PoA VERIFICATION REPORT for the CDM Programme of Activity

atmosfair gGmbH

Improved Cooking Stoves for Nigeria Programme of Activities

CPA # 1 Improved Cooking Stoves for Nigeria
CPA # 2 Improved Cooking Stoves for Nigeria
CPA # 3 Improved Cooking Stoves for Nigeria
CPA # 4 Improved Cooking Stoves for Nigeria
CPA # 5 Improved Cooking Stoves for Nigeria

In

Nigeria

Report No: CCL294/CDM-GS/PoA/VER/ICSNPOA/20140825

Revision number: 3

Report Date: 20 April 2015

Carbon Check (India) Private Ltd.
209, 2nd Floor, Vishwadeep Tower, District Centre, Janak Puri, New Delhi – 110058

I. PROJECT DATA

Title of the PoA	Improved Cooking Stoves for Nigeria Programme of Activities		
Registration No. / Date of the PoA:	5067 / 10/11/2011		
Title of CPA/s verified:	CPA # 1 Improved Cooking Stoves for Nigeria CPA # 2 Improved Cooking Stoves for Nigeria CPA # 3 Improved Cooking Stoves for Nigeria CPA # 4 Improved Cooking Stoves for Nigeria CPA # 5 Improved Cooking Stoves for Nigeria		
Monitoring period:	01/07/2012 – 30/06/2013		
Monitoring Period Number:	02		
Methodology/ies:	AMS II.G., version 3	Sectoral Scope/Technical Area	3/3.1
Publication of MR:	The monitoring report (version 01, 08-08-2014) http://cdm.unfccc.int/PoAIssuance/mon_db/poamon493999786/edit?viewmode=1		
Final Monitoring Report:	Monitoring Report, version 07, Dated: 20/03/2015		
Emission reductions (estimated**):**	CPA 1: 11,270 tCO_2e CPA 2: 8,423 tCO_2e CPA 3: 8,473 tCO_2e CPA 4: 1,425 tCO_2e CPA 5: 1,437 tCO_2e		
Emission reductions (verified**):**	CPA 1: 6,506 tCO_2e CPA 2: 2,618 tCO_2e CPA 3: 994 tCO_2e CPA 4: 0 tCO_2e CPA 5: 0 tCO_2e		
GHG reducing measure/technology of the CPA/s of the PoA:	The purpose of the PoA is the dissemination of improved cooking stoves in Nigeria. The ICS disseminated under this CPA save fuel wood and hence reduce greenhouse gas emissions stemming from the use of non-renewable biomass.		

Party	CME/Project participants	Party considered a project participant	Contract party
Nigeria (Host)	atmosfair gGmbH	No	☒

II. VERIFICATION TEAM

Verification Team			Role									
Full name	Affiliation	Appointed for Sectoral Scopes (Technical Areas)	Team leader	Acting/trainee Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting/Trainee Tech. Expert	Trainee Auditor	Technical Reviewer	Expert to TR	Trainee TR
Anubhav Dimri	India	1.1, 1.2, 3.1, 13.1	X				X					
Gaurav Sharma	India	1.2				X						

Anjili Bwala	India	--			X							
Vikash Kumar Singh	India	1.2, 3.1, 4.1, 13.1, 13.2								X		
Sanjay Agarwalla	India	1.1, 1.2, 2.1, 3.1, 4.1, 5.1, 5.2, 9.1, 9.2, 13.1										X

III. VERIFICATION REPORT

Verification Phases and Status:

☒ Desk Review ☒ Follow up interviews, On Site Assessment

☒ Resolution of outstanding issues ☒ Corrective Actions / Clarifications Requested

☒ Full Approval and Submission for Issuance ☐ Rejected

	Version	**Date**
Verification Report	***Revision 00***	***17/11/2014***
	Revision 01	***27/01/2015***
	Revision 02	***16/03/2015***
	Revision 03	***20/04/2015***
Final Approval Date	**Approval**	**Distribution**
Date: 2015-04-24	**By: Amit Anand**	☒ No distribution without permission from the Client or responsible organizational unit ☐ Limited Distribution ☐ Unrestricted distribution

Abbreviations

BAU	Business As Usual
CA	Corrective Action / Clarification Action
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CAR	Corrective Action Request
CCIPL	Carbon Check (India) Private Ltd.
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification Request
CME	Co-ordinating and Managing Entity
CPA	Component Project Activity
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
DOE	Designated Operational Entities
DVR	Draft Verification Report
EB	CDM Executive Board
EF	Emission Factor
FA	Final Approval
FAR	Forward Action Request
FVR	Final Verification Report
GHG	Greenhouse gas(es)
GWh	Giga Watt Hour
IPCC	Intergovernmental Panel on Climate Change
MWh	Mega Watt Hour
PoA	Programme of Activities
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
VVS	Validation and Verification Standard
WBT	Water Boiling Test

Verification Opinion — summary

Carbon Check (India) Private Ltd. has performed 2nd periodic verification of the CDM project "Improved Cooking Stoves for Nigeria Programme of Activities" and UNFCC ref number 5067 for CPAs[1] titled
"CPA # 1 Improved Cooking Stoves for Nigeria" UNFCCC ref no. 5067-0001
"CPA # 2 Improved Cooking Stoves for Nigeria" UNFCCC ref no. 5067-0002
"CPA # 3 Improved Cooking Stoves for Nigeria" UNFCCC ref no. 5067-0003
"CPA # 4 Improved Cooking Stoves for Nigeria" UNFCCC ref no. 5067-0004
"CPA # 5 Improved Cooking Stoves for Nigeria" UNFCCC ref no. 5067-0005

The verification team assigned by the DOE concludes that the Component Project Activities as described in the registered/included CPA DDs (all 5 CPA DD with version 3.2, dated 24/09/2014) /5/ and monitoring report (version 07, date 20/03/2015) /2/, meets 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 VVS requirements /B01/.

Verification methodology and process

The Verification team confirms the contractual relationship signed on the (26/09/2014) between the DOE, Carbon Check (India) Private Ltd[2]. and the Project Participant, (atmosfair gGmbH) /18/. The team assigned to the verification meets the Carbon Check (India) Private Ltd. 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 VVS version 07.0 /B01/ and constitutes the review and completion of the following steps:

- Reviewing the registered/included CPA DD/s /19/ and approved revised PoA DD /05/ and approved revised CPA-DDs (all 5 CPA DD with version 3.2 and dated 24/09/2014) /5/, including the monitoring plan and the corresponding validation report/s /21/;
- Publication of the MR on the UNFCCC website (Confirmed by UNFCCC CDM registration and issuance team through email on 07/10/2014)
- Desk review of the validation report, MR, previous verification reports and other relevant documents including documents related to the projects activities in emission reductions
- Review of the applied monitoring methodology (AMS II. G version 03) /B02/;
- Review of any CMP and EB decisions, clarifications and guidance;
- On-site assessment (26/10/2014 to 28/10/2014)
- Resolution of CARs and CLs raised during verification
- Confirmation that any FARs raised during the previous verification have been addressed by the Project Participant.
- Issuance of Verification Report

The component project activities were correctly implemented according to selected monitoring methodology monitoring plan /B02/ and the registered/included CPA DD/s /5/. The

[1] CPAs UNFCCC ref no. 5067-0004 and 5067-0005, has not been implemented yet. Hence, verification of these two CPAs has not been conducted.

[2] Subsequent to the transfer of accreditation from Carbon Check (Pty) Ltd to Carbon Check (India) Private Ltd., an addendum to the contract was signed between Carbon Check (India) Private Ltd. and the project participant, atmosfair gGmbH.

monitoring equipment was installed, calibrated and 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 visit /14/ the verification team confirms that the PoA has resulted in the 10,118 tCO_2e emission reductions during the 2nd monitoring period.

CPA wise verified emission reduction:
CPA 1: 6,506 tCO_2e
CPA 2: 2,618 tCO_2e
CPA 3: 994 tCO_2e
CPA 4: 0 tCO_2e
CPA 5: 0 tCO_2e

Carbon Check as a DOE is therefore obliged to issue a positive verification opinion expressed in the attached Certification statement.

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1. INTRODUCTION

The Project Participant has commissioned the Carbon Check (India) Private Ltd. to perform an independent verification of the CDM Programme of Activity "Improved Cooking Stoves for Nigeria Programme of Activities" in host country "Nigeria" /18/ (hereafter referred to as "Programme of Activity or PoA"). 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 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.

1.1 Objective

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 project 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 Activity "Improved Cooking Stoves for Nigeria Programme of Activities" in host country "Nigeria" for the period 01/07/2012 to 30/06/2013.

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. Carbon Check objective is to perform a thorough, independent assessment of the registered programme of activities.

In particular the, monitoring plan, monitoring report and the project's compliance with 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 registered/included component project design and conservative assumptions, as documented. And also if the monitoring plan is in compliance with the registered/included CPA DD and approved monitoring methodology.

1.2 Scope

The scope of the verification is:

- To verify the project implementation and operation with respect to the registered/included CPA DD or approved revised CPA DD
- To verify the implemented monitoring plan with the registered/included CPA DD or approved revised CPA DD 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.

The verification comprises a review of the monitoring report over the monitoring period from 01/07/2012 to 30/06/2013 and based on the registered/included CPA DD in part of the monitoring parameters and monitoring plan, emission reduction calculation spreadsheet, monitoring methodology AMS II G /B02/ and all related evidence provided by project participant.

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

2. METHODOLOGY

The verification consists of the following four phases:

1. Completeness check and webhosting of the Monitoring report on UNFCCC website;
2. Desk review of the validation report, monitoring plan, monitoring report, monitoring methodology, component project design document (CPA DD), programme of activity design document (PoA DD), applicable tools in particular attention to the frequency of measurements, quality of metering equipment's including calibration requirements, QA/QC procedures and other relevant documents;
3. On-site visit (including follow-up interviews with project stakeholders, when deemed necessary). The on-site assignment includes the following;
   - An assessment of implementation and operation of the component project activity with respect to registered/included CPA DD or approved revised CPA DD;
   - Review of information flows for generating, aggregating and reporting the monitoring parameters;
   - Interview with relevant personals to determine whether the operational and data collection procedures are implemented and in accordance with monitoring plan of the CPA DD;
   - Cross check of information and data provided in the monitoring report with plant logbooks, inventories, purchase records or similar data sources;
   - Check of monitoring equipment's, calibration frequency and monitoring practice in-line with methodology and CPA DD;
   - Review of assumptions made in calculating the emission reduction;
   - Implementation of QA/QC procedure in-line with the PDD and methodology requirement.
4. Resolution of outstanding issues and the issuance of the final Verification report and Certification statement.

The following sections outline each step in more detail.

2.1 Desk review

The following table outlines the documentation reviewed during the verification:

Ref no.	*Reference Document*
/1/	1. Webhosted Monitoring report, version 1, 08/08/2014 2. Monitoring Report, version 2, 12/12/2014 3. Monitoring Report, version 3, 12/12/2014 4. Monitoring Report, version 4, 19/01/2015 5. Monitoring Report, version 5, 03/02/2015 6. Monitoring Report, version 6, 04/03/3015
/2/	Final Monitoring report, version 07, 20/03/2015
/3/	Emission reduction calculation spread sheets for PoA, related to webhosted Monitoring Report /1.1/
/4/	Final emission reduction spread sheets for PoA, related to final version of monitoring

	report /2/
/5/	Approved revised PoA DD and CPA DD after Post Registration Changes: http://cdm.unfccc.int/PRCContainer/DB/prcp272754064/view
/6/	Email communication from UNFCCC Secretariat for the approval of post registration changes. Dated 2014-12-29
/7/	1.0_CPA-1-2_Ex-ante_Sample size calculation (eb75_an8)_MP2_4.3.15 1.0_CPA-3_Ex-ante_Sample size calculation (eb75_an8)_MP2_4.3.15 3.3_CPA 1-2_Ex-post_sample size calculation_MP2_04.03.15 3.6_CPA 3_Ex-post_sample size calculation_MP2_04.03.15
/8/	3.1_PoA Inspection database CPA 1-2_MP2_04.03.2015 3.2_PoA Inspection database CPA 3_MP2_04.03.2015
/9/	Sample User interviews for CPA1, CPA 2 and CPA 3.
/10/	1. Calibration Protocol of Digital Thermometer, GMH 3710, dated: 2013-07-03 2. Calibration: Weighing Scale Manual.
/11/	Water Boiling Test: 1. Calculation Spread sheet for CPA 1, CPA 2 and CPA 3. 2. Water Boiling Test Data Sheets for CPA 1, CPA 2 and CPA 3. 3. Water Boiling Test Certificates.
/12/	Sample Sales Receipt for CPA 1, CPA 2 and CPA 3
/13/	Technical Specification of stoves type SAVE80 and G3300
/14/	EB clarification for monitoring and verification activities in countries with security issues. Dated 04/06/2014
/15/	Verification Report of 1st Monitoring Period, prepared by DOE: GL. Dated: 2013-10-31
/16/	Training Protocol. Dated: 2012-01-11
/17/	Letter of Appointment of Monitoring team. Dated 2013-06-30
/18/	Letter of Engagement signed between atmosfair gGmbH and DOE. Dated: 26/09/2014
/19/	Registered PoA-DD, version 2.3, Dated: 24/10/2011 CPA 1: CPA-DD, version 2.1, Dated: 24/10/2011 CPA 2: CPA-DD, version 2.0, Dated: 12/06/2012 CPA 3: CPA-DD, version 2.0, Dated: 12/06/2012 CPA 4: CPA-DD, version 2.1, Dated: 15/05/2013 CPA 5: CPA-DD, version 2.1, Dated: 15/05/2013
/20/	Stove Distribution Database for CPA 1, CPA 2 and CPA 3
/21/	Validation Report, PoA, dated: 07/11/2011 Validation Report CPA 1, dated: 07/11/2011 Validation Report CPA 2, dated: 04/07/2012 Validation Report CPA 3, dated: 04/07/2012

2.2 Background documents:

Ref no.	*Reference Document*
/B01/	1. Validation and Verification Standard version 07 2. Project Standard version 07 3. Project Cycle Procedure version 07
/B02/	"Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass", AMS II.G., version 3
/B03/	Monitoring Report form, version 04.0. Attachment: Instructions for filling out the monitoring report form.
/B04/	Guideline on the application of Materiality in verifications (version 01.0)
/B05/	Standard - Sampling and surveys for CDM project activities and programme of activities. version 4.1

	Guidelines- Sampling and surveys for CDM project activities and programme of activities. Version 03.0
/B06/	Glossary of CDM terms, version 07

2.3 On-site visit and follow-up interviews with project stakeholders

An OSV was performed by members of the verification team of Carbon Check on dated (26/10/2014 to 28/10/2014) /14/ and it aims to the following:

i. An assessment of the implementation and operation of the registered project activity as per the registered/included CPA DD or any approved revised CPA DD;
ii. A review of information flows for generating, aggregating and reporting the monitoring parameters;
iii. Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the CPA DD;
iv. A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;
v. A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the CPA DD and the selected methodology and corresponding tool(s), where applicable;
vi. A review of calculations and assumptions made in determining the GHG data and emission reductions;
vii. An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The project representatives and stakeholders interviewed:

	Name	Organization	Topic	Means of Interview
/i/	Toyin Oshaniwa	atmosfair gGmbH	Project implementation and operation, monitoring procedure, data and information flow, Sustainability Monitoring Plan, Survey records, Sales/Distribution records	On site (face to face)
/ii/	Dietrich Brockhagen	atmosfair gGmbH	Project implementation and operation, monitoring procedure, data and information flow, Sustainability Monitoring Plan, Survey records, Sales/Distribution records	On site (face to face)
/iii/	Katrin Wolf	atmosfair gGmbH	CER calculation and completeness of monitoring report, Electronic Monitoring system, Sustainability Monitoring Plan, Sampling Plan, Survey records, Sales/Distribution records, CER waiver records and procedure, QA/QC Procedures, Quality Assurance – Management and operating system	Telephonic/Skype
/iv/	Rachel Soje	Freelancer	Monitoring procedures, Survey records	On site (face to face)

2.4 Resolution of outstanding issues

The objective of this phase of the verification is to resolve any outstanding issues (issues that require further elaboration, research or expansion) which have to be clarified/corrective action done prior to final DOE's conclusions on the project implementation, monitoring practices and achieved emission reductions. In order to ensure transparency a verification protocol is completed for the project activity. The protocol shows in transparent manner criteria (requirements), means of verification and resulting statements on verification actual project activity against identified criteria.

The verification protocol serves the following purposes:

- It organises in a table form, details and clarifies the requirements, which CDM project is expected to meet CDM requirements;
- It ensures a transparent verification process where the DOE will document how a particular requirement has been verified and the result of the verification.
- It ensures that the issues are accurately identified, formulated, discussed and concluded in the verification report.
- It ensures the determination of achieving credible emission reductions from the project activity.

The verification protocol consists of two tables. Table 1 reflects the verification requirements and reference to the materials used to verify the project activity against those requirements, as well as means of verification, reference to Table 2 (i.e. tables of findings) and preliminary and final opinion of the DOE on every particular requirement listed in table 1.

Verification Protocol Table 1: Requirement checklist				
Checklist question	***Verification Team Comment***	***Reference /MoV***	***Findings, comments, references, data sources / Draft Conclusion***	***Final Conclusion***
The checklist items in Table 1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.	*The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the Verification team and how the assessment was carried out. The reporting requirements of the VVS and Project Standard shall be covered in this section.*	*Gives reference to the information source on which the assessment is based on*	*Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR is raised (see below). The assessment refers to the draft verification stage.*	*In case a corrective action or a clarification request the final assessment at the final verification stage is given.*

The findings of verification process are summarized in the tables below.

Finding (reference section of table 1)			
Classification	☐ CAR	☐ CL	☐ FAR
Description of finding *(DOE)*			

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

In Table 2 FAR, shall reflect the forward actions initiated by the verification team if the monitoring and reporting require attention and/or adjustment for the next verification period. The completed verification protocol for this project is enclosed in Appendix A to this report.

Findings during the verification can be interpreted as a non-compliance with CDM criteria or a risk to the compliance.

Corrective action requests (CARs) are raised, in case:

(a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
(b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
(c) Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
(d) Issues identified in a FAR during validation/previous verification(s) that are not being resolved by the project participant(s) to be verified during current verification.

Requests for clarification (CLs) are raised, if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during verification to highlight issues related to project implementation/monitoring that require review during the subsequent verification of the project activity. FARs shall not relate to the CDM requirements for issuance.

2.5 Internal quality control

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

2.6 Verification Team

Carbon Check has appointed a competent team as per the Accreditation Standard and Carbon Check internal procedures, the team is outlined below:

Verification Team			Type of Involvement							
Full name	**Location**	**Appointed for Sectoral Scopes (Technical Areas)**	Supervising the work	Desk review	Site Visit + Interview	Report and protocol Writing	Technical Expert Input	Reporting Support	Technical Reviewer	Trainee TR
Anubhav Dimri	India	1.1, 1.2, 3.1, 13.1	X	X	X	X	X	X		
Gaurav Sharma	India	1.2		X		X		X		
Anjili Bwala	Nigeria	--			X					
Vikash Kumar Singh	India	1.2, 3.1, 4.1, 13.1, 13.2							X	
Sanjay Agarwalla	India	1.1, 1.2, 2.1, 3.1, 4.1, 5.1, 5.2, 9.1, 9.2, 13.1								X

3. VERIFICATION FINDINGS

The findings of the verification are described in the following sections. The verification criteria (requirements), the means of verification and the results of verification are documented in detail in the verification protocol in Appendix A.

3.1 Project implementation

The implementation of the component project activity

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:	5067-0001
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:	01/07/2012 to 30/06/2013

Title of the CPA:	CPA # 2 Improved Cooking Stoves for Nigeria
CPA reference number:	5067-0002
Date of inclusion:	11/07/2012
CPA start date:	01/01/2012
CPA start of operation:	01/01/2012

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:	15/07/2012 to 30/06/2013

Title of the CPA:	CPA # 3 Improved Cooking Stoves for Nigeria
CPA reference number:	5067-0003
Date of inclusion:	11/07/2012
CPA start date:	01/01/2012
CPA start of operation:	01/01/2012
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:	15/07/2012 to 30/06/2013

Title of the CPA:	CPA # 4 Improved Cooking Stoves for Nigeria
CPA reference number:	5067-0004
Date of inclusion:	29/05/2013
CPA start date:	01/01/2012
CPA start of operation:	Not yet started
CPA implementer	atmosfair gGmbH
Project Scale:	Small scale
Location of the CPAs:	Nigeria
CPA crediting period:	01/06/2013 to 31/05/2023
Reported monitoring Period verified in this verification:	01/06/2013 to 30/06/2013

Title of the CPA:	CPA # 5 Improved Cooking Stoves for Nigeria
CPA reference number:	5067-0005
Date of inclusion:	29/05/2013
CPA start date:	01/01/2012
CPA start of operation:	Not yet started
CPA implementer	atmosfair gGmbH
Project Scale:	Small scale
Location of the CPAs:	Nigeria
CPA crediting period:	01/06/2013 to 31/05/2023
Reported monitoring Period verified in this verification:	01/06/2013 to 30/06/2013

Project physical features (technology, project equipment, monitoring and metering equipment)	The improved cook stove (ICS) disseminated under SSC-CPA 1 and SSC-CPA 2 is the "SAVE80"/13/, a portable stove made of stainless steel, developed and prefabricated by a German manufacturer and assembled locally in Nigeria. The improved cook stove disseminated under the SSC-CPA 3 is the Envirofit G3300 /13/, a wood efficient burning rocket stove.	
Any Project Design Change been sought and approved by EB for the CPA? {compliance of § 330 (f) of VVS}	☐ Yes ☒ No	No project design change has been sought from EB for CPA.

There are five CPAs under Verification, however only three of them have been implemented till the last date of monitoring period. Each CPA involves the distribution of improved cooking

stoves in the host country Nigeria. The coordinating/managing entity for the PoA is atmosfair. The ICS deployed under CPA 1 and CPA 2 is "SAVE80" type /13/ and ICS disseminated under CPA 3 is Envirofit G3300 type /13/. The numbers of stoves deployed under each CPA has been confirmed by the monitoring database /20/. The verified /20/ total number of stoves deployed (implemented) under the three CPA are:
=> CPA 1 - 3,200,
=> CPA 2 - 2,747 and
=> CPA 3 - 721.

As per the registered CPA-DDs /05/, the estimated {maximum number of ICS to be deployed per year to ensure the CPA remains under the threshold of 20 GWh (corresponding to 60 GWh thermal energy savings) } cook stove for the CPAs are defined as:

=> CPA 1: 3,200.
=> CPA 2: 3,200.
=> CPA 3: 3,750.

Based on 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 thus CPA remains under the threshold of 180 GWh thermal energy savings/year.

Each CPA under the PoA involves the distribution of ICSs in the host country Nigeria. The CPAs have been defined by the number of stoves distributed instead of the regions where the distributions have taken place. However, the exact stoves locations have been verified from the monitored stove distribution database /20/ and sample sales receipts of each CPAs /12/ (i.e. CPA 1, CPA 2 and CPA 3).

The start date of distribution of ICSs under each CPAs verified from the monitored database /20/ is[3]:
CPA 1: 29/03/2011
CPA 2: 07/06/2012
CPA 3: 12/02/2012

Start date of crediting period is:
CPA 1: 10/11/2011
CPA 2: 15/07/2012
CPA 3: 15/07/2012

The component project activities were implemented and equipment installed as described in the registered/included CPA DDs/5/.

It was confirmed during OSV that atmosfair gGmbH is the Coordinating/Managing Entity for the PoA. The actual project activity is in line with the registered/included CPA-DDs. atmosfair gGmbH is the CPA implementer/ programme activity implementer for the CPA1, CPA 2 , CPA 3, CPA 4 and CPA 5 included in the PoA.

The information (including data and variables) provided in the MR /02/ is in line with the details provided in the included/registered CPA-DD/5/.

Verification Team summarizes *major* changes for the CPA/s between webhosted Monitoring Report and final version of Monitoring Report for submission as follows:

Subject	Webhosted Monitoring Report (MR) /01/	Verified Monitoring Report /02/
Changes		

[3] Start date mentioned in the CPA-DD 2 and CPA-DD 3 is 01/01/2012, however during the interview on site visit /I-iii, i/ it has been confirmed by the PP that the start date mentioned in the CPA-DDs are expected start date of the CPA. The actual start dates have been confirmed from the monitoring database/20/..

CER calculations (amount of emission reduction)	CPA 1: 6,511 tCO_2e CPA 2: 2,620 tCO_2e CPA 3: 994 tCO_2e CPA 4: 0 tCO_2e CPA 5: 0 tCO_2e	CPA 1: 6,506 tCO_2e CPA 2: 2,618 tCO_2e CPA 3: 994 tCO_2e CPA 4: 0 tCO_2e CPA 5: 0 tCO_2e

Carbon Check's verification team considers the project description of the project contained in the approved revised PoA-DD /5/ and CPA-DDs /5/ to be complete and accurate. The CPA-DDs complies with the relevant methodology, tools, forms and guidance at the time of CPA-DD submission for registration/inclusion.

As part of the site visit 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 (CPA 1, CPA 2 and CPA 3) /05/. The verification took cognizance of § 244, 245 & 248 of CDM Project Standard version 07 and § 270 (a) and 271 of VVS version 07 /B01/.

3.2 The actual operation of the CDM project activity

Starting date of CPA 1, CPA 2 and CPA 3 is 29/03/2011, 01/01/2012 and 01/01/2012 respectively as per the revised approved CPA-DDs /05/. The ICS deployed under SSC-CPA 1 and SSC-CPA 2 is the "SAVE80" /13/, a portable stove made of stainless steel, developed and prefabricated by a German manufacturer and assembled locally in Nigeria. The improved cook stove disseminated under SSC-CPA 3 is the Envirofit G3300 /13/. The G3300 is a wood burning rocket stove. During the monitoring period total number of stoves deployed under CPA 1 is 3,200, under CPA 2 is 2,747 and under CPA 3 is 721. Verification team confirms that the number of stoves deployed under each CPA is under the limit as set by the CME during the inclusion of each CPA (please refer to the assessment in section 3.1 of this report). Only those stoves that were installed before the last day of monitoring period i.e. 30/06/2013 have been used for the calculation of the emission reductions.

The PoA along with the real case CPA i.e. CPA 1 was registered on 10/11/2011. CPA 2 and CPA 3 were included on 11/07/2012. The start date of crediting period for CPA 1 is 10/11/2011 and for CPA 2 & CPA 3, it is 15/07/2012. The 1st verified monitoring period was 10/11/2011 to 30/06/2012 and this was only for CPA 1. The present monitoring period is from 01/07/2012 to 30/06/2013 for three CPAs i.e. CPA 1, CPA 2 and CPA 3. For CPA 1 the monitoring period will be from 01/07 2012 to 30/06/2013, for CPA 2 and CPA 3 the monitoring period will be from 15/07/2012 to 30/06/2013, since the start of crediting period of CPA 2 and CPA 3 is 15/07/2012. CPA 4 and CPA 5 included under this PoA, have not been implemented under the present monitoring period, hence no emission reduction claims have been sought by the CME, which is deemed appropriate.

Recipient household of ICS have ceded the rights of all entitlement of CERs to the managing entity of the PoA, this has been cross verified from the signed sample sales receipt /12/. Sample sales receipts were checked during the on site visit. Operation of the ICSs in the CPA 1, CPA 2 and CPA 3 was confirmed during the site visit by the verification team. Following was confirmed during the site visit:

1. Stoves numbering system
2. Electronic monitoring system including input procedure
3. Actual implementation of the stoves
4. Household-representatives were interviewed regarding the usage of stove
5. Whether or not baseline technology was still in use
6. Process of data collection during installation of stove
7. Sales Agreements between households and CPA implementer

Carbon Check's verification team confirms that the CPAs are implemented within the boundary of the PoA as described in the approved revised PoA-DD /5/ and the implementation and operation of the project activity is in accordance with the description contained in the registered PoA-DD /5/ and registered/included CPA-DDs /5/.

In accordance with § 273 c) of VVS, version 07, information (data and variables) provided in the monitoring report that are different from that stated in the registered CPA-DDs /5/ were assessed. The assessment is summarized below:

Parameter	Ex-ante value in the CPA-DD	Actual operation for the reported monitoring period	Assessment by the verification team
Efficiency of the stoves (η_{new})	52 %	CPA 1 and CPA 2 – 41.99 % CPA 3 – 32.58 %	The average efficiency of the cook-stoves (η_{new}) monitored ex-post for the current monitoring period is less than the estimated ex-ante value in the CPA-DDs. Verification team based on its sectoral expertise confirms that decrease in efficiency in actual project condition is a realistic condition and thus this issue does not require further assessment, as it does not lead to increase in the emission reductions. This is also deemed acceptable to the verification team as the actual monitored efficiency is lower than the value indicated in the registered CPA-DDs and it does not lead to increase in emission reductions.
Statistically adjusted drop out from total population of appliances in period y (DO_y)	5%	CPA 1 and CPA 2 – 36.24 % CPA 3 – 6.38 %	Drop out rate monitored ex-post for the current monitoring period is higher than the estimated ex-ante value in the CPA-DDs. This is deemed acceptable as it does not lead to increase of emission reductions.

In summary, the monitoring period is reasonable and the operation of the CPAs is in accordance with the registered (included) CPA DDs/5/. The verification took cognizance of § 244, 245 and 246 of CDM Project Standard version 07 and § 262 b (i), 270 (a), 271 (a), (b) and 273 (b) and (c) of VVS version 07 /B01/.

3.3 Compliance of the monitoring plan with the monitoring methodology including applicable tool(s)

Any Revision in Monitoring plan is sought and approved by EB for the project?	☒ Yes ☐ No	As per the FAR raised during 1st monitoring period by the respective DOE, post registration changes were sought. Accordingly PP revised the PoA-DD and all included CPA-DDs and got the approval of acceptance of changes in the monitoring plan by the EB. Verification team has referred the approved revised monitoring plan (as contained in the revised version of PoA-DD and CPA-DDs /5/) for the assessment. The effective approval date is 25/12/2014, which has been verified from the weblink: http://cdm.unfccc.int/PRCContainer/DB/prcp272754064/view

The verification team determined against all the information provided in the monitoring report, whether in-line with the applied monitoring methodology.

Verification Requirements	Criteria fulfilled	Verification and reporting by the verification team
Any Deviation been sought and approved by EB for the project.	☐ Yes ☒ No	No deviation has been sought for the PoA and CPAs of the PoA; checked and confirmed by the verification team by referring UNFCCC website.
Is complete set of data for the specified monitoring period is available for the CPA	☒ Yes ☐ No	Yes complete set of data is made available to the verification team for the reported monitoring period.
Is the required information provided in the monitoring report has been cross-checked with other sources (ex – plant logbooks, inventories, purchase records, laboratory analysis)	☒ Yes ☐ No	The required information provided in the monitoring report/02/ has been crosschecked against the data provided in the ER spread sheets of each CPAs /04/, sampling records /9/ including results of WBT /11/ stove distribution database/20/, copies of sales receipt/12/ and the observations during OSV.
Is the calculation of baseline emissions and project activity emissions and leakage been in accordance with the formulae and methods described in monitoring plan and the applied methodology?	☒ Yes ☐ No	Yes, the calculation of emissions has been done in accordance with the formulae and methods described in monitoring plan and the applied methodology/B02/.
Is all assumptions used for emission calculation have been justified	☒ Yes ☐ No	Yes all the assumptions made for emission calculation have been justified.
Is appropriate emission factors, IPCC default values and other reference values have been correctly applied	☒ Yes ☐ No	Yes, appropriate values of emission factors, other reference values and other default values have been used.
Does the monitoring methodology provides any provision of verification for parameters other than monitoring of GHG data and shall be specific to the applicability criteria of applied methodology.	☐ Yes ☒ No	No, the monitoring methodology does not provide for verification of parameters other than monitoring of GHG data.

The verification team is able to confirm that the monitoring plan contained in the approved revised CPA DDs /05/ are in accordance with the approved methodology applied by the project activity, i.e. AMS II G (version 03) /B02/.

The verification took cognizance of § 244 to 246 of CDM Project Standard version 07 and § 274 to 277 of VVS version 07 /B01/.

3.4 Compliance of the Actual monitoring with monitoring plan in the CPA DD

Any Revision in Monitoring plan is sought and approved by EB for the project?	☒ Yes ☐ No	There was a revision in the monitoring plan from the registered CPA-DDs. This was resulted due to the FAR raised in the verification report/15/ by the DOE of 1st monitoring period. PP got the approval of this revision in monitoring plan by the EB on 25/12/2014 /05/.

Does the monitoring report provide line diagram showing all relevant monitoring points?	☐ Yes ☐ No	NA.

The monitoring has been carried out in accordance with the revised monitoring plan accepted on 25/12/2014 contained in the approved revised CPA DDs /05/.

During the course of verification, all relevant monitoring parameters have been verified with regard to the appropriateness of the applied measurement/determination method, and applied QA/QC procedures. According to the methodology, a Total Sales Record, Detailed Customer Database, and Project Database are maintained.

The verification team reviewed the monitoring plan as contained in the approved revised PoA-DD ,/5/ and compared it against the requirements of the applied methodology /B02/ and confirms that appropriate provisions are included for the monitoring and reporting procedures, data management and QA/QC procedures, including maintaining the detailed customer database /20/ and project database.

The sampling plan implemented by the PP is in accordance with the applied approved monitoring methodology /B02/ and approved revised PoA-DD/CPA-DDs /05/. The PP has appropriately performed Simple Random Sampling procedure in line with the applied methodology and best suited for this type of project. As the PoA-DD /05/ 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 people of the project partners and PP (atmosfair), which has been evidenced by the certificates of training provided by the PP as proof of training/16//17/.

For the parameters DO_y and $N_{eaters,appliance}$ a common interview questionnaire /9/ was prepared and was used during the survey by the PP. Verification team has cross verified these sample documents during the on site visit. For the parameter η_{new} water boiling test has been performed and this has been checked by the verification team with the related spreadsheets and instructions and data entry forms /11/.

Assessment of sampling for CPA 1 and CPA 2:

PP has done a combined sampling for CPA 1 and CPA 2 for the current monitoring period. It is acceptable to the DOE since the make of ICS distributed under CPA 1 and CPA 2 are same i.e. “SAVE 80” type, also the geographical boundary is the host country Nigeria for both the CPAs. Since the type of ICS under CPA 3 is different i.e. Envirofit G3300 sampling has been performed separately. This is in accordance to the paragraph 20 of the Amendment to version 04.1 of the Standard for sampling and surveys for CDM project activities and programme of activities (EB 80, Annex 07)/B05/.

The sample size calculation for the parameters DO_y, is found in accordance with the paragraph 12 to 22 of Appendix 1 of Sampling Guidelines /B05/ and for the parameter , $N_{eaters,appliance}$ and η_{new} is found in accordance with the paragraph 50 to 56 of Appendix 1 of Sampling Guidelines /B05/.

The resultant applied sample size by PP for CPA 1 and CPA 2 together /7/ are:

Parameters	DO_y	$N_{eaters,appliance}$	η_{new}
Estimated Sample Size	52	13	5
Applied Sample Size	74	74	74
Actual Sample Surveyed	46	35	21

PP has calculated the estimated sample size /7/ from the results of last monitoring period, which is found appropriate as stated in the registered PoA-DD /05/. Response rate of 70% is assumed hence the applied a common sample size of 74 for each parameter. Oversampling is used and it is found in line with the footnote number 10 of sampling standard version 4.1 /B05/.

The necessary confidence interval/ precision level of 95/10 is not met for the parameter DO_y as the actual sample surveyed is below the estimated sample size. The precision achieved is calculated to be 16%, which is higher than the required precision limit of 10%. Based on paragraph 16 of "Standard for Sampling and surveys for CDM project activities and programme of activities" version 04.1 /B05/, the precision has not been met and option (b), has been applied, As per paragraph 16 (c) of the above Standard /B05/, paragraph 16 (b) is only eligible for application to the survey undertaken during the first two years of the crediting period of the project activity or CPAs which is satisfied for this PoA monitoring period. Accordingly PP has applied the option as per paragraph 16 (b) and the lower bound value for DO_y was calculated.

Hence the lower bound calculation for the parameter DO_y has been performed for CPA 1 and CPA 2 together. This is in accordance to the para 22 of applied monitoring methodology AMS II G /B02/ and hence deemed acceptable to the verification team.

The calculation of lower bound of the 95% confidence interval resulted in an applied DO_y of 36.24% instead of 23.91% as the monitored value /8/.

Lower bound calculation procedure followed by PP for CPA 1 and 2 is acceptable to the DOE.

Assessment of sampling for CPA 3:

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

The sample size calculation for the parameters DO_y, is found in accordance with the paragraph 12 to 22 of Appendix 1 of Sampling Guidelines /B05/, and for the parameter , $N_{eaters,appliance}$ and η_{new} is found in accordance with the paragraph 50 to 56 of Appendix 1 of Sampling Guidelines /B05/.

The resultant applied sample size by PP for CPA 3 /07/ is:

Parameters	DO_y	$N_{eaters,appliance}$	η_{new}
Estimated Sample Size	36	10	4
Applied Sample Size	59	59	59
Actual Sample Surveyed	48	44	35

The estimated sample size from the last monitoring period is 36 for the parameter DO_y. The calculated necessary sample size for $N_{eaters,appliance}$ was 10 and for η_{new} it was 4. PP has assumed a 70% response rate, the oversampling approach is applied and a common sample

size of 59 resulted for all the parameters. Oversampling is in line with the footnote number 10 of sampling standard version 4.1/B05/.

The necessary confidence precision of 90/10 is met for all the parameters in CPA 3, as the actual sample surveyed by the PP is much above the estimated sample sizes. This has been cross verified by the verification team from the supporting documents submitted i.e. Sample Size Calculation/7/, Inspection Database/8/, User Interview /9/ and Water Boiling Test Report /11/.

During the on site visit, verification of the PP's sampling has been done as per the clarification letter from the EB /14/. The board clarified that the paragraph 29 (b) (of "Sampling and Survey for CDM project activities and programme of activities" EB 74, Annex 06) allows flexibility in the application of sampling standard under specific situations including security conditions. The board agreed that the DOE may, for a period of one year for the PoA reference number 5067, choose either one of the two approaches in accordance with "Table 1 Sample size and acceptance number based on AQL, UQL, and producer and consumer risk":

a) Take sample size of 18, with the acceptance number 1 from the zone not affected by the conflict; or
b) Take sample size of 8, with acceptance number of 0 covering the entire project region.

DOE hence opted for option 'b' with sample size of 8, based on the producer risk of 5%, consumer risk of 20%, AQL of 0.5% and UQL of 20%. Sample households of 8 were randomly chosen from all three zones classified in the clarification letter provided by the UNFCCC /14/ for the verification, with acceptance number of 0, due to the security situation in Nigeria. No discrepancy was found during the on site verification of PP's sample records. Thus PP's set of records has been accepted in line with para 28 of the sampling standard, version 04.1/B05/.

The threshold of materiality was evaluated based on §10 and §17 of "Guideline on the application of materiality in verification" Version 01.0 (Annex 6, EB 69) /B04/. It was concluded that the materiality threshold applicable to the project activity based on actual emission reductions achieved is 5% ;

CPA 1: 5% of 6,506 tCO_2 e per year equals 325.3 tCO_2e
CPA 2: 5% of 2,618 tCO_2 e per year equals 130.9 tCO_2e
CPA 3: 5% of 994 tCO_2 e per year equals 49.7 tCO_2e

A materiality threshold of each CPAs is determined inline with para 10 and para 16(a) of "Guideline on the application of materiality in verification" Version 01.0 (Annex 6, EB 69) /B04/.

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 CPA implementer (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

In conducting the verification, DOE took cognizance of para 18-23 of "Guideline on the application of materiality in verification" Version 01.0 (Annex 6, EB 69) /B04/ and based on the input of data from different sources checked through sampling of records during OSV observed that no records were found to have inconsistent data from hand written (Copy of the sample sales records /12/) to the electronic monitoring database. Data flow was checked through comparison of data in electronic database and ER sheet. The data recording input device was also checked and the data compared with the monitoring database and found to be correct.

The risks identified were mitigated through cross check with all sets of documents.

Based on the review of CPA-DD, monitoring report, emission reduction calculation workbook and the data provided and the assessment carried out above, Carbon Check (CCIPL) confirms with a reasonable level of assurance that the claimed emission reductions or removals are free from material errors, omissions or misstatements.

3.5 Monitored parameters (compliance of § 278 and 281 of VVS)

EX-Post Parameters:

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	$N_{eaters,appliance}$
Measuring frequency/Time Interval:	Annually
Reporting frequency:	Once for this Monitoring Period Survey Period CPA 1and 2: 11/09/2013 – 05/04/2014 Survey Period CPA 3: 15/11/2013 – 18/03/2014
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 is 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 is not applicable.
Company performing the calibration(internal or external calibration):	No equipment used hence the calibration requirement is not applicable.
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	No equipment used hence the calibration requirement is not applicable.
Is (are) calibration(s) valid for the whole reporting period?	No equipment used hence the calibration requirement is 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/20/, inspection database/8/ and hard copy records were checked during the OSV.
How were the values in the monitoring report verified?	For CPA 1 and 2 : 7.11 For CPA 3 : 6.76 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 site visit. For the parameter $\mathbf{N_{eaters,appliance}}$ the value has been calculated in accordance with the section D.7.1 of the CPA-DDs /5/ and the section D.7.1 of the generic CPA-DD/5/. As per the generic CPA-DD the value was capped to 8. The actual calculated value of CPA1, CPA2 and CPA3 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 /5/.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC process are in place. Assessment of sample size: **For CPA1 and CPA 2:** For this monitoring period the confidence/precision applicable is 95/10. $\mathbf{N_{eaters,appliance}}$ the calculated necessary sample size is 13, however, oversampling approach as per footnote 10 of sampling standard version 4.1/B05/ is applied and 35 SAVE 80 stove type users were interviewed by the PP, which is more than the necessary sample size of 13, hence it is found acceptable to the verification team. **For CPA 3**: For this monitoring period of CPA 3 the confidence/precision applicable is 90/10. $\mathbf{N_{eaters,appliance}}$ the calculated necessary sample size is 10 however, oversampling approach as per footnote 10 of sampling standard version 4.1/B05/ is applied and 44 Envirofit stove users were interviewed by the PP which is more than the necessary sample size of 10, hence it is found acceptable to the verification team. Hence, PP has correctly determined the value of $N_{eaters,appliance}$ for Emission Reduction calculation.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	$\boldsymbol{N_y}$ Adjusted total number of appliances deployed until period y
Measuring frequency/Time Interval:	As per the registered CPA-DD/05/, sales

	record database is updated continuously.
Reporting frequency:	As per the registered CPA-DD/05/, CME may decide to do annual or biennial monitoring/reporting of the parameter. Hence, PP has opted for annual monitoring/reporting of the parameter for this monitoring period. Once in 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 is used. Source of data is from Sales receipts and sales records database.
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?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the 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/12/ and monitored database/20/.
How were the values in the monitoring report verified?	CPA 1: 3,199.66 CPA 2: 1,339.17 CPA 3: 400.50 The total number of appliances deployed until period y is calculated based on information monitored through the sales records database/20/. $N_y = \sum_{i=1}^{y} n_i \cdot OT_{adjusted,i,y}$ $n_{i=}$ 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. $OT_{adjusted,i,y}$ = Adjustment factor for

	reduced operational time of appliances deployed in monitoring period y. The reported data has been cross-checked against spot check user records and compared with the MR and the ER sheet. The data was then verified against the sample households checked during the site visit.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC process are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. Full data is available for the monitoring period.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of PDD):	DO_y Statistically adjusted drop out from total population of appliances in period y
Measuring frequency/Time Interval:	Annually.
Reporting frequency:	Once for this monitoring period (i.e. annual monitoring) Survey Period CPA 1and 2: 11/09/2013 – 05/04/2014 Survey Period CPA 3: 15/11/2013 – 18/03/2014
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	No monitoring equipment is used. Questionnaire was prepared by the PP to find out the dropout rate during the survey period.
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?	NA
Calibration frequency /interval: Is it monitoring methodology /CDM EB guidance / local or national standards / manufacturers specification	NA
Is the calibration interval in line with the monitoring plan of the 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	NA

monitoring equipment? (Yes / No):	
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	The reported data has been cross checked with the interview questionnaire/9/ and inspection database/8/.
How were the values in the monitoring report verified?	For CPA 1 and 2: 36.24% For CPA 3: 6.38 % The reported data has been cross-checked against spot check user records and compared with the MR and the ER sheet. The data was then verified against the sample households checked during the site visit.
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC process are in place. The confidence interval/precision level for parameter DOy under CPA 1 and CPA 2 is 95/10 and under CPA 3 is 90/10. This is in accordance with the para 22 of monitoring methodology AMS II G/B02/. **CPA 1 & CPA 2:** Estimated Sample Size: 52 Assumed 70% response rate. Applied sample size: 74 Total 46 out of the 74 Save 80 stove users could be interviewed to determine DO_y. This is less than the required minimum sample size for DO_y. Hence, PP applied the lower bound of the 95% confidence interval of the parameter value as per AMS II.G., ver. 3, paragraph 22 which results in a reduction of Emission Reductions and is therefore conservative. The detailed assessment of the same is shown in the above section 3.4 of the verification report. **CPA 3:** Estimated Sample size : 36 Assumed 70% response rate. Applied sample size: 59 Total 48 out of the 59 Envirofit users could be interviewed to determine DO_y This is more than the required minimum sample

	size for DO_y.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. 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:	Once for this monitoring period (i.e. annual monitoring) CPA 1-2: Survey Period: 11/09/2013 – 01/03/2014 CPA 3: Survey Period: 27/11/2013 – 03/03/2014
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: #267834-06 2. Thermocouple: Greisinger Präzisionsthermometer GMH 3710 Serial Number: 32402531
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?	No accuracy of equipment is stated in the CPA-DDs. 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	The weighing scale does not require calibration according to manufacturer's specification /10/. The calibration certificate for thermometer is valid for the period when the monitoring was done /10/.
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):	Greisinger electronic GmbH
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Yes
Is (are) calibration(s) valid for the whole reporting period?	Yes
If applicable, has the reported data been cross-checked with other available data?	The reported data has been cross-checked with the WBT test records/11/, ER sheet/4/ and MR/2/.
How were the values in the monitoring report	The value for the reported data was

verified?	verified against the WBT test records/11/. For CPA 1 and 2: 41.99% For CPA 3: 35.28%
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC process are in place. The confidence interval/precision level for parameter η_{new} under CPA 1 and CPA 2 is 95/10 and under CPA 3 is 90/10. This is in accordance with the para 22 of monitoring methodology AMS II G /B02/. **CPA 1 and CPA 2:** Estimated Sample Size: 5 Assumed 70% response rate. Applied common sample size: 74 PP has conducted WBTs for 21 stoves. This is higher than the required minimum sample size for η_{new}. Hence, found acceptable to the verification team. **CPA 3:** Estimated Sample Size: 4 Assumed 70% response rate. Applied common sample size: 59 PP has conducted WBTs for 35 stoves. This is higher than the required minimum sample size for η_{new}. Hence, found acceptable to the verification team. As per registered PoA-DD $0 \leq \eta_{new} \leq \eta_{specified}$ From above it can be seen that actual values are within range and verifiable from the information provided for calculation of Emission Reductions.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA. The data has been monitored in accordance with the registered monitoring plan.

EX-Ante Parameters:

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 registered CPA-DDs

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. (Ver. 3)

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. (Ver. 03)

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. (Ver. 03)

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 (Ver. 3)

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 (Ver. 3)

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	Manufactures specifications

Data/Parameter	$\eta_{specified}$
Default values used:	For CPA 1 and 2: 52% For CPA 3: 32.6%
Purpose of data	Not used for emission reduction calculation. Only for demonstration of fulfillment of eligibility criterion 2 (for CPA inclusion).

In summary, the verification team confirms that all the ex-ante and ex-post parameters are monitored in accordance with the approved monitoring plan and applied methodology. The verification took cognizance of § 252 of CDM Project Standard version 07 and § 262, 275, 277, 278 and 282 of VVS version 07/B01/.

3.6 Monitoring responsibility

Verification team evaluated the management system in place to implement the monitoring of CPAs under the PoA. Description of monitoring system provided under section C of the monitoring report /02/ is in accordance to the registered/included CPA-DDs /05/. This included the organisational structure, roles and responsibilities, data collection, transfer and aggregation procedures, training of personnel /16/, data storage and archiving and emergency procedures for the monitoring system. On the basis of onsite interview with the employee of atmosfair gGmbH involved in the project monitoring and data collection, inspection of data storage log book & equipment's and document review. Carbon Check can confirm that the responsibilities and authorities for monitoring and reporting are appropriate and effective for the project type and hence in accordance with monitoring plan of the registered PoA-DD and applied monitoring methodology.

3.6.1 Accuracy of equipment

There are two monitoring equipment used in the Water Boiling Test i.e. Weighing scale and Thermocouple. Following are the accuracy class defined; Weighing scale: +/- 1 g, and Thermocouple: Temperature range -199.99° C - +199.99° C. As per the operating manual/10/ precision device without probe is +/-1 digit(at nominal temperature).

The calibration was undertaken only for thermocouple and was done before conducting water boiling tests. No other calibration of any other equipment was required as per monitoring plan since the weighing scale needs no further calibration according to manufacturer's specification. The appropriate QA/QC procedures have been followed for the monitoring parameters.

The verification took cognizance of § 252 (b) of CDM Project Standard and § 282 of VVS version 07/B01/.

3.7 Deviation from and/or Revision of the registered monitoring plan

There was a revision in the monitoring plan from the registered CPA-DDs. This was resulted due to the FAR raised in the verification report/15/ by the DOE of 1st monitoring period. PP got the approval of this revision in monitoring plan by the EB on 25/12/2014 /05/. Hence, Verification team has accessed the approved revised CPA-DDs for the 2nd Verification period and found it to be appropriate.

3.8 Assessment of data and calculation of greenhouse gas emission reductions

In line with the requirement of § 330 d (iv) of VVS /B01/, verification team has reviewed the Monitoring report /02/ and ER spread sheet /04/ to check the arithmetic calculation of the emission reductions. The equation used for the calculation is compared with those provided in the registered CPA-DDs/05/ and the methodology AMS-II.G, version 03/B02/.

3.8.1.1 Baseline emissions

The equations for baseline emissions as provided in the monitoring report /02/ were confirmed with the registered CPA-DDs /05/ and the methodology AMS-II.G, version 03 /B02/ and found to be correct.

Emission reductions are calculated using the below equation:

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

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:

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

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:

$B_{old,,appliance}$ =	Quantity of woody biomass used in the absence of the project activity in tonnes, per appliance
$B_{old,capita}$ =	Average baseline fuelwood consumption per capita per year (fixed value of 0.692 t/year)
$N_{eaters,appliance}$ =	Average number of eaters per project appliance (**monitored** value, capped as per parameter HH_CAP)

The verification team has checked the calculation of emission reductions and found to be correct for the PoA.

3.8.1.2 Project emissions

There are no project emissions identified in the monitoring methodology/B02/ or CPA-DDs /05/.

3.8.1.3 Leakage emissions

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. ver.3) /B02/ were applied to the project activity to calculate Emission Reductions of this Monitoring Period.

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 registered CPA-DDs/05/. The total number of CERs achieved during the monitoring period for each CPA is:

CPA 1: 6,506 tCO_2e
CPA 2: 2,618 tCO_2e
CPA 3: 994 tCO_2e

3.9 Assessment of actual emission reductions with the estimate emission reductions in CPA DD

Estimated Emission Reduction as per Registered(included)/Approved CPA DDs:	CPA 1: 11,270 tCO_2e CPA 2: 8,423 tCO_2e CPA 3: 8,473 tCO_2e CPA 4: 1,425 tCO_2e CPA 5: 1,437 tCO_2e
Actual Emission Reduction for the Monitoring Period	CPA 1: 6,506 tCO_2e CPA 2: 2,618 tCO_2e

	CPA 3: 994 tCO_2e CPA 4: 0 tCO_2e CPA 5: 0 tCO_2e
Has any increase of CER's occurred?	No
Reason for Increase of CER's	NA

In summary, verification team confirms that actual emission reduction is lower than the estimate of the registered (included)/approved CPA DDs for the current monitoring period.

The verification took cognizance of § 257 & 258 of CDM Project Standard version 07 and § 273 (c) of VVS version 07/B01/.

3.10 Issues remaining from the previous verification period or during validation

One FAR was raised in the verification report/15/ of the last monitoring period by the verifying DOE. As a result, PP got approved the changes required from the EB on 25/12/2014 /6/. Hence no issue is remaining from the previous verification period or during the validation. The verification took cognizance of § 265 (d) and 330 (h) of VVS version 07/B01/.

3.11 Quality and Management System Assurance

Verification team evaluated the management systems in place to implement the monitoring of the project activity. This included the roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system.

The table of the roles and responsibilities data collection transfer and aggregation procedures, data storage and archiving for the monitoring system have been provided in Section C of the MR /02/.

The verification team confirms that the monitoring management system of the CDM project is in place; with the responsibilities properly identified and in place.

APPENDIX A

CARBON CHECK Certification statement for the Verification Report

CCL294/CDM-GS/PoA/VER/ICSNPOA/20140825

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 component project activities are designed to generate emission reductions by distribution of improved cooking stoves.

The CME is 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 registered PoA-DD/CPA-DDs. The verification is carried out in-line with the VVS requirements.

The verification was performed to identify the compliance of the component projects with implementation and monitoring requirements, and to verify the actual amount of achieved emission reductions, through obtaining evidence and information on-site 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 Monitoring Plan/ Approved revised CPA DDs and approved revised PoA DD of PoA "Improved Cooking Stoves for Nigeria Programme of Activities", version 3.2, date 24/09/2014; approved by EB on 25/12/2014

— Approved monitoring methodology AMS II G "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass", version 03;

— Validation report /21/ for the PoA and CPAs;

— Previous verification report /15/, version 08 dated 31/10/2013;

— Monitoring report version 07, dated 20/03/2015

This statement covers verification period of 12 months / 365 days between 01/07/2012 and 30/06/2013.

The DOE had raised 03 clarification and 08 corrective action requests, all of which have been successfully resolved by PPs.

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

The DOE , hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 6,506 tCO_2e, 2,618 tCO_2e, 994 tCO_2e, 0 tCO_2e and 0 tCO_2e from CPA 1, CPA 2, CPA 3, CPA 4 and CPA 5 respectively and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records.

2015-04-24	2015-04-21
Date	Date
Amit Anand	Anubhav Dimri
Final Approver	Team Leader Carbon Check
Carbon Check (India) Private Ltd.	(India) Private Ltd.

APPENDIX B

Carbon Check
CDM Verification Protocol

"Improved Cooking Stoves for Nigeria Programme of Activities" in Nigeria
to
Report No. CCL294/CDM-GS/PoA/VER/ICSNPOA/20140825

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Project implementation					
1.1 Have all physical features proposed in the registered/included CPA DD been implemented at the project site?	/1/ /2/	DR	Yes, all the physical features as proposed in the registered/included CPA DD have been implemented. CPA 1 and CPA 2 involve distribution of 'SAVE 80' stoves and CPA 3 involves distribution of 'Envirofit G3300' stoves. However, implementation of CPA 4 and CPA 5 have not taken place yet. However, CAR 1 is raised: 1. Under section A.2 of the Consolidated MR version 01, as per the requirement of Instructions of filling out the monitoring report form, PP is requested to provide the region/state/province of each CPA one by one for the deployed ICSs. 2. Physical and geographical region is required to be demonstrated in the MAP of Nigeria, for each CPA separately.	~~CAR 1~~	OK

[4] MoV = Means of Verification, DR = Document Review, I = Interview, www = internet search.

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1.2 Has the component project activity been operated in accordance with the project scenario described in the registered/included CPA DD and relevant guidance?	/1/ /2/	DR	Yes, the component project activity has been operated in accordance with the project scenario described in the registered/included CPA DD and relevant guidance.	OK	OK
1.3 If the component project activity is implemented on a number of different locations, has the Monitoring report provided the verifiable starting dates for each site?	/1/ /2/	DR	As per the CPA-DD included under the registered PoA, following are the start date of each CPAs; CPA 1: 29/03/2011 CPA 2: 01/01/2012 CPA 3: 01/01/2012 CPA 4: 01/01/2012 CPA 5: 01/01/2012 CPA 4 and CPA 5 have not been implemented by the PP hence not applicable for this monitoring period.	OK	OK
1.4 Is the start date of monitoring period consistent?	/1/ /2/	DR	Yes, the start date of the monitoring period is consistent.	OK	OK
1.5 Is the monitoring report consistently filled with respect to all sections as required by its guideline of filling the monitoring report?	/1/ /2/	DR	Yes, all the sections of the monitoring report have been completed as per the guideline of filling the monitoring report. However, CAR 2, CAR 4 and CAR 5 has been raised: CAR 2: Under section A.3 of the Consolidated MR version 01, PP is has not mentioned the exact name of Party involved(host) as per	~~CAR 2~~ ~~CAR 4~~ ~~CAR 5~~	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			the registered PoA-DD. CAR 4: PP is requested to maintain consistency in section A.6 and Appendix 1 of the consolidated monitoring report version 01. Tel no and Address do not match. CAR 5: Under section B.1 of the consolidated Monitoring Report, the information mentioned is not complying with the requirement of "Instruction of filling out the monitoring report". PP is requested to provide the photographs/diagram of each type of ICS deployed in all the CPAs under selected monitoring period as per the requirement.		
1.6 Does the CER's obtained for the monitoring period within the limit of estimate in the registered/included CPA DD? Is the claimed CER's justifiable?	/1/ /2/	DR	The actual emission reduction occurring for each CPA is within the estimated limits as per the CPA-DDs included under the registered PoA-DD. However, following findings has been raised under CL 1: 1. Estimated amount of GHG emission mentioned in Page 1 of the Consolidated MR version 01 do not match with the estimated amount of GHG reduction mentioned in the	~~CL 1~~	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			registered CPA-DD 02 and CPA-DD 03 2. Estimated amount of GHG emission from CPA 4 and CPA 5 was not found zero in the respective registered CPA-DDs. PP is requested to clarify these points		
1.7 Is the monitoring system provided in line diagrams showing all relevant monitoring points?	/1/ /2/	DR	Under section C of the monitoring report, line diagrams showing all relevant monitoring points has been provided.	OK	OK
2. Monitoring plan and methodology					
2.1 Is the monitoring plan established in accordance with the monitoring methodology?	/1/ /2/	DR	The monitoring plan established is in accordance with the monitoring methodology. However, CAR 3 was raised: Under section A.4 of the Consolidated MR version 01, the information mentioned is not complying with the requirement of "Instruction of filling out the monitoring report". PP is requested to mention all the tools and standards used for this monitoring period.	~~CAR 3~~	OK
2.2 In case the implemented monitoring plan defers from the monitoring methodology, has any requests for revision to or deviation from the monitoring methodology been officially	/1/ /2/	DR	During the last monitoring period of the registered PoA (i.e. Monitoring Period 1), 1 FAR was raised by the assigned DOE, which has been raised as CAR 06 during this	~~CAR 6~~	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
communicated to the CDM EB?			monitoring Period.		
2.2.1 Have the above changes to the monitoring plan been approved by the CDM EB?	/1/ /2/	DR	The above change in the monitoring plan is a revision. PP has applied for post registration changes. For this CAR 07 has been raised: CAR 07 PP is requested to submit all the supporting documents as per the sampling survey accepted in the PRC by EB. All the monitored parameters must follow the PRC, and accordingly incorporated in the monitoring report and emission reduction spread sheet. Moreover, later on after the acceptance of PRC by EB, following CL 03 was raised: CL 03: Table D.3.1 and D.3.2, under section D.3 of the revised MR, PP is requested to clarify, why the estimated value of the monitored parameters has been selected from the last monitoring period instead from the registered PoA-DD and CPA-DDs. The estimate of all the parameters are done at the validation stage, hence the applicable values must be from the registered CPA-DDs not from the last monitoring period, as the values in last MR was the actual values.	~~CAR 7~~ ~~CL 03~~	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3. Monitoring and the monitoring plan					
3.1 Is monitoring established in full compliance with the monitoring plan, contained in the registered/included CPA DD (or new monitoring plan approved by the CDM EB)?	/1/ /2/	DR	Based on the closure of CAR 07 and CL 03	~~CAR 7~~ ~~CL 3~~	OK
3.2 Are all baseline emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/1/ /2/	DR	Based on the closure of CAR 07 and CL 03	~~CAR 7~~ ~~CL 3~~	OK
3.2.1 Was the monitoring equipment for baseline emission parameters controlled and monitoring results recorded as per approved frequency?	/1/ /2/	DR	Yes, however CAR 08 was raised. CAR 08: PP is requested to mention the name of equipment used in measuring the efficiency and provide the calibration certificates for each.	~~CAR 8~~	OK
3.2.2 Was the monitoring equipment for baseline emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/1/ /2/	DR	Based on closure of CAR 08	~~CAR 8~~	OK
3.3 Are all project emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/1/ /2/	DR	Based on the closure of CAR 07, CAR 08 and CL 03	~~CAR 7~~ ~~CAR 8~~ ~~CL 3~~	OK
3.3.1 Was the monitoring equipment for project emission parameters controlled and monitoring results recorded as per approved frequency?	/1/ /2/	DR	Based on the closure of CAR 07, CAR 08 and CL 03	~~CAR 7~~ ~~CAR 8~~ ~~CL 3~~	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.3.2 Was the monitoring equipment for project emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/1/ /2/	DR	Based on the closure of CAR 07, CAR 08 and CL 03	~~CAR 7~~ ~~CAR 8~~ ~~CL 3~~	OK
3.4 Are all leakage emission parameters monitored and updated in accordance with monitoring plan, monitoring methodology and relevant CDM EB decisions?	/1/ /2/	DR	Based on the closure of CAR 07, CAR 08 and CL 03	~~CAR 7~~ ~~CAR 8~~ ~~CL 3~~	OK
3.4.1 Was the monitoring equipment for leakage emission parameters controlled and monitoring results recorded as per approved frequency?	/1/ /2/	DR	Based on the closure of CAR 07, CAR 08 and CL 03	~~CAR 7~~ ~~CAR 8~~ ~~CL 3~~	OK
3.4.2 Was the monitoring equipment for leakage emission parameters calibrated in accordance with QA&QC procedures described in the registered monitoring plan?	/1/ /2/	DR	Based on the closure of CAR 07, CAR 08 and CL 03	~~CAR 7~~ ~~CAR 8~~ ~~CL 3~~	OK
3.5 Were all monitoring parameters available and verifiable through the whole monitoring period?	/1/ /2/	DR	CL 2 Following findings have been raised under section D.2 of the MR, for parameters: 1. ***N_y:*** PP is requested to provide the complete database for number of deployed stoves(sales record) under each CPA. The information provided to DOE is for the sample of stoves only. Also, please clarify is there any mechanism set by the PP for distinguishing the stoves under	~~CL 2~~	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			CPA1 and CPA2, as from the spreadsheet of inspection database it can be noticed that the format of specifying stove ID is same. 2. η_{new}: thermal efficiency is distributed in row 31 & 32. However, calculation is shown only for row 32. Please clarify why row 31 has been ignored in calculation. Similarly, in supporting document of inspection database CPA 3. Also, please provide the nomenclature of parameter symbols used in the spreadsheets. 3. η_{new}: Date of contact for few of the interviews are falling out of survey period mentioned in the monitoring report. Kindly refer block L7, L22, L39, L58, L62 in spread sheet inspection database CPA3. Also refer, M32, M35, in spread sheet inspection database CPA 1-2. 4. Also, PP is requested to show the separate calculation of each parameter, for each CPA, as every CPA included under the PoA is		

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			treated as a single project. 5. ***DO_y*:** Please check the value of parameter DOy, as it is not found consistent with the calculated values provided in the spreadsheet. "3.1_PoA Inspection database CPA 1-2_MP2".		
3.5.1 In case, only partial monitoring data is available and PP(s) /CPA implementer provide estimations or assumptions for the rest of data, was it possible to verify those estimations and assumptions?	/1/ /2/	DR	Based on closure of CL 2.	~~CL 2~~	OK
3.6 Was management and operation system established and operated in accordance with the monitoring plan and provisions of registered PoA?	/1/ /2/	DR	Yes, the management and operation system was established and operated in accordance with the monitoring plan and provisions of registered PoA.	OK	OK
3.7 Was is it possible to verify that involved management and operation personal is fully aware of the responsibilities and perform all operations according to the registered monitoring plan and internally developed manuals?	/1/ /2/	DR	Yes, It has been verified during the on site visit interviews, that all the involved management and operation personal were fully aware of the responsibilities and perform all operations according to the registered monitoring plan.	OK	OK
3.8 Does the monitoring system provide organizational structure, role and responsibilities, emergency procedures?	/1/ /2/	DR	Yes, under section C of the monitoring report the monitoring system provided describes all the roles and responsibilities, emergency procedures and organization sector.	OK	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
3.9 Does any uncertainties identified and addressed?	/1/ /2/	DR	All the uncertainties identified related to the project activity have been addressed.	OK	OK
4. Parameters					
4.1.1 **Monitored parameter** Title: Average number of eaters per appliance (capped at value for parameter HH_Cap, see above) Indication: $N_{eaters,appliance}$ Units: - Estimated value (*ex-ante*): CPA 1, 2 and 3: 8 Measured value (*ex-post*): For CPA 1 & 2: 7.11 For CPA 3 : 6.76	/1/ /2/	DR	The average number of eaters per appliance has been capped to 8 for each CPAs (CPA 1, 2 and 3). The calculated average is below the capped value. It has been cross verified from the inspection database spreadsheet for CPA 1, 2 and 3.	OK	OK
4.1.2 **Monitored parameter** Title: Adjusted total number of appliances deployed until period y Indication: N_y Units: - Estimated value (*ex-ante*): Measured value (*ex-post*): CPA 1: 3,199.66 CPA 2: 1,339.17 CPA 3: 400.50	/1/ /2/	DR	Based on the closure of CL 2.	~~CL 2~~	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
4.1.3 **Monitored parameter** Title: Statistically adjusted drop out from total population of appliances in period y Indication: DO_y Units: % Estimated value (*ex-ante*): Measured value (*ex-post*): For CPA 1 and 2: 34.22 (lower bound of the parameter was chosen due to small sample size) For CPA 3: 6.38	/1/ /2/	DR	Based on the closure of CL 2	~~CL 2~~	OK
4.1.4 **Monitored parameter** Title: Adjusted average efficiency of the system being deployed Indication: η_{new} Units: % Estimated value (*ex-ante*): Measured value (*ex-post*): For CPA 1 & 2: 41.99 For CPA 3: 32.35	/1/ /2/	DR	Based on the closure of CL 2	~~CL 2~~	OK
4.2.1 **Default parameter** Title: Average baseline fuelwood consumption per capita per year Indication: $B_{old,capita}$ Units: t/year Default/Used value: 0.692	/1/ /2/	DR	Value of the parameter has been fixed ex-ante. This has been cross-checked with CPA-DD. The applied value is acceptable to the verification team.	OK	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
4.2.2 **Default parameter** Title: Efficiency of the baseline system being replaced Indication: η_{old} Units: % Default/Used value: 0.10	/1/ /2/	DR	Value of the parameter has been fixed ex-ante. This has been cross-checked with CPA-DD and applied methodology AMS II.G, version 03. The applied value is acceptable to the verification team.	OK	OK
4.2.3 **Default parameter** Title: Net-to-gross adjustment factor for NRB Leakage Indication: L_{NRB} Units: - Default/Used value: 0.95	/1/ /2/	DR	Value of the parameter has been fixed ex-ante. This has been cross-checked with CPA-DD and applied methodology AMS II.G, version 03. The applied value is acceptable to the verification team.	OK	OK
4.2.4 **Default parameter** Title: Net-to-gross adjustment factor for PoA Leakage Indication: L_{PoA} Units: - Default/Used value: 0.95	/1/ /2/	DR	Value of the parameter has been fixed ex-ante. This has been cross-checked with CPA-DD and applied methodology AMS II.G, version 03. The applied value is acceptable to the verification team.	OK	OK
4.2.5 **Default parameter** Title: Fraction of woody biomass saved by the project activity in period y that can be established as non-renewable biomass Indication: $f_{NRB,y}$ Units: - Default/Used value: 0.77	/1/ /2/	DR	Value of the parameter has been fixed ex-ante. This has been cross-checked with CPA-DD. The applied value is acceptable to the verification team.	OK	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
4.2.6 **Default parameter** Title: Net calorific value of the non-renewable woody biomass that is substituted Indication: $NCV_{biomass}$ Units: TJ/t Default/Used value: 0.015	/1/ /2/	DR	Value of the parameter has been fixed ex-ante. This has been cross-checked with CPA-DD and applied methodology AMS II.G, version 03. The applied value is acceptable to the verification team.	OK	OK
4.2.7 **Default parameter** Title: Emission factor for the substitution of non-renewable biomass by similar consumers Indication: $EF_{projected_fossilfuel}$ Units: tCO_2/tJ Default/Used value: 81.6	/1/ /2/	DR	Value of the parameter has been fixed ex-ante. This has been cross-checked with CPA-DD and applied methodology AMS II.G, version 03. The applied value is acceptable to the verification team.	OK	OK
4.2.8 **Default parameter** Title: Maximum number of eaters possible per specific ICS as applied in the specific CPA Indication: ***HH_CAP*** Units: Number Default/Used value:8	/1/ /2/	DR	Value of the parameter has been fixed ex-ante. This has been cross-checked with CPA-DD. The applied value is acceptable to the verification team.	OK	OK
4.2.9 **Default parameter** Title: Efficiency of the system being deployed as per manufacturer specification Indication: $\eta_{specified}$ Units: % Default/Used value: For CPA 1 and 2: 52 For CPA 3: 32.6	/1/ /2/	DR	Value of the parameter has been fixed ex-ante. This has been cross-checked with CPA-DDs. The applied value is acceptable to the verification team.	OK	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
4.3 if any parameter of interest is opting for sampling approach as per the provision in PoA DD and CPA DD, how the DOE has verified the sampling plan and sample records of the PP? Please provide detailed answer. Please refer to the latest sampling standard	/1/ /2/	DR	CAR 07 PP is requested to submit all the supporting documents as per the sampling survey accepted in the PRC by EB. All the monitored parameters must follow the PRC, and accordingly incorporated in the monitoring report and emission reduction spread sheet.	~~CAR 7~~	OK
5. Calculations					
5.1 Have all the calculations related to the baseline emissions been carried according to the formulae and methods described in the registered/included CPA DD and applied methodology?	/1/ /2/	DR	Based on the closure of CAR 06.	~~CAR 6~~	OK
5.2 Have all the calculations related to the project emissions been carried according to the formulae and methods described in the registered/included CPA DD and applied methodology?	/1/ /2/	DR	Based on the closure of CAR 06.	~~CAR 6~~	OK
5.3 Have all the calculations related to the leakage emissions been carried according to the formulae and methods described in the registered/included CPA DD and applied methodology?	/1/ /2/	DR	Based on the closure of CAR 06.	~~CAR 6~~	OK
6. PoA Specific checklist question					

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
6.1 Has the DOE identified those CPAs that it shall consider for verification in accordance with the method/procedure to be used for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by the CPAs under the PoA and determined in the PoA-DD ? In case of all CPA during the specified monitoring period is subject to verification and there is no provision in the registered PoA DD about verification on sampling basis, VT shall provide the affirmation in the answer of this checklist question.	/1/ /2/	DR	Total 5 CPAs are eligible for the verification included under the registered PoA. However, only 1st 3 CPAs have been implemented by the CME, and last 2 CPAs have not been implemented yet. This has been verified by the verification team during the onsite visit interviews. Hence, 1st 3 CPAs i.e. CPA 1, CPA 2, and CPA 3 are eligible for verification under this monitoring period.	OK	OK
6.2 Have the DOE taken into account the possible existence of CPAs complying with different versions of the PoA ? If yes, has the DOE accounted for this in its sampling approach, to ensure that a statistically sound sample of CPAs from each version of the PoA are being verified ?	/1/ /2/	DR	Yes, all the CPAs eligible under PoA, have been taken into account under this monitoring period. Total 5 CPAs are eligible for the verification included under the registered PoA. However, only 1st 3 CPAs have been implemented by the CME, and last 2 CPAs have not been implemented yet. This has been verified by the verification team during the onsite visit interviews. Hence, 1st 3 CPAs i.e. CPA 1, CPA 2, and CPA 3 are eligible for verification under this monitoring period.	OK	OK

Carbon Check's Checklist question	Ref.	MoV[4]	Findings, comments, references, data sources	Draft conclusion	Final conclusion
6.3 Have the DOE made the single monitoring report for all CPAs of the PoA publicly available in accordance with the Project cycle procedure? In case of batched issuance, please confirm that the requirements contained in latest VVS adhered to. .	/1/ /2/	DR	Yes, single monitoring report for all CPAs of the PoA has been made by the PP. This is in accordance with the requirement of Project cycle procedure and as per para 352 VVS version 07.	OK	OK
6.4 How the DOE systematically verified and certified the correct implementation and operation of the record-keeping system as stipulated in the registered PoA ?	/1/ /2/	DR	The DOE verified and checked the monitoring database used by the project participant along with the records of the sample sales records and found the system to be in line with the monitoring plan stated in CPA-DD and the monitoring report.	OK	OK
6.5 How the DOE applied the methods/procedures for the purpose of verification stipulated in the registered CDM-PoA-DD, in particular the the site visits undertaken ?	/1/ /2/	DR	During the site visit, verification team appointed by DOE visited the households to verify the installed cook stoves and all the monitoring system along with the sales database, data input procedure, and the raw data recorded.	OK	OK

List of findings

Finding (reference 1.5 section of table 1)	**CAR 01**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *(DOE)*	1. Under section A.2 of the Consolidated MR version 01, as per the requirement of Instructions of filling out the monitoring report form, PP is requested to provide the region/state/province of each CPA one by one for the deployed ICSs. 2. Physical and geographical region is required to be demonstrated in the MAP of Nigeria, for each CPA separately.		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	1. It was stated under section A.2, that the region, where ICS are distributed is the Federal Republic of Nigeria for all CPAs (1-5), since CPAs are not defined by location, but by stove numbers. We provided a table listing the states in which stoves have been distributed in each CPA. 2. In addition to the table a Map showing the states of Nigeria has been provided.		
DOE Assessment #1 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. Revision under section A.2 of the monitoring report (mentioning the region/state/province for each CPA) is found appropriate; checked and confirmed by the verification team. CAR closed 2. Physical and geographical region is appropriately described in the revised monitoring report checked and confirmed by the verification team. CAR closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding (reference 1.5 section of table 1)	**CAR 02**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *(DOE)*	Under section A.3 of the Consolidated MR version 01, PP has not mentioned the exact name of Party involved(host) as per the registered PoA-DD.		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	The exact name of the party involved (host) has been added.		
DOE Assessment #1 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Revision in the monitoring report is found appropriate checked and confirmed by the verification team.. CAR closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding (reference 1.5 section of table 1)	**CAR 03**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *(DOE)*	Under section A.4 of the Consolidated MR version 01, the information mentioned is not complying with the requirement of "Instruction of filling out the monitoring report" PP is requested to mention all the tools and standards used for this monitoring period as per the requirements.		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	Under Section A.4. the methodology and if applicable the standardized baseline should be listed. We also listed which version of the sampling standard was applied		
DOE Assessment #1 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action*	Ok CAR is closed.		

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

Finding (reference 1.5 section of table 1)	**CAR 04**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *(DOE)*	PP is requested to maintain consistency in section A.6 and Appendix 1 of the consolidated monitoring report version 01. Tel no and Address do not match.		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	Address and Phone number have been adapted according to the information in Appendix 1.		
DOE Assessment #1 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Information mention under section A.6 and appendix 1 of the MR is now found consistent. CAR closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed		

Finding (reference 1.5 section of table 1)	**CAR 05**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *(DOE)*	Under section B.1 of the consolidated Monitoring Report, the information mentioned is not complying with the requirement of "Instruction of filling out the monitoring report". PP is requested to provide the photographs/diagrams of each type of ICS deployed in all the CPAs under selected monitoring period as per the requirement.		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further*	Photographs of each type of ICS distributed in the CPAs under the selected monitoring		

information for clarification as per finding)	period have been provided.
DOE Assessment #1 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Photographs of ICS has been inserted under section B.1 of the revised MR. CAR closed
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding (reference 1.5 section of table 1)	**CAR 06**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *(DOE)*	FAR raised in last verification report is now a CAR for this monitoring period. FAR 1 "PP shall revise the PoA-DD and CPA-DD incorporating the requirements of the latest sampling standard and sampling guidelines for monitoring with reference to (a) the Desired Precision/Expected Variance and Sample Size; (b) the frequency of sampling for each parameter (i.e. annual or biennial); (c) the information regarding how the ICS age will be classified (e.g. classification of ICS deployed each 6 months); Also a detailed description of the simple random sampling approach shall be included in the PoA-DD and CPA-DD. PP shall submit the revised documents through Post Registration Changes (PRC) and obtain the approval from EB before the 2nd verification." Hence PP is requested to provide the outcome of PRC accepted by the EB, and accordingly provide the changes in monitoring report.		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	The PP included a description of the changes made in the PoA DD and CPA DDs according to the FAR in the monitoring report section B.2.3. The PRC was accepted on 25.12.2014. The accepted PoA-DD and CPA-DDs were submitted to the DOE.		
DOE Assessment #1 *The assessment shall encompass all open issues in the*	Following are the findings based on the changes made in the MR as per the PRC:		

finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	1. Under sampling method mentioned under section D.3 of the revised MR. It is not clear about the computerized randomizer, if this is any online available calculator/software, please provide the web-link. 2. The calculation of lower bound confidence interval is not provided by the PP for CPA 1 and CPA 2. CAR is open
Corrective Action or clarification #2 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	1. The following information was added as a footnote in the MR section D.3 A 3: The randomizer macro was programmed by atmosfair based on the excel tool of "RAND()" (https://support.office.com/en-in/article/RAND-function-e98f1011-127d-4815-96f5-a26850ca1866). The random select tool was provided to the DOE. 2. The calculation procedure was provided in section D.2 of the Monitoring Report. The following explanation was added: Calculation of the lower bound value for DO_y (CPA1 and 2): According to Guideline Sampling and surveys for CDM project activities and programmes of activities (EB67-A06-GUID) par.91 onwards: $= p \pm z * \sqrt{\frac{p(1-p)}{n}}$ With P Monitored proportion (0.7609) Z z value for confidence level (e.g. 1.960 for 95% confidence level) N Sample size (valid answers from monitoring, 46) Sample size for DO_y was calculated with p= 1-DO_y (usage rate of appliances), which is applicable according to: Guideline Sampling and surveys for CDM project activities and programmes of activities (EB67-A06-GUID) par 21.

	The monitored usage rate, the lower and upper bound values are as follows: **confidence intervall** upper bound: 0.8841 — Monitored value: 0.7609 — lower bound: 0.6376 Thus the most conservative value to be used for DO_y is 1 - lower bound = 1 - 0.6376 = 0.3624 Furthermore the calculation formula was added in the 3.3_CPA 1-2_Ex-post_sample size calculation_MP2_04.03.15 spreadsheet.
DOE Assessment #2 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. Ok Closed. 2. Lower bound calculation procedure followed by PP for CPA 1 and 2 is acceptable to the DOE. This is found in-line with the paragraph number 21 of Appendix 2 of Guideline: Sampling and surveys for CDM project activities and programme of activities" version 03.0. CAR is closed
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding (reference 1.5 section of table 1)	**CAR 07**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *(DOE)*	PP is requested to submit all the supporting documents as per the sampling survey accepted in the PRC by EB. All the monitored parameters must follow the PRC, and accordingly incorporated in the		

	monitoring report and emission reduction spread sheet.
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	The PRC was accepted on 25.12.2014. The revised PoA and CPA DDs were provided to the DOE. The sample survey has been carried out according to the revised monitoring plan and the latest sampling standard and sampling guidelines for monitoring. All supporting documents as per the revised monitoring plan have been submitted to the DOE.
DOE Assessment #1 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Please submit the proof of PRC acceptance from the EB. CAR is open
Corrective Action or clarification #2 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	The confirmation e-mail for the acceptance of the PRC was provided to the DOE.
DOE Assessment #2 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	PP has submitted the email from CDM EB confirming the acceptance of the PRC for the project activity. It has also been cross verified from the publically available information on the UNFCCC website. CAR is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding (reference 1.5 section of table 1)	**CAR 08**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *(DOE)*	PP is requested to mention the name of equipment used in measuring the efficiency and provide the calibration certificates for each.		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	The name of the equipment used for measuring the efficiency was added to the monitoring report. Calibration information and certificates are provided to the DOE.		
DOE Assessment #1	Revision in the Monitoring report was found appropriate; checked and confirmed by the		

The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	verification team. CAR closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding (reference 1.5 section of table 1)	**CL 01**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *(DOE)*	1. Estimated amount of GHG emission mentioned in Page 1 of the Consolidated MR version 01 do not match with the estimated amount of GHG reduction mentioned in the registered CPA-DD 02 and CPA-DD 03 2. Estimated amount of GHG emission from CPA 4 and CPA 5 was not found zero in the respective registered CPA-DDs. PP is requested to clarify these points		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	1. The estimated GHG emissions mentioned in Page 1 of the Consolidated MR for CPA 2 and CPA 3 have been adapted according to the respective PDDs. Since the monitoring period is not equal to a calendar year, but lasted from 01.07.2012 till 30.06.2013, we added the expected emission reductions (tCO_2e) of 2012 (starting 15.07.2012) and half of the emissions expected for 2013. Both CPAs crediting periods start at 15.07.2012 and both have the same monitoring period, the calculation of the emission reductions was the same for both CPAs. 2. The estimated GHG emissions mentioned in Page 1 of the Consolidated MR for CPA 4 and CPA 4 have been adapted according to the respective PDDs. Since for both CPAs the crediting period started 01-06-2013, and the selected monitoring period lasted from 01.07.2012 till 30.06.2013, the estimated emission reductions given in the monitoring report are from the month June 2013 for both CPAs (= expected ER for 2013 according to the PDD / 7 months* 1 month).		
DOE Assessment #1 *The assessment shall encompass all open issues in the*	PP is requested to show the breakup for estimated value in the monitoring period. As the		

finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.	values mentioned here are not traceable from the registered CPA-DDs. CL is open
Corrective Action or clarification #2 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	Breakup for estimated ER values was provided in the monitoring report in section E.5. Calculations were now provided on a daily base instead of a monthly base.
DOE Assessment #2 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Section E.5 in the revised MR has been appropriately corrected. CL is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

Finding (reference 1.5 section of table 1)	**CL 2**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *(DOE)*	Under section D.2 of the MR, for parameters: 1. N_y: PP is requested to provide the complete database for number of deployed stoves(sales record) under each CPA. The information provided to DOE is for the sample of stoves only. Also, please clarify is there any mechanism set by the PP for distinguishing the stoves under CPA1 and CPA2, as from the spreadsheet of inspection database it can be noticed that the format of specifying stove ID is same. 2. η_{new}: thermal efficiency is distributed in row 31 & 32. However, calculation is shown only for row 32. Please clarify why row 31 has been ignored in calculation. Similarly, in supporting document of inspection database CPA 3. Also, please provide the nomenclature of parameter symbols used in the spreadsheets. 3. η_{new}: Date of contact for few of the interviews are falling out of survey period		

	mentioned in the monitoring report. Kindly refer block L7, L22, L39, L58, L62 in spread sheet inspection database CPA3. Also refer, M32, M35, in spread sheet inspection database CPA 1-2. 4. Also, PP is requested to show the separate calculation of each parameter, for each CPA, as every CPA included under the PoA is treated as a single project.
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	1. The PP provided the combined sample database for CPA1 and 2 including 5947 stoves for the CPA3 including 722 stoves. In column D of the database it is indicated to which CPA each stove belongs. These databases contain all stoves that have been sold by the end of the monitoring period. For simple random sampling approach, the sample database is the same as the sales database, as described in the monitoring plan in the PRC PDD. The CPAs are separated by number of stoves, with one Save80 CPA (CPA 1 and 2) containing a maximum of 3200 stoves (according to CPA DDs). The allocation of the stoves to the CPAs is through the sales date. Thus the first 3200 stoves sold are allocated to CPA1, sold stove 3201 till 6400 will be allocated in CPA 2 and so on. 2. Usually one WBT was conducted per stove. The result of the WBT was inserted in row 32 of the WBT calculation sheet. In some cases three WBTs where conducted per stove. The results of these replicate tests where inserted in row 31. The average of the three replicate tests was calculated and inserted in row 32. n_{new} was calculated as average of line 32, in this way only one efficiency per stove was used to calculate the average efficiency. Nomenclature of parameter symbols has been provided in the spreadsheets. 3. The survey period given in the Monitoring report is the survey period for the parameter n_{new}, thus for the efficiency tests (WBT). The dates you are referring to above are the dates when household interviews were conducted to monitor other parameters (DO_y, n_{eaters}). Since the sample size for these parameters is higher, the survey period was longer than for the efficiency tests. 4. According to the revised monitoring plan in the PDDs (after PRC) and according to sampling standard version 04.1.(CDM-EB50-A30-STAN) including Amendment to version 4.1 of the Sampling Standard vers. 01.0 (CDM-EB80-A07-AMEN), "*Parameter values shall be estimated by sampling in accordance with the requirements in the applied methodology separately and independently for each of*

	the CPAs included in a PoA ***except when a single sampling plan covering a group of CPAs*** [19] *is undertaken applying 95/10 confidence/precision*[20] *for the sample size calculation* The parameters for CPA 1 and 2 have been determined through an across CPA sampling approach applying a 95/10 confidence/precision. That means the resulting parameter values are only statistically reliable when calculated as a common value across the two CPAs. Therefore the separate calculation of parameter values for CPAs 1 and 2 is not possible, since it will lead to statistically non-reliable values. The Emission reduction calculations are carried out for the CPAs separately by applying the respective N_y for the CPA.
DOE Assessment #1 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	***1.*** ***N_y:*** PP has submitted the sample database for CPA 1 & 2 including 947 stoves, and sample database spread sheet 721 stoves (not 722 stoves as mentioned above). Please check and confirm whether the number of stoves in spreadsheet for CPA 3 is correct. Also, column D of the Database do not indicates to which CPA each stove belongs. However, column A of worksheet "Monitoring List_CPA1-2" of spreadsheet "1.1_CPA1-2_Sample Database and random generator_poa__mp2" indicates to which CPA each stove belongs. Moreover, PP is requested to provide the check on Limit of SSC CPAs included in the PoA, as discussed under section D.2 and D.5 of the registered CPA-DDs. Also, it is noted that the number of stoves deployed mentioned under section D.2 of the revised MR is not consistent with the numbers mentioned under section B.1 of the MR and submitted database spreadsheet. PP is requested to be consistent in providing the information throughout the MR. CL 2.1 is open. ***2.*** ***η_{new}:*** PP has not submitted the corrected spreadsheet of inspection. Also, PP is requested to make the values in the spreadsheet traceable for the calculations performed. CL 2.2 is Open ***3.*** ***η_{new}:*** Since the information being provided under section D.2 of the MR is for ***η_{new}*** , PP is requested to provide the correct information relevant to each parameter. CL 2.3 is Open ***4.*** Closed. ***5.*** ***DO_y*** **:** Please check the value of parameter DOy, as it is not found consistent with

	the calculated values provided in the spreadsheet. "3.1_PoA Inspection database CPA 1-2_MP2". CL 2.5 is Open ***6.*** The information provided under section E.6 of the revised MR, is not found consistent with the values of ER mentioned under section E.5 of the MR. CL 2.6 is Open.
Corrective Action or clarification #2 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	1. The PP confirms that the sample database spread sheet of CPA 3 includes 721 stoves. The above mentioned number of 722 stoves was a mistake. 2. PP submitted the corrected spreadsheet of inspection, including nomenclature of calculations. 3. Survey periods for other parameters (DO_y and n_{eaters}) were provided in section D.2. Survey Period CPA 1and 2: 11.09.2013 - 05.04.2014 Survey Period CPA 3: 15.11.2013 – 18.03.2014 5. Value for Parameter DO_y in section D2. of the Monitoring Report was corrected to be consistent with values provided in the inspection database. The calculation of the applied lower bound value for DO_y, used for ER calculations was explained. 6. The information provided under section E.6 of the revised MR was corrected to be consistent with the information in section E.5.
DOE Assessment #2 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. Under section B.1 of the revised MR, PP is requested to recheck the total no of ICS deployed for CPA 3, also please tally the monthly figures, as it is not matching with the supporting document "1.1_CPA3_Sample Database and random generator_poa__mp2". Moreover, PP response to above clarification is found incomplete for "PP is requested to provide the check on Limit of SSC CPAs included in the PoA, as discussed under section D.2 and D.5 of the registered CPA-DDs". CL 2.1 is Open. 2. OK. Closed. 3. OK. Closed. 4. Closed 5. OK closed. 6. Values of ER are still not found consistent. CAR 2.6 is open

Corrective Action or clarification #3 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	1. The monthly deployment of stoves was corrected in Section B.1 of the revised MR. the total number of stoves deployed in CPA 3 is 721. The SSC limit of the CPAs was defined as follows in the respective CPAs: The CPA will remain under the limit of small-scale project activity types (annual energy savings below 180 GWh, threshold as per clarification request SSC_233) during every year of the crediting period. The calculation of the maximal number of ICS to be deployed per this CPA in order to remain under the limit is according to the following equation: $180\frac{GWh}{year} > B_{old,appliance} \cdot N_y \cdot (1-\frac{\eta_{old}}{\eta_{new}}) \cdot NCV_{biomass}$ Thus the Maximum number for the CPAs according to the SSC limit and the CPA DDs are: CPA1: 3200 stoves CPA2: 3200 stoves CPA3: 3750 stoves Actually deployed stoves under the CPAs: CPA1. 3200 stoves CPA2: 2747 stoves CPA3: 721 stoves Thus the SSC limit of the CPAs has been met. The explanation was inserted in Section B1 of the MR. 6. The value has been corrected.
DOE Assessment #3 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. Section B.1 has been corrected by the PP and is found acceptable after cross verifying the supporting document. Also, calculation to show the SSC threshold check has been provided. CL 2.1 is closed. 6. Value of ER has been made consistent. CL 2.6 is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed)

	☒ The finding is closed

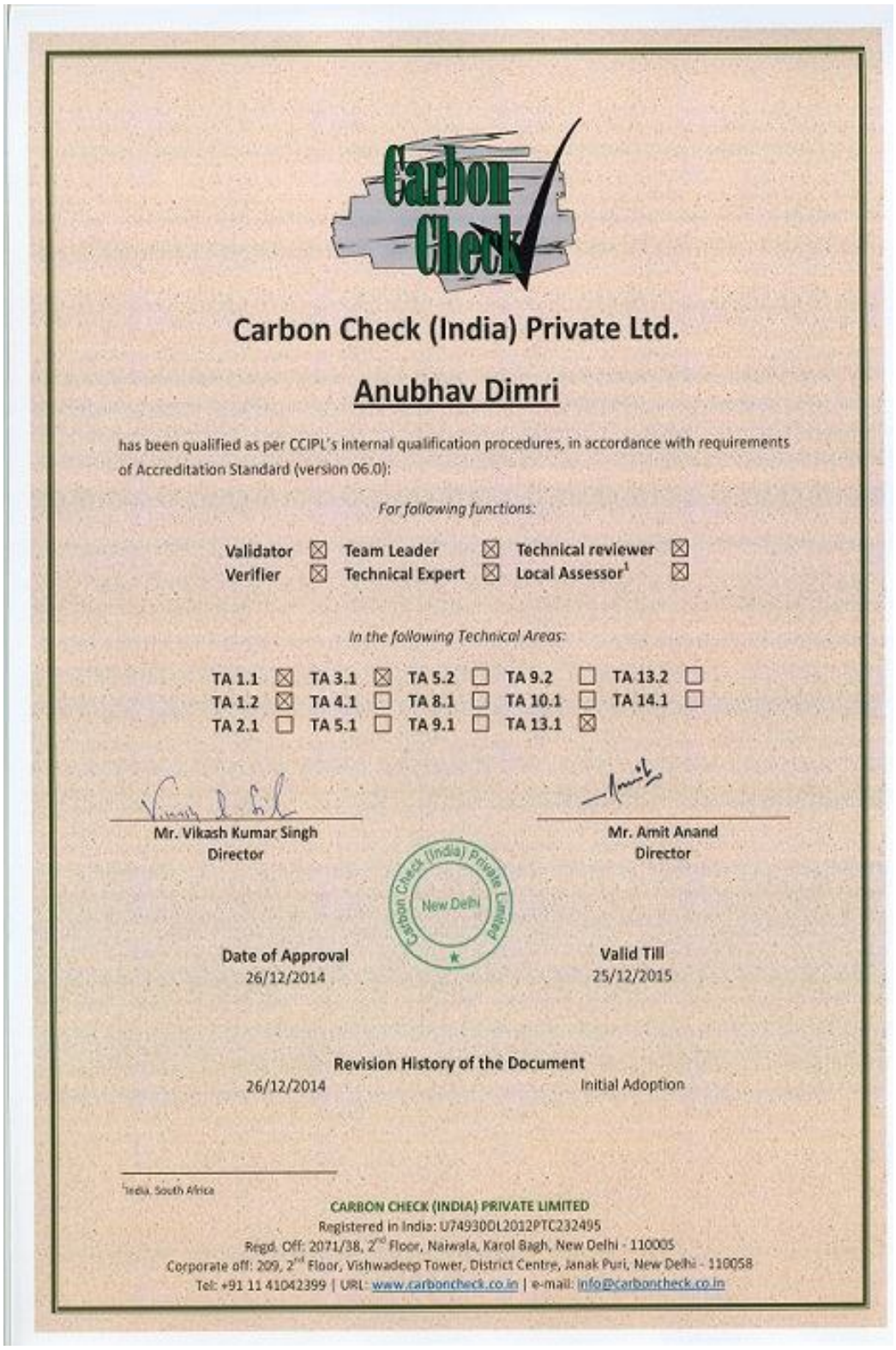
Finding (reference 1.5 section of table 1)	**CL 03**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *(DOE)*	Based on the PRC changes made in the MR, following clarification has been raised:- Table D.3.1 and D.3.2, under section D.3 of the revised MR, PP is requested to clarify, why the estimated value of the monitored parameters has been selected from the last monitoring period instead from the registered PoA-DD and CPA-DDs. The estimate of all the parameters are done at the validation stage, hence the applicable values must be from the registered CPA-DDs not from the last monitoring period, as the values in last MR was the actual values.		
Corrective Action or clarification #1 *(PP shall write a detailed and clear corrective action or further information for clarification as per finding)*	PoA PDD part II section B.7.2 A4 and CPA DD section B7.2 A 4 state that "The estimated values, expected variance and sample sizes of each parameter will be calculated before each monitoring period using monitored data of the previous monitoring period." Therefore the use of the values from the previous monitoring period for sample size calculation is applicable. These values are more accurate than the values used for ex ante calculation in the registered PoA-DD and CPA-DDs at time of validation, since the latter are estimate values whereas the further are real monitoring values. We thus expect the sample size to be even more appropriate by using the monitored values from the previous MP.		
DOE Assessment #1 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Clarification provided by PP is found acceptable to the DOE. As it is evident from the final version of CPA-DD (after PRC) under section D.7.2 that "The estimated values, expected variance and sample sizes of each parameter will be calculated before each monitoring period using monitored data of the previous monitoring period." However, PP is requested to recheck the value of DO_y from the previous monitoring report. As it is not found consistent with the same. CL 03 is open		
Corrective Action or clarification #2	The exact DO_y value from the last monitoring period was 11.32%. For the sample size		

(PP shall write a detailed and clear corrective action or further information for clarification as per finding)	calculation of this monitoring period, we conservatively up-rounded the DO_y value of the first monitoring period to 12% for simplification. This resulted in a higher sample size of 52 instead of 49 households for the common sample of CPA 1 and 2, and 36 instead of 34 for CPA3. Since oversampling is good practice according to the sampling standard CDM-EB50-A30-STAN footnote 10 and the adaptation lead to a higher sample size, we considered the procedure of up-rounding acceptable and conservative.
DOE Assessment #2 *The assessment shall encompass all open issues in the finding. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The explanation and approach of the PP is found conservative. CL is closed.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the next periodic verification ☐ Outstanding finding (not closed) ☒ The finding is closed

APPENDIX C

Certificates of Competence

209, 2nd Floor, Vishwadeep Tower, District Centre, Janak Puri, New Delhi – 110058



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Anubhav Dimri

has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 06.0):

For following functions:

Validator	☒	Team Leader	☒	Technical reviewer	☒		
Verifier	☒	Technical Expert	☒	Local Assessor[1]	☒		

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TA 1.2	☒	TA 4.1	☐	TA 8.1	☐	TA 10.1	☐	TA 14.1	☐
TA 2.1	☐	TA 5.1	☐	TA 9.1	☐	TA 13.1	☒		

Mr. Vikash Kumar Singh
Director

Mr. Amit Anand
Director

Carbon Check (India) Private Limited New Delhi

Date of Approval
26/12/2014

Valid Till
25/12/2015

Revision History of the Document

26/12/2014 Initial Adoption

[1] India, South Africa

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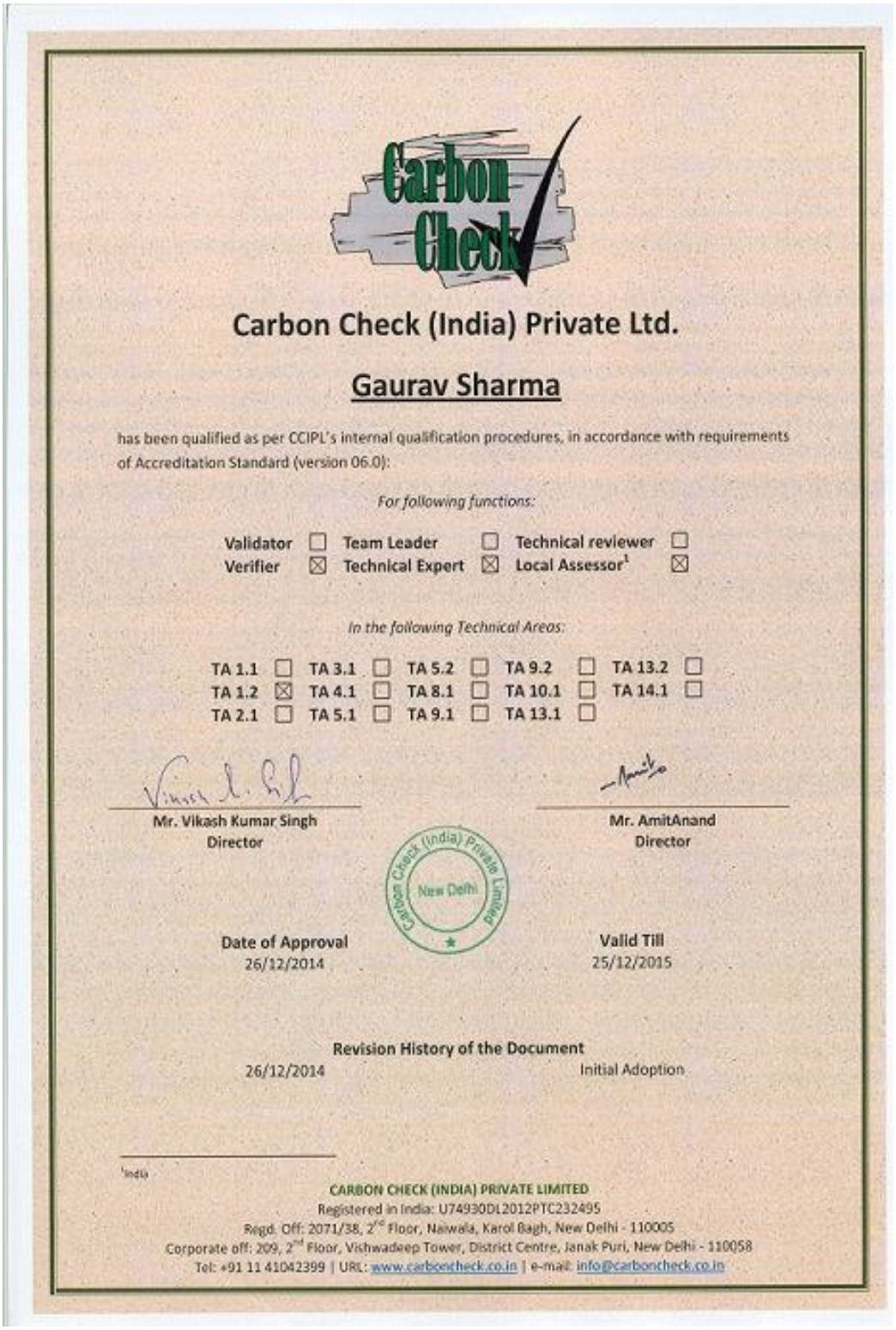

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Gaurav Sharma

has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 06.0):

For following functions:

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TA 2.1	☐	TA 5.1	☐	TA 9.1	☐	TA 13.1	☐		

Mr. Vikash Kumar Singh
Director

Mr. AmitAnand
Director

Carbon Check (India) Private Limited New Delhi

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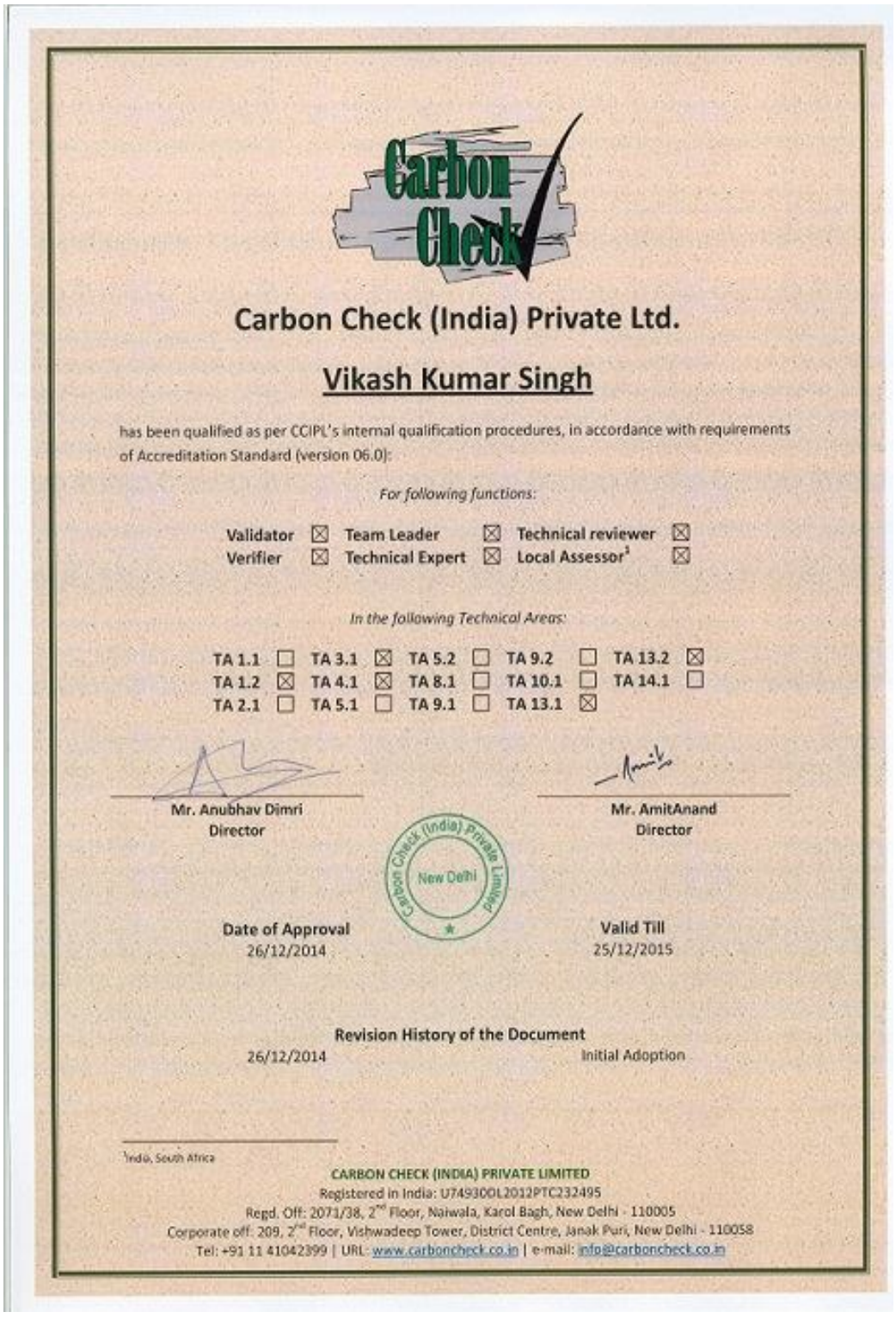

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Vikash Kumar Singh

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TA 1.2 ☒	TA 4.1 ☒	TA 8.1 ☐	TA 10.1 ☐	TA 14.1 ☐
TA 2.1 ☐	TA 5.1 ☐	TA 9.1 ☐	TA 13.1 ☒	

Mr. Anubhav Dimri
Director

Mr. AmitAnand
Director

Carbon Check (India) Private Limited New Delhi

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26/12/2014

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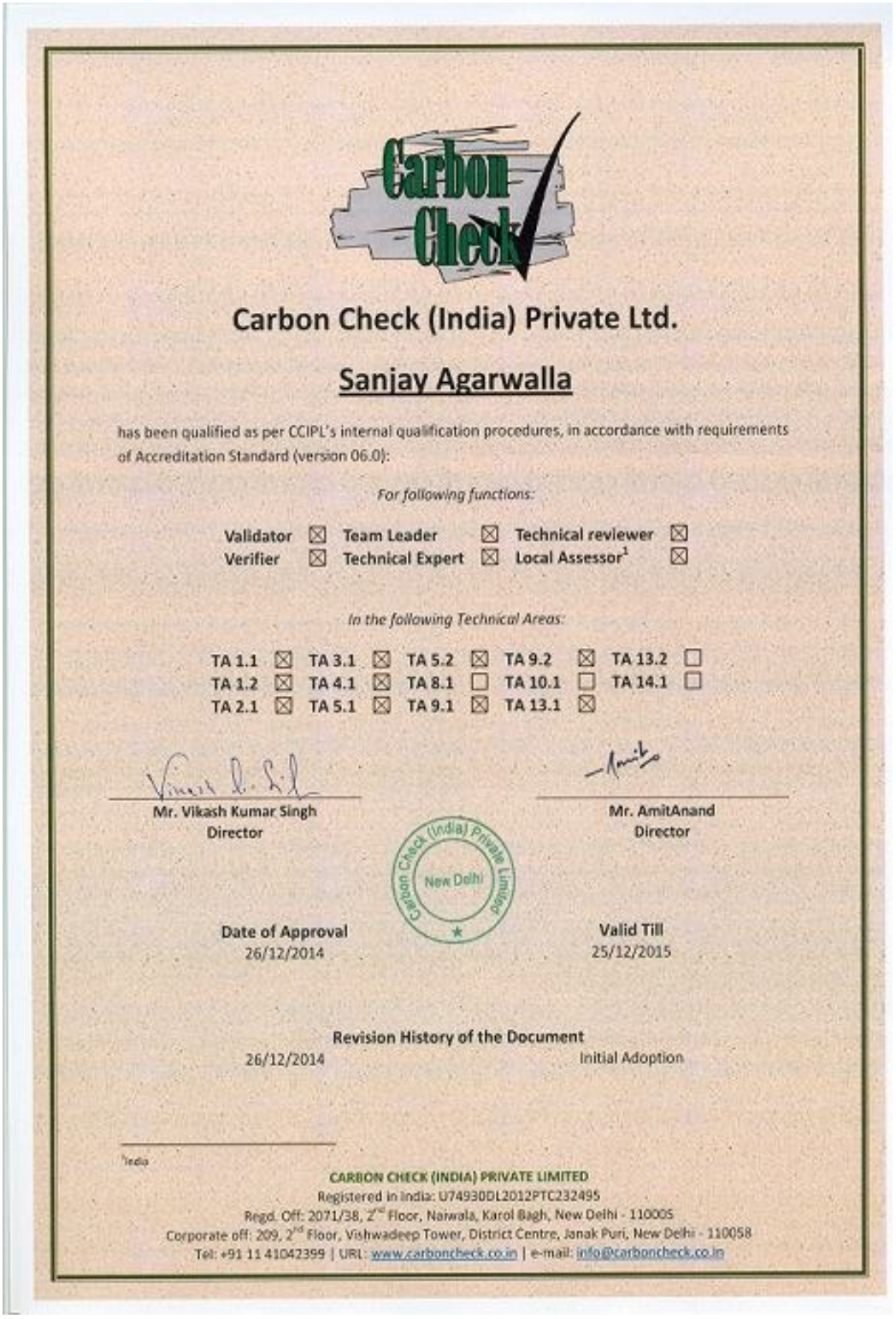

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Sanjay Agarwalla

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TA 2.1	☒	TA 5.1	☒	TA 9.1	☒	TA 13.1	☒		

Mr. Vikash Kumar Singh
Director

Mr. AmitAnand
Director

Carbon Check (India) Private Limited New Delhi

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