VCS and CDM standards on a same period.

- Rejection by other GHG programs: the project was not rejected under any other GHG programs.

All information provided was verified from the survey and the supporting documents and evidence provided by the PP. Thus, VVB confirms that the description provided in project

description is accurate, complete, and appropriately provides the understanding of the nature of the project. The project is found to be implemented in accordance with the Joint project description & Monitoring report/02/ and the applied methodology/B02/.

3.2 Participation under Other GHG Programs

The project activity has already been registered under Clean Development Mechanism (CDM) of UNFCCC, under Kyoto Protocol. This project is a Component Project Activity (CPA) under a registered Programme of Activities (CDM PoA). The details are as follows:

CDM-PoA Registration number : 10430

Title: Man and Man Enterprise Improved Cooking Stoves CDM Programme in Ghana supported by Republic of Korea

Weblink:
https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/KQXLWC1G6IEY8OHVDFU9S27T5ZNMRP/view

CPA Reference number : 10430-P1-0001-CP1

Title: Improved Cooking Stoves Programme in Burundi supported by Republic of Korea CPA1

Weblink:
https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/R71MGTX26FAZ93OE4BWKI80VSUPHCJ/view

Previous issuance requests:

- Monitoring report: 30/11/2018 – 13/12/2018 | CERs requested: 611 tCO_2e
- Monitoring report: 14/12/2018 – 13/12/2019 | CERs requested: 55,895 tCO_2e
- Monitoring report: 14/12/2019 – 31/12/2020 | CERs requested: 160,401 tCO_2e

The project proponent has confirmed that the project will never verify nor claim ER from both VCS and CDM standards on a same period.

3.3 Safeguards

3.3.1 No Net Harm

As identified by the PP in the section 2.1 of the Joint PD & MR /02/, this is not applicable to the project activity.

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.3.2 Local Stakeholder Consultation

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

The process for ongoing communication is provided in the section 2.2 of the Joint PD&MR/02/ and PP has confirmed that no comments have been received from the stakeholders during the reported monitoring period. The local stakeholder grievance register/13/ was also checked by the validation/ verification team during the onsite visit.

3.3.3 Environmental Impact

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.3.4 Public Comments

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.3.5 AFOLU-Specific Safeguards

Not applicable.

3.4 Application of Methodology

3.4.1 Title and Reference

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.4.2 Applicability

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.4.3 Project Boundary

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.4.4 Baseline Scenario

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.4.5 Additionality

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.4.6 Quantification of GHG Emission Reductions and Removals

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.4.7 Methodology Deviations

Not applicable as no methodology deviations have been applied to the project activity.

3.4.8 Monitoring Plan

Since, this is a gap validation of an already registered CDM project activity, validation of this section is not required in accordance with the §3.23.6 (3) of the VCS Standard, version 4.5/B01/.

3.5 Non-Permanence Risk Analysis

This is not applicable to the project activity as the Project is not an AFOLU (Agriculture, Forestry and Other Land Use) project.

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

The implemented project involves distribution of fuel-efficient stoves in Ghana (Brong- Ahafo region). Man and Man Enterprise involves the distribution and installation of Jiko – type ICS, also known as the "Holy Cook" for use by households in Ghana; which includes 435,000 improved cook stoves benefiting families throughout the region. Before the adoption of the Holy Cook Stove, households in Ghana used inefficient, conventional open fires. The monitoring period 01-January-2021 to 31-May-2022 covered all these stoves.

During the visit CCIPL was able to verify that the project has been implemented as planned and as mentioned in the Joint VCS-PD & MR/02/, CDM-PoA-DD/B04/ and CDM-CPA-DD/B04/ by visiting a sample of 11 households selected at random from the records available at the offices of the PP and the survey samples. During the site visit, it was observed that two stoves had the label of Gyapa project activity (SUDRA manufacturer) in addition to the serial number for the Man and Man Enterprise. A clarification request (CL07) had been raised in this regard, following which PP carried out an exercise to determine the cookstoves with labels from other project activity. Following the exercise, 14 stoves were found with the stickers from Gyapa project activity. The implementer of the Gyapa project activity has provided a letter/14/ declaring that Gyapa had carried out an extensive end-user engagement exercise from December 2021 to June 2022 to design marketing strategy at the households where Jiko cookstove model was distributed. SUDRA has also declared that:

(i) All the 14 stoves belong to Man-and-Man

(ii) That the stoves are not registered in the Gyapa Project database

(iii) That the Gyapa Improved Stoves Project is not claiming credits for these 14 stoves

(iv) That the exercise was not carried out for carbon accounting purposes but as a general market study.

The representatives from Gyapa were also interviewed by the validation/ verification team and it was determined that the enumerators had inadvertently pasted the Gyapa stickers on Man-and-Man stoves during a marketing exercise.

Following this, the existing sample visited by the verification team was rejected in accordance with the §38(b) of the Sampling Standard, version 09/B05/. A new sample was visited by the verification team. In accordance with the §31 and §32 of the sampling standard, version 09/B05-1/, a sample size of 18 was required based on an AQL of 0.5 % and UQL of 20 %, producer risk 5 % and consumer risk 10 %. The AQL and UQL selected is based on the Table 2 of the sampling standard, version 09/B05-1/ and complies with the requirements provided in §31 and §32 of the sampling standard, version 09/B05-1/. Acceptance number (c) thus determined

for the sample is 1. It was observed that out of the 18 samples for monitoring surveys, all 18 stoves were found to be operational. However, the responses observed during the VVB surveys were found to be inconsistent for 12 out of 18 households and thus a corrective action request was raised by the VVB in accordance with the §38(b) of the sampling standard, version 09/B05-1/. It was observed that only 1 out of 12 household had VVB results that were more conservative than the PP's survey records and thus adjustments have been made to the survey results of the 1 household.

CCIPL verification team preformed samples among households included in the monitoring system.

To verify the result of the calculation of confidence/precision, CCIPL has followed the Guideline: Sampling and surveys for CDM project activities and programmes of activities.

The project is already registered under CDM (another GHG program) as a CPA. Whereas the project was included under the registered CDM PoA 10430 and GHG Emission Reductions and removals generated by the project will not be used for any compliance under any programs or mechanisms, except CDM. The project activity under VCS shall not claim emission reduction for the same period that has been/ will be covered under CDM as a part of the registered PoA. Thus, there will not be any possibility of double accounting of emission reductions.

In addition, during desk review and on-site visit was confirmed that the project has not received or sought any other form of environmental credit for the project.

Overall, the project activity was implemented as described in the Joint VCS-PD & MR and CDM-CPA-DD/B04/. The Validation & Verification team confirmed that the component project implementation is in accordance with the project description contained in the Joint VCS-PD & MR and CDM-CPA-DD/B04/. No material discrepancies were identified between project implementation and the project description.

Based on above assessment, the validation and verification team concluded that all physical features of the project activity in the registered CPA-DD/B04/ are in place and that the project participant has operated the project activity as per the registered CPA-DD/B04/.

The project activity, while providing efficient cookstoves to households in Ghana, will have positive impacts on sustainable development:

The project presents economic benefits, in a region where expenses on cooking fuel. The households confirmed money savings due to reduced spendings on the fuel (SDG 1.1). 96.0 % households reported money savings.

The project results in the reduction of inhaled smokes through Household perception of health benefits (SDG 3.9.1). 96.0% of the monitoring survey respondents have confirmed that they felt less exposed to smoke since using the project stove.

Another beneficial SDG impact is Proportion of population with primary reliance on clean fuels and technology (SDG 7.1.1), as the project which aims the distribution of 435,000 ICS actively participates in that regard. A total of 195,232 project devices are operating during the reported monitoring period.

Finally, the GHG emissions reduction is estimated at 1,198,634 tCO2e during the first crediting period. These avoided emissions actively participate in the urgent action needed to mitigate climate change (SDG 13). A total of 364,210 tCO_2e are avoided during the reported monitoring period.

The equations and choices provided in the methodology and all other methodological tools are correctly quoted in the Joint PD & MR /01 /. The emission reductions of the project instances of the project and project activity instance are calculated using the formulae mentioned in the applied methodologies; AMS-II.G, version 8.0/B02/. The validation and verification team has reviewed the emission reduction spread sheets (ER sheets) and checked all the formulae and found they are correct and are in accordance with the monitoring plan of the Joint PD&MR/02/ and the applied monitoring methodology/B02/.

The monitoring has been carried out in accordance with the provision of monitoring plan; the validation & verification team reviewed if:

- The monitoring of reductions in GHG emissions resulting from the proposed VCS project activity were implemented in accordance with the monitoring plan contained in the Joint VCS-PD & MR/02/, CDM-PoA-DD and CDM-CPA-DD/B04/.

- The monitoring plan and the applied methodologies had been properly implemented and followed by the project participants.

- All parameters stated in the monitoring plan, the applied methodologies and relevant CDM EB decisions had been sufficiently monitored and updated.

- The responsibilities and authorities for monitoring and reporting were in accordance with the responsibilities and authorities stated in the monitoring plan.

The monitoring system and all applied procedures are in compliance with the monitoring plan contained in the Joint VCS-PD & MR/02/, CDM- PoA-DD and CDM- CPA-DD/B04/ and the applied methodology AMS-II.G. version 08/B02/.

Sampling Plan:

The sampling plan is intended to enable the discovery of unbiased and reliable estimates of monitored parameter values used in the GHG emission reduction calculations. The sampling plan design is based on the CDM Guideline: Sampling and surveys for CDM project activities and programmes of activities, version 4/B05/.

Sampling Design:

Objectives and Reliability Requirements –

In accordance with the section B.5 of the CPA-DD/B04/, equation (6) was used for the calculation of the minimum sample size for monitoring surveys on a 95/10 level of precision/confidence. Then, a 20% factor (oversampling) was applied to the values. For each batch, it was established a minimum of 90 stoves needed to be monitored, 270 in total. In the end, the actual sample size amounts to 272, with at least 90 stoves per batch. The stoves were selected through a program generating random numbers and owners contacted to prepare and confirm their availability before the monitoring visit. Details of the sampling calculation is displayed in the ER sheet.

In accordance with the section B.5 of the CPA-DD/B04/, equation (7) was used for the calculation of the minimum sample size for water boiling tests on a 90/10 level of precision/confidence (annual). Then, a 20% factor (oversampling) was applied to the values. For each batch, it was established a minimum of 2 stoves needed to be tested, 6 in total. In the end, the actual sample size amounts to 9, corresponding to 3 per batch. The stoves were selected through a program generating random numbers and owners contacted to prepare and confirm their agreement beforehand.

Target Population –

The target population is the complete monitoring and sales database. The stoves were selected through a program generating random numbers and owners contacted to prepare and confirm their availability before the monitoring visit.

Sampling Method –

As per the CPA-DD/B04/, due to the homogeneity requirement for grouping CPAs/PoAs under one sampling plan, the sampling method is simple random sampling for all parameters monitored through sampling at all times.

VVB Acceptance Sampling:

VVB used acceptance sampling during verification for checking the PP's records for the monitoring parameters $N_{y,i,j}$, μ_y and $\eta_{new,i,j}$. In accordance with the §31 and §32 of the sampling standard, version 09/B05-1/, a sample size of 11 was required based on an AQL of 0.5 % and UQL of 20 %, producer risk 10 % and consumer risk 10 %. The AQL and UQL selected is based on

the Table 2 of the sampling standard, version 09/B05-1/ and complies with the requirements provided in §31 and §32 of the sampling standard, version 09/B05-1/. Acceptance number (c) thus determined for the sample is 0. It was observed that out of the 11 samples for monitoring surveys, all 11 stoves were found to be operational and SDG responses and continued usage of baseline stoves also matched with the household respondents. However, 2 stoves were found with the stickers from Gyapa project activity in addition to the Man and Man serial number on the stoves. Thus, PP's sample was rejected in accordance with the §38(b) of the sampling standard, version 09/B05-1/.

The 9 households for the WBT carried out in the households for the monitoring parameter $\eta_{new,i,j}$ were also cross-checked and confirmed that the WBTs were conducted in the households. The WBTs were conducted by a recognized laboratory at a third party (Kwame Nkrumah University of Science and Technology). The monitoring personnel were interviewed by the verification team that they are trained in conducting surveys/14/.

A new site visit was also conducted of the households where monitoring surveys were conducted. In accordance with the §31 and §32 of the sampling standard, version 09/B05-1/, a sample size of 18 was required based on an AQL of 0.5 % and UQL of 20 %, producer risk 5 % and consumer risk 10 %. The AQL and UQL selected is based on the Table 2 of the sampling standard, version 09/B05-1/ and complies with the requirements provided in §31 and §32 of the sampling standard, version 09/B05-1/. Acceptance number (c) thus determined for the sample is 1. It was observed that out of the 18 samples for monitoring surveys, all 18 stoves were found to be operational. However, the responses observed during the VVB surveys were found to be inconsistent for 12 out of 18 households and thus a corrective action request was raised by the VVB in accordance with the §38(b) of the sampling standard, version 09/B05-1/. It was observed that only 1 out of 12 household had VVB results that were more conservative than the PP's survey records and thus adjustments have been made to the survey results of the 1 household in accordance with the §38(b) of the sampling standard, version 09/B05-1/.

Ex-ante Parameters:

Parameter	Description	Value	Unit	Source	Assessment
$B_{old,p}$	Annual quantity of woody biomass that would have been used per person in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices.	180 kg/capita /year	tonnes/ person/ year	UN Food & Agriculture Organization (FAO 2017): The Charcoal Transition. Greening the charcoal value chain to mitigate climate change and improve local livelihoods. p. 139 (http://www.fao.org/3/a-i6935e.pdf)	The parameter is used for the ex-ante calculation of the baseline emission for the project activity. The value is consistent with registered CDM CPA-DD /B04/ and fixed ex-ante for the project activity.

$N_{p,HH}$	Average number of persons served per household prior to project implementation	4.0	-	Table 2.1 of Ghana Statistical Service 2014: Ghana Living Standards Survey Round 6 (GLSS 6). Main report. (http://www.statsghana.gov.gh/gssmain/fileUpload/Living%20conditions/GLSS6_Main%20Report.pdf)	The parameter is used for the ex-ante calculation of the baseline emission for the project activity. The value is consistent with registered CDM CPA-DD /B04/ and fixed ex-ante for the project activity.
$B_{old,HH}$	Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices	4.32	tonnes/ household/year	Determined ex ante at CPA-level	The parameter is used for the ex-ante calculation of the baseline emission for the project activity. The value is consistent with registered CDM CPA-DD/B04/ and Joint PD & MR/02/ and fixed ex-ante for the project activity.
$B_{old,i,j}$	Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j	4.32	tonnes/ year	Determined ex ante at CPA-level.	The parameter is used for the ex-ante calculation of the baseline emission for the project activity. The value is consistent with registered CDM CPA-DD /B04/and Joint PD & MR/02/ and fixed ex-ante for the project activity.
$\eta_{old,i,j}$	Efficiency of the device being replaced	18%	fraction	The average value for baseline efficiency is based on Ghana case study – Growing Inclusive Markets (UNDP, 2010) : https://bit.ly/2R8pYAs	The parameter is used for the ex-ante calculation of the baseline emission for the project activity. The value is consistent with registered CDM CPA-DD/B04/ and Joint PD & MR/02/ and fixed ex-ante for the project activity.
$EF_{projected\_fossilfuel}$	Emission factor for the fossil fuels projected to be used for substitution of	81.6	tCO2/TJ	2006 IPCC Guidelines for National Greenhouse Gas Inventories	The parameter is used for the ex-ante calculation of the baseline emission for the

	non-renewable woody biomass by similar consumers				project activity. The value is consistent with registered CDM CPA-DD/B01/ and Joint PD & MR/02/ and fixed ex-ante for the project activity.
$m_{wood}/m_{charcoal}$	Description Conversion factor wood/charcoal	6	kg biomass /kg charcoal	AMS-II.G, para. 23/B02/	The parameter is used for the ex-ante calculation of the baseline emission for the project activity. The value is consistent with registered CDM CPA-DD /B01/ and fixed ex-ante for the project activity.
$Leakage_{adj}$	Net to gross adjustment factor to account for leakages	0.95	Fraction	AMS-II.G, version 08/B02/	The parameter is used for the ex-ante calculation of the baseline emission for the project activity. The value is consistent with registered CDM CPA-DD /B01/and Joint PD & MR/02/ and fixed ex-ante for the project activity.
$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass.	0.9884	Fraction	Default values of fraction of non-renewable biomass for least developed countries and small island developing states, version 01.0 (EB 67, Annex 22)	The parameter is used for the ex-ante calculation of the baseline emission for the project activity. The value is consistent with registered CDM CPA-DD/B04/ and Joint PD & MR/02/ and fixed ex-ante for the project activity.

Parameters monitored ex-post

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	Number of project devices of type i and batch j operating during year y ($N_{y,i,j}$)
Measuring frequency/Time Interval:	At least once every two years (biennial)
Reporting frequency:	At least once every two years (biennial)

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Reported value:	195,980 2018: 91.11% 2019: 98.91% 2020: 98.89%
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from monitoring survey of samples. % of operational stoves determined for each batch of stoves.
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with the CDM-CPA-DD/B04/.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /06/ and the ER sheet /02/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	Adjustment to account for any continued use of pre-project devices during year y (μ_y)
Measuring frequency/Time Interval:	At least once every two years (biennial)
Reporting frequency:	At least once every two years (biennial)
Reported value:	2018: 13.38 % 2019: 17.02 % 2020: 14.65 %

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from monitoring survey of samples. % of continued use of pre-project stoves.
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with the CDM-CPA-DD/B04/.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /06/ and the ER sheet /02/.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	Efficiency of the device of each type i and batch j implemented as part of the project activity ($\eta_{new,i,j}$)
Measuring frequency/Time Interval:	At least once every two years (biennial)
Reporting frequency:	At least once every two years (biennial)
Reported value:	2018: 31.04 % 2019: 30.98 % 2020: 30.34 %
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Details of monitoring equipment:	The WBTs have been conducted by the third party, Technology Consultancy Centre Laboratory at the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi.
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	The third-party laboratory Technology Consultancy Centre Laboratory at the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi has provided a letter confirming that the monitoring equipment used for WBTs does not require calibration/08/. However, the calibration record of weighing scale is provided and is valid for the monitoring period/08/.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	The third-party laboratory Technology Consultancy Centre Laboratory at the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi has provided a letter confirming that the monitoring equipment used for WBTs does not require calibration/08/.
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The third-party laboratory Technology Consultancy Centre Laboratory at the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi has provided a letter confirming that the monitoring equipment used for WBTs does not require calibration/08/.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with WBT records /07/, information provided in the qualification and calibration letter/08/ and the ER sheet /02/.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	To establish the date of commissioning, the Project Participant opts to group the devices in "batches" and the latest date of commissioning of a device within the batch shall be used as the date of commissioning for the entire batch (Date of commissioning of batch j)
Measuring frequency/Time Interval:	Fixed and recorded at the time of commissioning/distribution of the last project device in the batch
Reporting frequency:	Fixed and recorded at the time of commissioning/distribution of the last project device in the batch
Reported value:	2018 batch : from 04/06/2018 until 03/06/2019

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
	2019 batch : from 04/06/2019 until 03/06/2020 2020 batch ; from 04/06/2020 until 03/06/2021
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	The values are determined based on the distribution database and recorded at the time of commissioning/distribution.
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with the CDM-CPA-DD/B04/.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /06/ and the ER sheet /02/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	Actual date of commissioning of the project device (Date of commissioning of project device i)
Measuring frequency/Time Interval:	Recorded at the time of commissioning/distribution of project devices
Reporting frequency:	Recorded at the time of commissioning/distribution of project devices
Reported value:	Excel spreadsheet provided to the VVB (The date of distribution of each project stove is provided in the Distribution Database.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	The values are determined based on the distribution database and recorded at the time of commissioning/distribution.
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with the CDM-CPA-DD/B04/.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /06/ and the ER sheet /02/.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	Number of project devices distributed (N)
Measuring frequency/Time Interval:	Recorded at the time of commissioning/distribution of project devices
Reporting frequency:	Recorded at the time of commissioning/distribution of project devices
Reported value:	203,460
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	The values are determined based on the distribution database and recorded at the time of commissioning/distribution.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with the CDM-CPA-DD/B04/.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /06/ and the ER sheet /02/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
necessary QA/QC processes in place?	
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter: (as in monitoring plan of VCS PD):	Number of project devices distributed per household ($N_{d,HH}$)
Measuring frequency/Time Interval:	Recorded at the time of commissioning/distribution of project devices. Only one cooking stove per household is registered in the electronic database. If a household purchases more than one cooking stoves, monitoring surveys of sampled kitchens' stoves in use will account for any additional project device and be reflected in adjustment factor $N_{d,HH}$
Reporting frequency:	Recorded at the time of commissioning/distribution of project devices. Only one cooking stove per household is registered in the electronic database. If a household purchases more than one cooking stoves, monitoring surveys of sampled kitchens' stoves in use will account for any additional project device and be reflected in adjustment factor $N_{d,HH}$
Reported value:	1.17

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	The values are determined based on the distribution database and verified during the monitoring surveys by the project proponent.
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with the CDM-CPA-DD/B04/.
Company performing the calibration (internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records /06/ and the ER sheet /02/.

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

VVB confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the pre-defined formulae from registered VCS Joint PD & MR /02/. The total number of emission reductions for the monitoring period from 1st January 2021 to 31st May 2022 is 364,210 tCO_2e.

VVB has checked and confirmed the calculations in the spreadsheet/04/ and found to be accurate. The monitoring report is supported by an emission reduction spreadsheet. The consistency and formula were verified and found to be accurate.

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

When verifying the reported emission reduction, CCIPL ensured that there was a clear audit trail that contained the evidence and records that verify the stated figures. All source documents that form the basis for assumptions and other information underlying the GHG data are shown above.

When assessing the audit trails, CCIPL also examined:

1. whether sufficient evidence was available, both in terms of frequency and in covering the full monitoring period

2. the source and nature of the evidence

3. if comparable information was available from sources other than that used in the monitoring report, CCIPL cross-checked the monitoring report against the other sources to confirm that the stated figures were correct. The sources and the data referenced are shown in Appendix 1 below.

CCIPL also assessed that the data collection system met the requirements of the monitoring plan as per the applied methodology.

Proper data management inclusive of data acquisition and aggregation, data management system is being followed for the project activity.

The monitoring personnel at site are well trained and follow reproducible routines. Thus, they are competent to carry out the relevant tasks with sufficient accuracy.

5 VALIDATION AND VERIFICATION OPINION

Carbon Check (India) Pvt Ltd, contracted by Man and Man Enterprise, has performed the joint verification and validation of the emission reductions for the VCS project activity Ref number 1398 "CPA1 - Man and Man Enterprise Improved Cooking Stoves Programme in Ghana (Brong-Ahafo region)" for the crediting period 20th October 2017 to 19th October 2024 and monitoring period from 01-January-2021 to 31-May 2022 as reported in the Joint VCS PD and MR/02/ version 1.6 dated 29/06/2023. The project proponent, Man and Man Enterprise is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity. It is VVB's responsibility to express and independent validation and verification statement on the reported GHG emission reductions from the project activity.

Carbon Check (India) Pvt Ltd commenced the validation and verification based on the baseline and monitoring methodology AMS-II.G, version 08.0, the monitoring plan contained in the Joint MR and PD Version 1.9 dated 25/10/2023 and the VCS Standard version 4.5.

Carbon Check's validation and verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Carbon Check planned and performed the validation and verification by obtaining evidence and

other information and explanations that Carbon Check considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 01-January-2021 to 31-May 2022 are fairly stated in the Joint Project Description and Monitoring Report Version 1.9 dated 25/10/2023. The GHG emission reductions were calculated correctly based on baseline and monitoring methodology AMS-II.G, version 08.0, and the VCS standard, version 4.5.

The level of assurance of the verification report falls under reasonable assurance engagements as selected by the Client. The verification team verified the monitoring data for all the parameters of the monitoring plan based on the sampling measures used by the project proponent and confirms that the reported emission reductions are free from any type of material errors. The validation and verification of the GHG statement was conducted in accordance with ISO 14064-3: 2019 and the VCS standard, version 4.5.

For validation:

Year	Estimated GHG emission reductions or removals (tCO_2e)
Year 2017	0
Year 2018	1,961
Year 2019	70,393
Year 2020	169,189
Year 2021	245,756
Year 2022	245,756
Year 2023	245,756
Year 2024	219,822
Total estimated ERs	1,198,634
Total number of crediting years	7
Average annual ERs	171,233

Verification period: From 01-January-2021 to 31-May-2022

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO2e)	Project emissions or removals (tCO2e)	Leakage emissions (tCO2e)	Net GHG emission reductions or removals (tCO2e)
2021 (01-January-2021 to 31-December-2021)	257,630	0	0	257,630
2022 (01-January-2022 to 31-May-2022)	106,580	0	0	106,580
Total	**364,210**	**0**	**0**	**364,210**

Percentage difference for ex-ante and achieved ERs with justification:

Ex-ante emissions reductions /removals	Achieved emissions reductions /removals	Percent difference	Justification for the difference
347,424 tCO_2e	364,210 tCO_2e	4.6%	Slightly overestimated values in the CPA-DD like $B_{old,i,j}$ were counterbalanced with monitored parameters like μ_y and $p_{operational\ stoves}$, which were found higher than estimated. Overall, the achieved emission reductions is close to the ex-ante calculations. The parameter μ_y had an ex-estimate value of 0.80 and for $p_{operational\ stoves}$ the value was 0.90 and the monitoring results had less usage of pre-project devices and higher proportion of the operational stoves as compared to the ex-ante estimates.

APPENDIX 1: REFERENCES

S. No.	Document
/01/	Joint Project Description & Monitoring Report (Version 1.2 dated 09/09/2022)
/02/	Joint Project Description & Monitoring Report (Final Version – Version 1.9, dated 25/10/2023)
/03/	Ex-post Emission reductions sheet (Corresponding to /01/)
/04/	Ex-post Emission reductions sheet (Final Version – dated 12/10/2023)
/05/	Distribution and Sales Database
/06/	Monitoring survey questionnaires
/07/	Water boiling test records: 1. WBT Report dated July 2022 2. WBT Records
/08/	WBT Qualification and calibration evidence: 1. Calibration letter confirming that the equipment does not require calibration dated 16/02/2015. 2. KNUST qualification to carry out tests confirmed through letter provided by Energy Commission of Ghana dated January 26, 2023 3. Calibration of weighing scale valid upto January 2023.
/09/	Declaration on Double counting claims dated 26/04/2023
/10/	Start date evidence dated 20/10/2017
/11/	Sample end user sales receipts/ carbon waiver forms
/12/	Training Certificates for: 1. Agyei Michael Yaw 2. Ernest Nyanteh Adu
/13/	Grievance Register
/14/	Letter from SUDRA dated 29/09/2023 declaring that: (i) All the 14 stoves belong to Man-and-Man (ii) That the stoves are not registered in the Gyapa Project database (iii) That the Gyapa Improved Stoves Project is not claiming credits for these 14 stoves

	(iv) That the exercise was not carried out for carbon accounting purposes but as a general market study.
/15/	Ex-ante ER calculation sheet - 220520 ER ex-ante CPA1 M&M.xlsx
/B01/	1. VCS Standard, Version 4.5 2. VCS Program Guide, Version 4.4 3. VCS Validation and Verification Manual, Version 3.2 4. Registration and Issuance Process, Version 4.4 5. VCS Program Definitions, Version 4.4
/B02/	AMS II.G. (version 08.0) Small Scale Methodology “Energy Efficiency Measures in Thermal Applications of Non- Renewable Biomass”
/B03/	VCS Joint PD & MR Template Version 4.2 (The template is valid upto 01/03/2024)
/B04/	1. Registered CDM- CPA - DD (version 2.0 dated 02/10/2019) 2. Registered CDM- PoA - DD (version 2.0 dated 02/10/2019)
/B05/	1. Guideline: Sampling and Surveys for CDM project Activities and Programme of activities, version 4.0 2. Standard: Sampling and Surveys for CDM project Activities and Programme of activities, version 9.0

APPENDIX 2: ABBREVIATIONS

BAU	Business As Usual
CA	Corrective Action/ Clarification Action
CER	Certified Emission Reduction
CAR	Corrective Action Request
CCIPL	Carbon Check (India) Private Ltd.
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
EB	CDM Executive Board
EF	Emission Factor
FA	Final Approval
FAR	Forward Action Request
FVR	Final Validation Report
GHG	Greenhouse gas(es)
GWh	Giga Watt Hour
ICS	Improved Cook Stoves
IPCC	Intergovernmental Panel on Climate Change
KNUST	Kwame Nkrumah University of Science and Technology
MWh	Mega Watt Hour
OSV	On Site Visit
PP	Project Proponent
QC/ QA	Quality Control / Quality Assurance
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VVB	Validation / Verification Body
WBT	Water Boiling Test

APPENDIX 3: COMPETENCY CERTIFICATE

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Amit Anand

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☒ Plastic Waste Expert
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	☒ CCB Expert
☒ Financial Expert	☐ Local Expert for India and South Africa		

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☒ TA 7.1	☒ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☒ TA 14.1	☒ TA 15.1			

Issue Date	Expiry Date
1st January 2023	31st December 2023

Mr. Vikash Kumar Singh
Compliance Officer

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Mr. Anubhav Dimri

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	☐ CCB Expert
☒ Financial Expert	☒ Local Expert for India, South Africa and Spanish speaking countries		

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☒ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☐ TA 13.2
☐ TA 14.1	☐ TA 15.1			

Issue Date
1st January 2023

Expiry Date
31st December 2023

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

MENSAH ISAAC

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☐ Validator	☐ Verifier	☐ Team Leader	☐ Technical Expert
☐ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☐ SDG+	☐ Social no-harm(S+)	☐ Environment no-harm(E+)	☐ CCB Expert
☐ Financial Expert	☒ Local Expert for Ghana		

in the following Technical Areas:

☐ TA 1.1	☐ TA 1.2	☐ TA 2.1	☐ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☐ TA 13.1	☐ TA 13.2
☐ TA 14.1	☐ TA 15.1			

Issue Date
03rd May 2023

Expiry Date
02nd May 2024

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

Carbon CHECK

Carbon Check (India) Private Limited

Certificate of Competency

Ms. Indumathi C

has been qualified as per CCIPL's internal qualification procedures in accordance with the requirements of CDM AS (V7.0), ISO/IEC14065:2020, ISO/IEC 17029:2019 and other applicable GHG programs:

for the following functions and requirements:

☒ Validator	☒ Verifier	☒ Team Leader	☒ Technical Expert
☒ Technical Reviewer	☐ Health Expert	☐ Gender Expert	☐ Plastic Waste Expert
☒ SDG+	☒ Social no-harm(S+)	☒ Environment no-harm(E+)	☐ CCB Expert
☒ Financial Expert	☒ Local Expert for India and Sri Lanka		

in the following Technical Areas:

☒ TA 1.1	☒ TA 1.2	☐ TA 2.1	☒ TA 3.1	☐ TA 4.1
☐ TA 4. n	☐ TA 5.1	☐ TA 5.2	☐ TA 7.1	☐ TA 8.1
☐ TA 9.1	☐ TA 9.2	☐ TA 10.1	☒ TA 13.1	☒ TA 13.2
☐ TA 14.1	☐ TA 15.1			

Issue Date
1st January 2023

Expiry Date
31st December 2023

Mr. Vikash Kumar Singh
Compliance Officer

Mr. Amit Anand
CEO

CCIPL_FM 7.9 Certificate of Competency_V2.1_012023

APPENDIX 4: LIST OF FINDINGS

TABLE 1: CORRECTIVE ACTION REQUESTS (CARs) AND CLARIFICATION REQUESTS (CLs)

Finding	**CL 01**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	In section 2.2 of the Joint PD & MR, PP has not provided the procedures or methods used for documenting the outcomes of the local stakeholder communication. Furthermore, PP shall clarify what input was received through emails received during ongoing communication and how due account of such inputs was taken.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Section E of the CPA-DD available online at the URL mentioned in the Joint PD & MR describes the process of the Local Stakeholder Consultation. This section includes a summary of the comments received, and a description of their consideration. During this monitoring period from 01/01/2021 to 31/05/2022, PPs have not received any e-mail from stakeholders concerning this project. Also, section 2.2 of the Joint PD & MR is not required to be completed according to VCS Standard v4.4.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	In accordance with the §3.18.4, PP shall provide the details of the mechanisms for ongoing communication with local stakeholders to allow stakeholders to raise concerns about potential negative impacts during project implementation. CL01 remains open.		
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Section 2.2 of the JPDMR was updated to include a description of ongoing communication mechanisms, in accordance with the §3.18.4 of the VCS Standard v4.4.		
VVB Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has provided the details of the ongoing communication process in the section 2.2 of the Joint PD/MR. CL01 is closed.		
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding	CL 02		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	1. In section 5.3 of the Joint PD & MR, PP has not provided procedures used for handling any internal auditing performed and any non-conformities identified in accordance with the §3.4.3 of the VCS Standard, version 4.3. 2. PP has not provided the details of sampling approach, sampling sizes calculated, confidence interval/precision level used, and precision level achieved for the sampling plan during the reported monitoring period in the section 5.3 of the Joint PD/MR.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. Man & Man Enterprise has frequent site visit and data check as part of its internal auditing. Project proponent trained monitoring personnel on monitoring procedures, including provisions for maximizing response rates, documenting out-of-population cases, refusals and other sources of non-response. The monitoring survey included several questions to support the information on the key monitoring parameters. These included visual inspections to confirm stove use and presence of baseline stoves, comments by surveyors, check of randomly selected households against actual household information, and refusal tracking. These strategies were aimed at minimizing surveyor or non-response biases. This information was added to section 5.3 of the Joint PD & MR. 2. Section 5.3 of the Joint PD & MR was updated to include details of sampling approach, sampling sizes calculated, confidence interval/precision level used, and precision level achieved for the sampling plan during the reported monitoring period.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. PP has provided the procedures for for handling any internal auditing performed and any non-conformities identified in accordance with the §3.4.3 of the VCS Standard, version 4.3. CL02.1 is closed. 2. The achieved precision level has not been provided for the proportion type and mean type parameters in the section 5.3 of the Joint PD&MR. In the ER sheet, the achieved precision for proportion type parameter has not been calculated based on the actual sample size used and the results obtained.		

	The achieved precision for mean type parameter has not considered the actual results for the reported monitoring period. CL02.2 remains open.
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	2. The achieved precision levels for the monitored parameters have been added to adequate section 6.1, in the comment row of each parameter affected. However, concerning the ER sheet, it appears to us that the achieved precision levels are calculated based on the actual sample and results.
VVB Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. Closed. 2. PP has updated the section 6.1 of the MR with the achieved precision levels for the parameters μy and ηnew,i,j. However, the sampling results and achieved precision for fraction of operational stoves has not been provided. CL02.2 remains open.
Corrective Action or clarification #3 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	2. Section 6.1 of the JPDMR was updated to include the sampling results and achieved precision per batch for % of operational stoves, as part of the Ny,i,j parameter. The precision levels are achieved for each batch.
VVB Assessment #3 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. Closed. 2. PP has provided the sampling results and achieved precision per batch for % of operational stoves, however, the values are not provided in internationally recognizable format. CL02.2 remains open.
Corrective Action or clarification #4 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	2. Section 6.1 of the JPDMR was updated to display values in internationally recognizable format.
VVB Assessment #4 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. Closed. 2. The format of the values has been rectified in the Joint PD/MR. CL02.2 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CL 03		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	In section 1.8 of the Joint PD & MR, PP has not provided a justification for the start date of the project activity with VCS.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	30/11/2018 is the start date of the project activity. It corresponds to time of inclusion of the CPA in the PoA, as it can be seen in section C.3.2 of the CPA-DD. Inclusion date can be seen on the project CDM web page here: https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/R71MGTX26FAZ93OE4BWKI80VSUPHCJ/view Section 1.8 was edited and this justification was added.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP shall provide the justification for the start date of the project activity in accordance with the §3.8 of the VCS Standard v4.4. CL03 remains open.		
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	In accordance with §3.8 of the VCS Standard v4.4, the start date is now the 20/10/2017, as the sales date of the first ICS and start of activities resulting in GHG emission reductions. The Joint PD&MR was adapted accordingly (section 1.8).		
VVB Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has stated that the start date of the project activity is 20/10/2017, based on the sales date of the first ICS. PP shall also provide the evidence for the same. CL03 remains open.		
Corrective Action or clarification #3 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	VVB to kindly note that 04/06/2018 is the actual start date of the project. It corresponds to the sale of the first stove being accounted as part of the project activity. This date can be checked on the sales database provided to the VVB as the earliest stove sale. 3 sales agreement of these first purchases on 04/06/2018 are also provided to the VVB.		
VVB Assessment #3 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action	PP has clarified that the actual start date of the project activity is 04/06/2018. However, when compared with the start date of the CDM CPA on the UNFCCC website, the start date of the sale of ICS in the MR		

and VVB assessments (#2, #3, etc.) shall be added.	has been provided as 20/10/2017. CL03 remains open.
Corrective Action or clarification #4 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	On the 20/10/2017, a single stove was sold indeed. However, it was a test stove which never accounted for any credits since the start of the project. The start date of operation is 04/06/2018 and as the mentioned stove was not part of the project operations, it has never been present in the databases, for each monitoring period. Also, this distinction was reflected in the project's first monitoring period Final Verification Report, page 34 of 65 : "*CME has clarified that only one stove was distributed in the year 2017 as a test stove and no other stoves were distributed in the year 2017. The stove distributed in the year 2017 has not been used in the monitoring database to claim emission reductions and thus no stoves for the vintage year 2017 are applicable to thePoA. CL04.2 is closed"* The cited FVR is provided to the VVB.
VVB Assessment #4 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	The above reasoning does not change the start date as provided in the CDM CPA-DD and no post registration changes were made in the CDM CPA-DD. CL03 remains open.
Corrective Action or clarification #5 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Project start date was updated to 20/10/2017 as the first sale of a stove. Updated crediting period now starts on the same date. Sections 1.8 and 1.9 of the JPDMR were revised and the updated report is provided to the VVB.
VVB Assessment #5 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has updated the project start date in the Joint PDMR. CL03 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	**CL 04**

Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	The project crediting period has been provided in the section 1.9 of the Joint PD/MR. However, the dates are identical to CDM crediting period. PP shall clarify the measures chosen to avoid double counting of emission reductions across CDM and VCS.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	Indeed, the crediting period is the same for the project under both CDM and VCS standards. However, the monitoring periods for the different standards never overlap : The 3rd monitoring period which issued 160,401 CERs ended on the 31/12/2020. The first day of the 4th monitoring period currently under verification starts on the 01/01/2021. As indicated in the MR section 1.15, the project will never verify nor claim ER from both VCS and CDM standards on a same period. The section comprises the monitoring periods under CDM, as well as the webpage here : https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/R71MGTX26FAZ93OE4BWKI80VSUPHCJ/view		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP shall submit an undertaking confirming that the emission reductions for the same period are not claimed under any other program during the reported monitoring period.		
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	The document has been edited and signed by the PPs. It is shared to the VVB.		
VVB Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has provided the undertaking, however, it is noticed that the letter mentions about the 4th monitoring period even though the project activity has been submitted for joint validation and verification. CL04 remains open.		
Corrective Action or clarification #3 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	VVB to kindly note that the undertaking has been revised by PPs to take into consideration VVB comments. The undertaking now mentions the 4th verification, as well the validation of the project.		
VVB Assessment #3 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action	Since, the project activity is being submitted for registration, it is not clear how 4th monitoring period is applicable under VCS. CL04 remains open.		

and VVB assessments (#2, #3, etc.) shall be added.	
Corrective Action or clarification #4 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	In the undertaking, it was mentioned 4th verification period because of its 3 previous verifications as a CDM project. However, it indeed is the project's first verification period under VCS so the undertaking was edited and signed again for a clearer statement. The updated undertaking is provided to the VVB.
VVB Assessment #4 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	The undertaking provided by the project proponent has been revised and reflects the 1st verification under VCS. CL04 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	**CL 05**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	1. The values of the parameters provided in the section 6.1 of the Joint PD/MR, such as $\eta_{new,i,j}$ are not consistent with the values provided in the ER sheet. 2. The values for the monitoring parameters provided in the section 6.1 of the Joint PD/MR are for a different vintage as compared to the values provided in the ER sheet. 3. The value of the parameter $N_{d,HH}$ provided in the section 6.1 and 6.2 of the Joint PD/MR are not consistent.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. The values in section 6.1 of the Joint PD/MR such as η_{new} are the same as the ones in the ER sheet, in the last version of the project documents shared on the 06/10/2022. However, for η_{new}, an inconsistent number of digits were displayed on the documents. This was rectified and updated documents are sent to the VVB. 2. The values for the monitoring parameters provided in the section 6.1 of the Joint PR/MR		

	are now for the same vintages as in the ER sheet. 3. Indeed, the value for $N_{d,HH}$ in section 6.2 of the Joint PD/MR had not been updated. This is now corrected to be consistent with ER sheet and section 6.1.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. PP has revised the values for the parameter η_{new} in the section 6.1 of the Joint PD/MR. The value is consistent with the ER sheet. CL05.1 is closed. 2. PP has revised the values in the section 6.1 of the Joint PD/MR and the values are consistent with the ER sheet. CL05.2 is closed. 3. PP has revised the values in the section 6.2 of the Joint PD/MR. The revised values are consistent with the ER sheet. CL05.3 is closed. 4. In section 6.1 of the Joint PD/MR, the values for the parameters $N_{d,HH}$ and μy are not provided in internationally recognizable format. PP shall ensure that all the value reported in the Joint PD/MR are provided in internationally recognized decimal system. CL05.4 is open.
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	4. Joint PD&MR was updated to revise any values not displayed in internationally recognizable format, including section 6.1.
VVB Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. Closed. 2. Closed. 3. Closed. 4. The number format has been updated in the section 6.1 of the Joint PD&MR. CL05.4 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	**CL 06**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	1. In ER sheet, PP has provided two workbooks 'monitoring surveys CPA1' and 'monitoring surveys CPA1 new'. However, the overall values calculated in both workbooks are		

	different. PP shall clarify the purpose of the workbooks provided in the ER sheet. 2. The value of the parameter μ,y provided in the ER sheet is not consistent with the value reported in the section 6.1 of the MR. 3. The sample sizes have been calculated in the sample size CPA1 workbook of the ER sheet. PP shall justify the sample size calculated for the parameter $p_{op\ stoves,y}$ in accordance with the §14 of the sampling standard, version 09 (EB110, Annex1). 4. The sample size calculated for the parameter $\eta_{new,y}$ shall be provided in accordance with the §14 of the sampling standard, version 09 (EB110, Annex1). 5. The monitoring survey list provides users such as CDM1092 and CDM1783 (Rebecca Donkor). Number of Man and Man list has been provided as 2 for CDM 1092 and 1 for CDM1783. PP shall check if they are both different persons or same person with different values reported. 6. The value of the efficiency of the stove for 3MCDM11195, 3MCDM26910, 2MCDM27228, 2MCDM1603, CDM661, CDM45630, 2MCDM1603, CDM1327 (MP4 stoves efficiency workbook of the ER sheet) does not match with the test report provided. 7. The details of the entity responsible to conduct WBTs have not been provided. Furthermore, certified test reports from the entity responsible to conduct WBTs have not been provided. PP shall also demonstrate the competence of the persons/ entity responsible to conduct WBTs. 8. The expected proportion, expected mean and standard deviation for all three vintages are based on a common value determined during the previous monitoring period and different means and standard deviations for different vintages have not been considered for the calculation of sample size. 9. PP shall provide the complete monitoring and sales database for the project activity.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or	1. In the last version of the ER sheet provided to VVB, there is only one 'monitoring surveys CPA1' sheet. PPs previously had an issue with the batch determination of the surveyed households, and realized new surveys for the

further information for clarification as per finding)	2020 batch were needed. This new version with the resolved batch issue became the current and only monitoring sheet in the latest documents provided to VVB. 2. The value of the parameter μ_y on the ER sheet is consistent with section 6.1 of the Joint PD/MR in the latest project documents provided to VVB. 3. Indeed, the minimum size of the sample calculation after oversampling is 14 for $p_{op\ stoves,y}$, which is less than 30. As para. 14 of the 'Standard: Sampling and surveys for CDM project activities and programmes of activities (version 09.0)', a minimum sample size of 30 shall be chosen. However, the sample size for the monitoring of the CPA is selected from the higher sample calculation between the two parameters $p_{op\ stoves,y}$ and μ_y. In the latter case, the calculation amounts to 90 samples after oversampling, which far exceeds the 30 minimum sample. In the end, a minimum sample size of 90 per batch was selected. 4. As §14 of the sampling standard, version 09 (EB110, Annex1), for a mean value, the Student's t-distribution shall be used if the resulting sample size is less than 30. As shown in the ER sheet, based on the student t value, the precedent MP standard deviation and mean, the minimum value is 2 per batch after oversampling. We sampled 3 per batch in the end, for a total of 9 WBTs. 5. This is an error from the PPs monitoring team. It is the same end-user, and she possesses two Man&Man stoves. The wrong monitoring survey was deleted and the ER sheet is updated. As a consequence, $N_{d,HH}$ goes from 1.16 to 1.17. The ERs are updated accordingly. 6. After checking the test results for WBTs between lab reports and the ER sheet, it appears to us the results do match. It is possible VVB checked on a previous, obsolete version of ER sheet. Lab test results and ER sheet are sent again to VVB for checking. 7. Certified test reports from the entity responsible to conduct WBTs (KNUST lab) were asked. They will be provided to the VVB as soon as received. Meanwhile, a document attesting the calibration of measuring instruments of the Cookstove Testing and Expertise laboratory is shared to the VVB. Finally, recent photos of the lab and the

	measuring area can be shared to the VVB is requested. 8. The expected proportion (p) calculation is based on a value per batch, for $p_{op\ stoves,y}$. However, different means and standard deviations for different vintages have not been considered since in the last monitoring period, only one stove tests were required for batch 2019 and 2020. Therefore in order to get a standard deviation and mean, we had to consider the whole set and could not values per batch. Concerning the determination of pre-use value sample, a general mean value was chosen : according to PPs knowledge, it was more adapted and still permitted to achieve the targeted precision. Finally, the sample calculation gave results of 90 samples per batch, which is 3 times the minimum size. 9. Complete monitoring and sales database for the project activity is provided to VVB.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. PP has resolved the issue with the two different workbooks and only one sheet is provided with the batch details for each of the vintages. CL06.1 is closed. 2. The value for the parameter μ_y has been revised and is consistent with the section 6.1 of the MR. CL06.2 is closed. 3. PP has clarified that the actual sample size used for the parameter $p_{op\ stoves,y}$ is higher than the minimum sample size required of 30 and thus in compliance with the §14 of the sampling standard, version 09 (EB110, Annex1). CL06.3 is closed. 4. PP has provided the t-value calculations for the sample size. However, the basis for the expected standard deviation and expected mean has not been provided to the verification team. CL06.4 remains open. 5. PP has revised the details for the user Rebecca Donkor, and she has been listed only once with the 2 stoves. However, it is noted that the total actual sample size is also reduced. This has not been revised in the section 5.3 of the Joint PD/MR and the calculation of precision level for the proportion type parameter. CL06.5 remains open. 6. PP has submitted the revised version of the WBT report, and the values provided are consistent with the ER sheet. CL06.6 is closed. 7. PP has provided the certified test reports dated July 2022 and the letter from Energy

	Commission Ghana confirming that KNUST is established as a testing and expertise center for improved cookstoves in Ghana. CL06.7 is closed. 8. PP has clarified that different vintages are not considered for the expected proportion used for the calculation of the sample size since only one stove test were required for batch 2019 and 2020. CL06.8 is closed. 9. PP has provided the distribution database to the verification team. The value for the parameter $N_{d,HH}$ is lower in the database than the monitoring survey database and thus has been accepted by the verification team. CL06.9 is closed.
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	4. An excel sheet from previous monitoring period with the basis for the expected mean for the parameter $\eta_{new,y}$ is provided to the VVB 5. Indeed, the section 5.3 has been adapted accordingly. For the calculation of precision level for the proportion type parameter, it appears already updated to us on the ER sheet.
VVB Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. Closed. 2. Closed. 3. Closed. 4. PP has used the expected mean and expected standard deviation from the monitored values from the WBTs conducted during the 3rd monitoring period of the CDM validation. Since, the tests were conducted on the stoves distributed in the same project activity, the values have been accepted by the validation/ verification team. CL06.4 is closed. 5. PP has revised the number of total samples in the section 5.3 of the Joint PD/MR. CL06.5 is closed. 6. Closed. 7. Closed. 8. Closed. 9. Closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	CL 07		
Classification	☐ CAR	☒ CL	☐ FAR

Description of finding (VVB)	During the onsite visit by the VVB, it was observed that stove IDs 4MCDM10430.CPA54433 and 4M.CDM.1043063236 had stickers and ID numbers pasted with a different project activity implemented in the same country/region. PP shall justify the reason for the same and provide the effectiveness of the measures adopted to avoid double counting.
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	During the onsite visit, it was stated from PPs that the stoves in this situation were indeed from Man&Man and they had their manufacture signature on them : they do belong to this project, as VVB saw itself on the field. PPs are currently investigating on the field and after multiple monitoring visits in the Brong-Ahafo region, they found a total of 6 stoves in this situation. Photos and videos were taken and Project Developers of the involved project were asked by e-mail if they had any information about the situation, and reminded of the double counting risk for both projects. They were also asked to stop such practice immediately. In order to avoid any risk of double counting of those stoves, and during the wait for an e-mail response from the other project PPs, the 6 devices involved were not included in the MP4 ER calculations.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP shall clarify how the 6 stoves identified with the identity of a different project in addition to the applicable project activity have been identified. Furthermore, PP shall also clarify how many total surveys were conducted to identify 6 such households. The results shall be extrapolated across the monitoring database. CL07 remains open.
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	The monitoring visits for replacements in the Brong Ahafo region lasted 1 month and the team was 11 Man&Man workers who operated in 20+ district/towns in Q4 of 2022. All stoves in multiple towns were checked for replacements of liners, inoperative stoves, etc. Each time a stove with double projects IDs was spotted, it was written and compiled in a list. At the end of the monitoring period for replacement, a total of 14 stoves with double IDs were identified. In total during these visits, 2418 stoves were replaced. 14/2418 = 0.58% of the replaced stoves. This is highly conservative considering a lot more than 2418 stoves

	were checked, but as the majority did not need replacement, their numbers were not recorded, unlike the replaced ones. Conservatively, a 0.58% reduction factor was applied to the $N_{y,i,j}$ parameter for this Monitoring Period. As a consequence, the claimed ER for this MP are re-estimated from 377,750 ERs to 375,564 ERs. The Project Proponent of the involved project was contacted on 22/12/2022, and to this day no answer was received. Both excel databases of total replaced stoves (2418) and total double IDs stoves (14) were shared to the VVB.
VVB Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has clarified that the stoves with project IDs from more than 1 project activity were identified based on as sample of 2,418 households and the results obtained were extrapolated across the total database to reduce the emission reductions claimed. CL07 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	**CAR 01**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	The version of the Joint PD & MR template is not in accordance with the latest version of the Joint PD & MR template.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	The Joint PD & MR is adapted to the latest version available and provided to VVB. NB : At the time of the findings response start, the 4.1 version of Joint PD & MR was the latest available. Even though a 4.2 version was released in late December, its use will be mandatory from the 01/04/2023 only.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action	PP has revised the Joint PD&MR to the latest applicable version. CAR01 is closed.		

and VVB assessments (#2, #3, etc.) shall be added.	
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	**CAR 02**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	1. In section 1.4 of the PD, the instruction text has not been followed for the details provided. 2. In section 1.10 of the PD, the instruction text has not been followed for the details provided. 3. The values of the monitoring parameters provided in the section 6.1 of the Joint PD/MR is not in accordance with the internationally recognizable format.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. Indeed, this section was edited to follow the guidelines of the v4.1 of the Joint PD & MR template. 2. As this project is already listed and under validation, the section fulfills the guidelines of the template by establishing the scale and expected ERs of the project activity. Otherwise please specify how the instruction were not followed. 3. Indeed, not all parameters were in accordance with the internationally recognizable format. This has been corrected in section 6.1 of the Joint PD & MR.		
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. PP shall provide the required information in the section 1.4 of the Joint PD&MR in accordance with the clause 3 of the §3.22.6 of the VCS Standard v4.4. CAR02.1 remains open. 2. PP has revised the section 1.10 of the PD to indicate the required fields for the Joint PD&MR. CAR02.2 is closed. 3. PP shall address the comment for all the parameters as listed in the CL05.4 of the findings. This shall also be checked in the Table 1 of the MR. CAR02.3 remains open.		

Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. The section 1.4 already contains the information needed according to the Joint Project Description and Monitoring Report, v4.2 template. The weblink and reference to the CDM webpage is removed, as not applicable. *1)* 3. Table 1 of the Joint PD&MR is adapted so that the values are displayed in accordance with the internationally recognizable format
VVB Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. PP has clarified that the weblink reference is not required in the section 1.4 of the Joint PD/MR and thus has been deleted. CAR02.1 is closed. 2. Closed. 3. PP has revised the numbering format for the incorrect format provided in the Table 1 of the Joint PD/MR. CAR02.3 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	**CAR 03**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding (VVB)	1. In section 1.17.2 of the Joint PD & MR, in the SDG table, the SDG 13 has to be renamed as "Tonnes of GHG emissions avoided or removed" as provided in the latest template version of Joint PD & MR. PP shall correct the name of SDG 13 accordingly. 2. PP shall identify the SDG targets and indicators in accordance with the SDG Indicators Metadata. 3. In section 1.17.2 of the Joint PD & MR, PP is requested to update the SDG table according to the latest template version of Joint PD & MR.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	1. The section is adapted accordingly, and updated Joint PD & MR transmitted to VVB. 2. SDG targets and indicators are now described in accordance with the SDG Indicators Metadata. When a project's self-defined measure for tracking a benefit did not align with an official SDG indicator, a project-specific indicator was given without indicator		

	number, according to the 1.17.2 SDG guidelines of the Joint PD&MR template. 3. The section is adapted accordingly, and updated Joint PD & MR transmitted to VVB.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	1. PP has revised the SDG Indicator for SDG 13. CAR03.1 is closed. 2. PP has revised the targets and indicators in accordance with the SDG Indicators Metadata. 3. The table has been revised in accordance with the applicable template version of Joint PD & MR. CAR03.3 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding	**CAR 04**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding (VVB)	CL07 has been raised by the VT – "During the onsite visit by the VVB, it was observed that stove IDs 4MCDM10430.CPA54433 and 4M.CDM.1043063236 had stickers and ID numbers pasted with a different project activity implemented in the same country/region. PP shall justify the reason for the same and provide the effectiveness of the measures adopted to avoid double counting. " VT/PP shall justify that how the closure based on 1 out of 2,418 samples is deemed appropriate in context of the acceptance sampling principle in context of the §38 of the Sampling Standard, version 9.		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	***Response by PP:*** TR is kindly requested to take into consideration the followings: 1) The closure is not 1 out of 2,418, but 14 out of 2,418. Following on-site visits, and determination of those stoves' appropriation, the project developer Man&Man undertook a campaign, to: a. Replace stoves with issues. b. Estimate the number of stoves that could present the risk of double counting. Following that campaign 14 stoves have been detected which had two identifications. The campaign		

	covered all the locations, and 2,418 stoves were replaced with new ICS during the campaign (including stoves with double ID). Therefore, as those stoves have been replaced, accounting for a fraction of 14/2,148, is only to bring again more conservativeness. 2) The fraction 14/2,418, has been found as a good and conservative proxy, this is of course more conservative than applying a factor of (14/203,460) with 203,460 being the total number of stoves distributed in the project. TR to also take into consideration that apart from this factor, the 2 stoves mentioned have also been removed from calculation to again be more conservative. 3) Last but not last, we would like to underline that a communication (mails shared with VVB) between Man&Man and Sustainable Development and Relief Associate (SUDRA) occurred. SUDRA have recognized their error and explained that M&M stoves have been tagged with their ID as part of a Kitchen Performance Test by some of their workers, but they confirmed that those stoves are not registered in their database, and that they will pay a particular attention to ensure that no ERs are never requested for those. Hence excluding the risk of double counting. The PP have therefore done a 3-step approach to avoid double counting (removing the stoves, applying a default 14/2,418 factor, ensure that SUDRA never account for those stoves). Therefore, in PP's opinion, the risk of double counting is totally excluded, and acceptance sampling for this particular case is not needed from PP's side, as all the stoves have been both replaced and excluded from DB for this monitoring period.
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	PP has provided a justification that the 14 out of 2,418 households have been considered instead of 14 out of 203,460 as a conservative measure. However, in accordance with the acceptance sampling approach, 2 out of 11 households were determined to have been with identifiers from two different projects. In accordance with the paragraph 38 (b) of the Sampling Standard, version 9, PP shall apply the conservative estimates to the claimed emission reductions.
Corrective Action or clarification #2 (PP shall write a detailed and clear corrective action or	VVB to kindly note that following their comments on applying a conservative factor of 2/11, hence a reduction of 18% of the VCUs, PP has requested a new site visit. VVB therefore rejected the original sample and requested to audit physically 18 new

further information for clarification as per finding)	households chosen randomly. Following this visit it was observed that: 1) None of the households visited had this double identification, as this was stated by PP before the audit explaining that following the first on-site audit, Man&Man has done extensive monitoring in all the areas of stoves distribution. Only 14 stoves have been found, and those have been replaced. 2) Also, SUDRA, shared with VVB a letter stating that those stoves belong to Man&Man and that the double identification was an error made by one of their enumerators. They confirmed in the letter and during a call with VVB that those stoves are not in their database and that therefore no credits have been requested for those stoves. Therefore, in PP opinion, there is no need for PP to remove any stove form their database and/or apply any conservative reduction, and this for two reasons: 1) The stoves belong to Man&Man and thus the credits generated by those stoves as per agreement signed by end-users. 2) There is no risk of double counting as SUDRA confirmed that those stoves were not in their database.
VVB Assessment #2 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	Based on the VVB's observations during the onsite visit of a new sample of 18 households, no samples were found with the logo of the other stove. A letter has been provided by the project owner of the other project activity (SUDRA) that the stoves were indeed owned by the project proponent Man & Man and while conducting the surveys by SUDRA, these stoves were incorrectly marked by the logo pasted by SUDRA. However, during the onsite survey of the new set of HHs, following inconsistencies were observed with the PP's monitoring survey: 1. Number of dependents, frequency of man and man stove and frequency of project stove for stove ID CDM19100 was not consistent with the PP's monitoring survey. 2. Number of M&M stoves, other stove frequency for stove ID CDM1527 is not consistent with the PP's monitoring survey. 3. Other stove frequency for stove ID CDM5924 is not consistent with the PP's monitoring survey.

	4. Other stove frequency for stove ID CDM2639 is not consistent with the PP's monitoring survey. 5. Number of dependents for stove ID CDM1092 was not consistent with the PP's monitoring survey. 6. Frequency of man and man stove and frequency of project stove for stove ID CDM1265 was not consistent with the PP's monitoring survey. 7. Other stove frequency for stove ID CDM15951 is not consistent with the PP's monitoring survey. 8. Other stove frequency for stove ID CDM20177 is not consistent with the PP's monitoring survey. 9. Other stove frequency for stove ID CDM3012 is not consistent with the PP's monitoring survey. 10. Number of dependents for stove ID CDM2846 was not consistent with the PP's monitoring survey. 11. Frequency of man and man stove for stove ID 2M6319 was not consistent with the PP's monitoring survey. 12. Frequency of man and man stove and frequency of project stove for stove ID 3M48600 was not consistent with the PP's monitoring survey.
Corrective Action or clarification #3 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)	VVB to kindly note the following: 1. ***Number of dependents, frequency of man and man stove and frequency of project stove for stove ID CDM19100 was not consistent with the PP's monitoring survey***. During the monitoring surveys, the household declared owning only one stove, during the new onsite visit, it was found that the end-user now bought also another ICS. During surveys, it was found that the M&M stove was used 3 times a day, and during on-site audit the M&M stove was now used 4times a day and the new ICS once a day. The onsite audit values are found more conservative and applied. However, VVB to kindly note that dependents numbers are not a monitored parameter, and it is quite frequent that from a year to another, the household size vary. 2. ***Number of M&M stoves, other stove frequency for stove ID CDM1527 is not***

	consistent with the PP's monitoring survey. During the monitoring surveys, the household declared having 1 M&M stove and 1 traditional stove, during the new on site visit the household declared that the traditional stove was replaced by a new M&M stove. Frequencies being the same (2times/ICS/day). Therefore, the NdHH parameter increases, but the frequency of usage of other stoves decrease to Zero). Monitoring surveys are found more conservative, and values kept. **3.** ***Other stove frequency for stove ID CDM5924 is not consistent with the PP's monitoring survey*.** Frequency of other stove is found to be consistent it was declared 1/week in monitoring and during audit. The only difference is the type of stove. During monitoring it was found a 3stones was used which is now replaced with metallic pot. However, as frequencies are the same, no impact on calculation. The other stove type has been changed to metallic coal pot. 4. **Other stove frequency for stove ID CDM2639 is not consistent with the PP's monitoring survey:** During monitoring surveys, the HH declared using LPG while during the later site visit, LPG was no more used. PP calculation is therefore found conservative. **5.** ***Number of dependents for stove ID CDM1092 was not consistent with the PP's monitoring survey.*** VVB to kindly note that number of households is not a monitored parameter, as HH can vary between two dates. During survey the user declared that 2 persons were dependents on the stoves, however during the new audit, she declared that HH had 7 dependents. This may be due to household welcoming people for a period of time. This has no impacts on ERs calculation. 6. ***Frequency of man and man stove and frequency of project stove for stove ID CDM1265 was not consistent with the PP's monitoring survey***.

	During the surveys, the end-users declared That their M&M stove was not working, and a traditional coal pot was used. During new visit it was found that M&M stove was repaired and working and that the traditional coal pot was discarded. Monitoring surveys values are therefore more conservative. ***7. Other stove frequency for stove ID CDM15951 is not consistent with the PP's monitoring survey.*** During surveys a traditional stove was used twice a day, but during on-site the users declared using the coal pot only once a month. Monitoring surveys are therefore more conservative. 8. ***Other stove frequency for stove ID CDM20177 is not consistent with the PP's monitoring survey***. During surveys, the household declared using the stove once a week, but during the visit, the end-user declared using the stove once a day. Onsite values are more conservative and therefore monitoring values are revised. ***9. Other stove frequency for stove ID CDM3012 is not consistent with the PP's monitoring survey. VVB To please share discrepancies records.*** During surveys, a traditional pot was found, and user declared using it (2 times a day, and sometimes once a week), during on-site audit she declared that the traditional coal pot was no more used. Therefore, monitoring survey is conservative. ***10. Number of dependents for stove ID CDM2846 was not consistent with the PP's monitoring survey.*** During monitoring surveys, the end-user declared a household size of 6, however during the new on-site audit she declared 9. Please this is not a monitored parameter and have no impacts on ER calculations. 11. ***Frequency of man and man stove for stove ID 2M6319 was not consistent with the PP's monitoring survey***. During the surveys, the end-users declared using M&M stove 3times a day and coal pot once a day. During onsite she declared using M&M stove 2times a day and coal pot once a week. Although the

	frequency of M&M decreased from 3 to 2, the coal pot frequency also decreased from 1 per day to 1 each week. Therefore, monitored values are still conservative. 12. ***Frequency of man and man stove and frequency of project stove for stove ID 3M48600 was not consistent with the PP's monitoring survey***. During surveys, the end-user declared using M&M stove 3 times a day and coal pot and 3 stones 4 times a day, during the new onsite audit she declared using M&M stove twice a day and 3stones twice a week. The coal pot is not used frequently, and the users does not even recall last time she used it. Same as above, this is conservative. Also, it was found during surveys, that CDM91 declared that they were using LPG, but during new visit they declared that LPG was no more used. They also declared 2 stoves during surveys but only one stove in onsite audit. CDM39882 declared using LPG once a day during monitoring and now declare using LPG once a week, hence surveys results are more conservative. They also declared 2 M&M stoves during monitoring and only one during audit, hence reducing the NdHH factor. VVB to kindly take into consideration the following regarding discrepancies: 1) Household size: *1)* please note that: (i) household size is not a monitored parameter, and (ii) this parameter can vary frequently due to the arrival/departure of relatives & children. 2) For each discrepant records, the most conservative value between monitored value and onsite audit value is used for ER calculation.
VVB Assessment #3 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.	Based on the §38(b) of the Sampling Standard, version 09, PP has applied conservative value from VVB's sampling result for the discrepant record of the stove ID CDM20177. For other, households, monitoring survey results were found to be more conservative and thus have been accepted. CAR04 is closed.
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

TABLE 2: FORWARD ACTION REQUESTS

Finding	**FAR xx**		
Classification	☐ CAR	☐ CL	☐ FAR
Description of finding (VVB)	Not applicable		
Corrective Action or clarification #1 (PP shall write a detailed and clear corrective action or further information for clarification as per finding)			
VVB Assessment #1 The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and VVB assessments (#2, #3, etc.) shall be added.			
Conclusion Tick the appropriate checkbox	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☐ The finding is closed		