



**Verification and certification report form for
CDM programme of activities
(Version 04.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the programme of activities (PoA)	Improved Cooking Stoves for Nigeria Programme of Activities PoA reference number: 5067		
Version number(s) of the PoA-DD(s) to which this report applies	3.2		
Version number of the verification and certification report	Version 4		
Completion date of the verification and certification report	07/03/2024		
Monitoring period number and duration of this monitoring period	Monitoring Period 10 th Duration: 01/07/2021 – 30/06/2022		
Number and version number of the monitoring report to which this report applies	Monitoring Report Number: 1 Version number of the monitoring report: 6.0 dated 13/11/2023		
Coordinating/managing entity (CME)	Atmosfair gGmbH		
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)	
	Nigeria	Yes	
Applied methodologies and standardized baselines	AMS II.G., version 3, "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass"		
Mandatory sectoral scopes	3: Energy demand		
Conditional sectoral scopes, if applicable	NA		
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	CPA 1: 2,704 t CO ₂ e CPA 2: 11,559 t CO ₂ e CPA 3: 11,627 t CO ₂ e CPA 4: 34,677 t CO ₂ e Total: 60,567 t CO ₂ e		
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	Amount before 1 January 2013	Amount from 1 January 2013 until 31 December 2020	Amount from 1 January 2021
	0	0	CPA 1: 2,335 tCO ₂ e CPA 2: 6,830 tCO ₂ e CPA 3: 5,637 tCO ₂ e CPA 4: 5,427 tCO ₂ e Total: 20,229 tCO ₂ e

Name and UNFCCC reference number of the DOE	Carbon Check (India) Private Ltd. (E-0052)
Name, position and signature of the approver of the verification and certification report	<p><i>Sanjay Agarwalla</i></p> <p>Sanjay Kumar Agarwalla, Technical Director</p>

SECTION A. Executive summary

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Purpose, general description and location of the project activity:

The co-ordinating managing entity/project participant (Atmosfair gGmbH) has appointed the DOE, Carbon Check (India) Private Ltd. (CC IPL) to perform an independent verification of the CDM Programme of Activity "Improved Cooking Stoves for Nigeria Programme of Activities" in Nigeria (UNFCCC Ref. No. 5067) (hereafter referred to as "Programme of Activity" or "PoA") for the CPA(s) titled "CPA # 1 Improved Cooking Stoves for Nigeria", "CPA # 2 Improved Cooking Stoves for Nigeria", "CPA # 3 Improved Cooking Stoves for Nigeria" and "CPA # 4 Improved Cooking Stoves for Nigeria". The CPA 5 "CPA # 5 Improved Cooking Stoves for Nigeria; 5067-P1-0005-CP1" included in the PoA is not being verified under the batched issuance request. The PoA involves dissemination of improved cooking stoves to household users in Nigeria. The PoA saves greenhouse gas emissions by replacing baseline (inefficient and traditional) stoves with improved cookstoves. The aim of the PoA is to enhance the penetration of efficient cookstoves by offering cost-effective efficient stoves. The CPAs are designed to generate emission reductions by distribution of energy efficient or improved cookstoves for household cooking purposes in Nigeria.

This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM M & P, as well as criteria given to provide for consistent project operations, monitoring and reporting and the subsequent decisions by the CDM Executive Board. Verification is required for all registered CDM project activities/programme of activities intending to confirm their achieved emission reductions and proceed with request for issuance of CERs. This report contains the findings and resolutions from the verification and a certification statement for the certified emission reductions.

Verification is the periodic independent review and ex-post determination of both quantitative and qualitative information by a Designated Operational Entity (DOE) of the monitored reductions in GHG emissions that have occurred as a result of the registered CDM programme of activity during a defined monitoring period.

Certification is the written assurance by a DOE that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and certify emission reductions reported for the Programme of activities "Improved Cooking Stoves for Nigeria Programme of Activities" in the host country "Nigeria" for the period 01/07/2021 to 30/06/2022 (including both the days).

The purpose of verification is to review the monitoring results and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data and used to confirm the reductions in anthropogenic emissions by sources, is sufficient, definitive and presented in a concise and transparent manner. CC IPL's objective is to perform a thorough, independent assessment of the registered project activity.

In particular, the monitoring plan, monitoring report and the project's compliance with the relevant UNFCCC and host Party criteria are verified in order to confirm that the component project/s has/have been implemented in accordance with the previously approved revised component project design and conservative assumptions, as documented. It is also confirmed if the monitoring plan is in compliance with the approved revised PoA-DD, approved revised CPA-DDs /B04/ and the approved monitoring methodology/B02/.

Scope of the verification:

The scope of the verification is:

- To verify the project implementation and operation with respect to the approved revised PoA-DD /B04/

- To verify the implemented monitoring plan with the approved revised PoA-DD/B04/ and applied baseline and monitoring methodology.
- To verify that the actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan.
- 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.

Verification process:

The verification comprises a review of the monitoring report over the monitoring period from 01/07/2021 to 30/06/2022 and based on the approved revised PoA-DD/B04/, approved revised CPA-DDs/B04/ in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology/B02/ and all related evidence provided by project participant.

On-site audit and stakeholders' interviews are also performed as part of the verification process.

Conclusion:

The verification team assigned by the DOE concludes that the approved revised PoA-DD (version 3.2, dated 24/09/2014), approved revised CPA-DDs (CPA 1 - version 3.2, dated 24/09/2014, CPA 2- version 3.2, dated 24/09/2014, CPA 3 – version 3.2, dated 24/09/2014 and CPA 4 – version 3.2, dated 24/09/2014) /B04/ and the Monitoring report (version 6.0, dated 13/11/2023) /02/, meets all relevant requirements of the UNFCCC for CDM project activities/ programme of activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M& P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS for programme of activities requirements version 03.0 /B01-1/.

The programme of activity was correctly implemented according to the selected monitoring methodology, monitoring plan and the approved revised PoA-DD/B04/. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on-site audit, the verification team confirms that the project activity has resulted in 20,229 tCO₂e emission reductions from 01/01/2021 onwards for the tenth (10th) monitoring period – 01/07/2021 to 30/06/2022 (total 20,229 tCO₂e).

CC IPL as a DOE is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

In accordance with the agreement of the Executive Board of the CDM (the Board) at its 118th meeting, requests for registration, renewal of crediting period, and issuance of certified emission reductions relating to the period after 2020, as well as corresponding submissions for programmes of activities, may no longer be submitted under the temporary measures operated by the Board based on its agreement at its 108th meeting. The submission window closed on 30 June 2023. Therefore, this verification report may not be submitted to the UNFCCC with the existing provisions. The verification report has been prepared for internal purpose of atmosfair gGmbH and may not be distributed publicly. The distribution of the verification report shall require written consent of the Approver from CC IPL.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader/ Verifier/ Technical Expert	IR	Chaudhary	Aparna	CC IPL	X	X	X	X
2.	Trainee Assessor	IR	K V	Kiran	CC IPL	X	X	X	X
2.	Local Expert	EI	Sunday	Siyabola	CC IPL			X	

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Dimri	Anubhav	CC IPL
2.	Approver	IR	Agarwalla	Sanjay Kumar	CC IPL

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human Error: Recording and reporting of the information in the ER spreadsheet.	Medium	<i>All the ER spreadsheet data of the stoves, including sales database, determination of parameter for efficiency testing including data calculation. This includes all the parameters to be monitored ex-post as per the approved revised PoA-DD and approved revised CPA-DDs.</i>	<i>The risk has been mitigated by the training of the personnel involved in the data capture, calculation and by following the monitoring responsibilities. The training records have been checked by the verification team^{10/}. Also, it was noted that same personnel have been employed during the previous monitoring period and thus found competent to handle recording and reporting of the information.</i>
2.	<i>Information System: Use of spreadsheets without adequate controls related to data changes/updates,</i>	Medium	<i>The data is recorded in the spreadsheets based on the raw data collected during the field visits. The access to the</i>	<i>The identified risk has been mitigated by managing access to the records^{13/09/11/}. It was confirmed through interviews that the raw data is collected</i>

	<i>version tracking, traceability, security</i>		<i>spreadsheets for calculation of ERs, monitoring and sales database and Stove efficiency testing records.</i>	<i>by the field agents and then transmitted and stored electronically to the PP's office. The data quality control is maintained by the Assigned Monitoring Officer. As confirmed through the interviews with the monitoring team, no new stoves have been distributed in the PoA/ CPAs during the reported monitoring period.</i>
3.	<i>Accuracy of the measuring equipment and the compliance to the QA/QC procedures</i>	<i>Medium</i>	<i>Check the calibration records for the measurement equipment and the personnel/ institutional capacity involved with the monitoring.</i>	<i>The risk due to accuracy of the measuring equipment has been ensured by planning to check calibration certificates^{/12-2//12-3/} of the measuring equipment used for stove efficiency (water boiling tests) and the training records of the personnel involved in testing the stove efficiency (water boiling tests)^{/10/}. The monitoring personnel have been trained to conduct Water Boiling tests as confirmed through the review of the training certificates^{/10/}.</i>
4.	<i>Competence of personnel involved in conducting standardized tests viz., WBT</i>	<i>Medium</i>	<i>Interview of the personnel involved and check the training records / accreditation certificates (applicable in case of institutions) involved in conducting such tests.</i>	<i>The risk is mitigated by reviewing the training records of the personnel involved in conducting such tests and by following the monitoring responsibilities. The training records and certificates are reviewed which are also confirmed during the On-site audit interviews.</i>
5.	<i>Sample</i>	<i>Medium</i>	<i>Sample size is not suitable; or the surveyed households at the CPA level are not random.</i>	<i>Crosscheck the procedure to identify the sample size against the methodology/ sampling guideline / sampling standard and confirm the sample size is calculated correctly.</i>

C.2. Consideration of materiality in conducting the verification

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The threshold of materiality was evaluated based on §13 of “Guideline: Application of materiality in verifications”, version 02.0^{/B08/} and § 310 of CDM VVS for PoAs, version 03.0/B01-1/. It was concluded that the materiality threshold applicable to the project activity based on actual emission reductions achieved is 5% of 20,229 tCO₂e which is equal to 1,011 tCO₂e.

In planning the verification, verification team took cognizance of §11 and §12 of the “Guideline: Application of materiality in verifications” Version 02.0^{/B08/}. A materiality threshold of 1,011 tCO₂e is determined in line with §13(a) of “Guideline: Application of materiality in verifications”, version 02.0^{/B05/}.

Based on the above, activities in which risks were assessed were:

1. Monitoring system including the data input procedure
2. Copy of the agreement between household and the Project Participant (s) (origin of data)
3. Stove unique ID system
4. ER sheet (application of data)
5. Data flow
6. Data control procedures
7. Stove efficiency test (WBT) records and QA/QC procedures

In conducting the verification, DOE took cognizance of § 13-17 of the “Guideline: Application of materiality in verifications”, version 02.0^{/B08/} and based on the input of data from different sources checked through sampling of records during verification audit observed that no records were found to have inconsistent data from handwritten (Copy of the agreement between household and Project Participant) to the electronic monitoring database. Data flow was checked through comparison of data in handwritten forms, electronic database and ER sheet. The training records of the personnel involved in conducting the stove efficiency testing, recording of data and calculation of the emission reductions data has been checked by the verification team^{/10/}.

The risks identified were mitigated through cross check with all sets of documents. The verification team performed the following checks in order to mitigate the effects of the above-identified sources of error:

Mitigation of Human error risks: The verification team mitigated the risk by checking the training records^{/10/} of the personnel during the on-site audit. These records have been provided to the verification team by the PP. Furthermore, data was crosschecked with the ER calculation spreadsheet^{/04/}, sales and monitoring database^{/13/} and the raw data questionnaire^{/09/}. Verification team, based on the above, confirms that the risk is appropriately mitigated.

Mitigation due to error in Information system: Verification team by conducting interviews with the personnel responsible for such activities mitigated the risk due to error in information system. It was confirmed through interviews that the raw data is collected by the field agents and then transmitted and stored electronically to the PP’s office. The data quality control is maintained by the Assigned Monitoring Officer from the PP.

Accuracy of the measuring equipment: The risk due to inaccuracy in measurements is assessed by reviewing calibration certificates of all the project equipment. The verification team has reviewed the dates of calibration and to check whether all equipment is being calibrated at regularly defined intervals as per the approved revised PDD^{/B04/}. The risk due to the QA/QC procedures is mitigated through the training^{/10/} of personnel involved in the WBT.

Competence of personnel involved in conducting standardized tests viz., WBT: Verification team has confirmed by conducting the interviews with the personnel responsible for conducting WBT using WBT Testing Protocol and review of the qualifications/ training records^{/10/} of the monitoring personnel that the competence of the personnel involved is appropriate to conduct the WBTs.

Mitigation due to error in Sampling: The verification team mitigated the risk by checking the ER sheet^{/04/} and sample size calculation workbook provided therein^{/04/} and on-site interviews with the personnel responsible for the same.

Based on the review of the approved revised PDD^{/B04/}, monitoring report^{/02/}, emission reduction calculation spread sheet^{/04/} and the data provided, and the assessment carried out above, CCIPL confirms with a reasonable level of assurance that the claimed emission reductions or removals are free from material errors, omissions or misstatements.

CC IPL confirms with a reasonable level of assurance that the claimed emission reductions or removals are free from material errors, omissions or misstatements.

SECTION D. Means of verification

D.1. Desk/document review

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List of all documents reviewed or referenced during the validation is provided in Appendix-3 below.

D.2. On-site inspection

A combined monitoring and verification inspection has been conducted for the verification of the project activity as per the approval from CDM Executive Board for 2nd request for renewal of special permission for monitoring and verification in conflict zones (INQ-0926_EB106)/14/.

In response to the political situation in Nigeria the UN approved following exception which is valid until the 13th of June 2023 (INQ-09626_Response_EB106):

- a) The CME and DOE may apply a combination of survey and data collection methods as per section 9 of the "Guidelines for sampling and surveys for CDM project activities and programme of activities" (version 4.0, CDM-EB86-A04), for example using telephone interviews and household visits for the data collection;
- b) Joint site visits by the monitoring and verification personnel to collect data and evidence may be undertaken

CME and VVB has conducted combined monitoring and verification survey through combination of on-site visit and remote audits. VVB has sampled 11 household across the CPAs CPA1-CPA-2, CPA-3, and CPA-4 through on-site survey (list provided in the table below in section D.3) and rest of the samples were surveyed remotely by the verification team.

The monitoring and remote verification survey were conducted between the dates from 13/10/2022 to 18/01/2023, while the physical verification along with monitoring survey were conducted between 02/12/2022- 06/12/2022.

The sampling approach was assessed in accordance with the §318(c) of the VVS for the PoAs, version 03/B01-1/, based on the sampling standard, version 09/B07/. Interviews with the end user households were facilitated by the local expert through telephonic calls with the sampled household.

Moreover, in accordance with the §319 of the VVS for the PoA, version 3.0/B01-1/, the site visit is not mandatory as:

- (i) This is not the first verification for the DOE with regards to the CPAs- 5067-P1-0001-CP1, 5067-P1-0002-CP1, 5067-P1-0003-CP1, 5067-P1-0004-CP1
- (ii) More than three years have not elapsed since the last on-site inspection conducted for verification for the CPAs - 5067-P1-0001-CP1, 5067-P1-0002-CP1, 5067-P1-0003-CP1, 5067-P1-0004-CP1. Last on-site inspection was carried out for the monitoring period 7 (01/07/2018 to 30/06/2019)
- (iii) The CPAs (5067-P1-0001-CP1, 5067-P1-0002-CP1, 5067-P1-0003-CP1, 5067-P1-0004-CP1) have not achieved more than 300,000 t CO₂e of GHG emission reductions or net anthropogenic GHG removals since the last verification when an on-site inspection was conducted.

On site visit exclusion justification:

N/A

Duration of Remote/on-site inspection: 13/10/2022 to 18/01/2023				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting, Interview with stakeholders.	Kano, Nigeria	13/10/2022	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyabola (Local Expert)
2.	Household visits/ remote audit	Kano, Nigeria	13/10/2022 – 18/01/2023	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyabola (Local Expert)
3.	Closing meeting	Kano, Nigeria	18/01/2023	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyabola (Local Expert)

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Oshaniwa	Toyin	atmosfair gGmbH	02/12/2022 - 06/12/2022	Project implementation and operation, monitoring procedure, data and information flow, CER calculation and completeness of monitoring report, QA/QC Procedures, Stove Efficiency Tests procedures and records, Quality Assurance – Management and operating system	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyabola (Local Expert)
2.	Olajide	Rachel	atmosfair gGmbH	02/12/2022 - 06/12/2022	Monitoring procedure, QA/QC Procedures, Stove Efficiency Tests, Quality Assurance – Management and operating system	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyabola (Local Expert)
3.	Olorunmaiye	Tosin	atmosfair gGmbH	02/12/2022 - 06/12/2022	Monitoring procedure, QA/QC Procedures, Stove Efficiency Tests, Quality Assurance – Management and operating system	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyabola (Local Expert)

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4.	Addullah Z	Ahmed	End user (stove id 815)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
5.	Abdullahi	Rabe	End user (stove id 1127)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
6.	Yakuse	Mohammed	End user (stove id 785)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
7.	Umen	Usman	End user (stove id 887)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
8.	Aliyu	Abdullah	End user (stove id 916)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
9.	Rabiu	Abdullahi	End user (stove id 2227)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
10.	Mage	Mai Angum	End user (stove id 120628)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
11.	Usman	Alis	End user (stove id 116073)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
12.	Haruma	Lara	End user (stove id 190644)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
13.	Zainab	Umar	End user (stove id 190681)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)

14.	Adeoye	Ohisola	End user 9Stove id 3193)	02/12/2022 - 06/12/2022	On-site Verification household survey	Aparna Choudhary (Team leader), Kiran K V(Trainee Assessor), Sunday Shiyanbola (Local Expert)
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D.4. Sampling approach

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The sampling plan implemented by the CME is in accordance with the applied approved monitoring methodology /B02/ and the approved revised PoA-DD/B04/, approved revised CPA-DDs /B04/. The CME has appropriately performed Simple Random Sampling procedure in line with the applied methodology and best suited for this type of project. As the approved/revised PoA-DD, approved/revised CPA-DDs /B04/ mentions the option for Simple Random Sampling procedure, it is acceptable to the verification team.

The sampling survey has been carried out by the well-trained personnel in the atmosfair gGmbH, training certificates of the personnel have been provided to the verification team /10/.

For the parameters DO_y and $N_{\text{eaters,appliance}}$ a common interview questionnaire /09/ was prepared and was used during the survey by the CME. Verification team has cross verified these sample documents during the on-site audit assessment. For the parameter η_{new} , water boiling test has been performed and this has been checked by the verification team during the on-site audit assessment and with review of related spreadsheets and instructions and data entry forms /08/ /11/.

Assessment of sampling for CPA 1, CPA 2 and CPA 4:

CME has done a combined sampling for CPA 1, CPA 2 and CPA 4 for the current monitoring period. It is acceptable to the DOE since the make of ICS distributed under CPA 1, CPA 2 and CPA 4 is same i.e. "SAVE 80" type and also the geographical boundary is the host country Nigeria for the CPAs. Since the make of ICS under CPA 3 is different i.e. Envirofit G3300, sampling has been performed separately for CPA 3. This is in accordance with the Sampling Standard version 04.1 /B07-2/.

The resultant applied sample size by the CME for the CPA 1, CPA 2 and CPA 4 together /05/ are:

Parameters	DO_y	$N_{\text{eaters,appliance}}$	η_{new}
Calculated Sample Size	147	13	7
Applied Sample Size	147	126	10
Valid Responses	147	126	10

CME has calculated the estimated sample size /05/ from the results of last monitoring period, which is found appropriate as stated in the approved revised PoA-DD /B04/. A total of 147 households for the parameter DO_y and 126 households for the parameter $N_{\text{eaters,appliance}}$ are surveyed. For the parameter η_{new} , WBTs were conducted for 10 samples. The sample sizes for $N_{\text{eaters,appliance}}$ and η_{new} were calculated by the CME using Student's t-distribution calculations in accordance with the Guideline: Sampling and surveys for CDM project activities and programmes of activities (EB 67 Annex 06) /B06-1/, applicable at the time of PoA registration as provided in the approved revised approved monitoring plan. As the sample size calculated using z-values was less than 30, a sample size has been calculated using student's t-distribution. This is appropriate and is in accordance with the §14 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, version 09.0/B07-1/ as the parameter of interest if less than 30, shall be calculated using Student's t-distribution.

Assessment of sampling for CPA 3:

CME has conducted sampling for CPA 3 separately as the type of improved cook stoves deployed in the CPA (i.e. Envirofit G3300) is different from the CPA 1, CPA 2 and CPA 4.

The resultant applied sample size by CME for CPA 3 /05/ is:

Parameters	DO _y	N _{eaters,appliance}	η _{new}
Calculated Sample Size	30	6	4
Applied Sample Size	31	31	8
Valid responses	31	31	8

The calculated sample size is 30, 6 and 4 for the parameters DO_y, N_{eaters,appliance} and η_{new} respectively. A total of 31 households for the parameter DO_y and 31 for the the parameter N_{eaters,appliance} are surveyed. For the parameter η_{new}, WBTs were conducted for 8 samples. The sample sizes for N_{eaters,appliance} and η_{new} were calculated by the CME using Student's t-distribution calculations in accordance with the Guideline: Sampling and surveys for CDM project activities and programmes of activities (EB 67 Annex 06) /B06-1/, applicable at the time of PoA registration as provided in the approved revised monitoring plan. As the sample size calculated using z-values was less than 30, a sample size has been calculated using student's t-distribution. This is appropriate and is in accordance with the §14 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, version 09.0/B07-1/ as the parameter of interest mean if less than 30, shall be calculated using Student's t-distribution.

The necessary confidence / precision of 95/10 is met for all the parameters in CPAs 1, 2 and 4 and 90/10 for CPA 3 for the current monitoring period. This has been cross verified by the verification team from the supporting documents submitted i.e. Sample Size Calculation /05/, Inspection Database /04/, User interviews questionnaire records /09/ and Water Boiling Test Report /08//10/.

During the On-site audit assessment, verification of the CME's sampling has been done in accordance with the clarification letter INQ-09626-EB from the CDM EB /14/. The Board allowed the CME to conduct monitoring and verification simultaneously. Since, the verification team was available during the monitoring process, the monitoring exercise was carried out by the CME in presence of the verification team on-site. The verification team was able to verify all the households interviewed as part of the monitoring survey (CME's set of records), thus the acceptance sampling as described in the steps indicated in § 28 – §39 of the sampling standard, version 09 /B07-1/ is not applicable in this case.

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General			
Compliance of the monitoring report with the monitoring report form	--	--	--
Remaining forward action requests from validation and/or previous verifications	--	--	FAR 01
CPAs considered for verification and covered in this report	--	--	--
Programme of activities			
Compliance of the programme implementation with the registered PoA-DD	--	--	FAR 02
Implementation and operation of the management system	--	--	--
Post-registration changes			
• Corrections	--	--	--
• Inclusion of a monitoring plan	--	--	--
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized	--	--	--

baselines, or other methodological regulatory documents ¹			
• Changes to the programme design	--	--	--
• Addition of CPA inclusion template	--	--	--
• Change of coordinating/managing entity	--	--	--
• Changes specific to afforestation and reforestation activities	--	--	--
Component project activities			
Compliance of the CPA implementation with the included CPA design document	--	--	--
Post-registration changes			
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	--	--	--
• Corrections	--	--	--
• Changes to the start date-of the crediting period	--	--	--
• Inclusion of a monitoring plan	--	--	--
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	--	--	--
• Changes to the project design	--	--	--
• Changes specific to afforestation and reforestation activities	--	--	--
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	--	--	--
Compliance of monitoring activities with the registered monitoring plan	--	--	--
• Data and parameters fixed ex ante or at renewal of crediting period	--	--	--
• Data and parameters monitored	--	CAR 02	--
• Implementation of sampling plan	--	--	--
Compliance with the calibration frequency requirements for measuring instruments	--	--	--
Assessment of data and calculation of emission reductions or net removals	--	--	--
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	--	--	--
• Calculation of project GHG emissions or actual net GHG removals by sinks	--	--	--
• Calculation of leakage GHG emissions	--	--	--
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	--	CAR 01	--
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	--	--	--
• Remarks on difference from estimated value in included CPA	--	--	--
Assessment of reported sustainable development co-benefits	--	--	--
Global stakeholder consultation	--	--	--
Others (Supporting documents)	CL 02	--	--
Others (Issuance procedure	CL 01	--	--
Total	02 CLs	02 CARs	02 FARs

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

SECTION E. Verification findings

E.1. General

E.1.1. Compliance of the monitoring report with the monitoring report form

Means of verification	DR, I
Findings	--
Conclusion	<p>CME has used the Monitoring report form, for CDM programme of activities, version 05.0 /B03/. Verification team confirms that the latest available version of monitoring report /01/ /02/ has been used by the CME and the MR is in compliance of the monitoring report form with the relevant form and instructions therein /B03/.</p> <p>This confirms compliance with the §336 and §337 of CDM VVS for PoAs, version 03.0 /B01-1/.</p> <p>In accordance with the clarification letter issued by the UNFCCC Secretariat /14/ before undertaking the combined remote and on-site audit assessment for the verification team from 13/10/2022 – 18/01/2023.</p> <p>Moreover, in accordance with the agreement of the Executive Board of the CDM (the Board) at its 118th meeting, requests for registration, renewal of crediting period, and issuance of certified emission reductions relating to the period after 2020, as well as corresponding submissions for programmes of activities, may no longer be submitted under the temporary measures operated by the Board based on its agreement at its 108th meeting. The submission window closed on 30 June 2023 and therefore the MR/01/ was not webhosted.</p>

E.1.2. Remaining forward action requests from validation and/or previous verifications

>>

FAR ID	01	Section no.	E.3.4.2	Date: 01/11/2021
Description of FAR				
<p><i>In accordance with the §2 (c) of the Clarification: Regulatory requirements under temporary measures for post-2020 cases issued in EB 109, Annex 1, the CME and project participant of the PoA shall update their monitoring reports:</i></p> <p><i>(i) To apply any global warming potential values that may be adopted by the CMP; and</i></p> <p><i>(ii) In accordance with any requirements of the CMP guidance.</i></p>				
CME response				Date: 19/01/2024
<p><i>(I) GWP as per Regulatory requirements under temporary measures for post-2020 cases, Version 02.0 were applied.</i></p> <p><i>(II) The Risk acknowledgement and acceptance form was provided to the DOE and any requirements of the CMP guidance were followed.</i></p>				
Documentation provided by the CME				
DOE assessment				Date: 02/02/2024
<p>1) VVB confirms that the GWP value mentioned in table 1 of § 1 of appendix 1 of "Regulatory requirements under temporary measures for post-2020 cases" has been applied by CME</p> <p>2) The Risk acknowledgment and acceptance form has been provided to VVB.</p> <p>The compliance of the requirement shall be checked at the time of the next periodic verification. FAR01 remains open.</p>				

E.1.3. CPAs considered for verification and covered in this report

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
"CPA # 1 Improved Cooking Stoves for Nigeria" 5067-P1-0001-CP1	Yes	10/11/2011	Version 3.2	Y
"CPA # 2 Improved Cooking Stoves for Nigeria" 5067-P1-0002-CP1	Yes	11/07/2012	Version 3.2	Y
"CPA # 3 Improved Cooking Stoves for Nigeria" 5067-P1-0003-CP1	Yes	11/07/2012	Version 3.2	Y
"CPA # 4 Improved Cooking Stoves for Nigeria" 5067-P1-0004-CP1	Yes	29/05/2013	Version 3.2	Y
"CPA # 5 Improved Cooking Stoves for Nigeria" 5067-P1-0005-CP1	No	29/05/2013	Version 3.2	N

E.2. Programme of activities**E.2.1. Compliance of the programme implementation with the registered programme design document**

Means of verification	DR, I
Findings	--
Conclusion	CC IPL by means of an on-site audit assessment and document review, assessed that all physical features (technology, project equipment, and monitoring and metering equipment) of the included CPAs in the approved revised PoA-DD are in place and that the coordinating/managing entity has operated the PoA and the CPAs as per the approved revised PoA-DD and the approved revised CPA-DDs. Verification team confirms that the programme has been implemented as per the approved revised PoA-DD. This confirms the compliance of § 338(a), § 340 and § 345 of CDM VVS for PoAs, version 03.0 /B01-1/.

E.2.2. Implementation and operation of the management system

Means of verification	DR, I
Findings	--
Conclusion	The PoA management system including the record-keeping system has been explained in the approved revised PoA-DD /B04/. During the course of verification, verification team based on the review of the provided documents and on-site audit interviews/observations has assessed this management system. This included the organisational structure, roles and responsibilities, data collection, transfer and aggregation procedures, training of personnel /10/, data storage and archiving and emergency procedures for the monitoring system.

	<p>On the basis of on-site audit interviews with the personnel of atmosfair gGmbH involved in the project monitoring and data collection, inspection of monitoring database & equipment used and document review, CCIPL can confirm that the responsibilities and authorities for monitoring and reporting are appropriate and effective for the project type and hence in accordance with the monitoring plan of the approved revised PoA-DD /B04/ and the applied monitoring methodology /B02/.</p> <p>The verification team confirms that the monitoring management system of the CDM PoA is in place, with the responsibilities properly identified and in place. This confirms the compliance of § 338 (a) and § 345 (b) (iv) of CDM VVS PoAs, version 03.0 /B01-1/.</p>
--	---

E.2.3. Post-registration changes

E.2.3.1. Corrections

>>

There are no corrections applicable to the monitoring period that have been approved by the Board during this monitoring period or to be submitted with the request for issuance.

E.2.3.2. Inclusion of a monitoring plan

>>

There are no inclusions of monitoring plan to the approved revised programme of activities has been approved by the Board during this monitoring period.

E.2.3.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>>

A post registration change was approved prior to the start of the reported monitoring period on 29/12/2014 for the PoA and is prior to the submission of issuance request for the PoA. The reference number for the post registration change is PRC-5067-001 (Approval date: 29/12/2014).

E.2.3.4. Changes to the programme design

>>

There are no changes to the programme design of the approved revised PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA

E.2.3.5. Addition of CPA inclusion template

>>

There are no post registration changes approved by the Board to add CPA inclusion template during this monitoring period or are to be submitted with the request for issuance.

E.2.3.6. Change of coordination/managing entity

>>

N/A

E.2.3.7. Changes specific to afforestation and reforestation activities

>>

N/A

E.3. Component project activities

E.3.1. Compliance of the CPA implementation with the included CPA design document

Means of verification	DR, I
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Findings	--																																																																																				
Conclusion	<p>The implementation status of the PoA and the component project activities is:</p> <table border="1"> <tr> <td>Co-ordinating and Managing entity/Project Participants:</td> <td>atmosfair gGmbH</td> </tr> <tr> <td>Title of the PoA:</td> <td>Improved Cooking Stoves for Nigeria Programme of Activities</td> </tr> <tr> <td>UNFCCC registration No:</td> <td>5067</td> </tr> <tr> <td>Applied Baseline and monitoring methodology:</td> <td>AMS II. G., version 3</td> </tr> </table> <table border="1"> <tr> <td>Title of the CPA:</td> <td>CPA # 1 Improved Cooking Stoves for Nigeria</td> </tr> <tr> <td>CPA reference number:</td> <td>5067-P1-0001-CP1</td> </tr> <tr> <td>Date of inclusion:</td> <td>10/11/2011</td> </tr> <tr> <td>CPA start date:</td> <td>29/03/2011</td> </tr> <tr> <td>CPA start of operation:</td> <td>29/03/2011</td> </tr> <tr> <td>CPA implementer</td> <td>atmosfair gGmbH</td> </tr> <tr> <td>Project Scale:</td> <td>Small scale</td> </tr> <tr> <td>Location of the CPAs:</td> <td>Nigeria</td> </tr> <tr> <td>CPA crediting period:</td> <td>10/11/ 2011 – 09/11/2021</td> </tr> <tr> <td>Reported monitoring Period verified in this verification:</td> <td>01/07/2021 to 30/06/2022²</td> </tr> </table> <table border="1"> <tr> <td>Title of the CPA:</td> <td>CPA # 2 Improved Cooking Stoves for Nigeria</td> </tr> <tr> <td>CPA reference number:</td> <td>5067-P1-0002-CP1</td> </tr> <tr> <td>Date of inclusion:</td> <td>11/07/2012</td> </tr> <tr> <td>CPA start date:</td> <td>01/01/2012</td> </tr> <tr> <td>CPA start of operation:</td> <td>14/01/2012</td> </tr> <tr> <td>CPA implementer</td> <td>atmosfair gGmbH</td> </tr> <tr> <td>Project Scale:</td> <td>Small scale</td> </tr> <tr> <td>Location of the CPAs:</td> <td>Nigeria</td> </tr> <tr> <td>CPA crediting period:</td> <td>15/07/2012 – 14/07/2022</td> </tr> <tr> <td>Reported monitoring Period verified in this verification:</td> <td>01/07/2021 to 30/06/2022</td> </tr> </table> <table border="1"> <tr> <td>Title of the CPA:</td> <td>CPA # 3 Improved Cooking Stoves for Nigeria</td> </tr> <tr> <td>CPA reference number:</td> <td>5067-P1-0003-CP1</td> </tr> <tr> <td>Date of inclusion:</td> <td>11/07/2012</td> </tr> <tr> <td>CPA start date:</td> <td>01/01/2012</td> </tr> <tr> <td>CPA start of operation:</td> <td>07/01/2012</td> </tr> <tr> <td>CPA implementer</td> <td>atmosfair gGmbH</td> </tr> <tr> <td>Project Scale:</td> <td>Small scale</td> </tr> <tr> <td>Location of the CPAs:</td> <td>Nigeria</td> </tr> <tr> <td>CPA crediting period:</td> <td>15 /07/2012 – 14/07/2022</td> </tr> <tr> <td>Reported monitoring Period verified in this verification:</td> <td>01/07/2021 to 30/06/2022</td> </tr> </table> <table border="1"> <tr> <td>Title of the CPA:</td> <td>CPA # 4 Improved Cooking Stoves for Nigeria</td> </tr> <tr> <td>CPA reference number:</td> <td>5067-P1-0004-CP1</td> </tr> <tr> <td>Date of inclusion:</td> <td>29/05/2013</td> </tr> <tr> <td>CPA start date:</td> <td>01/01/2012</td> </tr> <tr> <td>CPA start of operation:</td> <td>12/07/2013</td> </tr> <tr> <td>CPA implementer</td> <td>atmosfair gGmbH</td> </tr> <tr> <td>Project Scale:</td> <td>Small scale</td> </tr> <tr> <td>Location of the CPAs:</td> <td>Nigeria</td> </tr> </table>	Co-ordinating and Managing entity/Project Participants:	atmosfair gGmbH	Title of the PoA:	Improved Cooking Stoves for Nigeria Programme of Activities	UNFCCC registration No:	5067	Applied Baseline and monitoring methodology:	AMS II. G., version 3	Title of the CPA:	CPA # 1 Improved Cooking Stoves for Nigeria	CPA reference number:	5067-P1-0001-CP1	Date of inclusion:	10/11/2011	CPA start date:	29/03/2011	CPA start of operation:	29/03/2011	CPA implementer	atmosfair gGmbH	Project Scale:	Small scale	Location of the CPAs:	Nigeria	CPA crediting period:	10/11/ 2011 – 09/11/2021	Reported monitoring Period verified in this verification:	01/07/2021 to 30/06/2022 ²	Title of the CPA:	CPA # 2 Improved Cooking Stoves for Nigeria	CPA reference number:	5067-P1-0002-CP1	Date of inclusion:	11/07/2012	CPA start date:	01/01/2012	CPA start of operation:	14/01/2012	CPA implementer	atmosfair gGmbH	Project Scale:	Small scale	Location of the CPAs:	Nigeria	CPA crediting period:	15/07/2012 – 14/07/2022	Reported monitoring Period verified in this verification:	01/07/2021 to 30/06/2022	Title of the CPA:	CPA # 3 Improved Cooking Stoves for Nigeria	CPA reference number:	5067-P1-0003-CP1	Date of inclusion:	11/07/2012	CPA start date:	01/01/2012	CPA start of operation:	07/01/2012	CPA implementer	atmosfair gGmbH	Project Scale:	Small scale	Location of the CPAs:	Nigeria	CPA crediting period:	15 /07/2012 – 14/07/2022	Reported monitoring Period verified in this verification:	01/07/2021 to 30/06/2022	Title of the CPA:	CPA # 4 Improved Cooking Stoves for Nigeria	CPA reference number:	5067-P1-0004-CP1	Date of inclusion:	29/05/2013	CPA start date:	01/01/2012	CPA start of operation:	12/07/2013	CPA implementer	atmosfair gGmbH	Project Scale:	Small scale	Location of the CPAs:	Nigeria
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²The end date of crediting period of CPA #1 is 09/11/2021 which is prior to the end date of the monitoring period. However, the ER is only calculated for the period from 01/07/2021 to 09/11/2021 which can be verified from the calculation provided in cell "E11", tab "CPA1 CER calculation" of excel spreadsheet "Nigeria PoA_5067_ER-calculation_Spreadsheet_MP10_v2_13112023"

CPA crediting period:	01/06/2013 to 31/05/2023
Reported monitoring Period verified in this verification:	01/07/2021 to 30/06/2022

Each CPA involves the distribution of improved cooking stoves in the host country, Nigeria. The coordinating/managing entity for the PoA is atmosfair gGmbH. The ICS deployed under CPA 1, CPA 2 and CPA 4 is "SAVE80" type /12-1/ and ICS disseminated under CPA 3 is Envirofit G3300 type /12-1/. CPA 5 has not been reported in the monitoring report for the reported monitoring period (MP 9). This is in accordance with the section 10.2.1 of the CDM VVS for PoA, version 03.0 /B01-1/. The number of stoves deployed under each CPA has been confirmed by the monitoring database /13/. The verified total number of stoves deployed (implemented) under the CPAs are:

- CPA 1 – 2,830
- CPA 2 – 2,994
- CPA 3 – 2,115
- CPA 4 – 2,379
- Total – 10,318 stoves

The total stoves have reduced from the previous verification as the dropouts from the previous verification have been treated as permanent dropouts and removed from the database for claiming emission reductions. This approach is acceptable to the verification team.

As per the approved revised CPA-DDs /B04/, the estimated (maximum number of ICS to be deployed per year to ensure the CPA remains under the threshold of 60 GWh thermal energy savings) cook stove/per for the CPAs are defined as:

- CPA 1: 4,601
- CPA 2: 4,601
- CPA 3: 4,150
- CPA 4: 4,601

Based on the above assessment, verification team confirmed that the number of stoves deployed under each CPA is under the limit as set by the CME during the inclusion of each CPA and CPAs remain under the threshold of 60 GWh thermal energy savings/year.

The thermal savings for each CPA has been calculated by the CME as follows:

CPA	GWh _{th}	Comment
CPA 1	36.90	The annual thermal savings from the CPA is less than the CPA-DD requirement of 60 GWh _{th} for micro scale project.
CPA 2	39.04	The annual thermal savings from the CPA is less than the CPA-DD requirement of 60 GWh _{th} for micro scale project.
CPA 3	30.58	The annual thermal savings from the CPA is less than the CPA-DD requirement of 60 GWh _{th} for micro scale project.
CPA 4	31.02	The annual thermal savings from the CPA is less than the CPA-DD requirement of 60 GWh _{th} for micro scale project.

Each CPA under the PoA involves the distribution of ICSs in the host country, Nigeria. The exact stove locations could be verified from the monitored stove distribution database /13/ and sample sales receipts of each CPA /07/ (i.e. CPA 1, CPA 2, CPA 3 and CPA 4).

The component project activities were implemented, and equipment installed as described in the included CPA DDs /B04/.

In accordance with the clarification letter INQ-09626-EB issued by the UNFCCC /14/ on 18/06/2020, an on-site audit assessment by the CME for monitoring and On-site audit by the DOE personnel was undertaken to collect data and evidence. It was confirmed during the on-site audit interviews that atmosfair gGmbH is the Coordinating/Managing Entity for the PoA. The actual project activity is in line with the included CPA-DDs /B04/. atmosfair gGmbH is the CPA implementer/ programme activity implementer for the CPAs.

The information (including data and variables) provided in the MR /02/ is in line with the details provided in the approved revised CPA-DDs /B04/.

CC IPL's verification team considers the project description of the project contained in the approved revised PoA-DD and the approved revised CPA-DDs /B04/ to be complete and accurate. The approved revised CPA-DDs/B04/ comply with the relevant methodology, tools, forms and guidance at the time of CPA-DDs/B04/ submission for registration/inclusion.

In accordance with § 340 of CDM VVS for PoA, version 03 /B01-1/, the verification team confirms that there is no information (data and variables) in the current monitoring period that are different from that stated in the approved revised CPA-DDs/B04/ which has caused an increase in the estimates of GHG emission reductions.

Verification team has assessed the project in order to check any proposed or actual changes to the project design in accordance with § 267 of CDM VVS for PoAs, version 03.0/B01/. In the opinion of CC IPL, there is no change to the project design. CC IPL's verification team confirms that the CPAs are implemented within the boundary of the PoA as described in the approved revised PoA-DD/B04/ and the implementation and operation of the project activity has been conducted in accordance with the description contained in the approved revised PoA-DD/B04/ and included approved revised CPA-DDs/B04/.

As part of the on-site audit assessment, the verification team was able to confirm that the component project implementation is in accordance with the project description contained in the approved revised CPA-DDs /B04/. The verification team took cognizance of §338, § 339 and § 340 of the CDM VVS for PoA, version 03 /B01-1/.

E.3.2. Post-registration changes

E.3.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

>>

There are no temporary deviations from the approved revised monitoring plan, monitoring methodology or standardized baseline during the monitoring period.

E.3.2.2. Corrections

>>

There are no corrections applicable to the monitoring period that have been approved by the Board during this monitoring period or to be submitted with the request for issuance.

E.3.2.3. Changes to the start-date of the crediting period

>>

There are no changes to the start date of the crediting period for the CPAs.

E.3.2.4. Inclusion of a monitoring plan

>>

There are no inclusions of monitoring plan to included approved revised CPA-DDs.

E.3.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>>

A post registration change was approved prior to the start of the reported monitoring period on 29/12/2014 for the PoA and is prior to the submission of issuance request for the PoA. The reference number for the post registration change is PRC-5067-001.

E.3.2.6. Changes to the project design

>>

There are no changes to the programme design of the included CPA-DDs.

E.3.2.7. Changes specific to afforestation and reforestation activities

>>

N/A

E.3.3. Compliance of the registered monitoring plan with applied methodologies and standardized baselines

Means of verification	DR, I
Findings	--
Conclusion	<p>The verification team is able to confirm that the monitoring plan contained in the approved revised CPA-DDs /B04/ is in accordance with the approved methodology applied by the project activity, i.e., AMS-II.G., version 03 /B02/.</p> <p>The monitoring plan is in accordance with the approved methodology, AMS-II.G., version 03 /B02/, applied by the component project activities and as provided in the approved revised CPA-DDs /B04/.</p> <p>The verification took cognizance of § 341 to § 343 of CDM VVS for PoAs, version 03.0 /B01-1/.</p>

E.3.4. Compliance of monitoring activities with the registered monitoring plan

E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	DR, I
Findings	--
Conclusion	<p>The verification team confirms that the Data and parameters fixed ex-ante are in compliance with the monitoring plan contained in the approved revised CPA-DDs /B04/.</p> <p>Detailed assessment of each parameter has been provided in Appendix-5.</p> <p>The verification took cognizance of §344, §345 (c) and §357 of CDM VVS for PoAs, version 03.0 /B01-1/.</p>

E.3.4.2. Data and parameters monitored

Means of verification	DR, I
Findings	--
Conclusion	<p>The verification team confirms that the Data and parameters monitored are in compliance with the monitoring plan contained in the approved revised CPA-DDs/B04/.</p> <p>A complete assessment of each of the monitored parameters has been provided in Appendix-6 of the verification report.</p> <p>The verification took cognizance of § 344, § 345 (c), § 355 and § 357 of CDM VVS for PoAs, version 03.0 /B01-1/.</p>

E.3.4.3. Implementation of sampling plan

Means of verification	DR, I																																		
Findings																																			
Conclusion	<p>The sampling plan implemented by the CME is in accordance with the applied approved monitoring methodology /B02/ and the approved revised PoA-DD, approved revised CPA-DDs /B04/. The CME has appropriately performed Simple Random Sampling procedure in line with the applied methodology and best suited for this type of project. As the approved revised PoA-DD /B04/ mentions the option for Simple Random Sampling procedure, it is acceptable to the verification team.</p> <p>The sampling survey has been carried out by the well-trained people in the atmosfair gGmbH, training certificates of the personnel have been provided to the verification team /10/.</p> <p><u>Assessment of sampling for CPA 1, CPA 2 and CPA 4:</u></p> <p>CME has done a combined sampling for CPA 1, CPA 2 and CPA 4 for the current monitoring period. It is acceptable to the DOE since the make of ICS distributed under CPA 1, CPA 2 and CPA 4 is same i.e. "SAVE 80" type and also the geographical boundary is the host country Nigeria for the CPAs. Since the make of ICS under CPA 3 is different i.e. Envirofit G3300, sampling has been performed separately for CPA 3. This is in accordance with the Sampling Standard version 04.1 /B07-2/.</p> <p>The resultant applied sample size by the CME for the CPA 1, CPA 2 and CPA 4 together /05/ are:</p> <table border="1"> <thead> <tr> <th>Parameters</th> <th>DO_y</th> <th>N_{eaters,appliance}</th> <th>η_{new}</th> </tr> </thead> <tbody> <tr> <td>Calculated Sample Size</td> <td>147</td> <td>13</td> <td>7</td> </tr> <tr> <td>Applied Sample Size</td> <td>147</td> <td>126</td> <td>10</td> </tr> <tr> <td>Valid Responses</td> <td>147</td> <td>126</td> <td>10</td> </tr> </tbody> </table> <p>CME has calculated the estimated sample size /05/ from the results of last monitoring period, which is found appropriate as stated in the approved revised PoA-DD /B04/. A total of 147 households for the parameter DO_y and 126 households for the parameter N_{eaters,appliance} are surveyed. For the parameter η_{new}, WBTs were conducted for 10 samples. The sample sizes for N_{eaters,appliance} and η_{new} were calculated by the CME using Student's t-distribution calculations in accordance with the Guideline: Sampling and surveys for CDM project activities and programmes of activities (EB 67 Annex 06) /B06-1/, applicable at the time of PoA registration as provided in the approved revised approved monitoring plan. As the sample size calculated using z-values was less than 30, a sample size has been calculated using student's t-distribution. This is appropriate and is in accordance with the §14 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, version 09.0/B07-1/ as the parameter of interest if less than 30, shall be calculated using Student's t-distribution.</p> <p><u>Assessment of sampling for CPA 3:</u></p> <p>CME has conducted sampling for CPA 3 separately as the type of improved cook stoves deployed in the CPA (i.e. Envirofit G3300) is different from the CPA 1, CPA 2 and CPA 4.</p> <p>The resultant applied sample size by CME for CPA 3 /05/ is:</p> <table border="1"> <thead> <tr> <th>Parameters</th> <th>DO_y</th> <th>N_{eaters,appliance}</th> <th>η_{new}</th> </tr> </thead> <tbody> <tr> <td>Calculated Sample Size</td> <td>30</td> <td>6</td> <td>4</td> </tr> <tr> <td>Applied Sample Size</td> <td>31</td> <td>31</td> <td>8</td> </tr> <tr> <td>Valid responses</td> <td>31</td> <td>31</td> <td>8</td> </tr> </tbody> </table>			Parameters	DO _y	N _{eaters,appliance}	η _{new}	Calculated Sample Size	147	13	7	Applied Sample Size	147	126	10	Valid Responses	147	126	10	Parameters	DO _y	N _{eaters,appliance}	η _{new}	Calculated Sample Size	30	6	4	Applied Sample Size	31	31	8	Valid responses	31	31	8
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Calculated Sample Size	30	6	4																																
Applied Sample Size	31	31	8																																
Valid responses	31	31	8																																

	<p>The calculated sample size is 30, 6 and 4 for the parameters DO_y, $N_{\text{eaters,appliance}}$ and η_{new} respectively. A total of 31 households for the parameter DO_y and $N_{\text{eaters,appliance}}$ each are surveyed. For the parameter η_{new}, WBTs were conducted for 8 samples. The sample sizes for $N_{\text{eaters,appliance}}$ and η_{new} were calculated by the CME using Student's t-distribution calculations in accordance with the Guideline: Sampling and surveys for CDM project activities and programmes of activities (EB 67 Annex 06) /B06-1/, applicable at the time of PoA registration as provided in the approved revised monitoring plan. As the sample size calculated using z-values was less than 30, a sample size has been calculated using student's t-distribution. This is appropriate and is in accordance with the §14 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, version 09.0/B07-1/ as the parameter of interest mean if less than 30, shall be calculated using Student's t-distribution.</p> <p>The necessary confidence / precision of 95/10 is met for all the parameters in CPAs 1, 2 and 4 and 90/10 for CPA 3 for the current monitoring period. This has been cross verified by the verification team from the supporting documents submitted i.e. Sample Size Calculation /05/, Inspection Database /04/, User interviews questionnaire records /09/ and Water Boiling Test Report /08//10/.</p> <p>During the on-site audit assessment, verification of the CME's sampling has been done in accordance with the clarification letter INQ-09626-EB from the CDM EB /14/. The Board allowed the CME to conduct monitoring and verification simultaneously. Since, the verification team was available during the monitoring process, the monitoring exercise was carried out by the CME in presence of the verification team. The verification team was able to verify all the households interviewed as part of the monitoring survey (CME's set of records), thus the acceptance sampling as described in the steps indicated in § 28–§39 of the sampling standard, version 09 /B07-1/ is not applicable in this case.</p>
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E.3.5. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	DR, I
Findings	--
Conclusion	<p>Monitoring database has been used to record the stoves details by the CME through a survey of the installed stoves based on sampling basis. The stove efficiency also needs to be checked. The stove efficiency testing has been done by WBTs conducted in line with the guidance provided by the CME in the approved revised CPA-DDs /B04/. The monitoring equipment used for conducting the stove efficiencies by WBTs are thermocouple and weighing machines. The thermocouple and weighing scale were duly calibrated on 26/08/2022; before the start of monitoring /12-2/ /12-3/. The appropriate QA/QC procedures have been followed for the monitoring parameters. The monitoring personnel were trained to conduct WBT tests before they conducted the WBTs/10/.</p> <p>The verification took cognizance of section 10.2.6 of CDM VVS for PoAs, version 03 /B01-1/.</p>

E.3.6. Assessment of data and calculation of emission reductions or net removals

E.3.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	DR, I
Findings	--
Conclusion	<p>In line with the requirement of § 356 and § 357 of CDM VVS for PoAs, version 03.0/B01-1/, the verification team has reviewed the monitoring report and ER spread sheet to check the arithmetic calculation of the emission reductions. The equation used for the calculation is compared with those provided in the approved revised CPA-DDs /B04/ and the methodology AMS-II.G., version 03 /B02/ and found to be in correct.</p>

The equations for baseline emissions as provided in the monitoring report /02/ were confirmed with the approved revised CPA-DDs /B04/ and the approved methodology AMS-II.G., version 03 /B02/ and found to be correct.

Emission reductions are calculated using the below equation:

$$ER_y = B_{y,savings} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossilfuel}$$

Where:

$ER_y =$	Emission reductions of the project activity in period y in tCO ₂
$B_{y,savings} =$	Quantity of woody biomass that is saved by the CPA in period y in tonnes
$f_{NRB,y} =$	Fraction of woody biomass saved by the project activity in period y that can be established as non-renewable biomass (fixed value of 0.77)
$NCV_{biomass} =$	Net calorific value of the non-renewable woody biomass that is substituted (fixed value of 0.015 TJ/ton)
$EF_{projected_fossilfuel} =$	Emission factor for the substitution of non-renewable woody biomass by similar consumers (fixed value of 81.6 tCO ₂ /TJ)

$B_{y,savings}$ is calculated according to the following formula as per the applied methodology /B02/, Option 2:

$$B_{y,savings} = B_{old} \cdot \left(1 - \frac{\eta_{old}}{\eta_{new}}\right)$$

Where:

$B_{y,savings}$	= Quantity of woody biomass that is saved in tonnes
B_{old}	= Quantity of woody biomass used in the absence of the project activity in tonnes
η_{old}	= Efficiency of the baseline system being replaced (fixed value of 0.1)
η_{new}	= Efficiency of the system being deployed as part of the project activity (monitored value)

B_{old} is calculated according to the following formula:

$$B_{old} = B_{old,appliance} \cdot N_y \cdot (1 - DO_y) \cdot \frac{mp_{length}}{365} \cdot L_{NRB} \cdot L_{PoA}$$

Where:

B_{old}	= Quantity of woody biomass used in the absence of the project activity in tonnes
$B_{old,appliance}$	= Quantity of woody biomass used in the absence of the project activity in tons, per appliance in tonnes per year
N_y	= Adjusted total number of appliances deployed in period y (monitored value)
DO_y	= Statistically adjusted drop out from total population of appliances in period y (monitored value)
mp_{length}	= Length of monitoring period y in days
L_{NRB}	= Net-to-gross adjustment factor for NRB Leakage (fixed value of 0.95)
L_{PoA}	= Net-to-gross adjustment factor for PoA Leakage (fixed value of 0.95)

$B_{old,appliance}$ is calculated according to the following formula:

$$B_{old,appliance} = B_{old,capita} \cdot N_{eaters,appliance}$$

Where:

	<p>$B_{old,appliance}$ = Quantity of woody biomass used in the absence of the project activity in tonnes, per appliance</p> <p>$B_{old,capita}$ = Average baseline fuelwood consumption per capita per year (fixed value of 0.692 t/year)</p> <p>$N_{eaters,appliance}$ = Average number of eaters per project appliance (monitored value, capped as per parameter HH_CAP)</p> <p>From the above equation and the parameter values, emission reductions are calculated as:</p> <p>5067-P1-0001-CP1: 2,335 tCO₂e 5067-P1-0002-CP1: 6,830 tCO₂e 5067-P1-0003-CP1: 5,637 tCO₂e 5067-P1-0004-CP1: 5,427 tCO₂e</p> <p>Total ER_y = 20,229 tCO₂e</p> <p>The verification team confirms that the calculation of baseline emission and emission reductions is in accordance with the applied methodological equation and the approved revised CPA-DDs/B04/. Calculations have been checked and confirmed from the ER spread sheet /04/.</p> <p>The verification took cognizance of § 356 of CDM VVS for PoAs, version 03.0 /B01-1/.</p>
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E.3.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	DR, I
Findings	--
Conclusion	There are no project emissions identified in the monitoring methodology /B02/ and the approved revised CPA-DDs /B04/.

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	DR, I
Findings	--
Conclusion	<p>Net-to-gross adjustment factors for NRB leakage (L_{NRB}) and for PoA leakage (L_{PoA}) (fixed default values of 0.95 as per AMS II.G., version 03) /B02/ were applied to the project activity to calculate emission reductions of this monitoring period.</p> <p>Verification team 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 approved revised CPA-DDs /B04/.</p>

E.3.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	DR, I
Findings	
Conclusion	<p>Verification team 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 approved revised CPA-DDs /B04/. The total number of ERs achieved during the monitoring period is 20,229 tCO₂e.</p> <p>In summary, verification team confirms that actual emission reduction is lower than the estimate of the approved revised CPA-DD/B04/ for the current monitoring period.</p> <p>The verification took cognizance of § 356 of CDM VVS PoAs, version 03.0 /B01-1/.</p>

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
"CPA # 1 Improved Cooking Stoves for Nigeria" 5067-P1-0001-CP1	2,335	Not applicable	Not applicable	0	2,335	2,335
"CPA # 2 Improved Cooking Stoves for Nigeria" 5067-P1-0002-CP1	6,830	Not applicable	Not applicable	0	6,830	6,830
"CPA # 3 Improved Cooking Stoves for Nigeria" 5067-P1-0003-CP1	5,637	Not applicable	Not applicable	0	5,637	5,637
"CPA # 4 Improved Cooking Stoves for Nigeria" 5067-P1-0004-CP1	5,427	Not applicable	Not applicable	0	5,427	5,427
Total	20,229	0	0	0	20,229	20,229

E.3.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

Means of verification	DR, I
Findings	--
Conclusion	Comparison of the actual GHG emission reductions with the estimates in the included specific CPAs is given in the below table. The verification team took cognizance of § 356 of CDM VVS for PoAs, version 03.0 /B01-1/.

Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period	Value estimated in ex ante calculation in the included CPA-DD(s)
"CPA # 1 Improved Cooking Stoves for Nigeria" 5067-P1-0001-CP1	2,335	2,704
"CPA # 2 Improved Cooking Stoves for Nigeria" 5067-P1-0002-CP1	6,830	11,559
"CPA # 3 Improved Cooking Stoves for Nigeria" 5067-P1-0003-CP1	5,637	11,627

“CPA # 4 Improved Cooking Stoves for Nigeria” 5067-P1-0004-CP1	5,427	34,677
Total	20,229	60,567

E.3.6.6. Remarks on difference from estimated value in included CPA

Means of verification	DR, I															
Findings	--															
Conclusion	<p>Verification team confirms that actual emission reduction is lower than the estimate of the approved revised CPA-DDs/B04/ for the current monitoring period. The total ERs for the monitoring period are 20,229 tCO₂e and the ex-ante ERs for the monitoring period were 60,567 tCO₂e. The total ERs for the monitoring period is less than the estimated ex-ante. The difference of other monitoring parameters has been assessed in the Appendix 6 of this report.</p> <p>The difference in the monitored actual value of the ERs per unit of stove from the ex-ante estimated value for the current monitoring period is as follows.</p> <table border="1"> <thead> <tr> <th>CPA no.</th> <th>Ex-ante value (tCO₂e/year)/B04/</th> <th>Monitored value (tCO₂e/year)/04/</th> </tr> </thead> <tbody> <tr> <td>5067-P1-0001-CP1</td> <td>3.61</td> <td>1.78</td> </tr> <tr> <td>5067-P1-0002-CP1</td> <td>3.61</td> <td>1.78</td> </tr> <tr> <td>5067-P1-0003-CP1</td> <td>3.10</td> <td>2.67</td> </tr> <tr> <td>5067-P1-0004-CP1</td> <td>3.61</td> <td>1.78</td> </tr> </tbody> </table> <p>The monitored value is less than the ex-ante estimated values as the value of average number of eaters and efficiency has reduced from the ex-ante estimations for all the CPAs 1, 2 and 4. The value of drop-out rate has also increased compared to the ex-ante estimates for CPAs 1, 2 and 4. The reasons for such increase are provided in the section F.5.1 of the MR/02/. It is to be noted that the dropouts from previous verification have been treated as permanent dropouts and thus removed from the stove database and thus no emission reductions are claimed for such stoves.</p> <p>The monitored value is less than the ex-ante estimated values as the value of average number of eaters and efficiency has reduced from the ex-ante estimations for the CPA 3. Also, the value of drop-out rate has increased compared to the ex-ante estimates for CPA 3. The reasons for such increase are provided in the section F.5.1 of the MR/02/. It is to be noted that the dropouts from previous verification have been treated as permanent dropouts and thus removed from the stove database and thus no emission reductions are claimed for such stoves.</p> <p>The verification took cognizance of § 270 and § 271 of the CDM Project Standard for the PoAs version 03/B01-2/ and § 340 of the VVS for the PoAs version 03/B01-1/.</p>	CPA no.	Ex-ante value (tCO ₂ e/year)/B04/	Monitored value (tCO ₂ e/year)/04/	5067-P1-0001-CP1	3.61	1.78	5067-P1-0002-CP1	3.61	1.78	5067-P1-0003-CP1	3.10	2.67	5067-P1-0004-CP1	3.61	1.78
CPA no.	Ex-ante value (tCO ₂ e/year)/B04/	Monitored value (tCO ₂ e/year)/04/														
5067-P1-0001-CP1	3.61	1.78														
5067-P1-0002-CP1	3.61	1.78														
5067-P1-0003-CP1	3.10	2.67														
5067-P1-0004-CP1	3.61	1.78														

E.3.7. Assessment of reported sustainable development co-benefits

Means of verification	N/A
Findings	--
Conclusion	N/A The verification took cognizance of § 359 of CDM VVS for the PoAs, version 03 /B01-1/.

E.3.8. Global stakeholder consultation

Means of verification	N/A (this is not first MP)
Findings	--
Conclusion	The verification took cognizance of § 368 of CDM VVS for the PoAs, version 03 /B01-1/.

SECTION F. Internal quality control

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The final verification report has passed a technical review before being submitted to the UNFCCC Executive Board. A technical reviewer qualified in accordance with the CCIPL's qualification scheme for CDM validation and verification has performed the technical review.

SECTION G. Verification opinion

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Carbon Check (India) Private Ltd. has performed the tenth (10th) periodic verification of the registered CDM Programme of Activities "Improved Cooking Stoves for Nigeria Programme of Activities" and UNFCCC ref number 5067 for the CPAs titled "CPA # 1 Improved Cooking Stoves for Nigeria", "CPA # 2 Improved Cooking Stoves for Nigeria", "CPA # 3 Improved Cooking Stoves for Nigeria" and "CPA # 4 Improved Cooking Stoves for Nigeria" and UNFCCC reference numbers 5067-P1-0001-CP1, 5067-P1-0002-CP1, 5067-P1-0003-CP1, 5067-P1-0004-CP1 has been reported in the monitoring report. The verification team assigned by the DOE concludes that the Component Project Activities as described in the approved revised CPA-DDs (CPA 1 – version 3.2, dated 24/09/2014, CPA 2- version 3.2, dated 24/09/2014, CPA 3 – version 3.2, dated 24/09/2014 and CPA 4 – version 3.2, dated 24/09/2014) and the Monitoring report (version 6.0, dated 13/11/2023), meet all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol and paragraph 62 of CDM M & P, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification has been conducted in-line with the CDM VVS for programme of activities requirements, version 03.0 /B01-1/.

Verification methodology and process:

The Verification team confirms the contractual relationship signed on 06/09/2022 between the DOE, Carbon Check (India) Private Ltd. and the Co-ordinating Managing Entity/ Project Participant, (atmosfair gGmbH). The team assigned to the verification meets the Carbon Check (India) Private Ltd.'s internal procedures including the UNFCCC requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and Carbon Check procedures and requirements.

The verification has been performed as per the requirements described in the CDM VVS for programme of activities, version 03.0 and constitutes the review and completion of the following steps:

- Reviewing the approved revised PoA-DD (version 3.2, dated 24/09/2014), approved revised CPA DDs (CPA 1 – version 3.2, dated 24/09/2014, CPA 2- version 3.2, dated 24/09/2014, CPA 3 – version 3.2, dated 24/09/2014 and CPA 4 – version 3.2, dated 24/09/2014), including the monitoring plan and the corresponding validation reports;
- Desk review of the validation report, MR and other relevant documents including documents related to the component project activities in emission reductions;
- Review of the applied monitoring methodology (AMS-II.G., version 03);
- Review of any CMP and EB decisions, clarifications and guidance;
- On-site audit assessment and follow up interviews (21/10/2022 – 13/01/2023)
- Resolution of CARs and CLs raised during verification
- Issuance of Verification Report

The component project activities were correctly implemented according to the selected monitoring methodology, monitoring plan and the approved revised CPA-DDs/B04/. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on-site audit interviews, the verification team confirms that the PoA has resulted in the 20,229 tCO₂e emission reductions during the tenth (10th) monitoring period.

During the reported monitoring period five CPAs were registered. Emission reductions have been reported for 4 out of 5 CPAs in the Monitoring report. The emission reductions have been claimed only for CPA 1, CPA 2, CPA 3 and CPA 4 (UNFCCC reference number: 5067-P1-0001-CP1, 5067-P1-0002-CP1, 5067-P1-0003-CP1, 5067-P1-0004-CP1):

- Verified emission reductions (CPA 1): 2,335 tCO₂e
- Verified emission reductions (CPA 2): 6,830 tCO₂e
- Verified emission reductions (CPA 3): 5,637 tCO₂e
- Verified emission reductions (CPA 4): 5,427 tCO₂e

The break-up of emission reduction up to 31st December 2012 and 1st January 2013 to 31st December 2020 and 1st January 2021 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 to 31 December 2020	Emission reductions from 1 January 2021 onwards
Emission reductions (t CO ₂ e)	0	0	20,229

CC IPL as a DOE is therefore pleased to issue a positive verification opinion expressed in the attached Certification statement.

SECTION H. Certification statement

>>

Carbon Check (India) Private Ltd, the DOE, has performed the verification of the registered Programme of Activities “UNFCCC Registration Number 5067”, “Improved Cooking Stoves for Nigeria Programme of Activities” in Nigeria. The aim of the PoA is to enhance the penetration of efficient cookstoves by offering cost-effective efficient stoves. The component project activities of the Programme of Activity are designed to generate emission reductions by distribution of the fuel-efficient cook stoves in Nigeria. The fuel-efficient cook stoves are replacing the baseline fossil fuels-based stoves in common use (baseline scenario).

The CME and the CPA implementer are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the component project activities. It is DOE’s responsibility to express an independent verification statement on the reported GHG emission reductions from the component projects. The DOE does not express any opinion on the selected baseline scenario or on the validated and approved revised PoA-DD, approved revised CPA-DDs/B04/. The verification is carried out in-line with the VVS requirements, version 03/B01-1/.

The verification was performed to identify the compliance of the component projects with the implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, through obtaining evidence and information during On-site audit assessment that included i) checking whether the provisions of the monitoring methodology and the monitoring plan were consistently and appropriately applied and ii) the collection of evidence supporting the reported data.

The verification is based on:

- Approved revised PoA-DD version 03.2 with the CDM Executive Board on 24/09/2014/B04/;
- Approved revised CPA-DD/s included in the registered PoA and its monitoring plan/B04/.
- Approved monitoring methodology AMS-II.G., “Energy efficiency measures in thermal applications of non-renewable biomass”, version 03;
- Validation report /B04/ for the PoA and CPA/s;
- Verification reports for the previous verifications (MP1, MP2, MP3, MP4, MP5, MP6, MP7 and MP8)/B09/;

— Monitoring report(s) for the previous verifications (MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8, and MP9)/B09/.

This statement covers verification period from 01/07/2021 to 30/06/2022 (including both the days).

The DOE had raised 02 clarifications requests and 02 corrective action requests, all of which have been resolved by the CME. 01 FAR raised in the previous verification period is addressed by the CME and is closed in the current verification process. 01 forward action request has been raised during the current verification process.

The DOE considers necessary to give reasonable assurance that reported GHG emission reductions were calculated correctly on the basis of the approved baseline and the monitoring methodology and the monitoring plan contained in the approved revised CPA-DDs are fairly stated.

The DOE, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 20,229 tCO₂e and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records. The break-up of emission reduction up-to 31/12/2012, 01/01/2013 to 31/12/2020 and 01/01/2021 onwards as verified during the course of verification are as below:


Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 to 31 December 2020	Emission reductions from 1 January 2021 onwards
Emission reductions (t CO ₂ e)	0	0	20,229

In accordance with the agreement of the Executive Board of the CDM (the Board) at its 118th meeting, requests for registration, renewal of crediting period, and issuance of certified emission reductions relating to the period after 2020, as well as corresponding submissions for programmes of activities, may no longer be submitted under the temporary measures operated by the Board based on its agreement at its 108th meeting. The submission window closed on 30 June 2023. Therefore, this verification report may not be submitted to the UNFCCC with the existing provisions. The verification report has been prepared for internal purpose of atmosfair gGmbH and may not be distributed publicly. The distribution of the verification report shall require written consent of the Approver from CCIPL.

Appendix 1. Abbreviations

Abbreviations	Full texts
AQL	Acceptable Quality Limit
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CAR	Corrective Action Request
CCIPL	Carbon Check (India) Private Ltd.
CER	Certified Emission Reduction
CL	Clarification Request
CME	Co-ordinating and Managing entity
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DR	Document review
DOE	Designated Operational Entities
DVR	Draft Verification Report
EB	CDM Executive Board
EF	Emission Factor
EI	External individual
ER	Emission reduction
FA	Final Approval
FAR	Forward Action Request
FVR	Final verification Report
GHG	Greenhouse gas(es)
GWh	Giga Watt Hour
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IR	Internal resource
MWh	Mega Watt Hour
MP	Monitoring Period
MR	Monitoring Report
PoA	Programme of Activities
PoA-DD	Programme of Activities Design Document
PP	Project Participant
OSV	On Site Visit
QC/QA	Quality control /Quality assurance
RMP	Revised Monitoring Plan
TA	Technical Area
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Limit
VVS	Validation and Verification Standard
WBT	Water boiling test

Appendix 2. Competence of team members and technical reviewers



Carbon Check (India) Private Limited

Certificate of Competency

Ms. Aparna Choudhary

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:

<input checked="" type="checkbox"/> Validator	<input checked="" type="checkbox"/> Verifier	<input checked="" type="checkbox"/> Team Leader	<input checked="" type="checkbox"/> Technical Expert
<input type="checkbox"/> Technical Reviewer	<input type="checkbox"/> Health Expert	<input type="checkbox"/> Gender Expert	<input type="checkbox"/> Plastic Waste Expert
<input type="checkbox"/> CCB Expert	<input type="checkbox"/> Legal Expert	<input type="checkbox"/> Financial Expert	<input type="checkbox"/> Environmental, Health and Safety financial matters
<input checked="" type="checkbox"/> SDG+	<input checked="" type="checkbox"/> Social no-harm(S+)	<input checked="" type="checkbox"/> Environment no-harm(E+)	
<input checked="" type="checkbox"/> Local Expert for India			

in the following Technical Areas:

<input checked="" type="checkbox"/> TA 1.1	<input checked="" type="checkbox"/> TA 1.2	<input type="checkbox"/> TA 2.1	<input checked="" type="checkbox"/> TA 3.1	<input type="checkbox"/> TA 4.1
<input type="checkbox"/> TA 4. n	<input type="checkbox"/> TA 5.1	<input type="checkbox"/> TA 5.2	<input type="checkbox"/> TA 7.1	<input type="checkbox"/> TA 8.1
<input type="checkbox"/> TA 9.1	<input type="checkbox"/> TA 9.2	<input type="checkbox"/> TA 10.1	<input checked="" type="checkbox"/> TA 13.1	<input checked="" type="checkbox"/> TA 13.2
<input type="checkbox"/> TA 14.1	<input type="checkbox"/> TA 15.1	<input type="checkbox"/> TA 16.1		

<p>Issue Date</p> <p>5th December 2023</p> <p><i>Priya Suman</i></p> <hr/> <p>Ms. Priya Suman Compliance Officer</p>	<p>Expiry Date</p> <p>31st December 2024</p> <p><i>Sanjay Agarwalla</i></p> <hr/> <p>Mr. Sanjay Kumar Agarwalla Technical Director</p>
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Revision History of the document:

Revision date	Summary of changes
2022 ¹	Annual revision
Jan 2023	Annual revision
Dec 2023	Change in the template due to revision in TA and function

CCIPL_FM 7.9 Certificate of Competency_V4.0_112023

¹ Please refer to previous version of FM 7.9 for the revision history



Carbon Check (India) Private Limited

Certificate of Competency

Mr. Kiran KV

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:

- | | | | |
|--|--|---|---|
| <input checked="" type="checkbox"/> Validator | <input checked="" type="checkbox"/> Verifier | <input checked="" type="checkbox"/> Team Leader | <input checked="" type="checkbox"/> Technical Expert |
| <input type="checkbox"/> Technical Reviewer | <input type="checkbox"/> Health Expert | <input type="checkbox"/> Gender Expert | <input type="checkbox"/> Plastic Waste Expert |
| <input type="checkbox"/> CCB Expert | <input type="checkbox"/> Legal Expert | <input type="checkbox"/> Financial Expert | <input type="checkbox"/> Environmental, Health and Safety financial matters |
| <input checked="" type="checkbox"/> SDG+ | <input checked="" type="checkbox"/> Social no-harm(S+) | <input checked="" type="checkbox"/> Environment no-harm(E+) | |
| <input checked="" type="checkbox"/> Local Expert for India | | | |

in the following Technical Areas:

- | | | | | |
|---|---|----------------------------------|---|---|
| <input type="checkbox"/> TA 1.1 | <input checked="" type="checkbox"/> TA 1.2 | <input type="checkbox"/> TA 2.1 | <input checked="" type="checkbox"/> TA 3.1 | <input type="checkbox"/> TA 4.1 |
| <input type="checkbox"/> TA 4. n | <input type="checkbox"/> TA 5.1 | <input type="checkbox"/> TA 5.2 | <input type="checkbox"/> TA 7.1 | <input type="checkbox"/> TA 8.1 |
| <input type="checkbox"/> TA 9.1 | <input type="checkbox"/> TA 9.2 | <input type="checkbox"/> TA 10.1 | <input checked="" type="checkbox"/> TA 13.1 | <input checked="" type="checkbox"/> TA 13.2 |
| <input checked="" type="checkbox"/> TA 14.1 | <input checked="" type="checkbox"/> TA 15.1 | <input type="checkbox"/> TA 16.1 | | |

Issue Date

5th December 2023

Expiry Date

31st December 2024

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

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2022	Initial Adoption
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Dec 2023	Change in the template due to revision in TA and function

CC IPL_FM 7.9 Certificate of Competency_V4.0_112023

¹Please refer to previous version of FM 7.9 for the revision history



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:

- | | | | |
|--|--|---|--|
| <input checked="" type="checkbox"/> Validator | <input checked="" type="checkbox"/> Verifier | <input checked="" type="checkbox"/> Team Leader | <input checked="" type="checkbox"/> Technical Expert |
| <input checked="" type="checkbox"/> Technical Reviewer | <input type="checkbox"/> Health Expert | <input type="checkbox"/> Gender Expert | <input checked="" type="checkbox"/> Plastic Waste Expert |
| <input checked="" type="checkbox"/> CCB Expert | <input type="checkbox"/> Legal Expert | <input checked="" type="checkbox"/> Financial Expert | <input checked="" type="checkbox"/> Environmental, Health and Safety financial matters |
| <input checked="" type="checkbox"/> SDG+ | <input checked="" type="checkbox"/> Social no-harm(S+) | <input checked="" type="checkbox"/> Environment no-harm(E+) | |
| <input checked="" type="checkbox"/> Local Expert for India, RSA and Spanish speaking countries | | | |

in the following Technical Areas:

- | | | | | |
|---|---|---|---|---|
| <input checked="" type="checkbox"/> TA 1.1 | <input checked="" type="checkbox"/> TA 1.2 | <input type="checkbox"/> TA 2.1 | <input checked="" type="checkbox"/> TA 3.1 | <input type="checkbox"/> TA 4.1 |
| <input type="checkbox"/> TA 4. n | <input type="checkbox"/> TA 5.1 | <input type="checkbox"/> TA 5.2 | <input type="checkbox"/> TA 7.1 | <input checked="" type="checkbox"/> TA 8.1 |
| <input type="checkbox"/> TA 9.1 | <input type="checkbox"/> TA 9.2 | <input type="checkbox"/> TA 10.1 | <input checked="" type="checkbox"/> TA 13.1 | <input checked="" type="checkbox"/> TA 13.2 |
| <input checked="" type="checkbox"/> TA 14.1 | <input checked="" type="checkbox"/> TA 15.1 | <input checked="" type="checkbox"/> TA 16.1 | | |

Issue Date

5th December 2023

Expiry Date

31st December 2024

Priya Suman

Ms. Priya Suman
Compliance Officer

Sanjay Agarwalla

Mr. Sanjay Kumar Agarwalla
Technical Director

Revision History of the document:

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Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
/01/	atmosfair	1. Monitoring report	Version 1.0 dated 01/08/2023	CME
/02/	atmosfair	Final monitoring report	Version 6.0, dated 13/11/2023	CME
/03/	atmosfair	Emission reduction calculation spreadsheet corresponding to /01/	Nigeria PoA_5067_ER-calculation_Spreadsheet_MP10_01082023	CME
/04/	atmosfair	Emission reduction calculation spreadsheet corresponding to /02/	Nigeria PoA_5067_ER-calculation_Spreadsheet_MP10_v2_13112023	CME
/05/	atmosfair	Sample size calculation spreadsheet as part of the ER sheet	--	CME
/06/	atmosfair	Sampling Database 1. CPA 1, CPA 2 and CPA 4 2. CPA 3	--	CME
/07/	atmosfair	Sampled Households sales record for: 1. CPA 1, CPA 2 and CPA 4 2. CPA 3	--	CME
/08/	atmosfair	Water Boiling test data sheets: 1. CPA 1, CPA 2 and CPA 4 2. CPA 3	--	CME
/09/	atmosfair	Household questionnaire records for: 1. CPA 1, CPA 2 and CPA 4 2. CPA 3	--	CME
/10/	atmosfair	WBT personnel/team Training records for 1. Tosin Olorunmaiye 2. Rachel Olajide 3. Team training records dated 02/08/2021	Dated 01/09/2020	CME
/11/	atmosfair	Water boiling test procedure as defined in the Water Boiling test data sheets	Version 4.2.2	CME
/12/	atmosfair	1. Technical details of the SAVE 80 and G3300 type stoves implemented under the PoA. 2. Thermocouple Calibration	--	CME

		<p>certificate for 27/08/2022</p> <p>3. Weighing scale calibration certificate for 27/08/2022</p> <p>4. Manuals for Weighing scale and Thermocouple</p> <p>5. SAVE80 and WonderBox FactSheet</p>		
/13/	atmosfair	Sales and Monitoring Database	--	CME
/14/	atmosfair	EB Clarification letters (INQ-09626-EB)	INQ-09626 dated 18/06/2020	CME
/15/	atmosfair	Risk acknowledgement and acceptance form	Dated 28/10/2021	CME
/16/	Atmosair	Calibration certificate	Dated 27/08/2022	CME
/B01/	UNFCCC	<p>1. Validation and Verification Standard for PoAs, version 03.0</p> <p>2. Project Standard for PoAs, version 03.0</p> <p>3. Project Cycle Procedure for PoAs, version 03.0</p>	http://cdm.unfccc.int/	Others
/B02/	UNFCCC	Applied baseline and monitoring methodology, AMS-II.G., version 03	http://cdm.unfccc.int/	Others
/B03/	UNFCCC	Instructions for filling out the monitoring report form for CDM programme of activities version 05.0	http://cdm.unfccc.int/	Others
/B04/	UNFCCC	Approved revised PoA-DD (version 3.2 dated 24/09/2014); CPA-DD for 5067-P1-0001-CP1: (version 3.2 dated 24/09/2014); CPA-DD for 5067-P1-0002-CP1: (version 3.2 dated 24/09/2014); CPA-DD for 5067-P1-0003-CP1: (version 3.2 dated 24/09/2014); CPA-DD for 5067-P1-0004-CP1: (version 3.2 dated 24/09/2014); and corresponding validation reports.	http://cdm.unfccc.int/	Others
/B05/	Web sites	Websites: http://cdm.unfccc.int/	http://cdm.unfccc.int/	Others
/B06/	UNFCCC	1. Guidelines: Sampling and surveys for CDM project activities and programmes	http://cdm.unfccc.int/	Others

		<p>of activities, Version 04.0 (Latest used by VT)</p> <p>2. Guidelines: Sampling and surveys for CDM project activities and programmes of activities, version 03 (Used by CME as per sampling plan)</p>		
/B07/	UNFCCC	<p>1. Standard: Standard for sampling and surveys for CDM project activities and Programme of Activities, version 09.0 (Latest used by VT)</p> <p>2. Standard for sampling and surveys for CDM project activities and Programme of Activities, version 04.1 (Used by CME as per sampling plan)</p>	http://cdm.unfccc.int/	Others
/B08/	UNFCCC	Guideline: Application of materiality in verifications" version 02.0	http://cdm.unfccc.int/	Others
/B09/	UNFCCC	<p>Monitoring Report and Verification Reports of the previous monitoring periods:</p> <p>MP1: MR version 03, dated 10/10/2013 and the verification report version 08 dated 31/10/2013;</p> <p>MP2: MR version 07, dated 20/03/2015 and the verification report version 03 dated 20/04/2015;</p> <p>MP3: MR version 05, dated 07/03/2017 and the verification report version 04 dated 09/03/2017;</p> <p>MP4: MR version 05, dated 07/03/2017 and the verification report version 03 dated 09/03/2017;</p> <p>MP5: MR version 03, dated 05/02/2018 and the verification report</p>	http://cdm.unfccc.int/	Others

		<p>version 03 dated 23/03/2018; and MP6: MR version 06, dated 08/02/2019 and the verification report version 03 dated 11/02/2019 MP7: MR version 03, dated 04/05/2020 and the verification report version 03 dated 08/05/2020 MP8: MR version 5.0, dated 04/05/2021 and the verification report version 03 dated 10/05/2021 MP9: MR version 6.0 dated 10/11/2021 and verification report version 3.0 dated 07/12/2021.</p>		
/B10/	PCIA/ Global Alliance for Clean Cookstoves	The Water Boiling Test, version 4.2.2	https://cleancookstoves.org	Others

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FARs from validation and/or previous verification

FAR ID	01	Section no.	E.3.4.2	Date: 01/11/2021
Description of FAR				
<p><i>In accordance with the §2 (c) of the Clarification: Regulatory requirements under temporary measures for post-2020 cases issued in EB 109, Annex 1, the CME and project participant of the PoA shall update their monitoring reports:</i></p> <p><i>(i) To apply any global warming potential values that may be adopted by the CMP; and</i></p> <p><i>(ii) In accordance with any requirements of the CMP guidance.</i></p>				
CME response				Date: 09/01/2024
<p>(I) GWP as per Regulatory requirements under temporary measures for post-2020 cases, Version 02.0 were applied.</p> <p>(II) The Risk acknowledgement and acceptance form was provided to the DOE and any requirements of the CMP guidance were followed.</p>				
Documentation provided by the CME				
DOE assessment				Date: 02/02/2024
<p>1) VVB confirms that the GWP value mentioned in table 1 of § 1 of appendix 1 of “Regulatory requirements under temporary measures for post-2020 cases” has been applied by CME</p> <p>2) The Risk acknowledgment and acceptance form has been provided to VVB.</p> <p>The compliance of the requirement shall be checked at the time of the next periodic verification. FAR01 remains open.</p>				

Table 2. CLs from this verification

CL ID	01	Section no.	E.1.1	Date: 12/12/2023
Description of CL				
As per CDM dashboard (https://cdm.unfccc.int/Reference/index.html) "In accordance with the agreement of the Executive Board of the CDM (the Board) at its 118th meeting (see meeting report, paragraph 5(b)), requests for registration, renewal of crediting period, and issuance of certified emission reductions relating to the period after 2020, as well as corresponding submissions for programmes of activities, may no longer be submitted under the temporary measures operated by the Board based on its agreement at its 108th meeting. The submission window closed on 30 June 2023". VVB will not be able to web host or submit the project until further notice from CDM. CME is requested to provide a clarification on the same.				
CME response				Date: 09/01/2024
CME is aware of the above-mentioned paragraph and implications. However, CME will prepare a final MR and asks the DOE to prepare the final verification report (FVR) for the Monitoring period. This might ensure a transition and compliance with upcoming procedures. CME is aware that a submission is not possible.				
Documentation provided by the CME				
DOE assessment				Date: 02/02/2024
The final verification report will be provided to CME.				
CL01 is closed.				

CL ID	02	Section no.	NA	Date: 12/12/2023
Description of CL				
CME is requested to provide the following to VVB.				
1. Sampled households sales record				
2. Training records of WBT personals				
CME response				Date: 09/01/2024
PP provided sales records of sampled households and training records of WBT personals.				
Documentation provided by the CME				
Sales records:				
- Sampled household sales record.pdf				
Training records:				
- WBT Testing Agreement_Toyin				
- WBT Testing Agreement_Tosin				
DOE assessment				Date: 02/02/2024
PP has provided the sales record of the samples household and the WBT test agreement of the WBT personals to VVB,				
CL02 is closed.				

Table 3. CARs from this verification

CAR ID	01	Section no.	F	Date: 12/12/2023
Description of CAR				
CME is requested to correct the editorial mistake in the total actual amount of GHG emission or anthropogenic GHG removals provided in the project information table (page number 1), section F4 and F.5 of MR. The editorial mistake in the value 48.940 provided in section F.5.1 of MR is also requested to be corrected. PP is requested to maintain consistency in value representation throughout MR				
CME response				Date: 09/01/2024
PP has corrected the editorial mistakes.				
Documentation provided by the CME				
DOE assessment				Date: 02/02/2024
The editorial mistake has been corrected.				
CAR01 is closed				

CAR ID	02	Section no.	E.2	Date: 12/12/2023
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Description of CAR	
<i>PP is requested to revise the calibration date of the precision balance and thermometer as it has been observed that the calibration certificate provided to VVB is dated 27/08/2022.</i>	
CME response	Date: 09/01/2024
<i>PP has updated the calibration date of the precision balance and thermometer. Date of calibration was the 26/08/2022 and date of invoice was the 27/08/2022</i>	
Documentation provided by the CME	
<i>- calibration certificate.pdf</i>	
DOE assessment	Date: 02/02/2024
The calibration date 26/08/2022 has been correctly added in the MR. CAR02 is closed.	

Table 4. FAR from this verification

FAR ID	01	Section no.	E.3.4.2	Date: 28/02/2024
Description of FAR				
<i>In accordance with the §2 (c) of the Clarification: Regulatory requirements under temporary measures for post-2020 cases issued in EB 109, Annex 1, the CME and project participant of the PoA shall update their monitoring reports:</i>				
<i>(i) To apply any global warming potential values that may be adopted by the CMP; and</i>				
<i>(ii) In accordance with any requirements of the CMP guidance.</i>				
CME response				Date:
Documentation provided by the CME				
DOE assessment				Date:

Appendix 5. Data and parameters fixed ex ante

Data/Parameter	$B_{old, capita}$ Average baseline fuelwood consumption per capita per year
Default values used:	0.692 t/year
Purpose of data	Baseline emission calculation
Source and Verification of the source	UN Statistics Database, Value for 2006; Nigeria Census Data 2006 Cross verified from the approved revised CPA-DDs/B04/.

Data/Parameter	η_{old} Efficiency of the baseline system being replaced
Default values used:	0.10
Purpose of data	Baseline emission calculation
Source and Verification of the source	AMS II.G., version 03.0/B02/

Data/Parameter	L_{NRB} Net-to-gross adjustment factor for NRB Leakage
Default values used:	0.95
Purpose of data	Baseline emission calculation
Source and Verification of the source	AMS II.G., version 03.0/B02/

Data/Parameter	L_{PoA} Net-to-gross adjustment factor for PoA Leakage
Default values used:	0.95
Purpose of data	Baseline emission calculation
Source and Verification of the source	AMS II.G., version 03.0/B02/

Data/Parameter	$f_{NRB, y}$ Fraction of woody biomass saved by the project activity in period y that can be established as non-renewable biomass
Default values used:	0.77
Purpose of data	Baseline emission calculation
Source and Verification of the source	FAO (2010): Global Forest Resource Assessment 2010, Country Report Nigeria, http://www.fao.org/forestry/20262-1-1.pdf

Data/Parameter	$NCV_{biomass}$ Net calorific value of the non-renewable woody biomass that is substituted
Default values used:	0.015 TJ/t
Purpose of data	Baseline emission calculation
Source and Verification of the source	AMS II.G., version 03.0/B02/

Data/Parameter	$EF_{projected_fossilfuel}$ Emission factor for the substitution of non-renewable biomass by similar consumers
Default values used:	81.6 tCO ₂ /TJ
Purpose of data	Baseline emission calculation
Source and Verification of the source	AMS II.G., version 03.0/B02/

Data/Parameter	HH_CAP Maximum number of eaters possible per specific ICS as applied in the specific CPA
Default values used:	8
Purpose of data	Not used for emission reduction calculation. Only as cap for monitored parameter $N_{eaters, appliance}$
Source and Verification of the source	Manufacturer's specifications

CDM-PoA-VCR-FORM

Data/Parameter	$\eta_{specified}$ Efficiency of the system being deployed as per manufacturer specification
Default values used:	For CPA 1, 2 and 4: 52 % For CPA 3: 32.6 %
Purpose of data	Not used for emission reduction calculation. Only for demonstration of fulfilment of eligibility criterion 2 (for CPA inclusion).
Source and Verification of the source	Manufacturer's specifications

Appendix 6. Data and parameters monitored

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	N _{eaters, appliance}
Measuring frequency/Time Interval:	Once for this monitoring period
Reporting frequency:	Annual (Once for this monitoring period)
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment used to determine the average number of eaters per appliance.
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Not Applicable since no equipment is used to determine the parameter.
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	No equipment used hence the calibration requirement not applicable.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	No equipment used hence the calibration requirement not applicable.
Company performing the calibration (internal or external calibration):	No equipment used hence the calibration requirement not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement not applicable.
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement not applicable.
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross checked with the monitored database /13/, inspection database sheet /04/ and survey questionnaire for sample household/09/ were checked during the On-site audit assessment.
How were the values in the monitoring report verified?	For CPA 1, 2 and 4: 6.13 For CPA 3: 7.75 The values mentioned in the MR have been cross checked with the inspection database. The data was then verified against the sample households checked during the On-site audit assessment. For the parameter N _{eaters,appliance} , the value has been calculated in accordance with the PoA-DD/B04/ and section D.7.1 of the CPA-DDs /B04/. As per the generic CPA-DD the value was capped to 8. The actual calculated value is lower than 8. Hence, it is acceptable to the verification team and is found consistent with the description provided in the approved CPA-DDs /B04/. For all the households, where the number of eaters was

	<p>reported as more than 8, in accordance with the section D.6.2 of the CPA-DDs/B04/, the number of eaters has been used as 8 in all such cases.</p> <p>The reported value of the parameter for the previous verification (MP 9) is/B09/:</p> <p>For CPA 1, 2 and 4: 7.13 For CPA 3: 7.42</p> <p>The ex-ante estimated values of the parameter in the approved revised CPA-DDs/B04/ is:</p> <p>For CPA 1, CPA 2 and CPA 4: 8 For CPA3: 8</p> <p>As compared to previous monitoring period, the value of the parameter has increased for CPA 1, CPA 2 and CPA 4 (6.13) and decreased for CPA 3 (7.75). The values have changed due to actual responses in the sample and is within the range, thus acceptable to the verification team. The reported values of the number of eaters have also been compared with the ex-ante values and it is observed that the reported values are less than the ex-ante estimated values of the parameter in the approved revised CPA-DDs/B04/.</p>
<p>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?</p>	<p>Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.</p> <p>The appropriate QA/QC procedures have been followed for the monitoring parameter. The monitoring surveys have been conducted by the trained personnel of the CME, atmosfair gGmbH/10/ under the supervision of CME's database administrator/ manager.</p>
<p>In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?</p>	<p>NA. Full data is available for the monitoring period.</p>

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
<p>Data / Parameter: (as in monitoring plan of PDD):</p>	<p>N_y Adjusted total number of appliances deployed until period y</p>
<p>Measuring frequency/Time Interval:</p>	<p>Continuous monitoring and recording of n_i</p>
<p>Reporting frequency:</p>	<p>Annual (Reported once for the monitoring period)</p>
<p>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</p>	<p>Yes</p>
<p>Details of monitoring equipment:</p>	<p>No Monitoring equipment is used. Source of data is from Sales receipts and sales records database.</p>
<p>Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the</p>	<p>NA</p>

monitoring equipment, does the monitoring equipment represent good monitoring practise?	
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 PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA
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, reported data for each CPA has been cross checked with the sample sales receipts and monitored database /13/.
How were the values in the monitoring report verified?	<p>CPA 1: 2,830 CPA 2: 2,994 CPA 3: 2,115 CPA 4: 2,379</p> <p>The total number of appliances deployed until period y is calculated based on information monitored through the sales records database/13/.</p> $N_y = \sum_{i=1}^y n_i \cdot OT_{adjusted,i,y}$ <p>n_i= Number of appliances deployed in period i as reported in the sales records database and adjusted to account for delays between sales date and first use.</p> <p>$OT_{adjusted,i,y}$ = Adjustment factor for reduced operational time of appliances deployed in monitoring period y.</p> <p>The reported data has been cross-checked against spot check user records and compared with the MR and the ER sheet.</p> <p>The data was then verified against the sample households checked during the On-site audit interviews.</p> <p>The reported value of the parameter for the previous verification (MP 9) is/B09/:</p> <p>CPA 1: 2,834 CPA 2: 2,998 CPA 3: 2,118 CPA 4: 2,383</p>

	<p>The ex-ante estimated values of the parameter in the approved revised CPA-DDs/B04/ is: CPA 1: 3,200 CPA 2: 3,200 CPA 3: 3,750 CPA 4: 9,600</p> <p>The value of the parameter has changed for the CPAs since the previous verification/B09/ due to the removal of dropouts observed in the previous monitoring period. The reported value for CPA1, CPA 2, CPA 3 and CPA 4 is lower compared to the ex-ante estimates provided in the approved revised CPA-DDs/B04/. All the 4 CPAs, continue to remain within the micro-scale limit of the energy savings from the CPAs/04/.</p>
<p>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?</p>	<p>Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC process are in place.</p> <p>The appropriate QA/QC procedures have been followed for the monitoring parameter. The database is being maintained by the CME's database administrator/manager, trained personnel of the CME, atmosfair gGmbH/10/.</p>
<p>In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?</p>	<p>NA. Full data is available for the monitoring period.</p>

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
<p>Data / Parameter: (as in monitoring plan of PDD):</p>	<p>DO_y Statistically adjusted drop out from total population of appliances in period y</p>
<p>Measuring frequency/Time Interval:</p>	<p>Annual</p>
<p>Reporting frequency:</p>	<p>Annual (Once for the monitoring period)</p>
<p>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</p>	<p>Yes</p>
<p>Details of monitoring equipment:</p>	<p>No monitoring equipment is used. Questionnaire were prepared by the PP/09/ to find out the dropout rate during the survey period.</p>
<p>Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?</p>	<p>NA</p>
<p>Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification</p>	<p>NA</p>

<p>Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?</p>	<p>NA</p>
<p>Company performing the calibration (internal or external calibration):</p>	<p>NA</p>
<p>Did calibration confirm proper functioning of monitoring equipment? (Yes / No):</p>	<p>NA</p>
<p>Is (are) calibration(s) valid for the whole reporting period?</p>	<p>NA</p>
<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>The reported data has been cross checked with the interview questionnaire/09/ and inspection database /09/.</p>
<p>How were the values in the monitoring report verified?</p>	<p>For CPA 1, CPA 2 and CPA 4: 14.29 % For CPA 3: 9.68 %</p> <p>The reported data has been cross-checked against spot check user records and compared with the MR and the ER sheet.</p> <p>The data was then verified against the sample households checked during the On-site audit interviews.</p> <p>The reported value of the parameter for the previous verification (MP 9) is/B09/:</p> <p>For CPA 1, CPA 2 and CPA 4: 27.91 % For CPA3: 8.82 %</p> <p>The ex-ante estimated values of the parameter in the approved revised CPA-DDs/B04/ is: For CPA 1, CPA 2 and CPA 4: 5% For CPA3: 5%</p> <p>The value of the parameter has decreased for CPA 1, 2 and 4 and for CPA 3 as compared to the previous monitoring period. The values have changed due to actual responses in the sample and the observed dropouts are lower in the reported monitoring period compared to the last reported monitoring period. This is acceptable to the verification team. Furthermore, lower bound values have been used for the CPA 1, CPA 2 and CPA 4 as the required precision was not achieved. This is in accordance with the §22 of the methodology AMS-II.G, version 03/B02/. The reported values of the dropouts have also been compared with the ex-ante values and it is observed that the reported values are higher than the ex-ante estimated values of the parameter in the approved revised CPA-DDs/B04/. CME has listed the reasons in the section F.5.1 of the MR/02/.</p>
<p>Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions</p>	<p>Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC process are in place.</p>

and are necessary QA/QC processes in place?	The appropriate QA/QC procedures have been followed for the monitoring parameter. The drop out surveys have been conducted by the trained personnel of the CME, atmosfair gGmbH/10/ under the supervision of CME's database administrator/ manager.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	η_{new} Adjusted average efficiency of the system being deployed
Measuring frequency/Time Interval:	Annual Monitoring
Reporting frequency:	Annual (Once for this monitoring period)
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	1. Weighing scale: KD 8000 Serial Number: ESN5678224992T Calibrated/12-3/ on 26/08/20223 2. Thermocouple: Greisinger Präzisionsthermometer GMH 3710 Serial Number: 32402476 (Calibrated /12-2/ on 26/08/20223)
Is accuracy of the monitoring equipment as stated in the PDD? If the PDD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	Accuracy Class of equipment: 1. Weighing scale: +/- 1 g 2. Thermocouple: Temperature range -199.99° C - +199.99° C
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	CME got the Thermocouple and weighing scale duly calibrated on 26/08/20223 before the start of monitoring /12-2//12-3/.
Is the calibration interval in line with the monitoring plan of the PDD? If the PDD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA
Company performing the calibration (internal or external calibration):	Ecolab Nig. Ltd. (External calibration)/12-2//12-3/
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes

<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>The reported data has been cross-checked with the WBT test records/08/, ER sheet /04/ and MR /02/.</p>
<p>How were the values in the monitoring report verified?</p>	<p>The value for the reported data was verified against the WBT test records /08/.</p> <p>For CPA 1, CPA 2 and CPA 4: 38.22 % For CPA 3: 28.34 %</p> <p>The reported value of the parameter for the previous verification (MP 9) is /B09/:</p> <p>For CPA 1, CPA 2 and CPA 4: 34.50 % For CPA 3: 29.21 %</p> <p>The ex-ante estimated value of the parameter in the approved revised CPA-DDs/B04/ is:</p> <p>For CPA 1, CPA 2 and CPA 4: 52 % For CPA 3: 32.6 %</p> <p>The value of the parameter has marginally increased for CPA 1, 2, 4 and CPA 3 from the previous verification. The values have changed due to actual results from the efficiency tests in the sample and is within the range thus acceptable to the verification team. The slight increase in the efficiency value for the SAVE80 stove used in CPA 1, CPA 2 and CPA 4 compared to the previous monitoring period could be attributed to the range of values observed in the WBT tests (30.79 % to 39.83 %) and to the special occurrences of the climate/wind/ rain conditions during the tests. The reported values of the efficiency have also been compared with the ex-ante values and it is observed that the reported values are much less than the ex-ante estimated values of the parameter in the approved revised CPA-DDs/B04/.</p>
<p>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?</p>	<p>Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC process are in place.</p> <p>The appropriate QA/QC procedures have been followed for the monitoring parameter. The WBTs were conducted by personnel trained in conducting WBTs/10/ from the (atmosfair gGmbH). The CME, atmosfair gGmbH has provided the WBT test training according to the WBT protocol/B10/. The equipment used for testing efficiency have been calibrated prior to the WBT tests /12-2/ /12-3/.</p>
<p>In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the approved revised monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?</p>	<p>NA. Full data is available for the monitoring period.</p>

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	6 April 2021	Revision to: <ul style="list-style-type: none"> • Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN); • Make structural and editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
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