




# Verification and certification report form for CDM programme of activities

(Version 01.0)

Complete this form in accordance with the "Attachment. Instructions for filling out the verification and certification report form for CDM programme of activities" at the end of this form.

## VERIFICATION AND CERTIFICATION REPORT

<b>Title of the programme of activities (PoA)</b>	Improved Cooking Stoves Programme of Activities in Africa	
<b>UNFCCC reference number of the PoA</b>	5341	
<b>Version number(s) of the PoA-DD(s) applicable to this report</b>	3.2	
<b>Version number of the verification and certification report</b>	03	
<b>Completion date of the verification and certification report</b>	01/08/2016	
<b>Monitoring period number</b>	Second monitoring period	
<b>Duration of this monitoring period</b>	01/01/2015 - 31/12/2015 (first and last days are included).	
<b>Number and Version number of the monitoring report to which this report applies</b>	Monitoring report number for this monitoring period: 1 Version: 2.1, dated 01/08/2016	
<b>Coordinating/managing entity (CME)</b>	Envirofit International Ltd.	
<b>Host Party(ies)</b>	Host Party(ies) of the PoA	Is this a host Party to a CPA covered in this report?(yes/no)
	Kenya	Yes
	South Africa	No
<b>Sectoral scope(s)</b>	3: Energy demand	
<b>Selected methodology(ies)</b>	AMS-II.G Version 03	
<b>Selected standardized baseline(s)</b>	--	
<b>Total estimated GHG emission reductions or net GHG removals for this monitoring period in the included CPA(s) covered in this report</b>	5341-0001 GHG emission reductions: 13,356 tCO <sub>2</sub> e 5341-0002 GHG emission reductions: 43,063 tCO <sub>2</sub> e 5341-0003 GHG emission reductions: 42,811 tCO <sub>2</sub> e 5341-0004 GHG emission reductions: 43,384 tCO <sub>2</sub> e Total: :142,814 tCO <sub>2</sub> e	
<b>Total certified GHG emission reductions or net GHG removals for this monitoring period for the included CPA(s) covered in this report</b>	5341-0001 GHG emission reductions: 0 tCO <sub>2</sub> e 5341-0002 GHG emission reductions: 46,003 tCO <sub>2</sub> e 5341-0003 GHG emission reductions: 0 tCO <sub>2</sub> e 5341-0004 GHG emission reductions: 18,282 tCO <sub>2</sub> e Total: : 64,285 tCO <sub>2</sub> e	
<b>Name of DOE</b>	Carbon Check (India) Private Ltd.	
<b>Name, position and signature of the approver of the verification and certification report</b>		

	Amit Anand, CEO
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**SECTION A. Executive summary**

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Introduction:

The Co-ordinating Managing Entity/Project Participant has commissioned the DOE, Carbon Check (India) Private Ltd. to perform an independent verification of the CDM Programme of Activities “Improved Cooking Stoves Programme of Activities in Africa” in Kenya (hereafter referred to as “Programme of Activities or PoA”) for the CPAs titled “Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00001 (Kenya)”; “Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00002 (Kenya)”; “Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00003 (Kenya)” and “Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00004 (Kenya)”. The PoA involves replacement of less efficient cooking stoves using woody biomass (wood-fuel and/or charcoal) with improved cooking stoves (ICS) which are more efficient. The ICS distributed under CPAs of the PoA are more efficient in transferring heat from the fuel to the pot when compared to the stoves typically used in baseline. By replacing inefficient stoves, the PoA will save on consumption of woody biomass (either wood or charcoal made of wood).

During the current monitoring period only 5341-0002 and 5341-0004 were implemented and the other two CPAs were not implemented. Hence the CME has decided to claim emission reductions only for 5341-0002 and 5341-0004 in this monitoring period. The two CPAs are designed to generate emission reductions by distribution of the fuel-efficient charcoal stoves for 5341-0002 and charcoal / fuel wood based cook stoves for 5341-0004 in Kenya. The fuel-efficient cook stoves are replacing the less efficient baseline stoves in common use (baseline scenario). The CME and CPA implementer are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the component project activities.

This report summarises the findings of the verification of the project, performed on the basis of paragraph 62 of the CDM Modalities & Procedures, 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.

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 “Improved Cooking Stoves Programme of Activities in Africa” in the host country “Kenya” for the period 01/01/2015 to 31/12/2015.

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. CCIPL's 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. It is also confirmed if the monitoring plan is in compliance with the registered/included CPA-DDs and the approved monitoring methodology.

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 covering the monitoring period from 01/01/2015 to 31/12/2015 and based on the registered/included CPA-DDs including the monitoring plan, emission reduction calculation spreadsheet, monitoring methodology and all related evidence provided by project participant.

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

The verification team assigned by the DOE concludes that the PoA-DD (Version 3.2, dated 27/11/2012) /B04/, CPAs 5341-0002 and 5341-0004, as described in the registered CPA-DDs Version 2.0, date 11/10/2013 and Version 1.0, dated 27/01/2014 respectively /B04/ and monitoring report, Version 2.1, dated 01/08/2016) /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 Version 09.0 /B01-1/.

The component project activity was correctly implemented according to selected monitoring methodology, monitoring plan and the registered/included CPA DD/s. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the

verification of the amount of achieved GHG emission reductions. Through the review and on site visit the verification team confirms that the PoA has resulted in the 64,285 tCO<sub>2</sub>e emission reductions during the second monitoring period.

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

## **SECTION B. Verification team, technical reviewer and approver**

### **B.1. Verification team members**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	Agarwalla	Sanjay Kumar	CC IPL	X	X	X	X
2.	Verifier	IR	Agarwalla	Sanjay Kumar	CC IPL	X	X	X	X
3.	Technical Expert	IR	Agarwalla	Sanjay Kumar	CC IPL	X	X	X	X
4.	Local Expert	EI	Muriuki	Job N	EI		X	X	

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Singh	Vikash Kumar	CC IPL
2.	Approver	IR	Anand	Amit	CC IPL

## **SECTION C. Means of verification**

### **C.1. Desk review**

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Documents reviewed or referenced during the verification are listed in Appendix 3 below.

**C.2. On-site inspection**

Duration of on-site inspection: 12/07/2016 to 15/07/2016				
No.	Activity performed on-site	Site location	Date	Team member
1.	An assessment of the implementation and operation of the registered project activity as per the registered PoA-DD, registered/included CPA-DD.	Kenya, visit to sample households	12/07/2016 to 15/07/2016	Sanjay Kumar Agarwalla Job N Muriuki
2.	A review of information flows for generating, aggregating and reporting the monitoring parameters	Kenya, Envirofit office, Nairobi	12/07/2016 to 15/07/2016	Sanjay Kumar Agarwalla Job N Muriuki
3.	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	Kenya, Envirofit office, Nairobi	12/07/2016 to 15/07/2016	Sanjay Kumar Agarwalla Job N Muriuki
4.	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	Kenya, Envirofit office, Nairobi	12/07/2016 to 15/07/2016	Sanjay Kumar Agarwalla Job N Muriuki
5.	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	Kenya, Envirofit office, Nairobi	12/07/2016 to 15/07/2016	Sanjay Kumar Agarwalla Job N Muriuki
6.	A review of calculations and assumptions made in determining the GHG data and emission reductions	Kenya, Envirofit office, Nairobi	12/07/2016 to 15/07/2016	Sanjay Kumar Agarwalla Job N Muriuki
7.	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	Kenya, Envirofit office, Nairobi	12/07/2016 to 15/07/2016	Sanjay Kumar Agarwalla Job N Muriuki

**C.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Lohia	Rohit	Envirofit	12/07/2016 to 15/07/2016	Project operation, CER calculation and completeness of monitoring report, Quality Assurance – Management and operating system, compliance of monitoring plan with monitoring methodology and registered CPA-DDs.	Sanjay Kumar Agarwalla, Job N Muriuki
2.	Odero	Clara	Envirofit	12/07/2016 to 15/07/2016	Project implementation and operation, monitoring procedure, data and information flow, Roles and responsibility, Quality Assurance – Management and operating system, Sales/Distribution records, Survey records, Qualification and Training	Sanjay Kumar Agarwalla, Job N Muriuki
3.	Perminus	Nyagena	Envirofit	15/07/2016	Sales/Distribution records	Sanjay Kumar Agarwalla, Job N Muriuki
4.	Small	David	Envirofit	15/07/2016	Project implementation and operation, monitoring procedure, Roles and responsibility, Quality Assurance – Management and operating system, Sales/Distribution records, Survey records, Qualification and Training	Sanjay Kumar Agarwalla, Job N Muriuki

**C.4. Sampling approach**

As assessed in above sections, emission reductions for only two implemented CPAs, 5341-0002 and 5341-0004, are being claimed for this monitoring period and the total population of the stoves under these two CPAs are 24,783 and 17,049 respectively.

The four monitoring parameters required to be monitored through the sampling plan are:

1. The thermal efficiency of the ICS distributed (%) ( $\eta_{\text{new}}$ )
2. The Stove Operating Fraction, i.e. the fraction of users using the ICS (SOF)

3. The fraction of stove users still using baseline (replaced) stoves ( $f_{old}$ )
4. The amount of woody biomass that continues to be used in the replaced stoves (kg) ( $\mu_{old}$ )

Simple random sampling was applied by CME for selection of the monitoring samples with 95/10 confidence/precision for cross-CPA sampling for all the four parameters which is deemed acceptable as per the registered PoA DD /CPA DDs. Two sampling frames were applied for determining the parameters “SOF”, “ $f_{old}$ ” and “ $\mu_{old}$ ” for the two different types of fuels used in the stoves (charcoal and wood fuel). Within the same fuel type, the stoves were considered homogeneous as they were distributed in the same country (Kenya), end users were households only and the efficiency of the different stove models distributed under the two CPAs did not differ by more than +/-10%. For the thermal efficiency of the stoves ( $\eta_{new}$ ) sampling frames were chosen for the respective 6 models of stoves (CH2200, CH 4400, CH5200, CH6600, ECCL and M5000) separately. Please refer to the section I.4.3 of this report on detailed assessment on sampling plan opted by the CME.

DOE used acceptance sampling during verification for checking the stoves. Considering that the estimated volume of annual emission reductions of the PoA being verified is equal to or less than 100,000 tCO<sub>2</sub>e, applying paragraph 31 (c) of the sampling standard, Version 05.0 /B07/, a sample size of 16 households (8 for each of the two sampling frames i.e. charcoal and wood fuel fired stoves) was chosen (with no non-responses) based on an AQL of 0.5% and UQL of 20%, the producer risk as 10% and consumer risk as 20%. Acceptance number (c) thus determined for the sample is 0. A sample size of 8 was required (for each of the two sampling frames). It was observed that all the 8 stoves for each of the two sampling frames (for charcoal and wood fuel stoves) were in working condition, i.e., no discrepant records were observed with the published MR /1/ and ER sheet /3/, hence  $c=0$  was complied with. Thus CME's set of records has been accepted in line with paragraph 30 of the sampling standard, Version 05.0 /B07/.

### C.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
<b>General</b>	--	--	--
Compliance of the monitoring report with the monitoring report form	--	--	--
Remaining forward action requests from validation and/or previous verification	--	--	--
Specific-case CPA(s) considered for verification and covered in this report	--	--	--
<b>Programme of activities</b>			
Compliance of the programme implementation with the registered PoA-DD	--	--	--
Implementation and operation of the management system	--	--	--
Post-registration changes			
1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline	--	--	--
2. Corrections	--	--	--
3. Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))	--	--	--
4. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline	--	--	--
5. Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA	--	--	--
6. Types of changes specific to afforestation and reforestation activities	--	--	--
<b>Component project activity(ies)</b>			



Compliance of the CPA implementation with the included CPA design document	--	--	--
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Corrections</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Changes to the start date of the crediting period</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Inclusion of a monitoring plan to an included CPA-DD</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Changes to the programme design of the included CPA-DD</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Types of changes specific to afforestation and reforestation component project activities</li> </ul>	--	--	--
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	--	--	--
Compliance of monitoring activities with the registered monitoring plan			
<ul style="list-style-type: none"> <li>Data and parameters fixed ex ante or at renewal of crediting period</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Data and parameters monitored</li> </ul>	01	--	--
<ul style="list-style-type: none"> <li>Implementation of sampling plan</li> </ul>	--	--	--
Compliance with the calibration frequency requirements for measuring instruments	01	--	--
Assessment of data and calculation of emission reductions or net removals	--	--	--
<ul style="list-style-type: none"> <li>Calculation of baseline GHG emissions or baseline net GHG removals by sinks</li> </ul>	--	01	--
<ul style="list-style-type: none"> <li>Calculation of project GHG emissions or actual net GHG removals by sinks</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Calculation of leakage GHG emissions</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Summary of calculation of GHG emission reductions or net GHG removals by sinks</li> </ul>	--	--	--
<ul style="list-style-type: none"> <li>Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case CPA</li> </ul>	01	--	--
<ul style="list-style-type: none"> <li>Remarks on difference from estimated value in registered PDD</li> </ul>	01	--	--
Others (please specify)			
<b>Total</b>	04	01	

#### SECTION D. Internal quality control

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The final verification report passed a technical review before being submitted to the 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.

#### SECTION E. Verification opinion

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Carbon Check (India) Private Ltd. (CCIPL) has performed the second periodic verification of the registered CDM Programme of Activities "Improved Cooking Stoves Programme of Activities in Africa" having UNFCCC reference number as 5341, for the CPAs titled "Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00001 (Kenya)"; "Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00002 (Kenya)"; "Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00003 (Kenya)" and "Improved Cooking Stoves

Programme of Activities in Africa – CPA No. 00004 (Kenya)” with UNFCCC reference numbers 5341-0001, 5341-0002, 5341-0003 and 5341-0004 respectively for the four CPAs. The CPAs covered under this verification are those ones for which the crediting period falls within this monitoring period. During the current monitoring period only 5341-0002 and 5341-0004 were implemented and the other two CPAs were not implemented. Hence CME is claiming emission reductions only for 5341-0002 and 5341-0004 in this monitoring period.

The verification team assigned by the DOE concludes that the PoA-DD (Version 3.2, dated 27/11/2012), CPAs 5341-0002 and 5341-0004 as described in the respective registered CPA-DDs /B04/ and the monitoring report (Version 2.1, dated 01/08/2016) /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 Version 09.0 /B01-1/.

#### Verification methodology and process

The Verification team confirms the contractual relationship signed on 22/03/2016 between the DOE, Carbon Check (India) Private Ltd. and the Co-ordinating Managing Entity/ Project Participant, (Envirofit International Ltd.). The team assigned to the verification meets the CCIPL's internal procedures including the UNFCCC requirements for the team composition and competence. The verification team has conducted a thorough contract review as per UNFCCC and CCIPL's procedures and requirements.

The verification has been performed as per the requirements described in the VVS Version 09.0 and constitutes the review and completion of the following steps:

- Reviewing the registered PoA-DD (Version 3.2, date 27/11/2012), the registered CPA DDs for 5341-0002 and 5341-0004 (Version 2.0, date 11/10/2013 and Version 1.0, dated 27/01/2014 respectively), including the monitoring plan and the corresponding validation report/s /B04/;
- Publication of the MR (Version 1.0, 16/06/2016) /1/ on the UNFCCC website on 17/06/2016
- Desk review of the validation report, MR 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 /B05/;
- On-site assessment (12/07/2016 – 15/07/2016)
- Resolution of CARs and CLs raised during verification
- Issuance of Verification Report

The component project activities were correctly implemented according to selected monitoring methodology, monitoring plan and the registered/included CPA DD/s. The monitoring system was installed, maintained in a proper manner, while collected monitoring data allowed for the verification of the amount of achieved GHG emission reductions. Through the review and on site visit the verification team confirms that the PoA has resulted in the 64,285 tCO<sub>2</sub>e emission reductions during the second monitoring period.

During the reported monitoring period only 5341-0002 and 5341-0004 were implemented and the other two CPAs (5341-0001 and 5341-0003) were not implemented (i.e. no stoves were sold under these two CPAs). Hence emission reductions for only 5341-0002 and 5341-0004 were monitored and claimed for this monitoring period by the CME and no emission reductions are being claimed for 5341-0001 and 5341-0003.

Verified emission reductions for the PoA: 64,285 tCO<sub>2</sub>e.

The break-up of emission reduction up-to 31/12/2012 and 01/01/2013 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 onwards
<b>Emission reductions (t CO<sub>2</sub>e)</b>	0	64,285

Break up of emission reductions CPA wise:

5341-0001: 0 tCO<sub>2</sub>e  
 5341-0002: 46,003 tCO<sub>2</sub>e  
 5341-0003: 0 tCO<sub>2</sub>e  
 5341-0004: 18,282 tCO<sub>2</sub>e

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

## SECTION F. Certification statement

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Carbon Check (India) Private Ltd., the DOE, has performed the verification of the registered Programme of Activities, UNFCCC Registration Number 5341, "Improved Cooking Stoves Programme of Activities in Africa" in Kenya. The PoA involves replacement of less efficient cooking stoves using woody biomass (wood-fuel and/or charcoal) with ICS which are more efficient. The ICS distributed under CPAs of the PoA are more efficient in transferring heat from the fuel to the pot when compared to the stoves typically used in baseline. By replacing inefficient stoves, the PoA will save on consumption of woody biomass (either wood or charcoal made of wood).

The component project activities (5341-0002 and 5341-0004) of the Programme of Activities are designed to generate emission reductions by distribution of the fuel-efficient charcoal / wood fuel based cook stoves in Kenya. The CME and CPA implementer are responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the component project activity/ies. It is DOE's responsibility to express an independent verification statement on the reported GHG emission reductions from the component project/s. The DOE does not express any opinion on the selected baseline scenario or on the validated and registered PoA-DD/CPA-DD. The verification is carried out in-line with the VVS requirements.

The verification was performed to identify the compliance of the component project /ies 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:

- PoA-DD Version 3.2 dated 27/11/2012;
- CPA-DD/s included in the registered PoA and its monitoring plan for the monitoring period 01/01/2015 to 31/12/2015.
- Approved monitoring methodology AMS-II.G "Energy efficiency measures in thermal applications of non-renewable biomass", Version 03;
- Validation report /B04/ for the PoA and the CPA/s;

— Monitoring reports Version 1.0, 2.0 and 2.1 dated 16/06/2016, 21/07/2016 and 01/08/2016 respectively.

This statement covers verification period from 01/01/2015 to 31/12/2015.

The DOE had raised 04 clarification and 01 corrective action requests, all of which have been resolved by the CME.

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 monitoring plan contained in the registered/included CPA-DDs are fairly stated.

The DOE, hereby certifies that the project activity, achieved emission reductions by sources of GHG equal to 64,285 tCO<sub>2</sub> equivalent and all monitoring requirements have been fulfilled and is substantiated by an audit trail that contains evidence and records. The break-up of emission reduction up-to 31/12/2012 and 01/01/2013 onwards as verified during the course of verification are as below:

Item	Emission reductions up to 31 December 2012	Emission reductions from 1 January 2013 onwards
Emission reductions (t CO <sub>2</sub> e)	0	64,285

## SECTION G. Verification findings - General

### G.1. Compliance of the monitoring report with the monitoring report form

Means of verification	DR
Findings	-
Conclusion	<p>The latest available version of the Monitoring report form, for CDM programme of activities is Version 01.0 /B03/. Verification team confirms that the latest available version of monitoring report /1/ /2/ has been used by the CME and the MR is in compliance of the monitoring report form with the relevant form and instructions therein /B03/.</p> <p>This confirms the compliance of § 381 and 382 of VVS, Version 09.0 /B01-1/.</p>

### G.2. Remaining forward action requests from validation and/or previous verification

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This is the second periodic verification of the PoA. There are not any forward action requests from validation or the first periodic verification of the PoA / CPAs.

### G.3. Specific-case CPA(s) considered for verification and covered in this report

Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Is the specific-case CPA considered for this verification? (yes/no)	Version number of the registered PoA-DD to which the specific-case CPA complies with	Confirmation that a request for issuance including the specific-case CPA has been published for the previous monitoring period (Y/N)
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Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00001 (Kenya)	Yes	3.2	Y
Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00002 (Kenya)	Yes	3.2	Y
Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00003 (Kenya)	Yes	3.2	Y
Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00004 (Kenya)	Yes	3.2	Y

## SECTION H. Verification findings – Programme of activities

### H.1. Compliance of the programme implementation with the registered programme design document

<b>Means of verification</b>	DR, I
<b>Findings</b>	-
<b>Conclusion</b>	<p>CC IPL by means of an on-site inspection and document review, assessed that all physical features (technology, project equipment, and monitoring and metering equipment) of the included CPAs in the registered PoA-DD are in place and that the project participants or the coordinating/managing entity have operated the PoA and the CPAs as per the registered PoA-DD and the CPA-DDs.</p> <p>Verification team confirms that the programme has been implemented as per the registered PoA-DD. This confirms the compliance of § 383 and § 384 of VVS Version 09.0 /B01-1/.</p>

### H.2. Implementation and operation of the management system

<b>Means of verification</b>	DR, I
<b>Findings</b>	-
<b>Conclusion</b>	<p>The PoA management system including the record-keeping system has been explained in the registered PoA-DD /B04/. During the course of verification, verification team based on review of provided documents and OSV interview/observation has assessed this management system. 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.</p> <p>As outlined in section D.7.2 of CPA-DDs /B04/ and section F of MR, monitoring is done by the CPA implementer, Envirofit Kenya Limited (DO) by means of sales database. The data is further periodically checked by the CME to ensure there is no double counting. The records of sales database /6/ have been verified during the course of verification.</p> <p>In order to ensure completeness and accuracy of monitoring information, electronic database is operated and maintained by the DO. This information is further</p>

	<p>maintained by the CME, who verifies the reported sales with the number of stoves produced by the manufacturer. Since the unique code inscribed on the cook stoves will correspond to its CPA, the occurrence of double counting is avoided. This provision for the avoidance of double counting as outlined in the PoA management system has been verified by means of review records of sales database /6/ and OSV interview/observation during the course of verification. This unique serial numbering system and the data from manufacturer were further cross-checked (on a sampling basis) during the site visit physical inspection.</p> <p>It was confirmed during the OSV and by checking the monitoring system that all the roles and responsibilities related to monitoring are fulfilled by representatives of CME and the CPA implementer.</p> <p>The responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan /B04/.</p> <p>The details about monitoring system have been provided in Section F of the monitoring report /2/. The data flow and management and reporting structure was also checked during the site visit.</p> <p>The verification team confirms that the monitoring management system of the CDM PoA is in place, with the responsibilities properly identified and in place. This confirms the compliance of § 83 (a), § 390 (b) (iv) and § 390 (e) of VVS Version 09.0 /B01-1/.</p>
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### **H.3. Post-registration changes**

#### **H.3.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline**

&gt;&gt;

"N/A"

#### **H.3.2. Corrections**

&gt;&gt;

"N/A"

#### **H.3.3. Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))**

&gt;&gt;

"N/A"

#### **H.3.4. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline**

&gt;&gt;

"N/A"

#### **H.3.5. Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA**

&gt;&gt;

"N/A"

**H.3.6. Types of changes specific to afforestation and reforestation activities**

>>  
 “N/A”

**SECTION I. Verification findings – Component project activity(ies)****I.1. Compliance of the CPA implementation with the included CPA design document**

<b>Means of verification</b>	DR, I
<b>Findings</b>	-
<b>Conclusion</b>	<p>CCIPL’s verification team considers the CPAs description of the project contained in the registered CPA-DDs to be complete and accurate. The CPA-DDs comply with the relevant methodology, tools, forms and guidance at the time of CPA-DDs submission for registration/inclusion.</p> <p>The user details have been recorded in accordance with the CPA-DDs, Type of appliance (ICS type) deployed, Serial number (Stove-ID) of system, Delivery date of appliance (to user), User details (Name, Address, etc.).</p> <p>Please refer to <b>Annex 1</b> below for further details.</p> <p>In summary, the monitoring period is reasonable and the operation of the CPAs is in accordance with the registered CPA-DDs. The verification team took cognizance of § 239 to § 242 of CDM Project Standard and § 373 b (i), § 383, § 384 and § 385 of VVS Version 09.0 /B01-1/.</p>

**I.2. Post-registration changes****I.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

“N/A”

**I.2.2. Corrections**

“N/A”

**I.2.3. Changes to the start date of the crediting period**

“N/A”

**I.2.4. Inclusion of a monitoring plan to an included CPA-DD**

“N/A”

**I.2.5. Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline**

“N/A”

**I.2.6. Changes to the programme design of the included CPA-DD**

“N/A”

**I.2.7. Types of changes specific to afforestation and reforestation component project activities**

“N/A”

### I.3. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	DR
Findings	-
Conclusion	<p>The verification team is able to confirm that the monitoring plan contained in the registered CPA-DDs is in accordance with the approved methodology applied by the project activity, i.e. AMS-II.G, Version 03 /B02/.</p> <p>The monitoring plan is in accordance with the approved methodology, AMS-II.G, Version 03 /B02/, applied by the component project activity and as provided in the CPA-DDs /B04/.</p> <p>The verification took cognizance of § 386 to § 388 of VVS Version 09.0 /B01-1/.</p>

### I.4. Compliance of monitoring activities with the registered monitoring plan

The monitoring has been carried out in accordance with the monitoring plan contained in the registered CPA-DD, This conclusion has been made based on assessment below in section I.4.1, I.4.2 and I.4.3 below.

#### I.4.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	DR
Findings	-
Conclusion	<p>Verification team confirms that the Data and parameters fixed ex ante are in compliance with the registered CPA-DDs and monitoring plan. Please refer to the <b>Annex 2</b> for assessment of each parameter.</p> <p>The verification took cognizance of § 389 of VVS, Version 09.0 /B01-1/.</p>

#### I.4.2. Data and parameters monitored

Means of verification	DR, I
Findings	CL 01 was raised due to inconsistency found in the number of stoves for CPA 0002. Please refer to Appendix 4 for further details of the CL and its closure.
Conclusion	<p>Verification team confirms that the Data and parameters monitored are in compliance with the registered CPA DD and monitoring plan. Please refer to the <b>Annex 3</b> for assessment of each parameter.</p> <p>The verification took cognizance of § 389 and § 401 of VVS Version 09.0 /B01-1/.</p>

#### I.4.3. Implementation of sampling plan

Means of verification	DR, I
Findings	-
Conclusion	<p>As mentioned in the above sections, only the CPAs 5341-0002 and 5341-0004 were implemented for which emission reductions are being claimed for this monitoring period. The total population of the stoves under these two CPAs 5341-0002 and 5341-0004 are 24,783 and 17,049 respectively. The four monitoring parameters required to be monitored through the sampling plan are:</p> <ol style="list-style-type: none"> <li>1. The thermal efficiency of the ICS distributed (%) (<math>\eta_{new}</math>)</li> <li>2. The Stove Operating Fraction, i.e. the fraction of users using the ICS (SOF)</li> <li>3. The fraction of stove users still using baseline (replaced) stoves (<math>f_{old}</math>)</li> <li>4. The amount of woody biomass that continues to be used in the replaced stoves (kg) (<math>\mu_{old}</math>)</li> </ol> <p>Cross-CPA simple random sampling was applied for the two CPAs by CME for selection of the monitoring samples with 95/10 confidence/precision for all the four parameters for annual monitoring which is deemed acceptable as per the registered PoA-DD /CPA-DDs.</p> <p>Two sampling frames were applied for determining the parameters "SOF", "<math>f_{old}</math>" and</p>



" $\mu_{old}$ " for the two different types of fuels used in the stoves (charcoal and wood fuel). Within the same fuel type, the stoves were considered homogeneous as they were distributed in the same country (Kenya), end users were households only and the efficiency of the different stove models distributed under the two CPAs did not differ by more than +/-10%.

For the thermal efficiency of the stoves ( $\eta_{new}$ ) sampling frames were chosen for the respective 6 models of stoves (CH2200, CH 4400, CH5200, CH6600, ECCL and M5000) separately.

The number of samples for each of the parameters covered during the monitoring activity is as given below:

Parameter	Sample Size (n) required	Samples covered during monitoring
$\eta_{new}$ (CH2200)	7	8
$\eta_{new}$ (CH4400)	7	9
$\eta_{new}$ (CH5200)	7	9
$\eta_{new}$ (CH6600)	7	7
$\eta_{new}$ (ECCL)	7	9
$\eta_{new}$ (M5000)	7	8
SOF <sub>charcoal</sub>	43	88
SOF <sub>wood</sub>	43	81
$f_{old}$ - charcoal	68	82
$f_{old}$ - wood	6	79
$\mu_{old}$ - Charcoal	7	14
$\mu_{old}$ - Wood	7	12

As the actual sample size in all the cases was not less than either the calculated sample size or the minimum sample size as per the PoA-DD, the sample size covered by the CME was accepted.

For the monitoring parameters SOF,  $f_{old}$ , and  $\mu_{old}$ , data were collected following a specially designed survey form. For thermal efficiency of the stoves WBTs (Water Boiling Tests) were conducted.

It was found that for all the parameters the confidence/precision of 95/10 was met. Section I.4.2 above may be referred for more details.

Further, the verification team used sampling during verification for checking the stoves. Considering that the estimated volume of annual emission reductions of the PoA being verified is equal to or less than 100,000 tCO<sub>2</sub>e, applying paragraph 31 (c) of the sampling standard, Version 05.0 /B07/, a sample size of 16 households (8 for each of the two sampling frames for charcoal and wood fuel fired stoves) was chosen (with no non-responses). A sample size of 8 was required (for each of the two sampling frames), based on an AQL of 0.5% and UQL of 20%, the producer risk as 10% and consumer risk as 20%. Acceptance number (c) thus determined for the sample is 0. It was observed that all the 8 stoves for each of the two sampling frames (for charcoal and wood fuel stoves) were in working condition and no discrepant records were observed with the published MR /1/ and ER sheet /3/, hence c=0 was complied. Thus CME's set of records has been accepted in line with paragraph 30 of the sampling standard, Version 05.0 /B07/.

Verification team confirms that the sampling approach applied by the CME is in accordance with the registered PoA-DD and the CPA-DDs /B04/ including the Guidelines: Sampling and surveys for CDM project activities and programmes of activities, Version 03.0 /B06/ and Standard: Standard for sampling and surveys for CDM project activities and Programme of Activities, Version 05.0 /B07/.

#### I.5. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	DR, I
Findings	CL 02 was raised as the accuracy of the moisture meter used for WBT as stated in

	the published MR (+/-1%) does not match with the accuracy in the stated specification of the meter. Please refer to Appendix 4 for further details of the CL and its closure.
<b>Conclusion</b>	<p>The stove efficiency testing has been done by WBTs conducted in line with the guidance provided by the CME in the CPA-DDs /B04/ /17/. The monitoring equipments used for conducting the stove efficiencies by WBTs are thermometer, weighing machine and moisture meter. All the three monitoring equipments were either newly bought or auto calibrated and hence deemed appropriate /13/. The appropriate QA/QC procedures have been followed for the monitoring parameters.</p> <p>The verification took cognizance of § 389 and § 394 of VVS Version 09.0 /B01-1/.</p>

## I.6. Assessment of data and calculation of emission reductions or net removals

In line with the requirement of § 401 of VVS, Version 09.0 verification team has reviewed the Monitoring report and ER spread sheet to check the arithmetic calculation of the emission reductions. The equation used for the calculation is compared with those provided in the registered CPA-DDs /B04/ and the methodology AMS-II.G, Version 03 /B02/ and found to be in correct. Verification team further noted that for all the monitoring parameters the desired precision of 10% was met and hence any corrections need not be applied for these parameters as per the PoA-DD /B04/. The verification took cognizance of § 389 and § 401 of VVS Version 09.0 /B01-1/.

### I.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

<b>Means of verification</b>	DR, I
<b>Findings</b>	<p>CAR 01 was raised as the following errors were identified in the ER spread sheet submitted along with the published MR:</p> <ol style="list-style-type: none"> <li>In the "Survey Summary" sheet of the ER spread sheet, values for the parameter "<math>\mu_{old}</math>" were hard coded. CME needed to clarify how the values are calculated without applying any formulae.</li> <li>In the "Survey Summary" sheet of the ER spread sheet, in the column "Is traditional stove still being used for cooking", for stove number EM1K052083, "yes" was stated. This did not match with the survey sheet of the stove.</li> </ol>
<b>Conclusion</b>	<p>The equations for baseline emissions, as provided in the monitoring report /1/ and confirmed with the registered CPA-DD /B04/ and the methodology AMS-II.G, Version 03 /B02/, are:</p> $ER_y = B_{y,savings} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossilfuel}$ <p>Where:</p> <p><math>ER_y</math> = Emission reductions during the year y in tCO<sub>2</sub>e</p> <p><math>B_{y,savings}</math> = Quantity of biomass that is saved in tonnes</p> <p><math>f_{NRB,y}</math> = Fraction of biomass saved by the project activity in year y that can be established as non-renewable biomass using survey results, national or local statistics or other sources of information (fixed ex ante as 92%)</p> <p><math>NCV_{biomass}</math> = Net calorific value of the non-renewable biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne)</p> <p><math>EF_{projected\_fossilfuel}</math> = Emission factor for the substitution of non-renewable biomass by similar consumer (Default value of 81.6 tCO<sub>2</sub>/TJ).</p> $B_{y,savings} = B_{old} \cdot \left(1 - \frac{\eta_{old}}{\eta_{new}}\right)$ <p><math>B_{old}</math> = Quantity of biomass used in the absence of the project activity in tonnes/year</p> <p><math>\eta_{old}</math> = Efficiency of the system being replaced (fixed 12.9% ex ante)</p> <p><math>\eta_{new}</math> = Efficiency of the system being deployed as part of the project activity (monitored ex post during the monitoring period)</p>

	$B_{old} = LAF \cdot N_{all} \cdot SOF \cdot (Q_{biomass} - \left(\frac{\mu_{old}}{1000} \cdot f_{old}\right)) \cdot Stove_{year}$
LAF	=Net to gross Adjustment factor (0.95) applied in accordance with paragraph 13 and 23 of AMS-II.G v. 03
N <sub>all</sub>	=Total number of stoves installed (23,798 monitored ex post during the monitoring period)
SOF	=Stove Operation Fraction - % of stoves operating or replaced by equivalent in-service appliance (monitored ex post during the monitoring period)
Q <sub>biomass</sub>	= Average annual biomass consumption per appliance (3.56 tonnes / year for charcoal and 4.76 tonnes/year for woodfuel fixed ex - ante).
μ <sub>old</sub>	=Average amount of woody biomass consumption that is consumed through the continued use of old stoves (monitored ex post)
f <sub>old</sub>	=Fraction of end users that are still using their replaced stoves during the monitoring period (monitored ex post during the monitoring period)
Stove <sub>year</sub>	= Calculated average stove operation years in the monitoring period (monitored ex post for the monitoring period)
	<p>From the above equation and the parameter values, emission reductions are calculated as:</p> <p>5341-0002: 46,003 tCO<sub>2</sub>e  5341-0004: 18,282 tCO<sub>2</sub>e  Total ER<sub>y</sub> = 64,285 tCO<sub>2</sub>e</p> <p>The verification team confirms that the calculation of baseline emission and emission reductions is in accordance with the applied methodological equation and the registered CPA-DDs. Calculations have been checked and confirmed from the ER spread sheet /4/.</p> <p>The verification took cognizance of § 389 and § 401 of VVS Version 09.0 /B01-1/.</p>

#### I.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

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

#### I.6.3. Calculation of leakage GHG emissions

Means of verification	DR, I
Findings	-
Conclusion	<p>A default (0.95) Net to gross adjustment factor to account for leakages (LAF) has been considered by the project and thus it is in line with the requirement of monitoring methodology /B02/ and the CPA-DD /B04/.</p> <p>The verification took cognizance of § 389 of VVS, Version 09.0 /B01-1/.</p>

#### I.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	DR
Findings	-
Conclusion	<p>Verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the pre-defined formulae from registered CPA-DDs. The total number of CERs achieved during the monitoring period is 64,285 tCO<sub>2</sub>e.</p> <p>In summary, verification team confirms that actual emission reduction is lower than the estimate of the registered (included)/approved CPA-DDs for the current</p>

	monitoring period. The verification took cognizance of § 401 of VVS Version 09.0 /B01-1/.
--	----------------------------------------------------------------------------------------------

Specific-case CPA reference number	Baseline emissions or baseline net GHG removals by sinks (tCO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (tCO <sub>2</sub> e)	Leakage (tCO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (tCO <sub>2</sub> e)		
				Results achieved in the period up to 31 December 2012	Results achieved in the period from 1 January 2013 onwards	Results achieved in the entire monitoring period
5341-0001	0	-	-	0	0	0
5341-0002	46,003	-	-	0	46,003	46,003
5341-0003	0	-	-	0	0	0
5341-0004	18,282	-	-	0	18,282	18,282
<b>Total</b>	<b>64,285</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>64,285</b>	<b>64,285</b>

#### I.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case CPA

<b>Means of verification</b>	DR
<b>Findings</b>	CL 03 was raised as in Section H.5 of the published MR, values of the estimated ex ante ERs did not match with the respective CPA-DDs for CPA 0002 and CPA 0004. Also CME needed to clarify the inconsistency in the ERs for CPA 0004 in between the published MR (18,421 tCO <sub>2</sub> e) and ER spread sheet (18,363 tCO <sub>2</sub> e). Please refer to Appendix 4 for further details of the CL and its closure.
<b>Conclusion</b>	Comparison of the actual GHG emission reductions with the estimates in the included specific CPAs is given in the below table. The verification team took cognizance of § 401 of VVS Version 09 /B01/.

Specific-case CPA reference number	Value estimated in ex ante calculation in the included specific-case CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
5341-0001	13,356	0
5341-0002	43,063	46,003
5341-0003	42,811	0
5341-0004	43,384	18,282
<b>Total</b>	<b>142,814</b>	<b>64,285</b>

#### I.6.6. Remarks on difference from estimated value in registered PDD

<b>Means of verification</b>	DR
<b>Findings</b>	CL 04 was raised as there is an increase in the ERs for CPA 0002 for the monitoring period as compared to the ex ante estimated value in the CPA-DD. CME needed to provide clarification on this difference in section H.6 of the MR. Please refer to Appendix 4 for further details of the CL and its closure.
<b>Conclusion</b>	The emission reductions for the PoA under the monitoring period are less than the values estimated ex ante in the CPA-DDs together. But for CPA 0002, the emission reductions are higher than the corresponding estimated value in the CPA-DD. Verification team noted that the annual energy savings for this CPA is 170.22 GWh <sub>th</sub> which is less than the threshold value of 180 GWh <sub>th</sub> for small scale project activities. As the CPA does not cross the limit of small scale limit, this was deemed acceptable. Please also refer to section I.1 above.

## Appendix 1. Abbreviations

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



## Appendix 2. Competence of team members and technical reviewers



**Carbon Check (India) Private Ltd.**

**Sanjay Agarwalla**

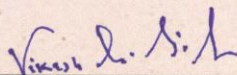
has been qualified as per CCIPL's internal qualification procedures, in accordance with requirements of Accreditation Standard (version 06.0):

For following functions:

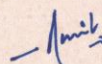
Validator	<input checked="" type="checkbox"/>	Team Leader	<input checked="" type="checkbox"/>	Technical reviewer	<input checked="" type="checkbox"/>
Verifier	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>	Local Expert <sup>1</sup>	<input checked="" type="checkbox"/>

In the following Technical Areas:

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



Mr. Vikash Kumar Singh  
Compliance Officer



Mr. Amit Anand  
CEO



Date of Approval  
24/12/2015

Valid Till  
23/12/2016

### Revision History of the Document

26/12/2014  
20/01/2016

Initial Adoption  
Revision to reflect updated office address

<sup>1</sup> India

### CARBON CHECK (INDIA) PRIVATE LIMITED

Registered in India: U74930DL2012PTC232495

Regd. Off: 2071/38, 2<sup>nd</sup> Floor, Naiwala, Karol Bagh, New Delhi - 110005

Corporate off: G 49 & 50, 3<sup>rd</sup> Floor, Sector - 3, NOIDA (Uttar Pradesh) - 201301

Tel: +91 120 4373114 / +91 120 2520027 | URL: [www.carboncheck.co.in](http://www.carboncheck.co.in)

e-mail: [info@carboncheck.co.in](mailto:info@carboncheck.co.in)





## Carbon Check (India) Private Ltd.

### Vikash Kumar Singh

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

For following functions:

Validator	<input checked="" type="checkbox"/>	Team Leader	<input checked="" type="checkbox"/>	Technical reviewer	<input checked="" type="checkbox"/>
Verifier	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>	Local Expert <sup>1</sup>	<input checked="" type="checkbox"/>

In the following Technical Areas:

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

Mr. Amit Anand  
CEO



Date of Approval  
24/12/2015

Valid Till  
23/12/2016

#### Revision History of the Document

26/12/2014  
20/01/2016

Initial Adoption  
Revision to reflect updated office address

<sup>1</sup> India, South Africa

#### CARBON CHECK (INDIA) PRIVATE LIMITED

Registered in India: U74930DL2012PTC232495

Regd. Off: 2071/38, 2<sup>nd</sup> Floor, Naiwala, Karol Bagh, New Delhi - 110005

Corporate off: G 49 & 50, 3<sup>rd</sup> Floor, Sector - 3, NOIDA (Uttar Pradesh) - 201301

Tel: +91 120 4373114 / +91 120 2520027 | URL: [www.carboncheck.co.in](http://www.carboncheck.co.in)

e-mail: [info@carboncheck.co.in](mailto:info@carboncheck.co.in)

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Envirofit	1. Webhosted Monitoring report 2. Monitoring Report	Version 1.0, dated 16/06/2016 Version 2.0, dated 21/07/2016	CME
2	Envirofit	Final Monitoring report	Version 2.1, dated 01/08/2016	CME
3	Envirofit	Emission reduction calculation spread sheet corresponding to /1/	Version 2.1, dated 15/06/2016	CME
4	Envirofit	Emission reduction calculation spread sheet, corresponding to /2/	Version 3.0, dated 21/07/2016	CME
5	Envirofit	CPA Monitoring Survey Records	-	CME
6	Envirofit	CPA distribution records including evidence for the dates of distribution	-	CME
7	Envirofit	Stove specifications for CH2200, CH4400, CH5200, CH6600, ECCL and M5000) models used under the monitoring period	-	CME
8	Envirofit	Proof of Carbon Credits waiver by End user	-	CME
9	Envirofit	Sample stoves sales receipt	-	CME
10	Envirofit	Training records	-	CME
11	Envirofit	Water boiling test records	-	CME
12	Envirofit	Manuals for the thermometer, weighing machine and moisture meter used for monitoring of the stove efficiency	-	CME
13	Envirofit	Contractual agreement in between the CME and the DO as per the eligibility criteria number 13 in section A.4.2.2 of the PoA-DD	-	CME
14	Envirofit	Evidence for random number generator for sampling	-	CME
15	Envirofit	WBT conducting methodology for the cook stoves	-	CME
16	Envirofit	Sample warranty cards	-	CME
17	Envirofit	Evidence for display of programme logo on the stoves	-	CME



**CDM-PoA-VCR-FORM**

/B01/	UNFCCC	1. Validation and Verification Standard Version 09.0 2. Project Standard Version 09.0 3. Project Cycle Procedure Version 09.0	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B02/	UNFCCC	Applied baseline and monitoring methodology, AMS-II.G, Version 03	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B03/	UNFCCC	Instructions for filling out the monitoring report form for CDM programme of activities Version 01.0	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B04/	UNFCCC	Registered PoA-DD (Version 3.2 dated 27/11/2012), (CPA-DD for 5341-0002: Version 2.0 dated 11/10/2013; 5341-0004: Version 1.0 dated 27/01/2014) and corresponding validation reports.	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B05/	Web sites	Websites: <a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a> <a href="http://www.ipcc-nggip.iges.or.jp/">http://www.ipcc-nggip.iges.or.jp/</a> <a href="http://www.pciaonline.org/testing">http://www.pciaonline.org/testing</a>	--	Others
/B06/	UNFCCC	Guidelines: Sampling and surveys for CDM project activities and programmes of activities, Version 04.0	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others
/B07/	UNFCCC	Standard: Standard for sampling and surveys for CDM project activities and Programme of Activities, Version 05.0	<a href="http://cdm.unfccc.int/">http://cdm.unfccc.int/</a>	Others

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

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

FAR ID	xx	Section no.	Date:DD/MM/YYYY
<b>Description of FAR</b>			
-			
<b>CME response</b>			<b>Date:DD/MM/YYYY</b>
-			
<b>Documentation provided by the CME</b>			
-			
<b>DOE assessment</b>			<b>Date: DD/MM/YYYY</b>
-			

Table 2. CL from this verification

CL ID	CL 01	Section no.	I.4.2	Date:20/07/2016
<b>Description of CL</b>				
CME needs to clarify the inconsistency in the number of stoves for CPA 0002 as stated in the published MR page 5 (24,783 or 24,790).				
<b>CME response</b>				<b>Date: 21/07/2016</b>
The correct number of stoves considered in this monitoring period for CPA0002 is 24,783. Footnote 1 in MR page 5 incorrectly refers this as 24,790 on account of typographical error. The same has been corrected in version 2.0 of the monitoring report.				
<b>Documentation provided by the CME</b>				
5341 MP#2 Monitoring Report v 2.0 21072016				
<b>DOE assessment</b>				<b>Date: 27/07/2016</b>
CME has submitted revised MR with correct number of stoves for the monitoring period. The number of stoves was verified from the stoves distribution records. Hence the CL is closed.				

CL ID	CL 02	Section no.	I.5	Date: 20/07/2016
<b>Description of CL</b>				
Accuracy of the moisture meter used for WBT as stated in the published MR (+/- 1%) does not match with the accuracy in the stated specification of the meter.				
<b>CME response</b>				<b>Date: 21/07/2016</b>
As per the email received from Delmhorst Instrument Company (manufacturer for moisture meter) the correct accuracy of J2000 moisture meter is +/- 0.2% The same has been revised in the monitoring report version 2.0				
<b>Documentation provided by the CME</b>				
5341 MP#2 Monitoring Report v 2.0 21072016 email from Delmhorst confirming measurement accuracy of J2000				
<b>DOE assessment</b>				<b>Date: 27/07/2016</b>
CME has revised the MR with correct accuracy class of the moisture meter used for WBT during the monitoring period along with its evidence. Hence the CL is closed.				

CL ID	CL 03	Section no.	I.6.5	Date:20/07/2016
<b>Description of CL</b>				
In Section H.5 of the published MR, values of the estimated ex ante ERs do not match with the respective CPA-DDs for CPA 0002 and CPA 0004. Also CME needs to clarify the inconsistency in the ERs for CPA 0004 in between the published MR (18,421 tCO <sub>2</sub> e) and ER spread sheet (18,363 tCO <sub>2</sub> e).				
<b>CME response</b>				<b>Date: 21/07/2016</b>
The errors identified are on account of typographical errors. The MR has been revised to be consistent with the ex-ante values as specified in CPA 0002 and CPA0004 CPA-DDs. Besides, the MR has been revised to be consistent with the ER spreadsheet.				
<b>Documentation provided by the CME</b>				
5341 MP#2 Monitoring Report v 2.0 21072016 Kenya MP#2 ER calculator version 3.0 21072016				

<b>DOE assessment</b>	<b>Date:</b> 27/07/2016
CME has submitted revised MR with correct value of ex ante ERs for CPA 0002 and CPA 0004. MR has also been revised with ER values in line with the revised ER spread sheet. Hence the CL is closed.	

<b>CL ID</b>	CL 04	<b>Section no.</b>	I.6.6	<b>Date:</b> 20/07/2016
<b>Description of CL</b>				
There is an increase in the ERs for CPA 0002 for the monitoring period as compared to the ex ante estimated value in the CPA-DD. CME needs to provide clarification on this difference in section H.6 of the MR.				
<b>CME response</b>				<b>Date:</b> 21/07/2016
Section H.6 of the MR has been revised to include the clarification on increase in ERs for CPA0002				
<b>Documentation provided by the CME</b>				
5341 MP#2 Monitoring Report v 2.0 21072016				
<b>DOE assessment</b>				<b>Date:</b> 27/07/2016
The CME has provided a table in section H.6 of the revised monitoring report with a comparison of ex-ante and ex-post values of the parameters. The rationale of the variation (which eventually leads to increase in emission reductions value) has also been provided in the table of comparison. The justification provided in the table is deemed appropriate and thus the increase in ERs is justified. Furthermore, verification team noted that the annual energy savings for CPA 0002 during the monitoring period is 170.22 GWh which is below the threshold limit of small scale of 180 GWh. Hence the CL is closed.				

**Table 3. CAR from this verification**

<b>CAR ID</b>	CAR 01	<b>Section no.</b>	I.6.1	<b>Date:</b> 20/07/2016
<b>Description of CAR</b>				
The following errors are identified in the ER spread sheet submitted along with the published MR:				
i. In the "Survey Summary" sheet of the ER spread sheet, values for the parameter " $\mu_{old}$ " are hard coded. CME needs to clarify how the values are calculated without applying any formulae. ii. In the "Survey Summary" sheet of the ER spread sheet, in the column "Is traditional stove still being used for cooking", for stove number EM1K052083, "yes" has been stated. This does not match with the survey sheet of the stove.				
<b>CME response</b>				<b>Date:</b> 21/07/2016
The identified errors have been corrected as follows: i. The parameter " $\mu_{old}$ " has now been calculated using applicable formulae in the revised ER spreadsheet ii. The survey records mention the user not using baseline stove. There was a typographical error while transferring the information from survey records to ER spread sheet. The ER spread sheet has been revised to be consistent with the same.				
<b>Documentation provided by the CME</b>				
5341 MP#2 Monitoring Report v 2.0 21072016; Kenya MP#2 ER calculator version 3.0 21072016				
<b>DOE assessment</b>				<b>Date:</b> 27/07/2016
i. CME has submitted revised ER spread sheet applying correct formulae for the calculation of the parameter " $\mu_{old}$ ". ii. In the revised ER spread sheet submitted by the CME, the error has been corrected. Due to this correction. Due to closure of this CL, ER value has reduced to 64,285 tCO <sub>2e</sub> from 64,424 tCO <sub>2e</sub> in the published MR. Also CME has again checked all the survey sheets (which was cross checked by the verification team also) and found no further error. The CL is closed.				

**Table 4. FAR from this verification**

<b>FAR ID</b>	Xx	<b>Section No.</b>		<b>Date:</b> DD/MM/YYYY
<b>Description of FAR</b>				
-				
<b>CME response</b>				<b>Date:</b> DD/MM/YYYY
-				
<b>Documentation provided by the CME</b>				
-				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY
-				

**Annex 1:**The implementation status of the component project activity

Co-ordinating and Managing entity/Project Participants:	Envirofit International Ltd.
Title of the PoA:	Improved Cooking Stoves Programme of Activities in Africa
UNFCCC registration No:	PoA - 5341
Applied Baseline and monitoring methodology:	AMS-II.G, Version 03

Title of the CPA:	Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00001 (Kenya)
CPA reference number:	5341-0001
Date of inclusion:	06/12/2012
CPA start date:	01/01/2012
CPA start of operation:	Not implemented during the reported monitoring period
CPA implementer	East Africa Energy Limited
Project Scale:	Small scale
Location of the CPA:	Kenya
CPA crediting period:	15/12/2012 to 14/12/2022
Reported monitoring Period verified in this verification:	01/01/2015 to 31/12/2015

Title of the CPA:	Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00002 (Kenya)
CPA reference number:	5341-0002
Date of inclusion:	29/10/2013
CPA start date:	16/03/2012
CPA start of operation:	Sale/Distribution of stoves – 16/03/2012 /6/
CPA implementer	Envirofit Kenya Limited
Project Scale:	Small scale
Location of the CPA:	Kenya
CPA crediting period:	01/01/2014 to 31/12/2023
Reported monitoring Period verified in this verification:	01/01/2015 to 31/12/2015

Title of the CPA:	Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00003 (Kenya)
CPA reference number:	5341-0003
Date of inclusion:	06/11/2013
CPA start date:	06/09/2013
CPA start of operation:	Not implemented during the reported monitoring period.
CPA implementer	Envirofit Kenya Limited
Project Scale:	Small scale
Location of the CPA:	Kenya
CPA crediting period:	01/01/2014 to 31/12/2023
Reported monitoring Period verified in this verification:	01/01/2015 to 31/12/2015

Title of the CPA:	Improved Cooking Stoves Programme of Activities in Africa – CPA No. 00004 (Kenya)
CPA reference number:	5341-0004
Date of inclusion:	24/03/2014
CPA start date:	16/03/2012
CPA start of operation:	Sale/Distribution of stoves – 10/01/2013
CPA implementer	Envirofit Kenya Limited
Project Scale:	Small scale
Location of the CPA:	Kenya
CPA crediting period:	01/04/2014 to 31/03/2024
Reported monitoring Period	01/01/2015 to 31/12/2015

verified in this verification:	
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During the reported monitoring period, only 5341-0002 and 5341-0004 were implemented and hence only these two CPAs were monitored as there were no stoves distributed in 5341-0001 and 5341-0003. No emission reductions are being claimed by the CME for 5341-0001 and 5341-0003. As a part of the site visit, the verification team was able to confirm that the Programme of activities and the component project activities' implementation are in accordance with the project description contained in the included CPA-DDs for 5341-0002 and 5341-0004 /B04/. The verification team took cognizance of § 239 to § 242 of CDM Project Standard, Version 09.0 /B01-2/ and § 373 b (i), § 383, § 384 and § 385 of VVS, Version 09.0 /B01-1/.

Project physical features (technology, project equipment, monitoring and metering equipment)	<p>The CPAs 5341-0002 and 5341-0004 include distribution of energy efficient improved cooking stoves. The CPA implementer is Envirofit Kenya Limited. The portable improved cook stoves (ICS) under the CPAs use charcoal / woodfuel /7/ as fuel. These ICSs are efficient in transferring heat from the fuel to the pot, thus saving charcoal / wood fuel compared to the traditional charcoal stoves used by the Kenyan households.</p> <p>The stove models along with their determined average efficiencies under the monitoring period are as below:</p> <ol style="list-style-type: none"> <li>1. CH2200 - 30.68%</li> <li>2. CH4400 - 29.10%</li> <li>3. CH5200 - 30.88%</li> <li>4. CH6600 - 28.44%</li> <li>5. ECCL - 29.88%</li> <li>6. M5000 - 28.96%</li> </ol> <p>The stove efficiency has been determined through water boiling tests /11/. There were no changes observed during OSV from the technology stated in the CPA-DDs.</p>	
Any Project Design Change been sought and approved by EB for the CPA?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No project design change has been sought from EB for the CPAs.

It was confirmed through the monitoring database /6/ that the CPA involves distribution and installation of 24,783 and 17,049 stoves for 5341-0002 and 5341-0004 CPAs respectively till the end of the monitoring period.

The annual energy savings for the CPAs 5341-0002 and 5341-0004 were found to be 170.22 GWh<sub>th</sub> and 67.65 GWh<sub>th</sub> /4/ respectively, which is less than 180 GWh<sub>th</sub> in each of the two cases and thus the CPAs remains under the small scale limit /B02/.

The stoves in the CPAs have been distributed across different locations in Kenya. As confirmed through the monitoring database provided in the ER spread sheet, first stove for the 5341-0002 was distributed on 16/03/2012 and for 5341-0004 the first stove was distributed on 08/04/2012 /6/. All the stoves that were checked during verification site visit were found to be working and with the serial number marked on the stoves.

It was confirmed during the OSV that Envirofit International Ltd. is the Co-ordinating/Managing Entity for the PoA. The actual project activity is in line with the included CPA-DDs. Envirofit Kenya Ltd. is the CPA implementer for the CPAs being monitored.

The information (including data and variables) provided in the MR /2/ is in line with the details provided in the included CPA-DDs /B04/.

Based on above assessment, verification team confirms that the component project activities were implemented and equipment installed as described in the included CPA-DDs.

#### The actual operation of the CDM project activity

The starting date of the two CPAs 5341-0002 and 5341-0004 is 16/03/2012 as per the CPA-DDs /B04/ and the first distribution of stoves took place on 16/03/2012 and 08/04/2012 respectively /6/. A total of 24,783 and

17,049 stoves for 5341-0002 and 5341-0004 CPAs respectively were distributed in the CPAs till the end of the monitoring period /6/. The CME / DO has got the recipient households consent for carbon rights for CME during the distribution of the ICS and also there is a contractual agreement in between the CME and the DO for the exclusive rights of the CERs for CME /8/. Operation of the devices is confirmed during the site visit by the verification team. Followings were verified at the project site:

1. Stoves numbering system
2. Electronic monitoring system including input procedure
3. Actual distribution / 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. Agreements between households and the CPA implementer

In accordance with § 385 (c) of VVS, Version 09.0 /B01-1/, information (data and variables) provided in the monitoring report that are different from that stated in the registered CPA-DDs /B04/, have been assessed. The assessment is summarized below:

**5341-0002:**

Parameter	Ex-ante value in the CPA-DD	Actual operation for the reported monitoring period	Assessment by the verification team
Number of cook-stoves ( $N_{all}$ )	18,500	24,783	<p>Verification team noted that the actual number of cook-stoves distributed under the CPA is higher than the number indicated in the registered CPA DD /B04/. This difference is acceptable based on the following:</p> <ul style="list-style-type: none"> <li>• CPA-DD does not restricts the number of cook stoves to 18,500 which is just an indicative value (as explained below);</li> <li>• Energy savings in the CPA during the monitoring period is 170.22 GWh<sub>th</sub>/year) which is less than the threshold limit of 180 GWh<sub>th</sub>/year for small scale project activities.</li> </ul> <p>Verification team further noted that the cook-stove numbers as indicated in the registered CPA DD is not a fixed number (thus this cannot be categorized under a design change) and this assessment has been based on review of following paragraphs of CPA DD:</p> <p><i>“The CPA will have a maximum energy saving of less than or equal to 180 GWh<sub>th</sub>/year thus staying within the small-scale threshold. Based on the estimated energy savings, it is envisaged that about 18,500 stoves will be distributed under the CPA”</i> (Refer Section A.3, of the registered CPA-DD, Version 2.0 dated 11/10/2013) /B04/.</p> <p>The number of cook-stoves stated in the CPA-DD is only an indicative number based on the small scale annual energy saving threshold of 180GWh<sub>th</sub>/year. 24,783 stoves implemented in the CPA results in 170.22 GWh<sub>th</sub>/year of energy saving. The verification team noted that with the increase in number of stoves, the CPA still remains under the limit of small scale and hence this is not deemed as any design change.</p>
Efficiency of the ICS ( $\eta_{new}$ )	36.5%	29.70%	The weighted average efficiency of the cook-stoves ( $\eta_{new}$ ) monitored ex-post for the current monitoring

			period is less than the estimated ex-ante value in the CPA-DD. 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 emission reductions.
Stove Operation Fraction (SOF)	0.95	0.932	Since, the monitored ex-post value of SOF for the current monitoring period is less than the estimated ex-ante value in the CPA-DD, this is acceptable to the verification team, as it does not lead to increase of emission reductions.  This is deemed acceptable.
The amount of woody biomass consumption that is consumed through the continued use of old stoves ( $\mu_{old}$ )	177.9 kg/year	1568 kg/year	Since, the amount of woody biomass consumption that is consumed through the continued use of old stoves monitored ex-post for the current monitoring period is higher than the estimated ex-ante value in the CPA-DD, this is acceptable to the verification team as it does not lead to increase of emission reductions.  This is deemed acceptable.
The fraction of end users that are still using baseline (replaced) stoves ( $f_{old}$ )	0.1	0.171	Since, the fraction of end users that are still using baseline (replaced) stoves monitored ex-post for the current monitoring period is higher than the estimated ex-ante value in the CPA-DD, this is acceptable to the verification team as it does not lead to increase of emission reductions.  This is deemed acceptable.
Calculated average stove operation years in the monitoring period ( $Stove_{year}$ )	1	1.0	$Stove_{year}$ monitored ex-post for the current monitoring period is same as in the estimated ex-ante value in the CPA-DD.

**5341-0004:**

Parameter	Ex-ante value in the CPA-DD	Actual operation for the reported monitoring period	Assessment by the verification team
Number of cook-stoves ( $N_{all}$ )	17,500	4,234 (Charcoal) 12,815 (Wood)	The distributed number of stoves in the current monitoring period is less than the estimated ex-ante value in the CPA-DD. This is deemed acceptable to the verification team, as it does not lead to increase of emission reductions.
Efficiency of the ICS ( $\eta_{new}$ )	34.3%	29.55% (Charcoal) 28.96% (Wood)	The weighted average efficiencies of the cook-stoves ( $\eta_{new}$ ) monitored ex-post for the current monitoring period are less than the estimated ex-ante value in the CPA-DD. 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 emission reductions.
Stove Operation Fraction (SOF)	0.95	0.932 (Charcoal) 0.975 (Wood)	Since, the monitored ex-post values of SOF for the current monitoring period are less than the estimated ex-ante value in the CPA-DD, this is acceptable to the verification team, as it does not lead to increase of emission reductions.  This is deemed acceptable.

The amount of woody biomass consumption that is consumed through the continued use of old stoves ( $\mu_{old}$ )	189.48 kg/year	1568 kg/year (Charcoal) 1972 kg/year (Wood)	Since, the amount of woody biomass consumption that is consumed through the continued use of old stoves monitored ex-post for the current monitoring period are higher than the estimated ex-ante value in the CPA-DD, this is acceptable to the verification team as it does not lead to increase of emission reductions.  This is deemed acceptable.
The fraction of end users that are still using baseline (replaced) stoves ( $f_{old}$ )	0.1	0.171 (Charcoal) 0.152 (Wood)	Since, the fraction of end users that are still using baseline (replaced) stoves monitored ex-post for the current monitoring period are higher than the estimated ex-ante value in the CPA-DD, this is acceptable to the verification team as it does not lead to increase of emission reductions.  This is deemed acceptable.
Calculated average stove operation years in the monitoring period ( $Stove_{year}$ )	1	0.58 (Charcoal) 0.42 (Wood)	$Stove_{year}$ monitored ex-post for the current monitoring period are less than the estimated ex-ante value in the CPA-DD which is deemed acceptable.

Verification team has assessed the project in order to check any proposed or actual changes to the project design in accordance with § 317 of VVS Version 09.0. In the opinion of CCIPL, there is no change to the project design. CCIPL's verification team confirms that the CPAs are implemented within the boundary of the PoA as described in the registered PoA-DD and the implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PoA-DD and registered/included CPA-DDs.



**Annex 2:** Assessment of data and parameters fixed ex-ante at the time of validation

Parameter	Annual average biomass consumption per appliance ( $Q_{\text{biomass}}$ )
Data unit:	tonnes/year
Default values used:	3.56 (for charcoal) 4.176 (for woodfuel)
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass. ( $f_{\text{NRB},y}$ )
Data unit:	Fraction
Default values used:	0.92
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Net calorific value of the non-renewable biomass that is substituted ( $\text{NCV}_{\text{biomass}}$ )
Data unit:	TJ/tonne
Default values used:	0.015
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Emission factor for the substitution of non-renewable biomass by similar consumers ( $\text{EF}_{\text{projected\_fossilfuel}}$ )
Data unit:	tCO <sub>2</sub> /TJ
Default values used:	81.6
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Efficiency of the system being replaced (fraction) ( $\eta_{\text{old}}$ )
Data unit:	Fraction
Default values used:	0.129 (for charcoal stoves) 0.108 (for woodfuel stoves)
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

Parameter	Net to gross adjustment factor to account for leakages (LAF)
Data unit:	Fraction
Default values used:	0.95
Purpose of data	Baseline emissions calculation
Source and Verification of the source	The value of this parameter is fixed ex-ante /B04/.

**Annex 3: Assessment of data and parameters monitored**

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of CPA-DD):	Efficiency of the system being deployed as part of the project activity ( $\eta_{new}$ )
Measuring frequency/Time Interval:	Annual
Reporting frequency:	Annual
Reported value:	29.70% for Charcoal stoves in CPA 0002 29.55% for Charcoal stoves in CPA 0004 28.96% for woodfuel stoves in CPA 0004
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Sampling of the households
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	CPA-DDs do not specify the accuracy of the monitoring equipment (thermometer, mass balance and moisture meter). Verification team confirms that the accuracy of the monitoring equipment as stated in the MR represent good monitoring practice based on sectoral expertise.
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 CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	The stove efficiency testing has been done by WBTs conducted in line with the guidance provided by the CME in the CPA-DDs /B04/ /15/. The monitoring equipments used for conducting the stove efficiencies by WBTs are thermometer, weighing machine and moisture meter. These equipments were newly bought by the CME or self calibration type and hence deemed appropriate /12/.  QA/QC procedures stated in MR comply with CPA-DDs.
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?	The data has been cross-checked with the WBT test documents /11/.
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
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Data / Parameter: (as in monitoring plan of CPA-DD):	Total number of stoves installed ( $N_{all}$ )		
Measuring frequency/Time Interval:	Continuous		
Reporting frequency:	Yearly		
Reported value:	<b>Parameter</b>	<b>CPA0002</b>	<b>CPA0004</b>
	Nall - Charcoal	24,783	4,234
	Nall - Wood	0	12,815
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes		
Details of monitoring equipment:	Sales database		
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD does not specify the accuracy of the monitoring equipment, does the monitoring equipment represent good monitoring practise?	An electronic sales database has been maintained for the project activity.		
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 CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with CPA-DDs.		
Company performing the calibration(internal or external calibration):	NA		
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA		
Is (are) calibration(s) valid for the whole reporting period?	NA		
If applicable, has the reported data been cross-checked with other available data?	Yes, the value of parameter has been cross-checked with the monitoring database and sample households and the hard copy records were also checked during the OSV.		
How were the values in the monitoring report verified?	NA		
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.		
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA		

Monitoring Parameter Requirement	Assessment/ Observation by the DOE				
Data / Parameter: (as in monitoring plan of CPA-DD):	Stove Operation Fraction – used to determine the share of distributed stoves that are still operating, measured ex-post through sampling ( <b>SOF</b> )				
Measuring frequency/Time Interval:	Annual				
Reporting frequency:	Annual				
Reported value:	<table border="1"> <tr> <td>SOF<sub>charcoal</sub></td><td>0.932</td></tr> <tr> <td>SOF<sub>wood</sub></td><td>0.975</td></tr> </table>	SOF <sub>charcoal</sub>	0.932	SOF <sub>wood</sub>	0.975
SOF <sub>charcoal</sub>	0.932				
SOF <sub>wood</sub>	0.975				

Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from the monitoring survey of samples
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD 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 CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with CPA-DD.
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 in MR has been compared with monitoring survey report and the ER sheet
How were the values in the monitoring report verified?	The values in the monitoring report were compared against the values in ER sheet
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA.

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of CPA-DD):	The amount of woody biomass consumption that is consumed through the continued use of old stoves ( $\mu_{old}$ )
Measuring frequency/Time Interval:	Annual
Reporting frequency:	Annual
Reported value:	1568 kg/year for charcoal stoves 1972 kg/year for woodfuel stoves
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from monitoring survey of samples
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD 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 /	NA

manufacturers specification	
Is the calibration interval in line with the monitoring plan of the CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with CPA-DD.
Company performing the calibration(internal or external calibration):	NA
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	NA
Is (are) calibration(s) valid for the whole reporting period?	NA
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with monitoring survey records and the ER sheet
How were the values in the monitoring report verified?	NA
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	NA

Monitoring Parameter Requirement	Assessment/ Observation by the DOE
Data / Parameter: (as in monitoring plan of CPA-DD):	The fraction of end users that are still using baseline (replaced) stoves ( $f_{old}$ )
Measuring frequency/Time Interval:	Annual
Reporting frequency:	Annual
Reported value:	0.171 for charcoal stoves 0.152 for woodfuel stoves
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Value obtained from monitoring survey of samples
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD 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 CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with CPA-DD.
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 in MR has been compared with monitoring survey report and the ER sheet

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

Monitoring Parameter Requirement	Assessment/ Observation by the DOE											
Data / Parameter: (as in monitoring plan of CPA-DD):	Calculated average stove operation years in the monitoring period ( <b>Stove<sub>year</sub></b> )											
Measuring frequency/Time Interval:	Annual											
Reporting frequency:	Annual											
Reported value:	<table><tr><th>Parameter</th><th>CPA0002</th><th>CPA0004</th></tr><tr><td>STOVE<sub>year</sub> - Charcoal</td><td>1.00</td><td>0.58</td></tr><tr><td>STOVE<sub>year</sub> - Wood</td><td></td><td>0.42</td></tr></table>			Parameter	CPA0002	CPA0004	STOVE <sub>year</sub> - Charcoal	1.00	0.58	STOVE <sub>year</sub> - Wood		0.42
Parameter	CPA0002	CPA0004										
STOVE <sub>year</sub> - Charcoal	1.00	0.58										
STOVE <sub>year</sub> - Wood		0.42										
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes											
Details of monitoring equipment:	Value obtained from monitoring survey of samples											
Is accuracy of the monitoring equipment as stated in the CPA-DD? If the CPA-DD 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 CPA-DD? If the CPA-DD does not specify the frequency of calibration, does the selected frequency represent good monitoring practise?	NA. QA/QC procedures stated in MR comply with CPA-DD.											
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 in MR has been compared with monitoring survey report and the ER sheet											
How were the values in the monitoring report verified?	Yes, reported data in MR has been compared with monitoring survey report and the ER sheet											
Does the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.											
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption	NA.											

theoretically possible been applied or has a request for deviation been approved?	
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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
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