




**Verification and certification report form for
CDM programme of activities
(version 02.0)**

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

BASIC INFORMATION

Title and UNFCCC reference number of the programme of activities (PoA)	Biomass Energy Conservation Programme UNFCCC ref.: 10182	
Version number(s) of the PoA-DD(s) to which this report applies	07	
Version number of the verification and certification report	03	
Completion date of the verification and certification report	26/06/2018	
Monitoring period number and duration of this monitoring period	02, 01/02/2017 – 31/01/2018	
Number and version number of the monitoring report to which this report applies	Monitoring Report Number: 1, Version 3.1	
Coordinating/managing entity (CME)	Hestian Innovation Ltd.	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Malawi Rwanda	Yes No
Applied methodologies and standardized baselines	AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass --- Version 6.0	
Mandatory sectoral scopes linked to the applied methodologies	Sectoral Scope 3 (Energy Demand)	
Conditional sectoral scopes linked to the applied methodologies, if applicable	NA	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	206,700	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	180,180	

Name and UNFCCC reference number of the DOE	Earthood Services Private Limited; UNFCCC Ref.: E-0066
Name, position and signature of the approver of the verification and certification report	 Dr. Kaviraj Singh Managing Director

SECTION A. Executive summary

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The proposed PoA involves the dissemination of highly efficient biomass fired Improved Cookstoves (ICS). The cook stoves disseminated through this programme replaces the inefficient three-stone fired or equivalent with stoves which combust wood more efficiently, and improve thermal transfer to pots, hence saving fuel and lowering greenhouse gas emissions. Each CPA supports the project goals of reducing fuel consumption, improving health, and reducing deforestation in Malawi. The target areas are all regions of Malawi with traditional biomass stove users.

The fuel type used by improved household cook-stoves is predominantly fire wood and to a small extent other biomass agricultural residue (e.g. pigeonpea stalks, maize hobs, etc.).

Hestian Innovation Ltd. is the CME for the PoA, which is the project participant providing the framework and incentives for the rest of parties involved to achieve the emission reductions.

The CME keep track of the list of ICS installations concerning to the PoA in the hard copies as well as in electronic form. The ICS users sign a title transfer with the CME while purchasing the product.

Scope of verification:

The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. The verification includes the implementation and operation of the PoA as set out in the registered PoA-DD & CPA-DDs viz., 10182-0001, 10182-0002, 10182-0003, 10182-0004, 10182-0005, 10182-0006 and 10182-0025 (CPA-07) in the monitoring period. The verification tests the data and assertions set out in the monitoring report based on the following:

The verification tests the data and assertions set out in the monitoring report prepared for this monitoring period by the CMEs and is based on the following:

- (i) The approved methodology AMS II.G version 06 "Energy efficiency measures in thermal applications of non-renewable biomass", applied in the POA-DD & CPA-DDs
- (ii) The registered PoA-DD & CPA-DD and monitoring plan
- (iii) UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
- (iv) The CDM Validation and Verification Standard (VVS)
- (v) The CDM Project Standard (PS) and Project Cycle Procedure (PCP)
- (vi) Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions

The verification has considered both quantitative and qualitative aspects on stated/reported emission reductions. The monitoring report (all versions) and corresponding supporting documentation was assessed in accordance with the rules defined by UNFCCC, as appropriate to the PoA. The verification is not meant to provide any consulting or recommendations to the CME/others. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

Verification Process:

The verification process is conducted as per internal CDM Quality Manual, which includes the following steps;

- a) Contract with Hestian Innovation Ltd. and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
- b) Completeness check of Monitoring Report
- c) Publication of Monitoring Report at UNFCCC website
- d) Desk review (refer Section D.1 of this report) of Monitoring Report and corresponding ER sheet by verification team and planning of onsite audit (including sampling approach (refer Section C.4 of this report) to be applied)
- e) On site audit (refer Section D.2 of this report) (physical implementation and interview with relevant stakeholders) by verification team consistent of Team Leader and all Technical Experts, as a minimum
- f) Follow up activities e.g., interviews (refer Section D.3 of this report)
- g) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section D.5 of this report)
- h) Independent technical review of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidences)
- i) Reporting and closure of TR comments/findings (refer Section D.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section E and F of this report).
- j) Issuance of final verification report to contracted CME (or authorized representatives) and submission of request for issuance, as appropriate.

Verification Conclusion:

Based on the outcome of the verification process of the registered PoA "Biomass Energy Conservation Programme" and its 07 CPAs (10182-0001, 10182-0002, 10182-0003, 10182-0002, 10182-0005, 10182-0006 and 10182-0025) for the monitoring period 01/02/2017 – 31/01/2018 (including both dates) we confirm that the implementation of referenced registered PoA and CPAs is complying with applicable CDM rules and regulations as stated in the Monitoring Report (final) Version 3.1 dated 25/06/2018. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodologies, AMS II.G Version 06 and the monitoring plan contained in the PoA-DD and the CPA DDs.

Earthood Services Private Limited is able to certify that the emission reductions from the registered CDM PoA UN#10182 "Biomass Energy Conservation Programme" in Malawi during the period 01/02/2017 – 31/01/2018 (including both days) amount to 180,180 tCO₂e. Therefore, this is being submitted for request for issuance, as per UNFCCC procedures.

SECTION B. Verification team, technical reviewer and approver**B.1. Verification team members**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	Mandal	Amit Ranjan	Central office	Y	Y	Y	Y
2.	Verifier	IR	Mandal	Amit Ranjan	Central office	Y	Y	Y	Y
3.	Meth expert (AMS-II.G)	IR	Mandal	Amit Ranjan	Central office	Y	Y	Y	Y
4.	Technical Expert (3.1)	IR	Mandal	Amit Ranjan	Central office	Y	Y	Y	Y
5.	Local expert	EI	Katundu	Enea	Central office	Y	N	N	Y

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	Garg	Shreya	Central office
2.	Expert to TR	IR	Garg	Shreya	Central office
3.	Approver	IR	Singh	Kaviraj	Central office

SECTION C. Application of materiality in conducting the verification**C.1. Consideration of materiality in planning the verification**

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Error in Data Transfer from Digital Records, Hard copy Records to ER Spread sheet for the monitoring parameters and sampling	High	The parameter is used in the calculation of emission reductions.	Since most of the monitoring parameter is confirmed through ex post monitoring survey conducted by CME, the verification team physically

	survey results. The errors could result from human errors during the information transfer from the source to emission reduction sheet.			checked and verified the 8 households from ex post monitoring survey and project database. The efficiency test result of stoves and sample surveys for other parameters were checked. PoA-DD, CPA-DD and reference documents are also compared with ER spread sheet to check for any material error during data transfer.
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C.2. Consideration of materiality in conducting the verification

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The prescribed thresholds for materiality,

Prescribed range of ERs/annum	500,000+	300,000+ to 500,000	300,000	SSC PoAs	MSC PoAs
Prescribed Threshold	0.5%	1.0%	2.0%	5.0%	10.0%

The identified/selected materiality threshold for the PoA under current monitoring period is 5% as PoA is small scale in accordance with para 307 of CDM VVS for PoA, Version 1.0.

	MR Version (Public)	MR Version (Final)
Emission reductions/annum	194,180	180,180
Identified Threshold	5.0%	5.0%

The sampling approach and the calculations are checked by the assessment team with available evidences/sources. Since most of the data is confirmed through ex post monitoring survey conducted by CME, the verification team has cross verified the ex-post survey data by applying sampling approach (10 number of households surveyed during onsite assessment). All ex-ante parameters were directly cross-checked from the PoA-DD and CPA-DD. There was no gap identified in the values of ex-ante parameters.

SECTION D. Means of verification

D.1. Desk/document review

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The desk review involves;

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions;

The list of documents/evidences reviewed during the verification is provided under Appendix 3 of this report.

D.2. On-site inspection

Duration of on-site inspection: 21/03/2018 to 22/03/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting and Physical site visit: Households visited (implementation of PoA)	Malawi	21/03/2018	Amit Ranjan Mandal
2.	Review of information flows for generating, aggregating and reporting the monitoring parameters	Malawi	21/03/2018	Amit Ranjan Mandal
3.	Cross check between information provided in the monitoring report and data from other sources such as test reports, inventories, purchase records or similar data sources;	Malawi	22/03/2018	Amit Ranjan Mandal
4.	Documents review, discussion with CME representatives regarding monitoring process, stove distribution process, stove efficiency test and sampling.	Malawi	22/03/2018	Amit Ranjan Mandal
5.	Closing meeting and discussion on observed issues.	Malawi	22/03/2018	Amit Ranjan Mandal

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Botha	Yamungu	Sunfire Ltd.	21/03/2018-22/03/2018	Sampling & ER calculation, survey sheet, WBT calculation MR related issues etc.	Amit Ranjan Mandal
2.	Kabota	Martin	Sunfire Ltd.	21/03/2018-22/03/2018	Stove distribution process, survey methods, record keeping etc.	Amit Ranjan Mandal
3.	Lisimba	Lawrence	Sunfire Ltd.	21/03/2018-22/03/2018	Stove distribution process, survey methods, record keeping etc.	Amit Ranjan Mandal
4.	Phiri	M'neill	Area 55 consulting	21/03/2018-22/03/2018	Sampling, survey sheet, Stoves sales & sales database, tracking etc.	Amit Ranjan Mandal
5.	Ngalande	Kelina	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal
6.	Fashoni	Masautso	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal
7.	Bokosi	Alice	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal
8.	Mwanyaidi	Magret	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal
9.	Jalasi	A	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal
10.	Chitwanga	Thomson	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal

11.	Riyaya	Ivy	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal
12.	Mistata	Peter	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal
13.	Ice	Akiramumu	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal
14.	Chimwaza	Alice	Household user	21/03/2018	ICS usage	Amit Ranjan Mandal

D.4. Sampling approach

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CME's sampling approach:

A Stratified sampling plan was carried out across all specific case CPAs covered in this monitoring period. The CME has applied Stratified Sampling across a group of CPAs for different monitoring parameters as per validated PoA DD and CPA DDs. 95/10 confidence precision was mainly applied by CME in the sampling, which is better than the 90/10 confidence precision prescribed in sampling tool. The confidence and precision level applied by the CME meets the methodological requirements. The sampling approach undertaken by CME is duly explained under Section B.1 of monitoring report.

DOE's sampling approach:

In order to meet the requirements of Standard for Sampling and surveys for CDM project activities and programmes of activities, the verification team applied acceptance sampling in the verification. The verification team selected random samples of CME's sampled records, checked the acceptability (or otherwise) of the data for each such record with CME's sample records, and then based on the number of records where there is agreement, determined if the CME's sample records meet the requirements.

As per para 33 of "Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 7," A DOE may select a different sample size than the one indicated in paragraph 31, either by choosing a different value for the consumer risk and producer risk (e.g. 20% for the consumer risk) when applying acceptance sampling or by using another approach, if any of the following conditions apply:

- (a) The estimated volume of annual emission reductions of the project activity or the PoA being verified is equal to or less than 100,000 tCO₂e;
- (b) The security conditions in the project region prevents inspection of many samples (e.g. conflict zones); or
- (c) The project activity or the PoA is located in a least developed country or a host Party with 10 or fewer registered CDM project activities at the end of the monitoring period being verified.

In case of the current verification, the PoA is located in a least developed country i.e. Malawi, which has been confirmed through UNFCCC website (http://unfccc.int/cooperation_and_support/ldc/items/3097.php / http://unfccc.int/resource/docs/publications/ldc_brochure2009.pdf), thus meeting the requirement of para 31(c). Hence DOE has considered 8 samples from each type of ICS for the current verification.

The verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgement and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities':

- The proportion of discrepancies between the CME's data and verification team's (field or onsite inspection results) data that can be considered acceptable. This is referred to as the AQL (Acceptable Quality Level): 0.5% was considered in this verification.
- The proportion of discrepancies between the CME's data and verification team's (field or onsite inspection results) data that would be considered unacceptable. This is the UQL (Unacceptable Quality Level): 20% was considered in this verification.
- The producer risk of 10% and consumer risk of 20% was considered.

Considering the above input values, a sample size of 8 was required as per Table 1 in the referred Standard for the monitoring period. Accordingly, Acceptance number (c) thus determined for the sample size is 0. A sample size of 8 meets the criteria. The assessment team has verified 10 sample considering two additional sample.

For other parameters viz. $B_{y=1,new,i,survey}$ (Annual quantity of woody biomass used by project devices in tonnes per device of type i) & $\mu_{y,i} / 365$ (Number of days of utilization of the project device during the year 'y'), $\eta_{new,i,a}$ (Thermal efficiency of device of type i being deployed as part of the project activity with the age a) the verification team has checked from the document/evidence submitted by the CME.

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General	-	-	-
Compliance of the monitoring report with the monitoring report form	-	-	-
Remaining forward action requests from validation and/or previous verification	-	-	-
CPA(s) considered for verification and covered in this report	-	CAR#02	-
Programme of activities			
Compliance of the programme implementation with the registered PoA-DD	CL#01	-	-
Implementation and operation of the management system	-	-	-
Post-registration changes	-	-	-
<ul style="list-style-type: none"> Temporary deviations from the registered monitoring plan, applied methodology or applied standardized baseline 	-	-	-
<ul style="list-style-type: none"> Corrections 	-	-	-
<ul style="list-style-type: none"> Inclusion of a monitoring plan 	-	-	-
<ul style="list-style-type: none"> Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools 	-	-	-
<ul style="list-style-type: none"> Changes to the programme design or project design 	-	-	-
<ul style="list-style-type: none"> Change of coordinating/managing entity 	-	-	-
<ul style="list-style-type: none"> Changes specific to afforestation and reforestation activities 	-	-	-
Component project activities			
Compliance of the CPA implementation with the included CPA design document	CL#01	-	-
Post-registration changes			
<ul style="list-style-type: none"> Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline 	-	-	-
<ul style="list-style-type: none"> Corrections 	-	-	-
<ul style="list-style-type: none"> Changes to the start date of the crediting period of component project activities 	-	-	-
<ul style="list-style-type: none"> Inclusion of a monitoring plan 	-	-	-
<ul style="list-style-type: none"> Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools 	-	-	-
<ul style="list-style-type: none"> Changes to the programme design of project design 	-	-	-
<ul style="list-style-type: none"> Changes specific to afforestation and reforestation component project activities 	-	-	-
Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline	-	-	-
Compliance of monitoring activities with the registered monitoring plan	-	-	-
<ul style="list-style-type: none"> Data and parameters fixed ex ante or at renewal of crediting period 	-	-	-
<ul style="list-style-type: none"> Data and parameters monitored 	-	-	-

• Implementation of sampling plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	CAR#04	-
Assessment of data and calculation of emission reductions or net removals	-	CAR#03	-
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	-	CAR#03	-
• Calculation of project GHG emissions or actual net GHG removals by sinks	-	CAR#03	-
• Calculation of leakage GHG emissions	-	CAR#03	-
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	-	CAR#03	-
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	-	-	-
• Remarks on difference from estimated value in included CPA	-	-	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
Total	01	03	00

SECTION E. Verification findings

E.1. General

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

Means of verification	Monitoring report is prepared using the correct template i.e. CDM-PoA-MR-FORM Version 02.0. The verification team confirms that the monitoring report has been appropriately prepared using the latest applicable monitoring report form, and that all sections are completed.
Findings	No findings raised.
Conclusion	Latest version of MR has been used and all the guidelines of the template have been followed by the CME to prepare the Monitoring Report.

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

There were no FARs observed from validation and/or previous verifications.

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

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
Malawi Biomass Energy Conservation Programme CPA 1 - CPA 10182-0001	Yes	13/08/2015	Version 07, dated – 07/07/2015	Yes
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-0002	Yes	15/10/2016	Version 07, dated – 07/07/2015	Yes
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-0003	Yes	15/10/2016	Version 07, dated – 07/07/2015	Yes
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-0004	Yes	15/10/2016	Version 07, dated – 07/07/2015	Yes
Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-0005	Yes	15/10/2016	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-0006	Yes	15/10/2016	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-0025	Yes	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 8 - CPA 10182-0020	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 9 - CPA 10182-0021	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 10 - CPA 10182-0022	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 11 - CPA 10182-0023	No	11/08/2017	Version 07, dated – 07/07/2015	NA

Malawi Biomass Energy Conservation Programme CPA 12 - CPA 10182-0024	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 13 - CPA 10182-0007	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 14 - CPA 10182-0009	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 15 - CPA 10182-0008	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 16 - CPA 10182-0010	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 17 - CPA 10182-0011	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 18 - CPA 10182-0012	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 19 - CPA 10182-0013	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 20 - CPA 10182-0014	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 21 - CPA 10182-0015	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 22 - CPA 10182-0016	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 23 - CPA 10182-0017	No	11/08/2017	Version 07, dated – 07/07/2015	NA

Malawi Biomass Energy Conservation Programme CPA 24 - CPA 10182-0018	No	11/08/2017	Version 07, dated – 07/07/2015	NA
Malawi Biomass Energy Conservation Programme CPA 25 - CPA 10182-0019	No	11/08/2017	Version 07, dated – 07/07/2015	NA

E.2. Programme of activities

E.2.1. Compliance of the programme implementation with the registered programme design document

Means of verification	<p>The registered PoA involves the promotion, distribution and sale of improved cook stoves (ICS) in Malawi. CME has implemented the CPAs through coordination with the monitoring team and further with local CPA implementers/distributors. The overall responsibility of implementation and operation is with CME (Hestian Innovation Ltd.), which was also evident during the site visit. This is consistent with PoA DD /01/. This monitoring period includes the implementation and monitoring of 07 CPAs as part of registered PoA.</p> <p>The implementation of all CPAs, as referenced above, are within the geographical boundary of the PoA DD, which constitutes the physical boundary as well.</p> <p>The ICS (Improve Cook Stoves) models deployed under each CPA is verified as following:</p> <p>CPA (10182 – 0001):</p> <table border="1"> <tr> <td>Cook stove deployed/ Model</td><td>Number</td></tr> <tr> <td>Chitetezo Mbaula ceramic stove</td><td>22,496</td></tr> </table> <p>CPA (10182 – 0002):</p> <table border="1"> <tr> <td>Cook stove deployed/ Model</td><td>Number</td></tr> <tr> <td>Chitetezo Mbaula ceramic stove</td><td>22,311</td></tr> </table> <p>CPA (10182 – 0003):</p> <table border="1"> <tr> <td>Cook stove deployed/ Model</td><td>Number</td></tr> <tr> <td>Chitetezo Mbaula ceramic stove</td><td>22,045</td></tr> </table> <p>CPA (10182 – 0004):</p> <table border="1"> <tr> <td>Cook stove deployed/ Model</td><td>Number</td></tr> <tr> <td>Chitetezo Mbaula ceramic stove</td><td>21,120</td></tr> </table> <p>CPA (10182 – 0005):</p> <table border="1"> <tr> <td>Cook stove deployed/ Model</td><td>Number</td></tr> <tr> <td>Chitetezo Mbaula ceramic stove</td><td>21,385</td></tr> </table> <p>CPA (10182 – 0006):</p> <table border="1"> <tr> <td>Cook stove deployed/ Model</td><td>Number</td></tr> </table>	Cook stove deployed/ Model	Number	Chitetezo Mbaula ceramic stove	22,496	Cook stove deployed/ Model	Number	Chitetezo Mbaula ceramic stove	22,311	Cook stove deployed/ Model	Number	Chitetezo Mbaula ceramic stove	22,045	Cook stove deployed/ Model	Number	Chitetezo Mbaula ceramic stove	21,120	Cook stove deployed/ Model	Number	Chitetezo Mbaula ceramic stove	21,385	Cook stove deployed/ Model	Number
Cook stove deployed/ Model	Number																						
Chitetezo Mbaula ceramic stove	22,496																						
Cook stove deployed/ Model	Number																						
Chitetezo Mbaula ceramic stove	22,311																						
Cook stove deployed/ Model	Number																						
Chitetezo Mbaula ceramic stove	22,045																						
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Cook stove deployed/ Model	Number																						
Chitetezo Mbaula ceramic stove	21,385																						
Cook stove deployed/ Model	Number																						

	Chitetezo Mbaula ceramic stove	11,378
	CPA (10182 – 0007):	
	Cook stove deployed/ Model	Number
	Chitetezo Mbaula ceramic stove	7,716
	<p>The verification team is able to confirm that the quantity, specification and target group of the ICSs is consistent with the PoA DD /01/ and respective CPA DDs/3-6/. Further, based on the review of sales data base /26/, physical observations and interview conducted during the site visit, the verification team found that:</p> <ul style="list-style-type: none"> • The CPA(s) are implemented within the boundary of the PoA as described in the registered PoA-DD. • The CME is same as that mentioned in the registered PoA-DD • The implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PoA-DD and included CPA-DDs. • All physical features of the CPA proposed in the included CPA-DDs are in place. • The project participants/CPA implementer has operated the CPAs as per the included CPA-DDs. 	
	<p>The verification team has visited the households during site visit; It was observed that each ICS was assigned a unique identification number (serial number), and unique household mobile number. The unique serial number on each ICS, personal information of ICS owners and date of purchase of ICS was cross checked with the sales database/26/ available with the CME. The operation of the ICSs was confirmed through interviews of owners/representatives (of ICSs) during the site visit.</p>	
	<p>The emission reductions being claimed during this monitoring period are lesser than the estimated emission reductions in the registered CPA-DDs, as given in the table below:</p>	
	CPA	Value estimated in ex ante calculation in the included CPA-DD(s)
	10182-0001	39,771
	10182-0002	39,771
	10182-0003	39,771
	10182-0004	39,771
	10182-0005	29,855
	10182-0006	10,133
	10182-0007	7,627
	Total	206,700
		Actual values achieved by the specific-case CPA(s) during this monitoring period
		41,863
		36,563
		26,273
		41,126
		30,176
		2,487
		1,692
		180,180
	<p>The information (including data and variables) provided in the MR/13/ is found to be in line with the details provided in the registered PoA-DD/1/.</p> <p>The verification team considers the project description of the project contained in the registered PoA-DD is complete and accurate. The PoA-DD complies with the relevant methodology, tools, forms and guidance at the time of PoA submission for registration/01/. The monitoring report was compared and verified against the description provided in the registered PoA-DD and found to be correct.</p>	
Findings	CL#01 and CAR#03 was raised and resolved.	
Conclusion	<p>The verification team confirms that the physical features (technology/type of ICS) of the implementation were in accordance with the registered PoA DD.</p> <ul style="list-style-type: none"> • The distribution of ICS is still ongoing as it has not yet reached the estimated quantity given in the respective specific case CPA DDs. 	

	<ul style="list-style-type: none"> • The actual operation is in line to respective CPA DD, which is further explained under Section E.3 of this report. • Except CPA0001, the number of installations in any CPA for the type of CEP were either equal to or within the quantity estimated in the respective CPA DDs. The total number of CERs achieved for CPA0001, CPA0004, and CPA0005 are more than the estimated ERs for the same period (5%, 3% and 1% respectively). The reason for the increase is higher efficiency than expected. The total actual CERs for CPAs (combined) were slightly less for comparable monitoring period. Apart from this, no information with regard to data and variables was identified that may surpass the estimated quantity of ERs in the respective CPA DDs. • The emission reductions achieved for each specific case CPA DD were within the estimated quantity in the registered CPA DD.
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E.2.2. Implementation and operation of the management system

Means of verification	The verification team during the site visit assessed the management systems in place to implement the monitoring of the PoA. This included the roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system through physical inspection. The assessment team has also checked training of the monitoring & data recording personnel, the maintenance schedules/records of the stoves and also cross checked the sales data records /26/ with the actual sales receipts /32/. The roles and responsibilities data collection transfer and aggregation procedures, data storage and archiving for the monitoring system have been provided in the MR /13/.
Findings	CL#01 was raised and resolved.
Conclusion	The verification team confirms that the monitoring management system of the PoA is in place with the responsibilities properly identified and established.

E.2.3. Post-registration changes

E.2.3.1. Temporary deviations from the registered monitoring plan, applied methodology or applied standardized baseline

>>

There is no deviation observed.

E.2.3.2. Corrections

>>There is no correction observed.

E.2.3.3. Inclusion of a monitoring plan

>> Not Applicable

E.2.3.4. Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools

>>No permanent changes observed.

E.2.3.5. Changes to the programme design or project design

>>No changes observed.

E.2.3.6. Change of coordination/managing entity

>>No changes observed.

E.2.3.7. Changes specific to afforestation and reforestation activities

>> Not Applicable.

E.3. Component project activities**E.3.1. Compliance of the CPA implementation with the included CPA design document**

Means of verification	The CPAs are grouped together in this section (i.e., Section E.3) for the purpose of verification and reporting as these are of similar in nature (technology and type). The CPAs involves the promotion and installation of ICS (portable) in rural areas of Malawi. The product is disseminated in residential households of the area.						
	The current verification which includes verification of 4 CPAs viz. 10182-0001(CPA - 01), 10182-0002 (CPA -02), 10182-0003 (CPA -03), 10182-0004 (CPA -04), 10182-0005 (CPA-05), 10182-0006 (CPA-06) and 10182-0025 (CPA-07). The implementation status of the ICS has been verified by physically verifying the samples of ICS from the PP's sample. The types of model of ICS installed is Chitetezo Mbaula type model have been installed by the CME, which is in line to the PoA DD/01/.						
	ICS installed Break-up CPA						
		CPA - 01	CPA - 02	CPA - 03	CPA - 04	CPA- 05	CPA-06
	Chitetezo Mbaula ceramic stove	22,496	22,311	22,045	21,120	21,385	11,378
							7,716
Hestian Innovation Ltd. is the CME for the implementation of the CPAs and is also responsible for coordinating and managing the implementation of each element of the monitoring plan. The monitoring period under this monitoring is from 01/02/2017 to 31/01/2018. The details of each CPA are as follows:							
CPA Ref.		Inclusion date	Location	ICS type	Total ICS sold		
Malawi Biomass Energy Conservation Programme CPA 1 - CPA 10182-0001		13/08/2015	Across Malawi	Chitetezo Mbaula ceramic stove	22,496		
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-0002		15/10/2016	Across Malawi	Chitetezo Mbaula ceramic stove	22,311		
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-0003		15/10/2016	Across Malawi	Chitetezo Mbaula ceramic stove	22,045		
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-0004		15/10/2016	Across Malawi	Chitetezo Mbaula ceramic stove	21,120		

	Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-0005	15/10/2016	Across Malawi	Chitetezo Mbaula ceramic stove	21,385
	Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-0006	15/10/2016	Across Malawi	Chitetezo Mbaula ceramic stove	11,378
	Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-0025	11/08/2017	Across Malawi	Chitetezo Mbaula ceramic stove	7,716
	<p>The reference numbers, inclusion date of each CPA and crediting period of each CPA have been checked and verified from the UN website/38/. The location of the ICS distribution is verified from the onsite audit, PoA DD/1/ and CPA DDs/3-6/. The type and number of ICS sold is verified from the sales database/26/.</p> <p>The model/ types of ICS have been verified during the on-site inspection of sample verifications in order to assess that all physical features of the registered CPA DDs are in place and the CME have operated the PoA & CPA as per the registered PoA – DD/1/ and CPA – DDs/3,4,5,6/.</p>				
Findings	CL#01 and CAR#02 is raised and resolved.				
Conclusion	<ul style="list-style-type: none"> The verification team is in opinion that physical features of the CPAs have been implemented in accordance with the registered CPA-DDs. No specific monitoring equipment had to be installed according to the monitoring plan. It is also confirmed, through the physical site visit and review of the supporting documentation that physical features of the component CPAs have been implemented in accordance with the CPA-DDs. The CPAs were also found to be completely operational in line with the CPA-DDs. The information provided in the relevant sections of the monitoring report are appropriately describe the implementation and operational status of the PoA. 				

E.3.2. Post-registration changes

E.3.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

>>

No changes observed.

E.3.2.2. Corrections

>>No corrections observed.

E.3.2.3. Changes to the start date of the crediting period of component project activities

>>Not applicable.

E.3.2.4. Inclusion of a monitoring plan

>>Not applicable.

E.3.2.5. Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline, or other applied standards or tools

>>No changes observed.

E.3.2.6. Changes to the programme design or project design

>> No changes observed.

E.3.2.7. Changes specific to afforestation and reforestation component project activities

>>Not applicable.

E.3.3. Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline

Means of verification	The monitoring plan as contained in respective CPA DDs were reviewed against the monitoring requirements of the applied methodology AMS-II.G version 06 /11/ as well as PoA DD/01/ with reference to the technology involved. Based on this review it was found that the monitoring plan contained in the CPA DDs includes all the required parameters to be monitored in the context of the CPA design and description and allows proper determination of emission reductions in accordance with PoA DD/1/ and applied methodology AMS-II.G version 06/11/.
Findings	No findings raised.
Conclusion	The monitoring plan is in accordance with the approved methodology, AMS-II.G version 06 /11/, that is included in each respective CPA DDs/3,4,5,6/.

E.3.4. Compliance of monitoring activities with the registered monitoring plan**E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period**

Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass, %, $f_{NRB,y}$

Means of verification	This is a default value of fraction of non-renewable biomass approved by CDM EB and accepted by DNA as indicated at UNFCCC website. The value applied is 0.81 for Malawi. The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD/1/ and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	0.81	CPA DD of page 11
	CPA -02	0.81	CPA DD of page 12
	CPA -03	0.81	CPA DD of page 12
	CPA -04	0.81	CPA DD of page 12
	CPA -05	0.81	CPA DD of page 12
	CPA -06	0.81	CPA DD of page 12
	CPA -07	0.81	CPA DD of page 13

Findings	No finding was raised.
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD/1/ & CPA DDs/3,4,5,6/. The applied value is correct and justified.

Net calorific value of the non-renewable biomass that is substituted, TJ/t, NCV_{biomass}

Means of verification	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD/1/ and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	0.015	CPA DD of page 11
	CPA -02	0.015	CPA DD of page 12
	CPA -03	0.015	CPA DD of page 12
	CPA -04	0.015	CPA DD of page 12
	CPA -05	0.015	CPA DD of page 12
	CPA -06	0.015	CPA DD of page 12
	CPA -07	0.015	CPA DD of page 13
Findings	No finding was raised.		
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD/1/ & CPA DDs/3,4,5,6/. The applied value is correct and justified.		

Emission factor for the substitution of non-renewable biomass by similar consumers, tCO₂ /TJ, EF_{projected_fossilfuel}

Means of verification	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD/1/ and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	81.6	CPA DD of page 12
	CPA -02	81.6	CPA DD of page 11
	CPA -03	81.6	CPA DD of page 11
	CPA -04	81.6	CPA DD of page 12
	CPA-05	81.6	CPA DD of page 12
	CPA-06	81.6	CPA DD of page 12
	CPA-07	81.6	CPA DD of page 13
Findings	No finding was raised.		

Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD/1/ & CPA DDs/3,4,5,6/. The applied value is correct and justified.
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Efficiency of the system being replaced, % , η_{old}

Means of verification	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD/01/ and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	10	CPA DD of page 12
	CPA -02	10	CPA DD of page 12
	CPA -03	10	CPA DD of page 12
	CPA -04	10	CPA DD of page 12
	CPA -05	10	CPA DD of page 12
	CPA -06	10	CPA DD of page 12
	CPA -07	10	CPA DD of page 13
Findings	No finding was raised.		
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD/01/ & CPA DDs/3,4,5,6/. The applied value is correct and justified.		

Leakage adjustment factor for period y, Fraction, L_y

Means of verification	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD/01/ and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	0.95	CPA DD of page 12
	CPA -02	0.95	CPA DD of page 13
	CPA -03	0.95	CPA DD of page 13
	CPA -04	0.95	CPA DD of page 13
	CPA -05	0.95	CPA DD of page 13
	CPA -06	0.95	CPA DD of page 13
	CPA -07	0.95	CPA DD of page 13
Findings	No finding was raised.		
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD/1/ & CPA DDs/3,4,5,6/. The applied value is correct and justified.		

E.3.4.2. Data and parameters monitored

Annual quantity of woody biomass used by project devices in tonnes per device of type I, t/HH/yr, ($B_{y=1, \text{new}, i, \text{survey}}$)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Measured
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology.
	Monitoring equipment	Digital high precision weighing scale and moisture meter are used. Please refer section I.5 for details.
	Calibration frequency /interval:	Since the Calibration frequency for the monitoring equipment's are not defined in the registered PoA DD/CPA DDs, so considering the SSC guideline EB 61, Annex 21, para 17(c), the frequency is once in 3 years. All the monitoring equipment's are duly calibrated.
	Is(are) calibration(s) valid for the whole reporting period?	Yes, from the calibration certificates it has been identified that calibration is valid for the whole reporting period.
	How were the values in the monitoring report verified?	<p>The CPAs measure the parameter by number of bundles of wood used in the project scenario is estimated via usage and monitoring survey of sampled households using an appropriate local metric (e.g. bundles of wood) for an easily understood period (e.g. per week). The average weight of a bundle of wood is calculated based on measurement of a sample of at least 30 different bundles adjusted for moisture content.</p> <p>Stratified random sampling is applied in the survey or field test conducted to determine the amount of fuel-wood used in the project activity by project devices. Survey questionnaires administered to a sample of end users elicit the quantification of wood used by the household user.</p> <p>The value of the parameter for all the CPAs i.e. CPA-01, CPA-02, CPA-03, CPA-04, CPA-05, CPA-06 and CPA-07 is 1.881 tonnes/household/ year.</p> <p>It is noteworthy that PP has done sampling across the CPA due to the similar nature of the technology employed in the PoA.</p>
	If applicable, has the reported data been cross-checked with other available data?	The survey results/23/, assumptions and sales records were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/15/ of final Monitoring Report.

		The verification team randomly selected 10 samples for DOE's field survey and via on-site interview found out amount of woody biomass consumed per household per year, which was consistent with the CME's sample survey result.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment. During the site visit, the assessment team has duly verified the CME's QA/QC procedures in which the data transfer from hard copies (field survey reports etc.) to excel sheets are randomly cross checked by the senior management either from the hard copies/ sales receipts/ telephonic calls to ascertain the reliability and correctness of the entered data in the excel sheet.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	No finding was raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Number of project devices of type i and age a that are operating in year y, Number of items, ($N_{y,i,a}$)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Measured continuously and aggregated annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology//.
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The values in the MR/13/ have been verified from the sales database/26/. The value of the parameter for all the CPAs i.e. CPA 1= 22,496 CPA 2= 22,311 CPA 3= 22,045 CPA 4= 21,120 CPA 5= 21,385

		<p>CPA 6= 11,378 CPA 7= 7,716</p> <p>The total number of stoves in each CPA have been indicated above, the PP has segregated the stoves into four age groups. The age group has been identified based on the days of operation of the stove in the monitoring period. The four age groups covered under the current monitoring period are:</p> <ol style="list-style-type: none"> Age 1: Stoves operating for less than 365 days Age 2: Stoves operating for 365-729 days. Age-3: Stoves operating for 730-1094 days. Age-4: Stoves operating for 1095-1417 days. <p>The reference for the calculation of days of operation has been taken as the end date of the monitoring period which was found acceptable by the assessment team.</p> <p>The detailed calculation of the of the number of age of stoves can be referred from the ER calculation sheet.</p> <p>Additionally, the number of stoves used for emission reduction calculation has been multiplied with usage rate to arrive at the number of operational stoves.</p> <p>The discounted usage rate for each age group can be found in detail in 'Usage and Monitoring survey' sheet. The approach followed by the PP was found acceptable including the sampling technique which was found representative.</p>
	If applicable, has the reported data been cross-checked with other available data?	<p>The sales records/26/ were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/15/ of final Monitoring Report.</p> <p>The verification team randomly selected 10 samples for DOE's field survey and via on-site interview found out that all the ICS which are picked up for sampling are installed at the household and are in working condition, and the details of the stoves were consistent with the CME's sample survey result.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment. During the site visit, the assessment team has duly verified the CME's QA/QC procedures in which the data transfer from hard copies to excel sheets are randomly cross checked by the senior management either from the hard copies/ sales receipts/ telephonic calls to ascertain the reliability and correctness of the entered data in the excel sheet.</p>
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1	<p>No such issues.</p>

	to the CDM Project Standard?	
Findings	CAR#03 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Number of days of utilization of the project device during the year 'y', %,($\mu_{y,i}$ / 365)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Calculated biennially
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology.
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	<p>The values have been verified from the Usage and monitoring survey conducted by CME/23/. The value of the parameter for all the CPAs i.e. CPA1, CPA 2, CPA 3, CPA 4, CPA 5, CPA 6 and CPA 7 are</p> <p><u>$\mu_{y,i}$</u></p> <p>CPA 1 – 331 CPA 2 – 331 CPA 3 – 331 CPA 4 – 331 CPA 5 – 331 CPA 6 – 331 CPA 7 – 331</p> <p><u>$\mu_{y,i} / 365$</u></p> <p>CPA 1 – 0.907 CPA 2 – 0.907 CPA 3 – 0.907 CPA 4 – 0.907 CPA 5 – 0.907 CPA 6 – 0.907 CPA 7 – 0.907</p>

		It is noteworthy that PP has done sampling across the CPA due to the similar nature of the technology employed in the PoA.
	If applicable, has the reported data been cross-checked with other available data?	The survey results/23/, assumptions and sales records// were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/15/ of final Monitoring Report. The verification team randomly selected 10 samples for DOE's field survey and via on-site interview found out the usage of the installed ICS which was consistent with the CME's sample survey result.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment. During the site visit, the assessment team has duly verified the CME's QA/QC procedures in which the data transfer from hard copies (field survey reports etc.) to excel sheets are randomly cross checked by the senior management either from the hard copies/ sales receipts/ telephonic calls to ascertain the reliability and correctness of the entered data in the excel sheet.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR#03 was raised and closed.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Factor to consider the efficiency loss of the project device type i due to its aging at the year y, %, ($\Delta\eta_{y,i,a}$)

Means verification of	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Measured , Water Boiling Tests is conducted in the first batch of stoves thereafter monitoring is determined the thermal efficiency of the devices installed at the first year of the crediting period, and the efficiency loss of this population is used to correct the initial efficiency of the population of devices installed later on.
	Is measuring and reporting frequency in accordance with the monitoring plan and	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology/11/.

	monitoring methodology? (Yes / No)	
	Monitoring equipment	Scales, thermometer, timer, wood moisture meter are used as the monitoring equipment.
	Calibration frequency /interval:	Since the calibration frequency for the monitoring equipment's are not defined in the registered PoA DD/CPA DDs, so considering the SSC guideline EB 61, Annex 21, para 17(c), the frequency is once in 3 years. All the monitoring equipment's are duly calibrated.
	How were the values in the monitoring report verified?	<p>The WBT results/15/ are checked with the WBT raw data copies/29/ and found to be correct. Also, people involved with the WBT were interviewed to understand the procedures followed for WBT. CME has applied WBT protocol version 4.3.2.</p> <p>The Factor to consider the efficiency loss of the project device type i due to its aging at the year y for the CPAs are –</p> <p>CPA 1 – 86.31 for age group 1, 83.76 for age group 2, 86.34 for age group 3;</p> <p>CPA 2 – 86.31 for age group 1, 83.76 for age group 2, 86.34 for age group 3;</p> <p>CPA 3 – 86.31 for age group 1, 83.76 for age group 2, 86.34 for age group 3;</p> <p>CPA 4 – 86.31 for age group 1, 83.76 for age group 2, 86.34 for age group 3;</p> <p>CPA 5 – 86.31 for age group 1, 83.76 for age group 2, 86.34 for age group 3;</p> <p>CPA 6 – 86.31 for age group 1, 83.76 for age group 2, 86.34 for age group 3;</p> <p>CPA 7– 86.31 for age group 1, 83.76 for age group 2, 86.34 for age group 3;</p>
	If applicable, has the reported data been cross-checked with other available data?	N/A
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment. During the site visit, the assessment team has duly verified the CME's QA/QC procedures in which the data transfer from hard copies to excel sheets are randomly cross checked by the senior management either from the hard copies/ sales receipts/ telephonic calls to ascertain the reliability and correctness of the entered data in the excel sheet.

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CL#01 and CAR#03 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Thermal efficiency of device of type i being deployed as part of the project activity with the age a, %, ($\eta_{new,i,a}$)

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Annually.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology/11/.
	Monitoring equipment	Scales, thermometer, timer, wood moisture meter are used as the monitoring equipment. Please refer section E.3.4.2 for details.
	Calibration frequency /interval:	Since the calibration frequency for the monitoring equipment's are not defined in the registered PoA DD/CPA DDs, so considering the SSC guideline EB 61, Annex 21, para 17(c), the frequency is once in 3 years. All the monitoring equipment's are duly calibrated.
	How were the values in the monitoring report verified?	CPA 1 – 26.41% for age 1, 25.63% for age 2, 26.42% for age 3. CPA 2 – 26.41% for age 1, 25.63% for age 2, 26.42% for age 3. CPA 3 – 26.41% for age 1, 25.63% for age 2, 26.42% for age 3. CPA 4 – 26.41% for age 1, 25.63% for age 2, 26.42% for age 3. CPA 5 – 26.41% for age 1, 25.63% for age 2, 26.42% for age 3. CPA 6 – 26.41% for age 1, 25.63% for age 2, 26.42% for age 3.

		CPA 7 – 26.41% for age 1, 25.63% for age 2, 26.42% for age 3. The efficiency of each group has been calculated as an average of efficiency of each tested stoves. The assessment team has checked the WBT records /29/ are checked as well as the WBT analysis sheet/24/ and also interviewed the persons involved in the WBT and found that the WBT was carried out appropriately and correctly and in accordance with the WBT protocol version 4.2.3.
	If applicable, has the reported data been cross-checked with other available data?	The hard copies of the WBT records /29/ are checked as well as the WBT analysis sheet/24/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment. During the site visit, the assessment team has duly verified the CME's QA/QC procedures in which the data transfer from hard copies to excel sheets are randomly cross checked by the senior management either from the hard copies/ sales receipts/ telephonic calls to ascertain the reliability and correctness of the entered data in the excel sheet.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CL#01 and CAR#04 was raised and closed.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

E.3.4.3. Implementation of sampling plan

Means of verification	<p>The assessment of CME's sampling is discussed below -</p> <p>Target population - The target population were the stoves distributed under the current CPAs i.e. CPA 1, CPA 2, CPA 3, CPA 4, CPA 5, CPA 6 and CPA 7. As per page 37 of the PoA-DD, "the population will be divided into primary sampling units (PSU) by same country and fuel consumption cluster, ICS type, ICS vintage and CPA implementer". Thus, the strata were defined by the PP in the MR which has been found to be correct and acceptable. Once the PSUs are defined, ICS will be randomly selected based on the relative size of the strata. To ensure a random selection of ICS, random number generators has been used.</p> <p>Sampling frame – ICSs distributed in 4 Districts randomly sampled taking into account the population size of each District, i.e. considering probability proportional to size on the primary unit (this gives more populous areas a higher chance of being selected).</p>
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sampling methods - stratified random sampling, in order to determine the sample size for monitoring the parameters viz. $B_{y=1,new,i,survey}$ (Annual quantity of woody biomass used by project devices in tonnes per device of type i), $n_{y,i}$ (Proportion of ICS still in operation), $\mu_{y,i}/365$ (Number of days of utilization of the project device during the year 'y'), & $\eta_{new,i,a}$ (Thermal efficiency of device of type i being deployed as part of the project activity with the age a'). The stoves were selected by randomly assigning, in corresponding stratum. The monitoring surveys and WBTs were conducted in February 2018.

For the monitoring parameters, PP has used following formulas used in the sampling:

- overall proportion and overall variance for proportional parameters were calculated based on equations (5) and (6); overall mean and overall variance for mean parameters were calculated based on equations (22) and (23) of CDM Guideline "Sampling and surveys for CDM project activities and programmes of activities".
- the minimum sample size required is calculated based on equation (4) for proportional parameters and equation (21) for mean parameters of CDM Guideline "Sampling and surveys for CDM project activities and programmes of activities" version 3.0.

The assessment team has checked and found that the formula used by PP is inline with the CDM guidelines "Sampling and surveys for CDM project activities and programmes of activities".

There is only one country to be sampled, only one fuel consumption cluster (i.e. only firewood-fuelled stoves), there is only one ICS type, there are 2 ICS vintages, and there are 2 CPA implementers.

So, there are 5 primary sampling units:

- CPA Implementer Area 55 implementing 1 year old stoves,
- CPA Implementer Sunfire implementing 1 year old stoves,
- CPA Implementer Area 55 implementing 2 years old stoves,
- CPA Implementer Sunfire implementing 2 years old stoves,
- CPA Implementer Area 55 implementing 3 years old stoves.

The CPA DDs/3-6/ mention a reliability level of 95/10 which was followed by in the CPA which is evident as per the sampling calculations in the ER sheet/15/.

The expected parameter values (mean, standard deviation and proportion) have been determined based on PP's knowledge and experience as per para 12(b) and 12(c) of the "Standard: Sampling and surveys for CDM project activities and programmes of activities", which is acceptable to the assessment team as per the guidance.

Parameter	Sample size calculated (required)	Whether minimum sample size achieved	Recommended Sample size	Actual Sample Size	Precision achieved
$\mu_{y,i}/365$	80	Yes	100	127	4.6%
Retention use of ICS	113	Yes	145	127	3.6%
$\eta_{new,i,a}$	10	No, Student t-distribution is applied	15	16	3.7%

	Kitchen Performance Test was conducted during the first verification to estimate the annual quantity of woody biomass used by project devices in tonnes per device and the value is 1.881.
Findings	CAR#03 was raised and resolved.
Conclusion	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD /01/.

E.3.4.4. Compliance with the calibration frequency requirements for measuring instruments

Means verification of	The monitoring plan (included in CPA DDs/2,3 &4/ and registered PoA DD/01/) does not state the calibration requirements for any of the parameter. However, the verification team has checked if the monitoring equipment used during WBT test (mass balance, moisture meter and thermometer) were duly calibrated. As a result, following information was verified from the calibration certificate of the equipments used for efficiency test;			
	Equipment	Sr. No.	Type	measuring range - accuracy
	Thermometer	080506150, 060300261	Voltcraft K 101	200°C to +1370°C (reversible °C/°F); 200°C to +200°C accuracy of 0.3% of the display, +1 °C
	Mass Balance	4,3.	MyWeigh KD- 8000	8 kg capacity accurate to 1 g
	Moisture Meter	12117541, 12117617	Voltcraft FM-300	measuring range 6% to 99.9%, ±1% (in moisture range 6% ~ 40%).
	Calibration details –			
	Equipment	Brand	Date of calibration	Expiry date
	Thermometer	Voltcraft K 101	23/01/2018	22/01/2019
	Mass Balance	MyWeigh KD-8000	13/01/2017	N.A.
	Mass Balance	MyWeigh KD- 8000	23/01/2018	N.A.
	Moisture Meter	Voltcraft FM-300	29/01/2018	28/01/2019
<p>The monitoring survey/WBT was done during the month of February 2018. Thus, the calibration is valid during the monitoring survey.</p> <p>It is noteworthy that in the registered PoA DD as well as CPA DDs, there is no calibration frequency was mentioned for the monitoring equipment's that will be used during the verification. However, CME has done the calibration of monitoring equipment's from a reputed agency, even though the equipment are newly purchased and are under guaranty from the manufacturer. Since neither the calibration agency nor the equipment manufacturer mentioned any specific validity of the calibration, thus CME has followed the guidelines as per "General Guidelines to SSC CDM methodologies" EB 61, Annex 21, para 17 (c): "Measuring equipment should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years". Hence, the monitoring equipment will be calibrated before completion of three years from the date of last calibrations of the respective equipment.</p>				

Findings	CL#01 and CAR#03 was raised and resolved.
Conclusion	The verification team confirm that CME applied good practices (as per manufacturer recommendation) while using the monitoring equipment and these were under the state of calibration. There is no specific requirement prescribed in this regard in the registered monitoring plan of monitoring methodology. Therefore, the approach presented by PP was accepted.

E.3.5. Assessment of data and calculation of emission reductions or net removals

E.3.5.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	<p>The verification team verified that</p> <p>a) A complete set of data for the monitoring period was available for the monitoring period and the verification of each monitoring parameter is elaborated under Section E.3.4.2 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheet /15/ of final Monitoring Report /13/.</p> <p>b) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section E.3.4.2 of this report.</p> <p>c) The calculations of baseline emissions as presented in the corresponding ER calculations sheet of final Monitoring Report were checked and found to be consistent with the formulae and methods described in the registered monitoring plan of each relevant CPA DD, PoA DD and the applied methodology.</p> <p>d) All assumptions used in the emission calculations were found appropriate and therefore justified</p> <p>e) Appropriate emission factors, IPCC default factors/24/ and other reference values have been correctly applied. This has also been elaborated under Section E.3.4.1 of this report.</p> <p>f) No standardized baseline was prescribed in the PoA DD and therefore it has not been applied.</p> <p>g) There is no pro-rata approach was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p> <p>The following equations were used to determine the baseline emissions as provided in the monitoring report // and applied in the corresponding ER calculations sheets /15/. The expressions used were found consistent with the registered PoA DD, CPA DDs and the applied methodology AMS-II.G, version 06:</p> <p>Total ER reductions achieved in the current monitoring period by all types of ICS distributed in the relevant CPA is calculated using the following expressions:</p> <p>Emission reductions are calculated as follows:</p> $ER_{y,i} = \sum_{a=1}^{a=y} B_{y,savings,i,a} \times N_{y,i,a} \times \left(\frac{\mu}{365}\right) \times F_{NRB,y} \times NCV_{biomass} \times EF_{projectedfossilfuel} - LE_y$ <p>Where:</p> <p>ER_y – emission reductions, t CO₂e, ‘a’ – the indices for the age (in years) of the cook stoves that are operating in the year y of the crediting period.</p>
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$B_{y, \text{savings}, i, a}$ – annual quantity of woody biomass that is saved in tonnes per cook stove device of type i and age a in year y

$N_{y, i, a}$ – number of project devices of type i and age a that are operating in year y

$\mu_{y, i}$ – number of days of utilization of the project device during the year y

$f_{NRB, y}$ – fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass

NCV_{biomass} – net calorific value of the non-renewable biomass that is substituted

$EF_{\text{projected_fossilfuel}}$ – emission factor for the substitution of non-renewable biomass by similar consumers

LE_y – Leakage adjustment factor for period y

CPAs	10182-0001	10182-0002	10182-0003	10182-0004	10182-0005	10182-0006	10182-0025	MOV
ER_y	41,863	36,563	26,273	41,126	30,176	2,487	1,692	Calculation checked in ER sheet/15/
$f_{NRB, y}$	0.81	0.81	0.81	0.81	0.81	0.81	0.81	Checked from PoA DD/01/ and CPA DDs/3-6/.
NCV_{biomass}	0.015	0.015	0.015	0.015	0.015	0.015	0.015	Checked from PoA DD/01/ and CPA DDs/3-6/.
$EF_{\text{projected_fossilfuel}}$	81.6	81.6	81.6	81.6	81.6	81.6	81.6	Checked from PoA DD/01/ and CPA DDs/3-6/.
L_y	0.95	0.95	0.95	0.95	0.95	0.95	0.95	Checked from PoA DD/01/ and CPA DDs/3-6/.
$N_{y, i, a}$	The number of project devices have been calculated for each year for the each age groups							Sales database/25/
$\mu_{y, i} / 365$	0.907	0.907	0.907	0.907	0.907	0.907	0.907	Calculation checked in ER sheet/16/
$B_{y, \text{savings}, i, a}$	3.087 for age 1, a=1; 2.940 for age 2, a=2; 3.089 for age 3, a=3	3.087 for age 1, a=1; 2.940 for age 2, a=2; 3.089 for age 3, a=3	3.087 for age 1, a=1; 2.940 for age 2, a=2; 3.089 for age 3, a=3	3.087 for age 1, a=1; 2.940 for age 2, a=2; 3.089 for age 3, a=3	3.087 for age 1, a=1; 2.940 for age 2, a=2; 3.089 for age 3, a=3	3.087 for age 1, a=1; 2.940 for age 2, a=2; 3.089 for age 3, a=3	3.087 for age 1, a=1; 2.940 for age 2, a=2; 3.089 for age 3, a=3	Calculation checked in ER sheet/2/

$B_{y, \text{savings}, i, a}$ is calculated using Equation 6 of the methodology AMS-II.G Version 6.0:

$$B_{y, \text{savings}, i, a} = B_{y=1, \text{new}, i, \text{survey}} \times ((\eta_{\text{new}, i, a=1} \times \Delta \eta_{y, i, a} / \eta_{\text{old}}) - 1)$$

and

$$\Delta \eta_{y, i, a} = (\eta_{\text{new}, i, a} / \eta_{\text{new}, i, a=1})$$

Where

$B_{y=1, \text{new}, i, \text{survey}}$ – annual quantity of woody biomass used by project devices in tonnes per device of type i

$\eta_{\text{new}, i, a}$ – the thermal efficiency of the device 'i' at age 'a' determined using the water boiling test

$\eta_{\text{new}, i, a=1}$ – the thermal efficiency of the device at its first year of operation

$\Delta\eta_{y, i, a}$ – factor to consider the efficiency loss of the project device type i due to its aging at the year y

η_{old} – efficiency of the device being replaced

Parameter	Description	Value applied	Means of Verification
B $y=1, \text{new}, i, \text{survey}$	annual quantity of woody biomass used by project devices in tonnes per device of type i	CPA1: 1.881 CPA2: 1.881 CPA3: 1.881 CPA4: 1.881 CPA5: 1.881 CPA6: 1.881 CPA7: 1.881	Verified from survey records/23/.
$\Delta\eta_{y, i, a}$	Factor to consider the efficiency loss of the project device type i due to its aging at the year y	CPA 1 – 86.31 for age group 1; 83.76 for age group 2; 86.34 for age group 3. CPA 2 – 86.31 for age group 1; 83.76 for age group 2; 86.34 for age group 3. CPA 3 – 86.31 for age group 1; 83.76 for age group 2; 86.34 for age group 3. CPA 4 86.31 for age group 1; 83.76 for age group 2; 86.34 for age group 3. CPA 5- 86.31 for age group 1; 83.76 for age group 2; 86.34 for age group 3. CPA 6- 86.31 for age group 1; 83.76 for age group 2; 86.34 for age group 3. CPA 7- 86.31 for age group 1; 83.76 for age group 2; 86.34 for age group 3.	Calculation checked in ER sheet/15/

	$\eta_{\text{new},i,a}$	Thermal efficiency of device of type i being deployed as part of the project activity with the age a	<p>CPA 1 – 26.41% for age group-1, 25.63% for age group-2 and 26.42% for age group-3.</p> <p>CPA 2 – 26.41% for age group-1, 25.63% for age group-2 and 26.42% for age group-3.</p> <p>CPA 3 – 26.41% for age group-1, 25.63% for age group-2 and 26.42% for age group-3.</p> <p>CPA 4 – 26.41% for age group-1, 25.63% for age group-2 and 26.42% for age group-3.</p> <p>CPA 5 – 26.41% for age group-1, 25.63% for age group-2 and 26.42% for age group-3.</p> <p>CPA 6 – 26.41% for age group-1, 25.63% for age group-2 and 26.42% for age group-3.</p> <p>CPA 7 – 26.41% for age group-1, 25.63% for age group-2 and 26.42% for age group-3.</p>	Checked from WBT records/24/.	
	$\eta_{\text{new}, i, a=1}$	the thermal efficiency of the device at its first year of operation	<p>CPA 1 – 30.6%</p> <p>CPA 2 – 30.6%</p> <p>CPA 3 – 30.6%</p> <p>CPA 4 – 30.6%</p> <p>CPA 5 – 30.6%</p> <p>CPA 6 – 30.6%</p> <p>CPA 7 – 30.6%</p>	Checked from PoA DD/01/ and CPA DDs/3-6/.	
	η_{old}	efficiency of the device being replaced	10%	Checked from PoA DD/01/ and CPA DDs/3-6/.	
	Detailed assessment of all the parameters used to calculate emission reductions is provided under section E.3.4.2.				
Findings	CL#01 and CAR#03 was raised and resolved.				
Conclusion	The verification team confirms that				

	<p>a) The complete data was available and is duly reported;</p> <p>b) As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section E.3.4.2 of this report);</p> <p>c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals were followed;</p> <p>d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied.</p> <p>e) There is no pro-rate approach was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p>
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E.3.5.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	The PoA DD, CPA DD and applied monitoring methodology does not prescribe any project emissions to be considered. The onsite visit and project design also did not reveal any potential source to be considered in this regard.
Findings	No findings raised.
Conclusion	No project emissions were required to be calculated, however, PP has calculated the project emission in ER sheet for illustrative purpose and the approach used is found to be correct.

E.3.5.3. Calculation of leakage GHG emissions

Means of verification	The PoA DD, CPA DD and applied monitoring methodology does not prescribe any leakage emissions to be considered. The onsite visit and project design also reveals that there is no potential source to be considered in this regard. However, the leakage adjustment factor that is required to adjust the baseline emissions has been duly accounted in emission reduction calculations.
Findings	No findings raised.
Conclusion	No additional leakage emissions (other than what is already considered in baseline calculations) were required in accordance with the methodology AMS-II G, version 06 /11/.

E.3.5.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	<p>As elaborated above, the entire emission reductions from the PoA were based on emission reduction calculation formulae prescribed by the applied methodology, the PP has followed same approach for calculation. The calculations presented in this regard in the final monitoring report /13/ and corresponding ER calculations sheet /15/ were found appropriate and complying with the provisions prescribed in the registered monitoring plan of respective CPA- DD, PoA-DD and applied methodology.</p> <p>The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.</p>
Findings	No findings raised.
Conclusion	<p>The verification team confirms that:</p> <p>a) The complete data was available and is duly reported;</p> <p>b) As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section E.3.4.2 of this report);</p> <p>c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed;</p> <p>d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied.</p> <p>e) There is no pro-rate approach was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p> <p>The total number of ERs achieved during the current monitoring period is 180,180 tCO₂e.</p>

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
Malawi Biomass Energy Conservation Programme CPA 1 - CPA 10182-0001	--	00	00	00	41,863	41,863
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-0002	--	00	00	00	36,563	36,563
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-0003	--	00	00	00	26,273	26,273
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-0004	--	00	00	00	41,126	41,126
Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-0005	--	00	00	00	30,176	30,176

Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-0006	--	00	00	00	2,487	2,487
Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-0025	--	00	00	00	1,692	1,692
Total	--	00	00	00	180,180	180,180

E.3.5.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

Means of verification	As verified and evident from the final Monitoring Report /11/ and corresponding ER calculations sheet /15/, the actual emission reductions achieved by each CPA (except CPA0001, CPA004 & CPA0005) that is included in the current monitoring period were found less than the estimated quantity in the respective CPA DDs for the comparable period since the due to gradual introduction of project technology (improved portable clay stoves). CPA0001 has more ICS distribution than the estimated and the efficiency of the ICS is also more than the expected. So, actual ERs achieved during the monitoring period is 5% more than the estimated ERs. For CPA0004 and CPA0005 has 3% and 1% more ERs achieved respectively than the estimated during the monitoring period. The reason for the increase in ER values is due to the more efficiency of ICS than expected/estimated. The assessment team has checked the details regarding the efficiency and found it correct.
Findings	No findings raised.
Conclusion	The actual emission reductions achieved in each specific CPA DD are not higher than the estimated quantity of ERs in the respective CPA DDs. Accordingly, it was accepted by the verification team.

Title and UNFCCC reference number of the CPA	Value estimated in ex ante calculation in the included CPA-DD(s)	Actual values achieved by the CPAs during this monitoring period
Malawi Biomass Energy Conservation Programme CPA 1 - CPA 10182-0001	39,771	41,863
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-0002	39,771	36,563
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-0003	39,771	26,273
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-0004	39,771	41,126
Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-0005	29,855	30,176

Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-0006	10,133	2,487
Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-0025	7,627	1,692
Total	206,700	180,180

E.3.5.6. Remarks on difference from estimated value in included CPA

Means of verification	As verified and evident from the final Monitoring Report /13/ and corresponding ER sheet /15/, the total actual emission reductions achieved by ICS for all 7 CPAs that is included in the current monitoring period were found less than the estimated quantity for the comparable period. However, actual values achieved by the specific-case CPA(s) during the monitoring periods for CPA 1, CPA 4 and CPA 5 were 5%, 3% and 1% higher than values estimated in ex ante calculation respectively. This is due to slightly higher monitored stove efficiency comparing to the expected efficiency of 25% value. CPA0001 has more ICS distribution than the estimated and the efficiency of the ICS is also more than the expected. So, actual ERs achieved during the monitoring period is 5% more than the estimated ERs. For CPA0004 and CPA0005 has 3% and 1% more ERs achieved respectively than the estimated during the monitoring period. The reason for the increase in ER values is due to the more efficiency of ICS than expected/estimated.
Findings	No findings raised.
Conclusion	The total actual emission reductions achieved for all CPAs during the crediting period is not higher than the estimated quantity of ERs for the same period.

E.3.6. Assessment of reported sustainable development co-benefits

Means of verification	Not applicable.
Findings	Not applicable.
Conclusion	Not applicable.

E.3.7. Global stakeholder consultation

Means of verification	Not applicable.
Findings	Not applicable.
Conclusion	Not applicable.

SECTION F. Internal quality control

>> A draft verification report prepared by verification team is reviewed by an independent technical review team (one or more members) to confirm whether all the internal procedures established and implemented by ESPL were duly complied with and such opinion/conclusion were reached in an objective manner that complies with the applicable CDM rules/requirements. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of technical review team are independent of the verification team.

During the technical review process additional findings may be identified or the closed-out findings may be opened, which needs to be satisfactorily resolved before the request for issuance is submitted to UNFCCC. The independent technical reviewer may either approve the report as such or reject/return the same in such case providing the comments/findings/issues that needs to be resolved by the verification team. The decision taken by the Technical Reviewer is final and is authorized by the Managing Director on behalf of Earthood Services Private Limited.

SECTION G. Verification opinion

>> Earthood Services Private Limited (ESPL), contracted by Hestian Innovation Ltd. (the CME for the PoA), has performed the second independent verification of the emission reductions for the registered CDM PoA 10182 "Biomass Energy Conservation Programme" in Malawi for the monitoring period 01/02/2017-31/01/2018 (both days included) as reported in the Monitoring Report (public) Version 1.1 dated 13/02/2018. The CME is

responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

This verification report is for the CPAs (10182-0001, 10182-0002, 10182-0003, 10182-0004, 10182-0005, 10182-0006, 10182-0025) which were included at the UNFCCC webpage at the end of the current monitoring period. A single monitoring report has been prepared by the CME for the same in which implementation of all referred CPAs along with monitoring results is included.

ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. This verification report has been prepared using the latest available template specified by UNFCCC and complies with the instructions to follow as per CDM VVS for PoA Version 1.

The verification activities were conducted in accordance with ESPL's CDM Quality Manual System as per the steps indicated under Section A of this report. The verification process has resulted in conclusion that the included CPAs confirm to the registered PoA DD as well as comply with applicable CDM rules and regulations and in accordance with applied monitoring methodology, AMS II.G Version 06.

As a result, it is confirmed that the emission reductions from the CDM PoA 10182 "Biomass Energy Conservation Programme" are correctly reported in the Monitoring Report (final) Version 3.1 dated 25/06/2018 and corresponding ER sheets for the monitoring period 01/02/2017-31/01/2018 (including both days) amount as 180,180 tCO₂e. Therefore, this will be submitted as part of request for issuance as per CDM PCP for PoA, Version 1.

SECTION H. Certification statement

>>

Earthood Services Private Limited (ESPL), contracted by Hestian Innovation Ltd. (the CME for the PoA), has performed the second independent verification of the emission reductions for the registered CDM PoA 10182 "Biomass Energy Conservation Programme" in Malawi for the monitoring period 01/02/2017-31/01/2018 (both days included) as reported in the Monitoring Report (public) Version 1.1 dated 13/02/2018.

The verification is based on the registered PoA-DD, CPA-DDs and the monitoring report for this project. Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakech accord, as well as those defined by the CDM Executive Board.

The management of the Hestian Innovation Ltd. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Final Monitoring Report Version 3.1 dated 25/06/2018. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Bureau of Energy Efficiency. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 3.1 dated 25/06/2018.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the monitoring period 01/02/2017 up to 31/01/2018 (including both dates) based on the reported emission reductions in the Final Monitoring Report Version 3.1 dated 25/06/2018 for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, ESPL planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

ESPL confirms the following;

Reporting period: From 01/02/2017 up to 31/01/2018 (including both dates)

Verified and certified emission in the above reporting period:

	Amount	Unit
Certified emission reductions (CERs)	180,180	tCO ₂ e

Appendix 1. Abbreviations

Abbreviations	Full texts
AQL	Acceptable Quality Level
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	Clean Development Mechanism Validation and Verification Standard
CER	Certified Emission Reduction
CL	Clarification Request
CME	Coordinating or Managing Entity
CPA	Component Project Activity
CP	Crediting period
DOE	Designated Operational Entity
DNA	Designated National Authority
EB	Executive Board
ESPL	Earthhood Services Private Limited
FAR	Forward action request
GHG	Green House Gases
GS	Gold standard
ICS	Improve Cook Stoves
IPCC	Intergovernmental Panel on Climate change
KPT	Kitchen Performance Test
MIS	Management Information System
POA	Programme Of Activity
PO	Partner Organization
TA	Technical Area
TR	Technical Reviewer
VVS	Validation and Verification Standard
UNFCCC	United Nation Framework convention on Climate change
WBT	Water Boiling Test
GACC	Global Alliance for Clean Cookstoves

Appendix 2. Competence of team members and technical reviewers

Competence Statement	
Name	Amit Ranjan Mandal
Country	India
Education	Master of Science (Energy Management)
Experience	9.5 yrs
Field	Environmental, Energy, CDM
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	ACM0002, AMS.I.D
Local expert	YES (India)
Financial Expert	YES
Technical Reviewer	YES

TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Kumar Gautam	Date	01/03/2018

Competence Statement			
Name	Enea Katundu		
Country	Malawi		
Education	Master of Science		
Experience	3 Yrs +		
Field	Research and Social Empowerment		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	YES (Malawi)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Kumar Gautam	Date	01/03/2018

Competence Statement			
Name	Shreya Garg		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

Competence Statement			
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Name	Kaviraj Singh		
Country	India		
Education	Ph.D. (Environmental Engineering), IIT Delhi Masters (Energy & Environmental), DAVV Indore		
Experience	15 Years +		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-II.D., ACM0006, AMS-I.A., AMS-I.C., AMS-II.B., AMS-III.H, ACM0002, ACM0001		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 13.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

Appendix 3. Documents reviewed or referenced

No	Author	Title	References to the document	Provider
1	CME	PoA DD	Version 07, dated – 07/07/2015	Others
2	TUV NORD	Validation report	Version 8000449119 – 14/021 , dated – 23/07/2015	Others
3	CME	CPA DD – 1	Version 05, dated – 07/07/2015	Others
4	CME	CPA DD – 2	Version 04, dated – 19/09/2016	Others
5	CME	CPA DD for CPA 3, 4, 5, 6	Version 04, dated -19/09/2016 respectively.	Others
6	CME	CPA DD for CPA 7	Version 2.1, dated -12/07/2017	Others
7	TUV NORD	CPA #1 validation report	Version 8000449119 – 14/021-CPA-001, dated – 23/07/2015	Others
8	TUV NORD	CPA #2 validation report	Version 1.0, dated -21/09/2016	Others
9	TUV NORD	CPA #3 validation report	Version 1.0, dated -21/09/2016	Others
10	TUV NORD	CPA #4 validation report	Version 1.0, dated -21/09/2016	Others
11	UNFCCC	Methodology AMS II G,	Version – 06	Others
12	CME	Monitoring report (Publication)	Version 1.1, dated -13/02/2018	CME
13	CME	Monitoring report (Final version)	Version 3.1, dated -25/06/2018	CME
14	CME	ER calculation sheet (Initial)	Corresponding to MR Version 1.1, dated -13/02/2018	CME
15	CME	ER calculation sheet (Final)	Corresponding to MR Version 3.1, dated -25/06/2018	CME
16	UNFCCC	CDM PoA VVS	Version 01.0	Others
17	UNFCCC	CDM PoA PS	Version 01.0	Others
18	UNFCCC	CDM PoA PCP	Version 01.0	Others
19	IPCC	IPCC Defaults	-	Others
20	UNFCCC	Standard: Sampling and surveys for CDM project activities and programme of activities	Version 07	Others

21	UNFCCC	Guideline: Sampling and surveys for CDM project activities and programme of activities	Version 04	Others
22	CME	Sampling calculation sheet	-	CME
23	CME	U & M survey sheet	-	CME
24	CME	WBT result sheet	Various	CME
25	CME	By=1,new, survey sheet	Various	CME
26	CME	Total sales records database	-	CME
27	CME	U&M Surveys copies	Various	CME
28	CME	Survey report for WBT	Various	CME
29	CME	WBT raw data copies	Various	CME
30	CME	Technical specification of cook stove	-	CME
31	CME	KPT raw data copies	-	CME
32	CME	Emission Reduction Transfer Contract	-	CME
33	CME	Calibration certificates of the monitoring equipment's	Various	CME
34	GACC	Water Boiling Test protocol document	Version 4.2.3	CME
35	CME	Training of monitoring personnel related documents	Various	CME
36	CREEC	Stove efficiency test by CREEC at the regional stove testing centre	-	CME
37	UNFCCC	SSC PoA MR template	Version 01	Others
38	UNFCCC	Project web page https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/4A2PCYSNBW81Z3L5FUH9RMJKQDV6/view	-	Others
39	TUV-NORD	Inclusion report form for CPA-2,3,4,5,6	Dated 13/10/2016	Others
40	Bureau Veritas	Validation report for CPA-7	Version 2.1 dated 20/07/2017	Others

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

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

There is no FAR from previous validation and/or verification.

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

Table 2. CL from this verification

CL ID	01	Section no.	E.2.1	Date : 16/03/2018
Description of CL				

<ol style="list-style-type: none"> 1. Sample hard copies Sample survey questionnaire. 2. Water boiling test results for ICS. 3. Evidence for carbon transfer contract. 4. Evidence for training and QA/QC for data management 5. Technical specifications of ICS 6. Interview of selected households. 7. Evidence for start date of CPAs included in this monitoring period. 												
<table border="1"> <tr> <td>Project participant response</td> <td>Date : 26/03/2018</td> </tr> <tr> <td colspan="2"> <ol style="list-style-type: none"> 1. The questionnaire used for usage and monitoring surveys as well as sample filled surveys have been provided. 2. Water Boiling Test protocol and Water boiling test results have been provided. 3. The examples of emission reduction transfer contract have been provided. 4. Evidences for training and QA/QC for data management have been provided. 5. Technical specifications of ICS have been provided. 6. Interview with selected households have been conducted during the site visit. 7. Evidences for the start date of CPAs have been provided. Please, note that the start date of CPA 6 is 31/10/2017. This is the first date, when the stoves distributed via the bulk sales are assumed to start operation. Therefore, the evidence for CPA 6 start date is the delivery note to Chipiku stores dated 13/09/2017 </td> </tr> <tr> <td colspan="2"> Documentation provided by project participant <ol style="list-style-type: none"> 1. Usage and monitoring survey questionnaire (Chitetezo U&M CDM Survey Form 141117.doc), scanned copies of usage and monitoring surveys. 2. WBT Protocol.pdf, scanned copies of WBTs results forms, excel files with WBTs results calculations 3. Examples of emission reduction transfer contract (ER 03062016 - evidence of the start date for CPA2.jpg, ER 03052017 - evidence of the start date for CPA 5.jpg) 4. Information about Cleaner Cooking Camp 2016; Area 55 Staff Trainings August 2015-March 2017 5. Technical specifications for ICS: Quality control for Chitetezo Mbaula, How to make Chitetezo Mbaula using a paddle mould, How to fire Chitetezo Mbaula using a fuel efficient kiln. 7. 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PP has also provided few of the documents which are found correct, hence accepted and closed out. 4. PP has provided the details of training provided during Cleaner Cooking camp. The assessment team has checked the documents and found correct. The same is also confirmed through interview to the monitoring personnel during onsite assessment. 5. PP has provided the technical specification document for Stoves. The assessment team has checked the documents and found it correct. 6. The monitoring survey sheet of the selected users interviewed during onsite assessment are checked and found correct and consistent. 7. Evidences for CPA start date are provided by the PP. The dates are found consistent with the submitted documents. Hence, accepted and closed out. </td> </tr> </table> </td> </tr> </table>	Project participant response	Date : 26/03/2018	<ol style="list-style-type: none"> 1. 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DOE assessment	Date: 05/04/2018											
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CL#01 is close.

Table 3. CAR from this verification

CAR ID	02	Section no.	E.3.1	Date : 16/03/2018
Description of CAR				

The CPA title as mentioned in section A.1.2 in MR is not consistent with the details as available in UNFCCC webpage.

In section C.1, it is mentioned for all 7 CPAs that it is implemented in Northern, Central and Southern Districts of Malawi. PP is requested to clarify the location of implementation of CPAs. PP is also requested to clarify the distinctiveness of CPAs.

In section B.1 of MR, under description of implemented sampling design the target population is mentioned as 128,451 ICS in point 1 whereas point 3 mentioned that the 4 districts sampled were Dowa, Mzimba South, Lilongwe and Balaka with total of 78,019 distributed ICS.

Please clarify the above.

Project participant response

Date : 26/03/2018

Section A.1.2 has been updated and correct UNFCCC reference numbers of the CPAs were indicated in line with the information on the UNFCCC web-site

https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/4A2PCYSNBW81Z3L5FUH9RMJKQDV6/viewCPAs?s=10

The CPAs are implemented throughout the whole territory of Malawi. There is no geographical distributions of the project activities between CPAs. The CPAs are divided chronologically. The information about the time periods, which are included in each CPA is provided in section C.1 of the monitoring report.

As described in section E.3 of the monitoring report, the following two-staged stratified random sampling approach was applied to optimize logistics and costs of the monitoring procedures. First the 4 districts were randomly sampled, namely: Lilongwe, Dowa, Mzimba South, Balaka. Such approach ensures cost effectiveness and does not impact the quality of monitoring data as ICS and cooking practices does not differ among districts. On the second stage individual households were randomly sampled for data collection taking into account defined primary sampling units based on CPA Implementer and stove vintage. Therefore, the first figure in section B.1 (128,451 ICS) refers to the total population of the ICS distributed under the PoA. The second figure (78,019 ICS) refers to the population of ICS distributed under the PoA in the four sampled districts.

Documentation provided by project participant

DOE assessment

Date: 05/04/2018

The CPA title of all CPAs are now found correct and consistent with the information provided in UNFCCC webpage. The assessment team has reviewed the revised MR and found it correct and consistent. PP has clarified that there is no geographical distributions of the project activities between CPAs. The CPAs are divided chronologically. The justification provided by PP is found accepted and closed out.

The clarification provided by PP regarding the different values of stoves is found accepted and the same is also confirmed during onsite assessment.

CAR#02 is closed.

CAR ID	03	Section no.	E.2.1	Date	16/03/2018
Description of CAR					
<p>The calculation of Annual quantity of woody biomass used by project devices in tonnes per device of type I is not clear in ER calculation sheet.</p> <p>The number of devices distributed as mentioned in monitoring data for each CPA is not consistent with numbers in individual CPA sheet in ER sheet.</p> <p>There are project emission calculated for each CPA in ER calculation sheet, however MR mentions that there is no project emission.</p> <p>Sample size calculation is not available in ER sheet.</p> <p>It is observed during the document review that the efficiency certificate does not mention the efficiency of the stove and only mentions the parameters used for efficiency calculation. PP is requested to provide the supporting documents which mentions the efficiency as considered in ER sheet.</p> <p>It is observed during onsite assessment that few stoves do not have the unique ID number (not visible/removed). In this case how CME ensures non-repetition of unique ID number in new stoves.</p>					

Project participant response	Date : 26/03/2018
<p>According to the PoA DD the parameter <i>Annual quantity of woody biomass used by project devices in tonnes per device of type i</i> is monitored during the first year of the crediting period. Therefore, the value was determined and verified during the first monitoring period using sample surveys and KPT tests. Please, refer to the monitoring report and verification report for the first monitoring period.</p> <p>The numbers in the Monitoring report are consistent with the numbers in ER calculation file (MR Tables worksheet and individual CPAs worksheets). The numbers indicated on the Monitoring Data worksheet are adjusted to take into account different time of commissioning and operation. To reflect the number of stoves operating during a year (365 days) the number of stoves was calculated based on the number of technology days for each year (number of technology days divided by 365). The number of stoves were adjusted by percentage of stoves still in operation and percentage of households using more than 1 stoves as determined by usage and monitoring surveys. Such approach is in line with the approach used during the first monitoring period. Therefore, the values on Monitoring Data worksheet differ from the values on MR Tables worksheet and individual CPAs worksheets.</p> <p>Project emissions on individual CPAs worksheets in the ER file are calculated for informational purposes. The methodology applied does foresees the calculation of project emissions.</p> <p>Sample size calculation has been provided in a separate file (<i>CDM 10182 Sampling - MP2.xlsx</i>). Please, refer to the Sample size worksheet for sample size calculation and to the Sample worksheet for the resulted sample for usage and monitoring survey.</p> <p>The scanned copies of the WBTs results forms, as well as the WBT protocol and excel files used for the calculation of the efficiency values for each stove tested based on the WBTs results have been provided. The average efficiency value for each age group of stoves has been used in ER calculation file. The excel file supporting the calculation has been provided (CDM 10182 - WBT results MP2.xls).</p> <p>At some stoves the serial number gets not visible after some time of stove usage. In this case the stove is identified based on other information included in the total sales database (name, address, etc.). The serial number is cross-checked with the records in total sales database and emission reduction contract. Non-repetition of unique ID number in new stoves is ensured by periodical checking of the total sale records database for duplicated serial numbers.</p>	
Documentation provided by project participant	
<ol style="list-style-type: none"> 1. Monitoring report for the first monitoring period (CDM 10182 MR1.pdf) 2. Sample calculation file (CDM 10182 Sampling – MP2.xlsx) 3. WBT Protocol.pdf, scanned copies of WBTs results forms, excel files with WBTs results calculations, CDM 10182 - WBT results MP2.xls 	
DOE assessment	Date: 05/04/2018

The annual Quantity of woody biomass used by project devices in tonnes per device of type I is calculated as per registered PoA DD. The value is found correct, hence accepted and closed out.

The MR is revised and the number of stoves distributed are found consistent with ER sheet. The assessment team has checked the revised documents and found correct and consistent. Hence, accepted and closed out.

PP has clarified that there is no project emission in the PoA. The calculation provided in ER sheet is only for informational purpose.

PP has now provided the sample calculation sheet. The assessment team has checked the calculation sheet and found correct and consistent. Hence, accepted and closed out.

PP has provided the efficiency test result sheets and the documents which contains the input values. The assessment team has checked the documents and found it correct.

As clarified by PP, in some stoves the serial number gets not visible after some time of stove usage. In this case the stove is identified based on other information included in the total sales database (name, address, etc.). The serial number is cross-checked with the records in total sales database and emission reduction contract. Non-repetition of unique ID number in new stoves is ensured by periodical checking of the total sale records database for duplicated serial numbers. The justification provided by PP is found correct and the same is also confirmed during onsite assessment.

CAR#03 is open in view of TR comments:

- Sheet "CDM 10182 Usage and Monitoring Surveys results", cells S1:AG1 does not report the unit of reported numbers.
- Section E.3 of MR does not report the date of previous monitoring survey to ascertain the frequency of monitoring.
- Exact reference to WBT sample and results is not reported in provided excel sheets.
- Spreadsheet "Usage and monitoring surveys result", worksheet "Survey results", column L, mentions 2 CDM stoves in use in the same household. It is not clear how the calculation of ERs is correct in the light of same household using more than 1 project stove. The provision of PoA-DD and methodology is also not discussed regarding this.
- "Usage and monitoring survey results", column M of all the worksheets, serial number for few of the stoves is missing.

CAR#03 remains open.

Project participant response

Date : 23/04/2018

The figures reported are in minutes. Information has been added.

The information has been added to section E.3. Previous usage and monitoring surveys were carried between January 11 and February 14, 2017. Previous WBTs were conducted in February, 2017.

Due to high potential non-response rate the sample used for Usage and Monitoring surveys was also used as a basis for stove collection to conduct WBTs. In the sample provided in CDM 10182 Sampling - sample size.xlsx for each primary sampling unit the information on the number of stoves required to be collected for WBTs is indicated. The results of WBTs are provided in CDM 10182 - WBT results MP2.xls. Detailed results of individual tests are contained in excel reports provided to DOE.

Discount factor to account for households with more than 1 stove installed has been used to discount usage rate for each age group monitored. As reported in cell L129 of Survey results worksheet and cell B9 of Results worksheet there were 110 stoves reported to operating among the sampled households. Overall there were 106 households continuing using project stoves. Four households had two project stoves installed. Discount factor for more than 1 stove installed has been calculated as $1 - 106/110 = 3.64\%$

Information about the serial numbers has been added.

Documentation provided by project participant

DOE assessment

Date: 26/04/2018

- PP has revised the sheet as per the requirements. The assessment team has checked the sheet and found correct.
- PP has revised the MR and date of previous monitoring has been added in section E.3 of the MR. The assessment team has checked the revised MR and found it correct.
- WBT test results are provided in separate sheets by the PP. The assessment team has checked the test results of each stoves and found correct and consistent.
- Discount factor to account for households with more than 1 stove installed has been used to discount usage rate for each age group monitored. As reported in cell L129 of Survey results worksheet and cell B9 of Results worksheet there were 110 stoves reported to operating among the sampled households. Overall there were 106 households continuing using project stoves. Four households had two project stoves installed. Discount factor for more than 1 stove installed has been calculated as $1-106/110 = 3.64\%$. The assessment team has checked the calculation sheet and is found correct.
- PP has revised the calculation sheet and provided the missing details. The assessment team has checked the sheet and found it correct.

Hence, CAR#03 is closed.

CAR ID	04	Section no.	E.3.4.2	Date : 16/03/2018
Description of CAR				
PP is requested to provide the calibration certificates of all equipments used for the monitoring of monitored parameters.				
Project participant response				Date : 26/03/2018
<i>The calibration certificated have been provided.</i>				
Documentation provided by project participant				
1. Calibration certificates for scales (Scale1.pdf, Scale2.pdf)				
2. Calibration certificates for thermometers (Thermometer 1.pdf, Thermometer 2.pdf)				
3. Evidence of moisture meters calibration				
DOE assessment				Date: 05/04/2018
PP has provided the calibration certificate for the equipments used for the monitoring of the parameters. The assessment team has checked the calibration certificates and found it correct and are found in line with the requirements. Hence, accepted and closed out.				
CAR#04 is closed.				

Table 4. FARs from this verification

There is no FAR from this verification.

FAR ID	xx	Section No.		Date: DD/MM/YYYY
Description of FAR				
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Document information

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