




**Verification and certification report form for
CDM programme of activities
(Version 03.0)**

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 10182	
Version number(s) of the PoA-DD(s) to which this report applies	8	
Version number of the verification and certification report	1.1	
Completion date of the verification and certification report	03/04/2020	
Monitoring period number and duration of this monitoring period	Fifth (01/06/2019-11/01/2020)	
Number and version number of the monitoring report to which this report applies	2.3	
Coordinating/managing entity (CME)	Hestian Innovation Limited	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Malawi	Yes
	Rwanda	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	3 (Energy Demand)	
Conditional sectoral scopes, if applicable	NA	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	559,314 tCO ₂	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	550,104 tCO ₂	
Name and UNFCCC reference number of the DOE	Earthood Services Private Limited E-0066	
Name, position and signature of the approver of the verification and certification report		

	Dr. Kaviraj Singh Managing Director
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SECTION A. Executive summary

The PoA aims at replacing the in-efficient three stone fired or equivalent cookstoves with the highly efficient biomass fired improved cookstoves (ICS). The program stoves 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 of the people in the country, 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. Apart from this, other fuel like biomass agricultural residue (e.g. pigeon pea stalks, maize hobs, etc.) is also used to some extent.

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.

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 review of implementation and operation of the PoA as set out in the revised PoA-DD & CPA-DDs viz., 10182-P1-0001-CP1, 10182-P1-0002-CP1, 10182-P1-0003-CP1, 10182-P1-0004-CP1, 10182-P1-0005-CP1, 10182-P1-0006-CP1, 10182-P1-0025-CP1 (CPA-07), 10182-P1-0020-CP1 (CPA-08), 10182-P1-0021-CP1 (CPA-09), 10182-P1-0022-CP1 (CPA-10), 10182-P1-0023-CP1 (CPA-11), 10182-P1-0024-CP1 (CPA-12), 10182-P1-0007-CP1 (CPA-13), 10182-P1-0009-CP1 (CPA-14), 10182-P1-0008-CP1 (CPA-15), 10182-P1-0010-CP1 (CPA-16), 10182-P1-0011-CP1 (CPA-17), 10182-P1-0012-CP1 (CPA-18), 10182-P1-0013-CP1 (CPA-19), 10182-P1-0014-CP1 (CPA-20), 10182-P1-0015-CP1 (CPA-21), 10182-P1-0016-CP1 (CPA-22), 10182-P1-0017-CP1 (CPA-23), 10182-P1-0018-CP1 (CPA-24), 10182-P1-0019-CP1 (CPA-25), 10182-P1-0031-CP1 (CPA-27), 10182-P1-0034-CP1 (CPA-29) in the monitoring period.

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/2/ & CPA-DDs/4-11/
- (ii) The registered and approved 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) for PoA, version 2.0/30/
- (v) The CDM Project Standard (PS)/31/ and Project Cycle Procedure (PCP) for PoA version 2.0/32/
- (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 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 G and H 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 27 CPAs (10182-P1-0001-CP1, 10182-P1-0002-CP1, 10182-P1-0003-CP1, 10182-P1-0004-CP1, 10182-P1-0005-CP1, 10182-P1-0006-CP1, 10182-P1-0025-CP1 (CPA-07), 10182-P1-0020-CP1 (CPA-08), 10182-P1-0021-CP1 (CPA-09), 10182-P1-0022-CP1 (CPA-10), 10182-P1-0023-CP1 (CPA-11), 10182-P1-0024-CP1 (CPA-12), 10182-P1-0007-CP1 (CPA-13), 10182-P1-0009-CP1 (CPA-14), 10182-P1-0008-CP1 (CPA-15), 10182-P1-0010-CP1 (CPA-16), 10182-P1-0011-CP1 (CPA-17), 10182-P1-0012-CP1 (CPA-18), 10182-P1-0013-CP1 (CPA-19), 10182-P1-0014-CP1 (CPA-20), 10182-P1-0015-CP1 (CPA-21), 10182-P1-0016-CP1 (CPA-22), 10182-P1-0017-CP1 (CPA-23), 10182-P1-0018-CP1 (CPA-24), 10182-P1-0019-CP1 (CPA-25), 10182-P1-0031-CP1 (CPA-27), 10182-P1-0034-CP1 (CPA-29)), for the monitoring period **01/06/2019 – 11/01/2020** (including both dates) we confirm that the implementation of referenced registered PoA and CPAs is complying with applicable CDM rules and regulations. 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 “Biomass Energy Conservation Programme” in Malawi having UNFCCC reference 10182 during the period 01/06/2019 – 11/01/2020 (including both days) amount to 550,104 tCO_{2e}. 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	Garg	Shreya	Central Office	Y	N*	Y	Y
2.	Meth Expert	IR	Garg	Shreya	Central Office	Y	N*	Y	Y
3.	Verifier	IR	Vatsa	Vaishali	Central Office	Y	N	N	Y
4.	Technical Expert	IR	Garg	Shreya	Central Office	Y	N*	Y	Y
5.	Local expert	EI	Katundu	Enea	Central Office	Y	N	N	Y
6.	Trainee (Verifier)	IR	Sahni	Rahi	Central Office	Y	N	N	Y

*Details for no on-site inspection have been discussed in detail in section D.2 of the report

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	Gautam	Ashok	Central Office
2.	Technical Expert	IR	Gautam	Ashok	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 survey results. The errors could result from human errors during the information transfer from the source to emission reduction sheet.	Low	CME enters the data in calculation of ERs as available through survey/sampling. The monitored parameters are 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 checked and verified the 8 households from ex post monitoring survey and project database on sampling basis. The efficiency test result of stoves and sample surveys for other parameters (hard copies) were also checked. PoA-DD, CPA-DD and reference documents are also compared with ER spread sheet to check for any material error during data transfer. Interview were also conducted to the end users to confirm the primary data on sampling basis.
2.	Erroneous consideration of fixed parameters, error in calculation.	Low	The details of the parameters fixed ex-ante are provided in PoA-DD/CPA-DD used for emission reduction calculation.	All parameters are checked from the registered documents (i.e. CPA-DD/PoA-DD). The formula used are also checked from the registered documents.

C.2. Consideration of materiality in conducting the verification

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Prescribed range of ERs/annum	500,000 or more	300,001 to 499,999	300,000 or less	PoAs comprising only small-scale CPAs	PoAs comprising only micro-scale CPAs
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 308 of CDM VVS for PoA, Version 2.0.

	MR Version (Public)	MR Version (Final)*
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Emission reductions	549,188	550,104
Identified Threshold	5.0%	5.0%

* The increase in the ERs in the final version of MR (Version 2.3)/13/ is due to addition of stoves under CPA-21 and CPA 29.

Monitored Parameter (Symbol / Description)	Reporting Frequency	Number of Discrete Data* (Total) Total (100%)	Sample selected for verification Sample (100%)	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (Population based on extrapolation)
CPA 10182-P1-0001-CP1 (CPA-1) to CPA 10182-P1-0019-CP1 (CPA-25), CPA 10182-P1-0031-CP1 (CPA-27), CPA 10182-P1-0034-CP1 (CPA-29)						
For ICS:						
B _{y=1,new,i} survey Annual quantity of woody biomass used by project devices in tonnes per device of type I.	Monitored during the first year of crediting period	1	1*	None	NA	NA
N _{y,i,a} Number of project devices of type i and age a that are operating in year y, Number of items	Continuously and aggregated annually	102	8 (based on acceptance sampling)	None	NA	NA
μ _{y, i / 365} Number of days of utilization of project device during	Annually	102	8 (based on acceptance sampling)	None	NA	NA
Δη _{y, i,a} Factor to consider the efficiency loss of the project device type i due to its aging at the year y. %	Monitored for the first batch of stoves	4	4(100% data was checked)	None	NA	NA

η new, I, a Thermal efficiency of device of type i being deployed as part of the project activity with the age a, %	Annually	19	19(100% data was checked)	None	NA	NA
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*The value was determined at the time of first verification and has been used since then. The value for current verification has corroborated from the previous verification report/33/.

The verification team confirms that the final total ERs claimed in the MR under verification are free from material errors.

SECTION D. Means of verification

D.1. Desk/document review

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: NA*				
No.	Activity performed on-site	Site location	Date	Team member

*No site visit was conducted

Mandatory Site-Visit:

The site-visit for the current verification was mandatory as there were nine new CPAs (10182-P1-0013-CP1; 10182-P1-0014-CP1; 10182-P1-0015-CP1; 10182-P1-0016-CP1; 10182-P1-0017-CP1; 10182-P1-0018-CP1; 10182-P1-0019-CP1; 10182-P1-0031-CP1; 10182-P1-0034-CP1) that are being verified for the first time in-line to para 321 VVS-PoA Version 2.0/30/.

Planned Site-Visit:

The site-visit was initially planned from 11th March, 2020 - 14th March, 2020. In view of the COVID-19 outbreak and increased exposure due to international travel, site-visit was put on hold.

Issue with the postponement of Site-visit:

The site-visit for this verification could not be postponed as this would lead to delayed issuance of the CERs. The CME relies upon the CER revenue generated from the project as the working capital of the project. It was clarified by the CME that along with the impact on the working capital of the project, the delay might also cause ERPA/42/ being cancelled. In light of the argument and evidence made available by the CME a clarification for the exemption of the onsite visit was sought from CDM EB.

Exemption by CDM EB

In response to the clarification an exemption (for the site-visits scheduled from 23/03/2020- 23/06/2020) was provided by CDM EB. Due to the site-visit exemption provided by the CDM-EB concerning the COVID-19 outbreak, a checklist as per the ESPL CDM QMS was made available for the application of alternative means for verifying the project related details. A declaration (Checklist for alternative means for site-visit exemption in accordance with the ESPL CDM QMS) was submitted to the Technical Manager for approval.

Alternative means applied

Following alternative means have been used to verify the project details:

1. Remote Survey including CME/CPA Implementer, end users and the personnels involved in monitoring and preparation of the monitoring report and related documents. Random samples for eight ICS users (details on sampling provided in section D.3) were drawn from the sample survey sheet and interviewed through video calls.
2. Photographic evidences of the monitoring equipment, ICS with stove IDs, WBT (Filled) Survey sheets, Monitoring Survey (filled) Forms.
3. Calibration certificates
4. Monitoring personnel certificates
5. Review of Other Documentary evidences (ER sheet, Usage and monitoring sheet, WBT analysis sheet)

Interviews (Via Telephone Call)

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Fox	Conor	CME	26/03/2020	Monitoring Plan, Project Implementation	Shreya Garg
2.	Shlapak	Mykola	CPA Implementer	26/03/2020	ER calculation and Monitoring	Shreya Garg

					Report (Via Skype)	
3.	Botha	Yamungu	Sunfire	26/03/2020	Monitoring Survey	Shreya Garg
4.	Chiyenda	Fred	DOE remote Field Survey	26/03/2020	ICS End User	Shreya Garg
5.	Wiki	Saidi	DOE remote Field Survey	26//03/2020	ICS End User	Shreya Garg
6.	Jozefe	Fulolesi	DOE remote Field Survey	26//03/2020	ICS End User	Shreya Garg
7.	Chimseu	Nasinthika	DOE remote Field Survey	26//03/2020	ICS End User	Shreya Garg
8.	Dede	Teleza	DOE remote Field Survey	26//03/2020	ICS End User	Shreya Garg
9.	Mdere	Nsalawa	DOE remote Field Survey	26//03/2020	ICS End User	Shreya Garg
10.	Lukasi	Judith	DOE remote Field Survey	27//03/2020	ICS End User	Shreya Garg
11.	Mussah	Alima	DOE remote Field Survey	27//03/2020	ICS End User	Shreya Garg

D.3. Sampling approach

CME 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,"/23/ 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 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': /27/

- 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. The assessment team has picked up random 8 samples with the help of excel sheet. The team leader arranged it in order of districts and assigned a serial number to each entry in CME survey sheet. Random number generator command was applied to all the values and then all the random number were sorted in increasing order. The top 11 entries were picked up for the site visit. 3 extra samples were picked only to account for the unavailability. Due to site visit exemption no HHs could be visited by the TL. But, alternative means were followed to verify the project details as listed under section D.2 of the report. All the households had same answer as reported in the survey sheet. thus, no discrepancy was observed. Accordingly, Acceptance number (c) thus determined for the sample size is 0 and a sample size of 8 meets the criteria in line with "Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 7,"/27/.

D.4. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General			
Compliance of the monitoring report with the monitoring report form	-	-	-
Remaining forward action requests from validation and/or previous verifications	-	-	FAR#01 FAR#02 FAR#03
CPAs considered for verification and covered in this report	-	-	-
Programme of activities			
Compliance of the programme implementation with the registered PoA-DD	CL#07	-	-
Implementation and operation of the management system	-	-	-
Post-registration changes	-	-	-
• Corrections	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents ¹	-	-	-
• Changes to the programme design	-	-	-
• Addition of CPA inclusion template	-	-	-
• Change of coordinating/managing entity	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Component project activities			
Compliance of the CPA implementation with the included CPA design document	CL#09	-	FAR#09
Post-registration changes	-	-	-
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	-	-	-
• Corrections	-	-	-
• Changes to the start date-of the crediting period	-	-	-
• Inclusion of a monitoring plan	-	-	-

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

• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	-	-	-
• Changes to the project design	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	-	-	-
Compliance of monitoring activities with the registered monitoring plan	CL#06	-	-
• Data and parameters fixed ex ante or at renewal of crediting period	-	-	-
• Data and parameters monitored	CL#05	CAR#08	-
• Implementation of sampling plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	-	-	-
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	-	-	-
• Calculation of project GHG emissions or actual net GHG removals by sinks	-	-	-
• Calculation of leakage GHG emissions	-	-	-
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	-	-	-
• 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 (evidences)	CL#04	-	-
Total	05	01	04

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 and latest template available on UN-webpage for PoA i.e. CDM-PoA-MR-FORM Version 03.0/01/. The verification team confirms that the monitoring report has been appropriately prepared using the latest applicable monitoring report form/1/, and that all sections are completed.
Findings	No findings were 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

>> Three FARs (listed as FAR#01, FAR#02, FAR#03) were raised during the previous verification/33/ because at the time of 4th verification of the registered PoA 10182 the gap in the monitoring survey during 4th monitoring period was more than 1 year from the 3rd monitoring period. Therefore, the DOE raised the FAR#01.

Secondly, the end-date of monitoring period of all the CPAs under verification did not align with the end-date of the different monitoring period. Therefore, the DOE raised FAR#02

During the previous verification, the monitoring frequency of the parameter “μ y, i / 365: Number of days of utilization of the project device during the year ‘y’”, was revised in the PoA-DD through prior approval of PRC which was approved on 03/04/2020 by UNFCCC. Thus, in-turn required revision of the monitoring frequency has been appropriately followed during the current verification however the FAR has been carried forward to the next verification for the revision of the parameter mentioned in all the CPA-DDs.

Therefore, the DOE raised FAR#09. Please refer to Appendix 4 for more details.

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

The monitoring periods are consecutive, and CPAs have been included in requests for issuance of CERs in a consecutive manner. All the CPAs included under this monitoring period has issuance request during previous monitoring period and are found in line with para 335 of VVS for PoA v2.0/30/. the details are given below in the table:

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-P1-0001-CP1	Yes	13/08/2015	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-P1-0002-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-P1-0003-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-P1-0004-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-P1-0005-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-P1-0006-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes

Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-P1- 0025-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 8 - CPA 10182-P1- 0020-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 9 - CPA 10182-P1- 0021-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 10 - CPA 10182- P1-0022-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 11 - CPA 10182- P1-0023-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 12 - CPA 10182- P1-0024-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 13 - CPA 10182- P1-0007-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 14 - CPA 10182- P1-0009-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 15 - CPA 10182- P1-0008-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 16 - CPA 10182- P1-0010-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes

Malawi Biomass Energy Conservation Programme CPA 17 - CPA 10182-P1-0011-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 18 - CPA 10182-P1-0012-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 19 - CPA 10182-P1-0013-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 20 - 10182-P1-0014-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 21 - 10182-P1-0015-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 22 - 10182-P1-0016-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 23 - 10182-P1-0017-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 24 - 10182-P1-0018-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 25 - 10182-P1-0019-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Rwanda Biomass Energy Conservation Programme CPA 1 - 10182-P1-0026-CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA

Rwanda Biomass Energy Conservation Programme CPA 2 - 10182-P1-0027- CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA
Rwanda Biomass Energy Conservation Programme CPA 3 - 10182-P1-0028- CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA
Rwanda Biomass Energy Conservation Programme CPA 4 - 10182-P1-0029- CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA
Rwanda Biomass Energy Conservation Programme CPA 5 - 10182-P1-0030- CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 27 - 10182-P1- 0031-CP1	Yes	11/12/2019	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 26 - 10182-P1- 0032-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 28 - 10182-P1- 0033-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 29 - 10182-P1- 0034-CP1	Yes	11/12/2019	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 30 - 10182-P1- 0035-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 31 - 10182-P1- 0036-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA

Malawi Biomass Energy Conservation Programme CPA 32 - 10182-P1- 0037-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 33 - 10182-P1- 0038-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 34 - 10182-P1- 0039-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 35 - 10182-P1- 0040-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 36 - 10182-P1- 0041-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 37 - 10182-P1- 0042-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 38 - 10182-P1- 0043-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 39 - 10182-P1- 0044-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 40 - 10182-P1- 0045-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 41 - 10182-P1- 0046-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA

Malawi Biomass Energy Conservation Programme CPA 42 - 10182-P1-0047-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 43 - 10182-P1-0048-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 44 - 10182-P1-0049-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 45 - 10182-P1-0050-CP1	No	11/12/2019	Version 08, dated 25/10/2019	NA

*There are total 50 CPAs but only 27 CPAs are considered for this verification. From CPA 10182-P1-0013-CP1 to CPA 10182-P1-0019-CP1, 10182-P1-0031-CP1 and 10182-P1-0034-CP1 this is the first verification.

E.2. Programme of activities

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

Means of verification	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 from the interview the CME representative and also confirmed from the previous verification report/33/. This is consistent with PoA DD/2/. The CPAs of PoA involves dissemination of improved household cookstoves:	
	Model name	Chjtetezo Mbaula
	Size / Dimensions (outer body) (cm)	23x27.6x22.4
	Size / Dimensions (combustion chamber) (cm)	20x22x17.5
	Efficiency	30.6%
	Pot Stand (cm)	1.5x3.3
	Air/Ash entry (cm)	10.6x12.8
	Insulation (material)	Clay
	Average Life span	47 months
	Daily firewood consumption (per household per day)	4.48
The specification for the cookstove provided meets the eligibility requirements of the PoA-DD page 4/2/. The details were verified from the stove test report /35/ provided by the CME. During the interviews the installation of cookstoves claimed by the PP were cross-checked from the officials involved in the project implementation and management and found to be in-line with the technical description provided in the PoA-DD/2/ and Monitoring report/13/.		

This monitoring period includes the implementation and monitoring of 27 CPAs as part of registered PoA.

The implementation of all CPAs, as referenced above, are within the geographical boundary of PoA as mentioned in PoA DD/2/.

The ICS (Improve Cook Stoves) models deployed under each CPA is verified as following:

CPA (10182 -P1- 0001-CP1):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	22,171

CPA (10182 – P1-0002-CP1):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	22,301

CPA (10182 –P1- 0003-CP1):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	22,308

CPA (10182 –P1- 0004-CP1):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	21,052

CPA (10182 –P1- 0005-CP1):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	21,341

CPA (10182 – P1-0006-CP1):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	21,403

CPA (10182 – P1-0025-CP1(CPA-07)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	24,640

CPA (10182 –P1- 0020-CP1(CPA-08)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	9,234

CPA (10182 –P1- 0021-CP1(CPA-09)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	19,889

CPA (10182 –P1- 0022-CP1(CPA-10)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,236

CPA (10182 – P1-0023-CP1(CPA-11)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	19,742

CPA (10182 – P1-0024-CP1(CPA-12)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,499

CPA (10182 – P1-0007-CP1(CPA-13)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,391

CPA (10182 – P1-0009-CP1(CPA-14)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	19,974

CPA (10182 – P1-0008-CP1(CPA-15)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	21,872

CPA (10182 – P1-0010-CP1(CPA-16)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,832

CPA (10182 – P1-0011-CP1(CPA-17)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	19,761

CPA (10182 – P1-0012-CP1(CPA-18)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	18,754

CPA (10182 – P1-0013-CP1(CPA-19)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	19,714

CPA (10182 – P1-0014-CP1(CPA-20)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,536

CPA (10182 – P1-0015-CP1(CPA-21)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	13,156

CPA (10182 – P1-0016-CP1(CPA-22)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	19,753

CPA (10182 – P1-0017-CP1(CPA-23)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,590

CPA (10182 – P1-0018-CP1(CPA-24)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	21,332

CPA (10182 – P1-0019-CP1(CPA-25)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	1,754

CPA (10182 – P1-0031-CP1(CPA-27)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	12,244

CPA (10182 – P1-0034-CP1(CPA-29)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	2,558

The verification team is able to confirm that the quantity, specification and target group of the ICSs is consistent with the PoA DD/2/ and respective CPA DDs/4-11/. Further based on the review of the sales database/3/ and interview conducted during the telephonic call, the verification team found that:

- The CPA(s) are implemented within the boundary of the PoA as described in the registered PoA-DD/2/.
- The CME is same as that mentioned in the registered PoA-DD/2/
- The implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PoA-DD/2/ and included CPA-DDs/4-11/.
- All physical features of the CPA proposed in the included CPA-DDs/4-11/ are in place.
- The project participants/CPA implementer has operated the CPAs as per the included CPA-DDs/4-11/.

The verification team on the basis of the ICS photos shared by the CME for the 8 sampled HHs confirmed that each ICS was assigned a unique identification number (serial number), and unique household mobile number. The unique serial number on majority of ICS (78.5% of the randomly selected ICS users were traceable), personal information of ICS owners and date of purchase of ICS was checked and cross checked with the information in sales database/3/ available with the CME through the hard copies of the ER contracts /40/ of each of the sampled HHs. The operation of the ICSs was confirmed through the monitoring survey forms of the owners/representatives (of ICSs) during the desk review.

The emission reductions being claimed during this monitoring period are less than the estimated emission reductions in the registered CPA-DDs. and the reason for less achieved emissions is duly explained under section E.3.6.5. and E.3.6.6.

The exact figures are given in the table below:

CPA UNFCCC reference number	Amount achieved during this Monitoring period (t CO ₂ e)	Amount estimated ex ante (t CO ₂ e)
10182-P1-0001-CP1	15,543	24,516
10182- P1-0002-CP1	23,462	24,516
10182- P1-0003-CP1	25,039	24,516
10182- P1-0004-CP1	24,682	24,516
10182- P1-0005-CP1	25,915	24,516
10182- P1-0006-CP1	24,670	24,516
10182- P1-0025-CP1	21,935	23,904
10182- P1-0020-CP1	14,168	23,904
10182- P1-0021-CP1	26,015	23,904
10182- P1-0022-CP1	23,349	23,904
10182- P1-0023-CP1	23,809	23,904
10182- P1-0024-CP1	23,168	23,904
10182- P1-0007-CP1	23,187	23,904
10182- P1-0009-CP1	25,455	23,904
10182- P1-0008-CP1	30,202	23,904
10182- P1-0010-CP1	33,104	23,904
10182- P1-0011-CP1	30,717	23,904
10182- P1-0012-CP1	29,801	23,904
10182-P1-0013-CP1	28 454	23,904
10182-P1-0014-CP1	23 625	19 655
10182-P1-0015-CP1	12,056	20 505
10182-P1-0016-CP1	15 769	14 130
10182-P1-0017-CP1	12 465	9 880
10182-P1-0018-CP1	9 508	8 393
10182-P1-0019-CP1	1 764	22 417
10182-P1-0031-CP1	1 999	4 462
10182-P1-0034-CP1	243	2 019
Total	550,104	559,314

	<p>The information (including data and variables) as mentioned in the MR/13/ is found to be in line with the details provided in the PoA-DD/2/.</p> <p>The verification team found the project description contained in the registered PoA-DD/02/ to be complete and accurate. The monitoring report was compared and verified against the PoA-DD/2/ and was found in line with it.</p>
Findings	CL#04 and CL#07 was raised and resolved.
Conclusion	<p>The verification team confirms that</p> <ul style="list-style-type: none"> • The physical features (technology/type of ICS) of the implementation were in accordance with the registered PoA-DD/02/. • The distribution of ICS is completed and has exceeded the estimated quantity given in the respective CPA-DDs for some of the CPAs. However, the ERs claimed have been capped for the small-scale threshold as demonstrated in the ER sheet/12/. • The actual operation is in line to the respective CPA-DD/4-11/, which is further explained under Section E.3 of this report. • The total number of CERs achieved for 15 CPAs are more than the estimated ERs for the same period. The reason for increase is higher monitored stove efficiency as compared to the efficiency assumed for the ex-ante calculation. The total actual CERs for CPAs (combined) were low for comparable monitoring period. • The difference in emission reductions achieved for each specific case CPA DD in comparison to the estimated quantity in the registered CPA DD are justified in detail under section E.3.6.5 and E.3.6.6.

E.2.2. Implementation and operation of the management system

Means of verification	<p>The verification team through the interview of the CME personnel and O&M personnel during the telephonic call (as listed under section D.2) 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 the interview and the evidences provided by the CME. The implementation of the operational and management system was also cross-checked from the photos and interviews of the CME/CPA Implementer and HH end users conducted and no further changes were found during the current verification. The assessment team has also checked training of the monitoring & data recording personnel, the maintenance schedules/records of the stoves and cross-checked the sales data records /3/. 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/.</p>
Findings	No findings were raised
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. Corrections

>> During the 4th monitoring period (01/06/2018-31/05/2019), there was a post-registration change to correct the inconsistent frequency of parameters $\mu y, i / 365$ - Number of days of utilization of the project device during the year 'y' and $N y, i, a$ - Number of project devices of type i and age a that are operating in year y. The change is in line with Appendix of the PS/31/, hence, request for approval of permanent changes is requested under the issuance track. The changes are reflected at <https://cdm.unfccc.int/PRCContainer/DB/prcp228115052/view> in PoA-DD version 8.0 dated 25/10/2019 and PRC validation report dated 31/10/2019 version 1.0/38/.

E.2.3.2. Inclusion of a monitoring plan

>> N/A

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

>> N/A

E.2.3.4. Changes to the programme design

>> N/A

E.2.3.5. Addition of CPA inclusion template

>> N/A

E.2.3.6. Change of coordination/managing entity

>> N/A

E.2.3.7. Changes specific to afforestation and reforestation activities

>> N/A

E.3. Component project activities

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

Means of verification	<p>The CPAs are grouped in this section (i.e., Section E.3) for the purpose of verification and reporting as these are of similar nature (technology and type). The CPAs involve the promotion and installation of ICS (portable) in rural areas of Malawi. There are three CPA implementers involved in the PoA: Area 55 (CPA 10182-P1-0001-CP1, CPA 10182-P1-0002-CP1, CPA 10182-P1-0004-CP1, CPA 10182-P1-0005-CP1, CPA 10182-P1-0006-CP1, CPA 10182-P1-0020-CP1, CPA 10182-P1-0019-CP1), Sunfire (CPA 10182-P1-0003-CP1, CPA 10182-P1-0025-CP1, CPA 10182-P1-0022-CP1, CPA 10182-P1-0024-CP1, CPA 10182-P1-0007-CP1, CPA 10182-P1-0009-CP1, CPA 10182-P1-0008-CP1, CPA 10182-P1-0010-CP1, CPA 10182-P1-0012-CP1, CPA 10182-P1-0013-CP1, CPA 10182-P1-0014-CP1, CPA 10182-P1-0016-CP1, CPA 10182-P1-0017-CP1, CPA 10182-P1-0018-CP1, CPA 10182-P1-0031-CP1), and Eden by Design (CPA 10182-P1-0021-CP1, CPA 10182-P1-0023-CP1, CPA 10182-P1-0011-CP1, CPA 10182-P1-0015-CP1 and CPA 10182-P1-0034-CP1). The same has been confirmed during the interview of the CME and also from the Sales database /3/.</p> <p>The product is disseminated in residential households of the area. It has been checked by the verification team that the CPA is below the threshold of 180 GWh/year (thermal) for Type II. It was also verified through the interview and during the onsite audit of the previous verification that CPA stoves are isolated units and are under 750 kW installed capacity.</p> <p>The current verification which includes verification of 27 CPAs viz. 10182-P1-0001-CP1 (CPA -01), 10182-P1-0002-CP1 (CPA -02), 10182- P1-0003-CP1 (CPA -03), 10182- P1-0004-CP1 (CPA -04), 10182- P1-0005-CP1 (CPA-05), 10182- P1-0006-CP1 (CPA-06), 10182- P1-0025-CP1 (CPA-07), 10182- P1-0020-CP1 (CPA-08) and 10182- P1-0021-CP1 (CPA-09), 10182- P1-0022-CP1 (CPA-10), 10182- P1-0023-CP1 (CPA-11), 10182- P1-0024-CP1 (CPA-12), 10182- P1-0007-CP1 (CPA-13), 10182- P1-0009-CP1 (CPA-14), CPA 10182- P1-0008-CP1 (CPA-15), 10182- P1-0010-CP1 (CPA-16), 10182- P1-0011-CP1 (CPA-17), 10182- P1-0012-CP1 (CPA-18), 10182- P1-0013-CP1 (CPA-19), 10182- P1-0014-CP1 (CPA-20), 10182- P1-0015-CP1 (CPA-21), 10182- P1-0016-CP1 (CPA-22), 10182- P1-0017-CP1 (CPA-23), 10182- P1-0018-CP1 (CPA-24), 10182- P1-0019-CP1 (CPA-25), 10182- P1-0031-CP1 (CPA-27), 10182- P1-0034-CP1 (CPA-29). The implementation status of the ICS for CPA-1 to CPA-18 was checked during the previous verification</p>
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and thus, the remote survey involved the verification of new CPAs (CPA 19 to CPA 25, CPA 27 and CPA 29). The implementation status of the new included CPAs has been checked via remote surveys due to the pandemic situation around the globe the site visit was avoided and the same has been explained in detail under section D.2. of the report. Thereby, following the alternative means for verifying the project related details as described under section D.2. Chitetezo Mbaula type model have been installed by the CME as observed through the evidences provided by the CME during the desk review and the photos provided during the remote survey, which is in line to the PoA DD/02/.

The CPAs of PoA involve dissemination of improved household cookstoves:

	Chitetezo Mbaula
Size / Dimensions (outer body) (cm)	23x27.6x22.4
Size / Dimensions (combustion chamber) (cm)	20x22x17.5
Efficiency	30.6%
Pot Stand (cm)	1.5x3.3
Air/Ash entry (cm)	10.6x12.8
Insulation (material)	Clay
Average Life span	47 months
Daily firewood consumption (per household per day)	4.48

The specification for the cookstove provided meets the eligibility requirements of the PoA-DD page 4/2/. The details were verified from the stove test report/35/ provided by the CME.

During the telephonic call, the interviews conducted with the CME and other personnel involved in the implementation of PoA confirmed the installation of cookstoves claimed by the PP and found to be in-line with the technical description provided in the PoA-DD/2/ and Monitoring report/13/.

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 in this monitoring report is from 01/06/2019 to 11/01/2020. The details of each CPA are as follows:

CPA Ref.	Inclusion date	Crediting period start date	ICS type	Total ICS sold
Malawi Biomass Energy Conservation Programme CPA 1-CPA 10182-P1-0001-CP1	13/08/2015	13/08/2015	Chitetezo Mbaula ceramic stove	22,171
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-P1-0002-CP1	15/10/2016	15/10/2016	Chitetezo Mbaula ceramic stove	22,301
Malawi Biomass Energy Conservation Programme CPA 3 - CPA	15/10/2016	15/10/2016	Chitetezo Mbaula ceramic stove	22,308

	10182-P1-0003-CP1				
	Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-P1-0004-CP1	15/10/2016	15/10/2016	Chitetezo Mbaula ceramic stove	21,052
	Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-P1-0005-CP1	15/10/2016	03/05/2017	Chitetezo Mbaula ceramic stove	21,341
	Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-P1-0006-CP1	15/10/2016	01/09/2017	Chitetezo Mbaula ceramic stove	21,403
	Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-P1-0025-CP1	11/08/2017	11/08/2017	Chitetezo Mbaula ceramic stove	24,640
	Malawi Biomass Energy Conservation Programme CPA 8 - CPA 10182-P1-0020-CP1	11/08/2017	06/04/2018	Chitetezo Mbaula ceramic stove	9,234
	Malawi Biomass Energy Conservation Programme CPA 9 - CPA 10182-P1-0021-CP1	11/08/2017	29/03/2018	Chitetezo Mbaula ceramic stove	19,889
	Malawi Biomass Energy Conservation Programme CPA 10 - CPA 10182-P1-0022-CP1	11/08/2017	01/06/2018	Chitetezo Mbaula ceramic stove	20,236
	Malawi Biomass Energy Conservation	11/08/2017	05/06/2018	Chitetezo Mbaula ceramic stove	19,742

	Programme CPA 11 - CPA 10182-P1- 0023-CP1				
	Malawi Biomass Energy Conservation Programme CPA 10182- P1-0024-CP1	11/08/2017	01/09/2018	Chitetezo Mbaula ceramic stove	20,499
	Malawi Biomass Energy Conservation Programme CPA 13 - CPA 10182-P1- 0007-CP1	11/08/2017	23/10/2018	Chitetezo Mbaula ceramic stove	20,391
	Malawi Biomass Energy Conservation Programme CPA-14-CPA 10182-P1- 0009-CP1	11/08/2017	03/12/2018	Chitetezo Mbaula ceramic stove	19,974
	Malawi Biomass Energy Conservation Programme CPA 15 - CPA 10182-P1- 0008-CP1	11/08/2017	23/01/2019	Chitetezo Mbaula ceramic stove	21,872
	Malawi Biomass Energy Conservation Programme CPA 16 - CPA 10182-P1- 0010-CP1	11/08/2017	05/04/2019	Chitetezo Mbaula ceramic stove	20,832
	Malawi Biomass Energy Conservation Programme CPA 17 - CPA 10182-P1- 0011-CP1	11/08/2017	31/10/2018	Chitetezo Mbaula ceramic stove	19,761
	Malawi Biomass Energy Conservation Programme CPA 18 - CPA 10182-P1- 0012-CP1	11/08/2017	01/09/2018	Chitetezo Mbaula ceramic stove	18,754
	Malawi Biomass Energy	11/08/2017	07/06/2018	Chitetezo Mbaula ceramic stove	19,714

	Conservation Programme CPA 19 - CPA 10182-P1-0013-CP1				
	Malawi Biomass Energy Conservation Programme CPA 20 - CPA 10182-P1-0014-CP1	11/08/2017	01/07/2019	Chitetezo Mbaula ceramic stove	20,536
	Malawi Biomass Energy Conservation Programme CPA 21 - CPA 10182-P1-0015-CP1	11/08/2017	01/07/2019	Chitetezo Mbaula ceramic stove	13,156
	Malawi Biomass Energy Conservation Programme CPA 22 - CPA 10182-P1-0016-CP1	11/08/2017	01/07/2019	Chitetezo Mbaula ceramic stove	19,753
	Malawi Biomass Energy Conservation Programme CPA 23 - CPA 10182-P1-0017-CP1	11/08/2017	01/07/2019	Chitetezo Mbaula ceramic stove	20,590
	Malawi Biomass Energy Conservation Programme CPA 24 - CPA 10182-P1-0018-CP1	11/08/2017	01/07/2019	Chitetezo Mbaula ceramic stove	21,332
	Malawi Biomass Energy Conservation Programme CPA 25 - CPA 10182-P1-0019-CP1	11/08/2017	01/07/2019	Chitetezo Mbaula ceramic stove	1,754
	Malawi Biomass Energy Conservation Programme CPA 27 - CPA 10182-P1-0031-CP1	11/12/2019	11/12/2019	Chitetezo Mbaula ceramic stove	12,244
	Malawi	11/12/2019	11/12/2019	Chitetezo Mbaula	2,558

	Biomass Energy Conservation Programme CPA 29 - CPA 10182-P1- 0034-CP1			ceramic stove	
	<p>The Reference number, inclusion date of each CPA and crediting period start date of each CPA have been checked and verified from the UN website/15/ and the details are found correct and consistent. The ICS are distributed across Malawi. The location where the ICS were distributed was verified from the geo-tagged photographs taken by the representative during the remote survey and was confirmed through documentary evidence provided during the current verification. The type and number of ICS sold is verified from the sales database/3/.</p> <p>The model of ICS has been verified from the evidence shared by the CME like photographs, technical description of the ICS stoves and also based on the confirmation from the on-site inspection of the fourth monitoring period sample verifications in order to assess that the physical features of the stoves as available in registered CPA-DDs/4-11/. The monitoring procedures are in place and the CME has operated the PoA & CPAs as per the registered PoA-DD/02/ and CPA-DDs/4-11/.</p> <p>Each of the independent subsystems/measures included in the CPA of a PoA is no larger than 1% of the small-scale thresholds defined by the applied methodology (i.e. not exceeding 180 GWh for SSC type II methodologies) thus fulfilling the additionality criteria stated in the CPA DD /4-11/ and PoA DD /2/.</p> <p>The implementation of new CPAs under verification i.e. 10182-P1-0013-CP1; 10182-P1-0014-CP1;10182-P1-0015-CP1; 10182-P1-0016-CP1;10182-P1-0017-CP1; 10182-P1-0018-CP1;10182-P1-0019-CP1; 10182-P1-0031-CP1; 10182-P1-0034-CP1 were verified through the remote surveys. Remote surveys were performed in accordance to the OSV exemption provided by CDM-EB in-light to the COVID-19 outbreak as detailed under section D.2 of the verification report.</p>				
Findings	CL#09 was 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/4-11/. • No specific monitoring equipment had to be installed according to the monitoring plan. • It is also confirmed, through the review of the supporting documentation that physical features of the component CPAs have been implemented in accordance with the CPA-DDs/4-11/. • The CPAs were also found to be completely operational in line with the CPA-DDs/4-11/. • The information provided in the relevant sections of the monitoring report appropriately describe the implementation and operational status of the PoA. 				

E.3.2. Post-registration changes

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

No Changes observed

E.3.2.2. Corrections

No corrections observed

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

There are changes to the start date of crediting period for following CPAs:

(a) Changes that have been notified to the secretariat and that do not affect the start of this monitoring period (i.e. any of the changed start dates are prior to the start of this monitoring period)

Reference number	CPA title	The new start date of the crediting period	Notification date
10182-P1-0005-CP1	Malawi Biomass Energy Conservation Programme CPA 5	03/05/2017	15/06/2018
10182-P1-0006-CP1	Malawi Biomass Energy Conservation Programme CPA 6	01/09/2017	15/06/2018
10182-P1-0020-CP1	Malawi Biomass Energy Conservation Programme CPA 8	06/04/2018	23/08/2018
10182-P1-0021-CP1	Malawi Biomass Energy Conservation Programme CPA 9	29/03/2018	23/08/2018
10182-P1-0013-CP1	Malawi Biomass Energy Conservation Programme CPA 19	07/06/2019	31/10/2019
10182-P1-0014-CP1	Malawi Biomass Energy Conservation Programme CPA 20	01/07/2019	31/10/2019
10182-P1-0015-CP1	Malawi Biomass Energy Conservation Programme CPA 21	01/07/2019	31/10/2019
10182-P1-0016-CP1	Malawi Biomass Energy Conservation Programme CPA 22	01/07/2019	31/10/2019
10182-P1-0017-CP1	Malawi Biomass Energy Conservation Programme CPA 23	01/07/2019	31/10/2019
10182-P1-0018-CP1	Malawi Biomass Energy Conservation Programme CPA 24	01/07/2019	31/10/2019
10182-P1-0019-CP1	Malawi Biomass Energy Conservation Programme CPA 25	01/07/2019	31/10/2019

(b) Changes that have been notified to the secretariat and that affect the start of this monitoring period (i.e. the changed start date is the start of this monitoring period)

Reference number	CPA title	The new start date of the crediting period	Notification date
10182-P1-0022-CP1	Malawi Biomass Energy Conservation Programme CPA 10	01/06/2018	31/10/2019
10182-P1-0023-CP1	Malawi Biomass Energy Conservation Programme CPA 11	05/06/2018	31/10/2019
10182-P1-0024-CP1	Malawi Biomass Energy Conservation Programme CPA 12	01/09/2018	31/10/2019
10182-P1-0007-CP1	Malawi Biomass Energy Conservation Programme CPA 13	23/10/2018	31/10/2019
10182-P1-0009-CP1	Malawi Biomass Energy Conservation Programme CPA 14	03/12/2018	31/10/2019
10182-P1-0008-CP1	Malawi Biomass Energy Conservation Programme CPA 15	23/01/2019	31/10/2019
10182-P1-0010-CP1	Malawi Biomass Energy Conservation Programme CPA 16	05/04/2019	31/10/2019
10182-P1-0011-CP1	Malawi Biomass Energy Conservation Programme CPA 17	31/10/2018	31/10/2019
10182-P1-0012-CP1	Malawi Biomass Energy Conservation Programme CPA 18	01/09/2018	30/05/2018

The details of the crediting start date changes have been checked from UN notification mail/39/ and found correct.

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 methodologies, standardized baselines, or other methodological regulatory documents

No changes observed

E.3.2.6. Changes to the project design

No changes observed

E.3.2.7. Changes specific to afforestation and reforestation activities

N/A

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

Means of verification	The monitoring plan as contained in respective CPA DDs/4-11/ were reviewed against the monitoring requirements of the applied methodology AMS-II.G. version 06 /14/ as well as PoA DD/02/ with reference to the technology involved. Based on this review it was found that the monitoring plan contained in the CPA DDs/4-11/ 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/02/ and applied methodology AMS-II.G version 06/14/. The CME and CPA Implementer was interviewed by the team leader as a part of alternative means for site visit exemption to cross-check compliance of the registered monitoring plan.
Findings	No findings were raised.
Conclusion	The monitoring plan is concordant to the approved methodology AMS-II.G. version 06 /14/, that is included in each respective CPA DD/4-11/.

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 the host country DNA as available on the UNFCCC website/15/. The value for Malawi is 0.81. The value of this parameter was checked with the registered PoA-DD/2/ and included CPA-DDs/4-11/.
Findings	No Findings were raised.
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet/12/ are consistent with the registered PoA-DD/2/ & CPA DDs/4-11/. 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 0.015 TJ/t as mentioned below as per CPA DDs. This was checked with the registered. PoA-DD/2/ and included CPA-DDs/4-11/. The value is not mentioned in the CPA-DDs for CPA 7-25, CPA 27 and CPA 29 but was checked with applied methodology/14/ and found to be correct.
Findings	No findings were raised
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet/12/ are consistent with the registered PoA-DD/2/ & CPA

DDs/4-11/. The applied value is correct and justified.

Emission factor for the substitution of non-renewable biomass by similar consumers, tCO_2 /TJ, EF_{projected_fossilfuel}

Means of verification	The value of this parameter is 81.6 as checked from the CPA DDs/4-11/. This was checked with the regd. PoA-DD/2/ and ER calculation sheet/12/ also. The value is not mentioned in the CPA-DDs for CPA 7-25, CPA 27 and CPA 29 but was checked with applied methodology/14/ and found to be correct.
Findings	No findings were raised..
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet/12/ are consistent with the registered PoA-DD/2/ & CPA DDs/4-11/. The applied value is correct and justified.

Efficiency of the system being replaced, % , η_{old}

Means of verification	The value of the parameter considered is 0.10. This was checked with the registered PoA-DD/2/ and included CPA-DDs/4-11/ The value is not mentioned in the CPA-DDs for CPA 7-25, CPA 27 and CPA 29 but was checked with applied methodology/14/ and found to be correct.
Findings	No findings were raised
Conclusion	The value in the monitoring report and corresponding ER spreadsheet/12/ are in concordance with the registered PoA-DD/2/ and CPA-DDs/4-11/. The applied value is correct and justified.

Leakage adjustment factor for period y, Fraction, L_y

Means of verification	The value of this parameter considered is 0.95. This was checked with the registered PoA-DD/2/ and included CPA-DDs/4-11/.The value is not mentioned in the CPA-DDs for CPA 7-25, CPA 27 and CPA 29 but was checked with applied methodology/14/ and found to be correct.
Findings	No Findings were raised.
Conclusion	The value in the monitoring report and corresponding ER spreadsheet/12/ are in concordance with the registered PoA-DD/2/ and CPA-DDs/4-11/. 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, ($B_{y=1,new,i,survey}$)

Means of verification	Criteria/Required Elements	Assessment / Observation
	Measuring /Reading /Recording frequency	Measured. Monitored in the first year of introduction of the devices (e.g. during the first year of the crediting period, $y=1$).
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in accordance to the registered PoA-DD/02/ and applied methodology/14/
	Monitoring equipment	The source of data is Sample surveys – Kitchen performance tests/16/. Digital high precision weighing scale and moisture meter are used.
	Calibration frequency /interval:	The calibration frequency for the monitoring equipment's are not defined in the registered PoA-DD/02/ and CPA-DDs/4-11/, so considering the SSC guideline EB 61, annex 21/17/ para17(c), the

		frequency is once in 3 years. All the monitoring equipment are duly calibrated.
	Is(are) calibration(s) valid for the whole reporting period?	Yes, the calibration is valid for whole reporting period. The calibration details are provided in section E.3.5
	How were the values in the monitoring report verified?	<p>The parameter is measured 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 the measurement of a sample of at least 30 different bundles adjusted for moisture content.</p> <p>Stratified random sampling technique is applied in the survey conducted to determine the amount of fuel used in the project activity by project devices. Survey sheets/18/ 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, CPA-07, CPA-08, CPA-09, CPA-10, CPA-11, CPA-12, CPA-13, CPA-14, CPA-15, CPA-16, CPA-17, CPA-18, CPA-19, CPA-20, CPA-21, CPA-22, CPA-23, CPA-24, CPA-25, CPA-27 and CPA-29 is 1.881 tonnes/household/year which is verified by the review of survey sheets/18/ and KPT data/16/.</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> <p>A discount factor is used in the calculation of Emission Reduction in case any household has more than one stove. This factor is determined based on monitoring survey done by CME. Discount factor to account for households with more than 1 stove installed has been used to discount usage rate for each age group monitored. According to the usage and monitoring survey results conducted in January 2020, the discount factor for more than 1 stove installed was 6.20%. The assessment team has checked the details of the monitoring survey results and it is found that the factor used is correctly calculated and considered correct by the assessment team. The assessment team interviewed the CME personnel to understand the ER calculation of the PoA.</p>
	If applicable, has the reported data been cross-checked with other available data?	The survey result/18/, assumptions and sales records were assessed by the verification team and were found accurate and acceptable. The results are reproducible in the ER sheet/12/ of the final monitoring report/13/. The assessment team has reviewed the KPT data/16/ and found the value correct.

	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
	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#06 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/2/ (as per measurement methods and procedures to be applied) and applied methodology/14/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/2/.	

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 monitoring is conducted on an annual basis which is in compliance with the information provided in Monitoring frequency section. The measuring and reporting frequency are in line to registered CDM PoA DD/2/ and applied methodology/14/.																									
	Monitoring equipment	Not applicable																									
	Calibration frequency /interval:	Not applicable																									
	How were the values in the monitoring report verified?	<div>The values in the MR/13/ have been verified from the sales database/3/. The value of the parameter for all the CPAs i.e.</div> <table><tr><th>CPA Reference number</th><th>Value applied</th></tr><tr><td>10182-P1-0001-CP1</td><td>22,171</td></tr><tr><td>10182-P1-0002-CP1</td><td>22,301</td></tr><tr><td>10182-P1-0003-CP1</td><td>22,308</td></tr><tr><td>10182-P1-0004-CP1</td><td>21,052</td></tr><tr><td>10182-P1-0005-CP1</td><td>21,341</td></tr><tr><td>10182-P1-0006-CP1</td><td>21,403</td></tr><tr><td>10182-P1-0025-CP1</td><td>24,640</td></tr><tr><td>10182-P1-0020-CP1</td><td>9,234</td></tr><tr><td>10182-P1-0021-CP1</td><td>19,889</td></tr><tr><td>10182-P1-0022-CP1</td><td>20,236</td></tr><tr><td>10182-P1-0023-CP1</td><td>19,742</td></tr><tr><td>10182-P1-0024-CP1</td><td>20,499</td></tr></table>	CPA Reference number	Value applied	10182-P1-0001-CP1	22,171	10182-P1-0002-CP1	22,301	10182-P1-0003-CP1	22,308	10182-P1-0004-CP1	21,052	10182-P1-0005-CP1	21,341	10182-P1-0006-CP1	21,403	10182-P1-0025-CP1	24,640	10182-P1-0020-CP1	9,234	10182-P1-0021-CP1	19,889	10182-P1-0022-CP1	20,236	10182-P1-0023-CP1	19,742	10182-P1-0024-CP1
CPA Reference number	Value applied																										
10182-P1-0001-CP1	22,171																										
10182-P1-0002-CP1	22,301																										
10182-P1-0003-CP1	22,308																										
10182-P1-0004-CP1	21,052																										
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10182-P1-0025-CP1	24,640																										
10182-P1-0020-CP1	9,234																										
10182-P1-0021-CP1	19,889																										
10182-P1-0022-CP1	20,236																										
10182-P1-0023-CP1	19,742																										
10182-P1-0024-CP1	20,499																										

			10182-P1-0007-CP1	20,391		
			10182-P1-0009-CP1	19,974		
			10182-P1-0008-CP1	21,872		
			10182-P1-0010-CP1	20,832		
			10182-P1-0011-CP1	19,761		
			10182-P1-0012-CP1	18,754		
			10182-P1-0013-CP1	19,714		
			10182-P1-0014-CP1	20,536		
			10182-P1-0015-CP1	13,156		
			10182-P1-0016-CP1	19,753		
			10182-P1-0017-CP1	20,590		
			10182-P1-0018-CP1	21,332		
			10182-P1-0019-CP1	1,754		
			10182-P1-0031-CP1	12,244		
			10182-P1-0034-CP1	2,558		
			<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> <p>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> <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/12/.</p> <p>Additionally, the number of stoves used for emission reduction calculation has been multiplied with discounted usage rate to arrive at the number of operational stoves of each age group. The approach is checked by the assessment team and is found correct and conservative.</p> <p>The discounted usage rate for each age group can be found in detail in 'Usage and Monitoring survey' sheet/19/ and sales database/3/. The approach followed by the PP was found acceptable including the sampling technique which was found representative.</p>			
			<p>If applicable, has the reported data been cross-checked with other available data?</p> <p>The sales records/3/ of randomly selected stoves were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/12/ of final Monitoring Report/13/.</p> <p>The verification team randomly selected 8 samples for DOE's field survey and via remote survey/41/ conducted by CME representative 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/19/.</p>			
			<p>Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary</p> <p>Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established through the evidences provided by the PP assessed during the telephonic interview the CME representative and monitoring survey personnel. The assessment team has duly verified the CME's QA/QC procedures through the telephonic interview of the CME and</p>			

	QA/QC processes in place?	monitoring personnel 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/20/ 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#08 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/2/ (as per measurement methods and procedures to be applied) and applied methodology/14/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/02/.	

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

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Calculated 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 CDM PoA DD/2/ and applied methodology/14/.
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The values have been verified from the Usage and monitoring survey conducted by CME/19/. Use of other types of stoves is taken into account during the calculation of the Number of days of utilization of the project device during the year 'y' ($\mu_{y,i} / 365$). The assessment team has checked the usage survey sheet /19/ and found it correct. The value of the parameter for all the CPAs is 342 days which is equivalent to 0.937.
	If applicable, has the reported data been cross-checked with other available data?	The survey results/18/, assumptions and sales records/3/ were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/12/ of final Monitoring Report. The verification team randomly selected 8 samples for DOE's field survey which due to site-visit

		exemption as stated under section D.2 was conducted by CME representative (remote survey.) DOE through the videos, Pictures and interview of the HH end-user during the remote survey found out the usage of the installed ICS which was consistent with the CME's sample survey result/19/.
	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 telephonic call, the assessment team has duly reconfirmed 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/20/ telephonic calls to ascertain the reliability and correctness of the entered data in the excel sheet. This was confirmed over telephonic call during current verification due to site-visit exemption duly stated under section D.2 of the report.
	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	FAR#03 was raised and further raised as FAR#09.	
Conclusion	The parameter has been monitored annually which is in-line with the monitoring frequency stated in the revised PoA-DD. FAR#03 was raised during the previous verification to correct the monitoring frequency of the parameter and revised the CPA-DDs to make it consistent with the revised PoA-DD. Considering that the prescribed requirement of the PoA DD has been met during the current verification and owing to time constraint the revisions in the CPA DDs has not been made. However, there is no impact on the current verification due to non-closure of the issue. Therefore, in order to ensure the consistency between PoA DD and CPA DDs, the FAR has been carried forward to the next verification as FAR 09. However, the annual frequency followed was found to be acceptable.	

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 of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Measured. Water Boiling Tests is conducted in the first batch of stoves; thereafter 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 monitoring methodology?	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/2/ and applied methodology/14/.

	(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 21/17/, para 17(c), the frequency is once in 3 years. All the monitoring equipment's are duly calibrated/21/. The calibration is conducted by a capable person with thorough understanding of internationally recognised WBT protocols, updated by the Partnership for Clean Indoor Air and the Global Alliance for Clean Cook-stoves. Use of calibrated measurement equipment.
	How were the values in the monitoring report verified?	The parameter was calculated based on the values from WBT tests/23/. The ER sheet/12/ was checked for the calculated value of the parameter and found to be correct. The verified values for all the CPAs are: 90.88% for age group 1, 88.55% for age group 2, 77.52% for age group 3, 53.82% for age group 4;
	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 interview, 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, survey sheet/25/ 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#04 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/02/ (as per measurement methods and procedures to be applied) and applied methodology/14/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/02/.	

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/14/.
	Monitoring equipment	Scales, thermometer, timer, wood moisture meter are used as the monitoring equipment. Please refer section E.3.4.4 for details.
	Calibration frequency /interval:	Since the calibration frequency for the monitoring equipment's are not defined in the registered PoA DD/CPA DDs/02,4-11/, so considering the SSC guideline EB 61, Annex 21/17/, para 17(c), the frequency is once in 3 years. All the monitoring equipment's are duly calibrated as checked from the calibration certificates/21/. The calibration is conducted by a capable person with thorough understanding of internationally recognised WBT protocols, updated by the Partnership for Clean Indoor Air and the Global Alliance for Clean Cookstoves. Use of calibrated measurement equipment.
	How were the values in the monitoring report verified?	<p>The efficiency of each group has been calculated as an average of efficiency of each tested stove. Actual efficiency based on the WBTs conducted within monitoring activities in 2020 was in the range of 27.04%-27.68%/22/. (comparing to the laboratory test efficiency of 30.6%).</p> <p>The verified values of efficiency for the current monitoring period are:</p> <p>27.09% for age 1,</p> <p>27.48% for age 2,</p> <p>27.67% for age 3,</p> <p>27.04% for age 4</p> <p>The tests were conducting choosing the samples across the CPAs so the results are valid for all the CPAs under this verification.</p> <p>The assessment team has checked the WBT results /22/ 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 4.2.3/24/.</p>

	If applicable, has the reported data been cross-checked with other available data?	The hard copies of the WBT records /25/ are checked as well as the WBT analysis sheet/22/.
	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 telephonic interview, 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/25/ 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#05 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/02/ (as per measurement methods and procedures to be applied) and applied methodology/14/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/02/.	

E.3.4.3. Implementation of sampling plan

Means of verification	<p>The assessment of CME's sampling is discussed below:</p> <p>The CME has applied single sampling plan for all the 27 CPAs. According to Sampling and Survey standards,' version 7.0/27/, the sampling plan applied by the PP for the following CPAs are found to be appropriate. As per the sampling plan stated in the PoA DD/2/, a minimum 95% confidence interval and a 10% margin of error requirement is achieved for the sampled parameters. When a single sampling plan covers a group of CPAs or when monitoring is conducted at least biennially (every two years) or annually (which is a conservative approach for more frequent monitoring and lies within the frequency stated by the applied methodology), confidence/precision of 95/10 for the sample size calculation is applicable. Since the sampling has been done across the CPAs, the CME has taken 95/10 as the confidence precision levels which is found to be in line with the registered monitoring plan/2/. The revised PoA DD/02/ consistently mentions annual monitoring , the actual monitoring also has also been conducted annually.</p> <p>Target Population- As per page 10 of revised PoA-DD/02/ the target population for all the parameters are those ICS that are found in operation under the current CPA's. As per 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 generator has been used.</p> <p>Sample Frame- ICSs distributed in 4 districts randomly sampled taking into account the population size of each district, i.e. considering probability proportional to the size on the primary unit (Therefore giving higher chances of selections for more populous areas.)</p>
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Sampling Method- The method used in sampling was 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 ; determined only once at the time of initial distribution of stoves), $N_{y, i, a}$ ($n_{y, i}$ as per PoA-DD (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 January, 2020 and February, 2020 respectively/22/.

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 version 3.0"/26/.
- 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 3.0/26/.

The assessment team has checked and found that the formula used by PP is in-line with the CDM guidelines "Sampling and surveys for CDM project activities and programmes of activities"/27/.

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 3 ICS vintages, and there are 3 CPA implementers.

So, there are 10 primary sampling units:

- CPA Implementer Area 55 implementing 1 year old stoves,
- CPA Implementer Sunfire implementing 1 year old stoves,
- CPA Implementer Eden implementing 1 year old stoves
- CPA Implementer Area 55 implementing 2 years old stoves,
- CPA Implementer Sunfire implementing 2 years old stoves
- CPA Implementer Eden implementing 2 year old stoves
- CPA Implementer Area 55 implementing 3 years old stoves
- CPA Implementer Sunfire implementing 3 year old stoves
- CPA Implementer Area 55 implementing 4 years old stoves.
- CPA Implementer Sunfire implementing 4 year old stoves

The CPA DDs/4-11/ mention a reliability level of 95/10 which was followed as evident from the sampling calculations in the ER sheet/12/.

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"/27/, which is acceptable to the assessment team as per the guidance.

Sample Size for Parameter of Interest:

The sampling has been applied to the following monitoring parameters

- $N_{y, i, a}$ (Number of project devices of type i and age a that are operating in year y , Number of items)
- $\mu_{y, i} / 365$ (The relative share of usage of the project ICS if a baseline (replaced) stove is still being used in addition to ICS (hereafter called "retention use of ICS"))
- $\eta_{new, i, a}$ (Thermal efficiency of project devices)

The sample size is chosen using the equation inline to CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities/26/.

In this regard, sample size calculation spreadsheet /36/ was checked and found

correct as per registered monitoring plan. The complete details are given in E.3 section of Monitoring Report/13/.

Implementation of Sampling Survey and Field Test Records:

Based on interviews with the CME and the videos and pictures of the sampled HHs and surveyors during the remote survey, in addition to simply asking this question to the end users surveyors were also checking whether it was operational or not. Therefore, the implementation of surveys was considered reliable. The surveyors also took photos of cookstoves which were checked during the desk review by the assessment team.

Monitoring survey (by CME) duration:

The monitoring survey (field survey / tests) was carried out by CME representatives between following duration for the current monitoring period.

CPA Ref.No.	Technology	From	To
CPA-10182-P1-0001-CP1 to CPA-10182-P1-0019-CP1, CPA-10182-P1-0031 and CPA-10182-P1-0034-CP1 (CPA1 to CPA 25, CPA-27 and CPA-29) 27 CPAs	Improved cookstoves	29/01/2020	18/02/2020

The revised PoA DD/2/ requires the parameter to be monitored annually. The frequency is in line with the applied methodology/14/.

The CME has conducted the monitoring surveys for previous and current monitoring period on the following dates:

1. Previous MP (01/06/2018-31/05/2019): monitoring was done in August 2019
2. Current Monitoring Period (01/06/2019- 11/01/2020): monitoring was done in February 2020

The WBT was carried out from 01/02/2019 to 13/02/2019 using two thermometers, two weighing Scales and one moisture meter (details of the equipment used in conducting the stove efficiency is listed under section E.3.5 of the verification report). A total of 19 stoves were tested for deriving the thermal efficiency of the project device as verified from the WBT results/22/.

The DOE has reviewed the ER sheet/12/ thoroughly and observed that the result has been applied only to a monitoring period of 6-months (i.e, 01/06/2019-11/01/2020) and the monitoring has been conducted immediately after the end of the current monitoring period(20 days after the end date of current MP(11/01/2020). Thus, it was confirmed that the monitoring plan has been followed.

The approach was found to be correct and reasonable. The result met the required confidence/precision.

Reliability and precision calculation:

The verification team has verified the Monitored survey results /19/ with the monitored data, where the actual achieved precision is calculated against the Guidelines outlined under "Standard for sampling and surveys for CDM project activities and Programme of Activities" /27/ and confirms that the calculation of achieved reliability was done correctly.

All parameters of interest are included in the ER spreadsheet/12/ for the CPAs under consideration. These were checked for the input values as well as formula applied and were found consistent. The reliability (demonstration of precision achieved after the survey results) is depicted in the Usage and Monitoring survey result /19/ and WBT sheet/22/ corresponding to final Monitoring Report /13/, which

	were also found correct. Thus, the verification team confirms that required precision has been met and the results are reliable.
Findings	No findings were raised.
Conclusion	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD /02/.

E.3.5. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	The monitoring plan (included in CPA DDs/4-11/ and registered PoA DD/02/) 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, the following information was verified from the calibration certificate/21/ of the equipments used for efficiency test;				
	Equipment	Sr. No.	Type	measuring range -	accuracy
	Thermometer	080506150, 060300261	Voltcraft K 102	200°C to +1370°C (reversible °C/°F);	-200°C to +200°C accuracy of 0.3% of the display, +1 °C
	Mass Balance	--	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 102	29/01/2020	28/01/2021	
	Mass Balance	MyWeigh KD-8000 (Sr#04)	29/01/2020	28/01/2021	
	Mass Balance	MyWeigh KD- 8000 (Sr#01)	29/01/2020	28/01/2021	
Moisture Meter	Voltcraft FM-300	31/01/2020	30/01/2021		
The monitoring survey/WBT was done during the 1 st February,2020- 13 th February,2020. Thus, the calibration is valid during the monitoring survey as the monitoring equipment used for conducting monitoring survey was found to be calibrated during this time.					
It is noteworthy that in the registered PoA DD/02/ as well as CPA DDs/4-11/, there is no calibration frequency 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 is newly purchased and are under guaranty from the manufacturer. WBT is conducted by a capable person with thorough understanding of internationally recognised WBT protocols, updated by the Partnership for Clean Indoor Air and the Global Alliance for Clean Cook-stoves. Use of calibrated measurement equipment. 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 21/17/, 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.
Findings	No Findings were raised.
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/02/ and in monitoring methodology/14/. Therefore, the approach presented by PP was accepted.

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

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

Means of verification	The PoA-DD/02/, CPA DDs/4-11/ prescribes direct calculation emission reduction as discussed under section E.3.6.4 of the verification report.
Findings	No findings were raised.
Conclusion	No separate baseline GHG emission calculations were required in accordance with the methodology AMS-II G, version 06/14/.

E.3.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	The PoA-DD/02/, CPA DDs/4-11/ and applied monitoring methodology/14/ do not prescribe any project emission to be considered.
Findings	No findings raised.
Conclusion	No project emissions were calculated, and the approach used is found to be correct.

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	The PoA DD/02/, CPA DDs/4-11/ and applied monitoring methodology/14/ do not prescribe any leakage emissions to be considered. 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 06/14/.

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

Means of verification	<p>The following equations were used to determine the Emission reduction as provided in the monitoring report/13/ and applied in the corresponding ER calculations sheets/12/. The expressions used were found consistent with the registered PoA DD/02/, CPA DDs/4-11/ and the applied methodology AMS-II.G, version 06/14/:</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. B_{y, 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,ia} – number of project devices of type i and age a that are operating in year y μ_{y, i} – number of days of utilization of the project device during the year y</p>
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	<p>$f_{NRB,y}$ – fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass</p> <p>$NCV_{biomass}$ – net calorific value of the non-renewable biomass that is substituted</p> <p>$EF_{projected_fossilfuel}$ – emission factor for the substitution of non-renewable biomass by similar consumers</p> <p>LE_y – Leakage adjustment factor for period y</p> <p>$B_{y, savings, i, a}$ is calculated using Equation 6 of the methodology AMS-II.G Version 6.0:</p> $B_{y, savings, i, a} = B_{y=1, new, i, survey} \times ((\eta_{new, i, a=1} \times \Delta\eta_{y, i, a} / \eta_{old}) - 1)$ <p>and</p> $\Delta\eta_{y, i, a} = (\eta_{new, i, a} / \eta_{new, i, a=1})$ <p>Where</p> <p>$B_{y=1, new, i, survey}$ – annual quantity of woody biomass used by project devices in tonnes per device of type I</p> <p>$\eta_{new, i, a}$ – the thermal efficiency of the device 'i' at age 'a' determined using the water boiling test</p> <p>$\eta_{new, i, a=1}$ – the thermal efficiency of the device at its first year of operation</p> <p>$\Delta\eta_{y, i, a}$ – factor to consider the efficiency loss of the project device type i due to its aging at the year y</p> <p>η_{old} – efficiency of the device being replaced</p> <p>Detailed assessment of all the parameters used to calculate emission reductions is provided under section E.3.4.2.</p> <p>The calculations presented in the monitoring report /13/ and the corresponding ER sheet /12/ were found appropriate and complying with provisions prescribed in the registered monitoring plan/2/ of the respective CPA-DDs/4-11/, PoA-DD/2/ and applied methodology/14/.</p> <p>The verification team affirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found legitimate.</p>
Findings	No findings were raised
Conclusion	<p>The verification team confirms that:</p> <ol style="list-style-type: none"> The complete data was available and is duly reported. 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); Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed; Appropriate emission factors, IPCC default factors and other reference values were correctly applied. 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>The total number of ERs achieved during the current monitoring period is 550,104 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-P1-0001-CP1	--	00	00	00	15,543	15,543
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-P1-0002-CP1	--	00	00	00	23,462	23,462
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-P1-0003-CP1	--	00	00	00	25,039	25,039
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-P1-0004-CP1	--	00	00	00	24,682	24,682
Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-P1-0005-CP1	--	00	00	00	25,915	25,915

Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-P1-0006-CP1	--	00	00	00	24,670	24,670
Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-P1-0025-CP1	--	00	00	00	21,935	21,935
Malawi Biomass Energy Conservation Programme CPA 8 - CPA 10182-P1-0020-CP1	--	00	00	00	14,168	14,168
Malawi Biomass Energy Conservation Programme CPA 9 - CPA 10182-P1-0021-CP1	--	00	00	00	26,015	26,015
Malawi Biomass Energy Conservation Programme CPA 10 - CPA 10182-P1-0022-CP1	--	00	00	00	23,349	23,349
Malawi Biomass Energy Conservation Programme CPA 11 - CPA 10182-P1-0023-CP1	--	00	00	00	23,809	23,809

Malawi Biomass Energy Conservation Programme CPA 12 - CPA 10182-P1-0024-CP1	--	00	00	00	23,168	23,168
Malawi Biomass Energy Conservation Programme CPA 13 - CPA 10182-P1-0007-CP1	--	00	00	00	23,187	23,187
Malawi Biomass Energy Conservation Programme CPA 14 - CPA 10182-P1-0009-CP1	--	00	00	00	25,455	25,455
Malawi Biomass Energy Conservation Programme CPA 15 - CPA 10182-P1-0008-CP1	--	00	00	00	30,202	30,202
Malawi Biomass Energy Conservation Programme CPA 16 - CPA 10182-P1-0010-CP1	--	00	00	00	33,104	33,104
Malawi Biomass Energy Conservation Programme CPA 17 - CPA 10182-P1-0011-CP1	--	00	00	00	30,717	30,717

Malawi Biomass Energy Conservation Programme CPA 18 - CPA 10182-P1-0012-CP1	--	00	00	00	29,801	29,801
Malawi Biomass Energy Conservation Programme CPA 19 - CPA 10182-P1-0013-CP1	--	00	00	00	28,454	28,454
Malawi Biomass Energy Conservation Programme CPA 20 - CPA 10182-P1-0014-CP1	--	00	00	00	23,625	23,625
Malawi Biomass Energy Conservation Programme CPA 21 - CPA 10182-P1-0015-CP1	--	00	00	00	12,056	12,056
Malawi Biomass Energy Conservation Programme CPA 22 - CPA 10182-P1-0016-CP1	--	00	00	00	15,769	15,769
Malawi Biomass Energy Conservation Programme CPA 23 - CPA 10182-P1-0017-CP1	--	00	00	00	12,465	12,465

Malawi Biomass Energy Conservation Programme CPA 24 - CPA 10182-P1-0018-CP1	--	00	00	00	9,508	9,508
Malawi Biomass Energy Conservation Programme CPA 25 - CPA 10182-P1-0019-CP1	--	00	00	00	1,764	1,764
Malawi Biomass Energy Conservation Programme CPA 27- CPA 10182-P1-0031-CP1	--	00	00	00	1,999	1,999
Malawi Biomass Energy Conservation Programme CPA 29 - CPA 10182-P1-0034-CP1	--	00	00	00	243	243
Total	--	00	00	00	550,104	550,104

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

Means of verification	<p>As verified and evident from the final Monitoring Report/13/ and corresponding ER calculations sheet/12/, the actual emission reductions achieved by CPAs included in the current monitoring period were less than estimated for all the CPAs. The estimated ERs were checked with the respective CPA DDs/4-11/ for the comparable period due to the gradual introduction of project technology (improved portable clay stoves).</p> <p>Also, the total emission reduction achieved during the monitoring period is less than the estimated emission reduction for the same period.</p> <p>The actual emission reductions achieved for some CPAs in monitoring period is more than the estimated quantity of ERs for the same period due to the slightly higher monitored stove efficiency (i.e.27.04%-27.67%) as compared to the stove efficiency considered at the time of ex-ante calculation (i.e.25%). Accordingly, it was accepted by the verification team. The measured efficiency is still lower than the design efficiency (30.6%)/22-25,35/.</p> <p>The assessment team has checked the details regarding the efficiency and found it correct.</p> <p>Another factor which led to decrease in ERs is the lower number of distributions</p>
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	done under the CPAs as compared to the stated number in the CPA DDs. However, the CME has ensured that the maximum energy saved is capped at the threshold for small scale project.
Findings	No finding was raised.
Conclusion	The actual emission reductions achieved in monitoring period is less than the estimated quantity of ERs for the same period due to the lower number of distributions done under CPAs as compared to the stated number in the CPA-DDs. The justification provided by the CME was found to be sufficient and thus it was accepted by the verification team.

Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period	Value estimated in ex ante calculation in the included CPA-DD(s)
Malawi Biomass Energy Conservation Programme CPA 1 - CPA 10182-P1-0001-CP1	15 543	24 516
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-P1-0002-CP1	23 462	24 516
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-P1-0003-CP1	25 039	24 516
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-P1-0004-CP1	24,682	24 516
Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-P1-0005-CP1	25,915	24,516
Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-P1-0006-CP1	24,670	24,516
Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-P1-0025-CP1	21,935	23,904
Malawi Biomass Energy Conservation Programme CPA 8 - CPA 10182-P1-0020-CP1	14,168	23,904
Malawi Biomass Energy Conservation Programme CPA 9 - CPA 10182-P1-0021-CP1	26,015	23,904
Malawi Biomass Energy Conservation Programme CPA 10 - CPA 10182-P1-0022-CP1	23,349	23,904
Malawi Biomass Energy Conservation Programme CPA 11 - CPA 10182-P1-0023-CP1	23,809	23,904

Malawi Biomass Energy Conservation Programme CPA 12 - CPA 10182-P1-0024-CP1	23,168	23,904
Malawi Biomass Energy Conservation Programme CPA 13 - CPA 10182-P1-0007-CP1	23,187	23,904
Malawi Biomass Energy Conservation Programme CPA 14 - CPA 10182-P1-0009-CP1	25,455	23,904
Malawi Biomass Energy Conservation Programme CPA 15 - CPA 10182-P1-0008-CP1	30,202	23,904
Malawi Biomass Energy Conservation Programme CPA 16 - CPA 10182-P1-0010-CP1	33,104	23,904
Malawi Biomass Energy Conservation Programme CPA 17 - CPA 10182-P1-0011-CP1	30,717	23,904
Malawi Biomass Energy Conservation Programme CPA 18 - CPA 10182-P1-0012-CP1	29,801	23,904
Malawi Biomass Energy Conservation Programme CPA 19 - CPA 10182-P1-0013-CP1	28,454	23,904
Malawi Biomass Energy Conservation Programme CPA 20 - CPA 10182-P1-0014-CP1	23,625	19,655
Malawi Biomass Energy Conservation Programme CPA 21 - CPA 10182-P1-0015-CP1	12,056	20,505
Malawi Biomass Energy Conservation Programme CPA 22 - CPA 10182-P1-0016-CP1	15,769	14,130
Malawi Biomass Energy Conservation Programme CPA 23 - CPA 10182-P1-0017-CP1	12,465	9,880
Malawi Biomass Energy Conservation Programme CPA 24 - CPA 10182-P1-0018-CP1	9,508	8,393
Malawi Biomass Energy Conservation Programme CPA 25 - CPA 10182-P1-0019-CP1	1 764	22 417

Malawi Biomass Energy Conservation Programme CPA 27- CPA 10182-P1-0031-CP1	1 999	4 462
Malawi Biomass Energy Conservation Programme CPA 29- CPA 10182-P1-0034-CP1	243	2 019
Total	550,104	559,314

E.3.6.6. 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 calculations sheet/12/, the actual emission reductions achieved by CPAs is included in the current monitoring period were more than estimated for 15 CPAs and less than the estimated quantity for rest 12 CPAs, The estimated ERs were checked with the respective CPA DDs/4-11/ for the comparable period due to gradual introduction of project technology (improved portable clay stoves). The actual emission reductions achieved in monitoring period is less than the estimated quantity of ERs for the same period due to less measured efficiency than the designed efficiency (30.6%)/22-25,35/. Accordingly, it was accepted by the verification team. Another factor which led to decrease in ERs is the lower number of distributions done under the CPAs as compared to the stated number in the CPA DDs. However, the CME has ensured that the maximum energy saved is capped at the threshold for small scale project.
Findings	No findings raised.
Conclusion	The actual emission reduction is less than the estimated ERs for the monitoring period. The justification provided by the CME was found to be sufficient and thus it was accepted by the verification team

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

Means of verification	The coordinating/managing entity did not identify and establish the monitoring of the sustainable development benefits of the registered CDM PoA /2/ and no such document was developed and published on the UNFCCC CDM website. Therefore, assessment is not required.
Findings	None
Conclusion	The CME is not required to monitor the sustainable development benefits of the registered CDM PoA.

E.3.8. Global stakeholder consultation

Means of verification	The global stakeholder consultation was not found applicable because period under verification is 5 th monitoring period.
Findings	None
Conclusion	The requirement is applicable for situations when global stakeholder consultation was carried out after the publication of first monitoring report. Therefore, this was not found 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 was 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 fifth independent verification of the emission reductions for the registered CDM PoA 10182 "Biomass Energy Conservation Programme" in Malawi for the monitoring period 01/06/2019-11/01/2020(both days included) as reported in the Monitoring Report (final) Version 2.3 dated 02/04/2020. 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-P1-0001-CP1, 10182- P1-0002-CP1, 10182- P1-0003-CP1, 10182- P1-0004-CP1, 10182- P1-0005-CP1, 10182- P1-0006-CP1, 10182- P1-0025-CP1,10182- P1-0020-CP1, 10182- P1-0021-CP1, 10182- P1-0022-CP1, 10182- P1-0023-CP1, 10182- P1-0024-CP1, 10182- P1-0007-CP1, 10182- P1-0009-CP1, 10182- P1-0008-CP1, 10182- P1-0010-CP1, 10182- P1-0011-CP1, 10182- P1-0012-CP1, 10182- P1-0013-CP1, 10182- P1-0014-CP1, 10182- P1-0015-CP1, 10182- P1-0016-CP1, 10182- P1-0017-CP1, 10182- P1-0018-CP1, 10182- P1-0019-CP1, 10182- P1-0031-CP1, 10182- P1-0034-CP1) 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 2.

The verification activities were conducted in accordance with ESPL's CDM Quality Manual System. 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 2.3 dated 02/04/2020 and corresponding ER sheets for the monitoring period 01/06/2019-11/01/2020 (including both days) amount as 550,104 tCO₂e. Therefore, this will be submitted as part of a request for issuance as per CDM PCP for PoA, Version 2.

SECTION H. Certification statement

Earthood Services Private Limited (ESPL), contracted by Hestian Innovation Ltd. (the CME for the PoA), has performed the fifth independent verification of the emission reductions for the registered CDM PoA 10182 "Biomass Energy Conservation Programme" in Malawi for the monitoring period 01/06/2019-11/01/2020 (both days included) as reported in the Monitoring Report Version 2.3 dated 02/04/2020/13/.

The verification is based on the registered PoA-DD/2/, CPA-DDs/4-11/ 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 2.0 dated 05/03/2020/13/. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 2.3 dated 02/04/2020 /13/.

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 01/06/2019 up to 11/01/2020 (including both dates) based on the reported emission reductions in the Final Monitoring Report Version 2.3 dated 02/04/2020 /13/ 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 01/06/2019 up to 11/01/2020 (including both dates)

Verified and certified emission in the above reporting period:

	Amount	Unit
Certified emission reductions (CERs)	550,104	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	Earthood 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
PSU	Primary Sampling Unit.
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	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			
Name	Ashok Gautam		
Country	India		
Education	M. Sc. (Environmental Sciences) M. Tech. (Energy & Environmental Management)		
Experience	16 Years +		
Field	Energy, Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-I.A., AMS-I.C., AMS-I.E, AMS-II.D., AMS-II.G., AMS-III.E., AMS-III.H., AMS-III.Q, AMS-III.Z., AMS-III.AV., AM0029, AM0025, AM0056, ACM0001, ACM0002, ACM0004, ACM0012, ACM0006, AM0018, ACM0009, AM0034, AMS.I.B, ACM0003		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
Reviewed by	Shreya Garg	Date	23/10/2019
Approved by	Anshika Gupta	Date	23/10/2019

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
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Competence Statement			
Name	Vaishali Vatsa		
Education	M.Sc. (Environmental Studies and Resource Management), TERI University		
Experience	4 months		
Field	Climate Change		
Approved Roles			
Team Leader	NO		
Validator	Yes		
Verifier	Yes		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	NO		
Reviewed by	Shreya Garg	Date	30/12/2019
Approved by	Anshika Gupta	Date	02/01/2020

Competence Statement			
Name	Rahi Sahni		
Education	M.Sc Environment Science and Technology, Bharati Vidyapeeth University, Pune		
Experience	4 months		
Field	Climate Change and Environment		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Trainee	Validator/Verifier		
Reviewed by	Shreya Garg	Date	01/10/2019
Approved by	Anshika Gupta	Date	03/10/2019

Appendix 3. Documents reviewed or referenced

No	Author	Title	References to the document	Provider
1.	UNFCCC	Monitoring Report Form for PoA (CDM-PoA-MR-FORM)	Version 03.0	Others
2.	Hestian Innovation Ltd.	Registered PoA DD Revised PoA DD	Version 7.0, Dated 07/07/2015 Version:8.0 Dated:25/10/2019	Others
3.	Hestian Innovation Ltd.	Sales database (ER calculation sheet)	Corresponding to this MP	PP
4.	Hestian Innovation Ltd	CPA DD – 1	Version 05, dated – 07/07/2015	Others
5.	Hestian Innovation Ltd	CPA DD – 2	Version 04, dated – 19/09/2016	Others
6.	Hestian Innovation Ltd	CPA DD for CPA 3, 4, 5, 6	Version 04, dated - 19/09/2016 respectively.	Others
7.	Hestian Innovation Ltd	CPA DD for CPA 7	Version 2.1, dated - 12/07/2017	Others
8.	Hestian Innovation Ltd	CPA DD for CPA 8	Version 2.1 dated 12/07/2017	Others
9.	Hestian Innovation Ltd	CPA DD for CPA 9	Version 2.1 dated 12/07/2017	Others
10	Hestian Innovation Ltd	CPA DD for CPA 10 CPA DD for CPA 11 CPA DD for CPA 12 CPA DD for CPA 13 CPA DD for CPA 14 CPA DD for CPA 15 CPA DD for CPA 16 CPA DD for CPA 17 CPA DD for CPA 18 CPA DD for CPA 19 CPA DD for CPA 20 CPA DD for CPA 21 CPA DD for CPA 22 CPA DD for CPA 23 CPA DD for CPA 24 CPA DD for CPA 25	Version 2.1 dated 12/07/2017 respectively	Others
11	Hestian Innovation Limited	CPA DD for CPA 27 CPA DD for CPA 29	Version 2.0 Dated: 17/10/2019	
12	Hestian Innovation Ltd	ER calculation sheet	Corresponding to current monitoring period	PP
13	Hestian Innovation Ltd	Monitoring report	Version 2.3 Dated:02/04/2020	PP
14	UNFCCC	AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass	Version 6.0	Others
15	UNFCCC	UN Project Webpage https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/4A2PCYSNBW81Z3L5FUH9RMJKQDV6/view	-	Others
16	Hestian Innovation Ltd	Kitchen Performance tests (B _{y=1,new,i,survey} sheet)	2017	PP
17	UNFCCC	SSC guideline EB 61, annex 21 Link: https://cdm.unfccc.int/filestorage/B/7/L/B7LDP	03/06/2011	Others

		O0KY4C9HAVTX5WIZQUMJ8SNR1/eb61_rep an21.pdf?t=c0R8cTAydWN6fDB9dOubZSmM wZjM6lejYWuF		
18	Hestian Innovation Ltd	Survey sheets	29/01/2020	PP
19	Hestian Innovation Ltd	Usage and Monitoring survey	February,2019	PP
20	Hestian Innovation Ltd	Sales receipt	Various	PP
21	Malawi Bureau of Standards	Calibration certificates of the monitoring equipment	Various	PP
22	Hestian Innovation Ltd	WBT result sheet	Various	PP
23	Hestian Innovation Ltd	WBT raw data copies	Various	PP
24	GACC	WBT protocol Document	Version 4.2.3	Others
25	Hestian Innovation Ltd	WBT survey sheets	Various	PP
26	UNFCCC	Guidelines: Sampling and surveys for CDM project activities and programmes of activities version 3.0	Version 3.0	Others
27	UNFCCC	Standard: Sampling and surveys for CDM project activities and programmes of activities	Version 7.0	Others
28	IPCC	IPCC default factors	2016	Others
29	Bureau Veritas Certification Holding SAS	Validation Report (CPA-7 to CPA-25)	20/07/2017	Others
30	UNFCCC	CDM VVS for PoA	Version 2.0	Others
31	UNFCCC	CDM PS for PoA	Version 2.0	Others
32	UNFCCC	CDM PCP for PoA	Version 2.0	Others
33	ESPL	Previous Verification Report (4 th MP)	Dated: 27/01/2020	Others
34	Hestian Innovation Ltd	CPA Start date evidence	Various	Others
35	CREEC	Stove testing report	August 2012	PP
36	Hestian Innovation Ltd	Sample Size calculation sheet	-	PP
37	ESPL	Screenshot of random samples picked up by the DOE	-	Other
38	ESPL	PRC Validation opinion	24/01/2020	Other
39	Hestian Innovation Ltd	UN notification mail	31/10/2019	PP
40	Hestian Innovation Limited	ER contracts	Various	PP
41	Hestian Innovation Limited	Remote Survey Files	26/03/2020-27/03/2020	PP
42	Hestian Innovation Limited	Emission Reduction Purchase Agreement	-	PP

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

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

FAR ID	01	Section no.	E.1.2.	Date : 03/03/2020
Description of FAR				
The FAR raised during the 4 th Verification states that “the DOE involved in the next verification shall ensure that the gap between the current monitoring survey and the next monitoring survey is not more than one year.”				
Project participant response				Date : 16/03/2019
<i>Usage and monitoring surveys used during the previous verification were conducted in August, 2019. The monitoring surveys used in the current monitoring report were conducted in January-February, 2020. Therefore, the gap between the monitoring surveys is not more than one year. The next three rounds of verification are planned to be conducted by the end of 2020 and will cover the following monitoring periods (MP): MP 6 12/01/2020 – 11/05/2020, MP 7 12/05/2020 - 11/08/2020, and MP 8 12/08/2020 – 31/12/2020. Therefore, monitoring surveys conducted in January-February, 2020 will be also used for the next three monitoring reports.</i>				
Documentation provided by project participant				
DOE assessment				Date: 18/03/2020
The usage and monitoring survey for previous verification was conducted in August, 2019 and the monitoring survey for the current monitoring period was conducted in January-February, 2020. Thus, the gap between the current monitoring survey and previous monitoring survey is less than one year. Thus, the finding stands closed.				

FAR ID	02	Section no.	E.1.2.	Date : 03/03/2020
Description of FAR				
The FAR raised during the 4 th Verification states that “the DOE involved in the next verification shall ensure that the end date of the monitoring period of all the CPAs covered by the revised monitoring report aligned to the end-date of the different monitoring period”				
Project participant response				Date : 16/03/2019
<i>The end date of the monitoring period of all the CPAs covered by the revised monitoring report is aligned to the end-date of the different monitoring period. 11/01/2020 is the end date of the monitoring period used for all CPAs.</i>				
Documentation provided by project participant				
DOE assessment				Date: 18/03/2020
The end-date of the monitoring period of the CPAs covered during the current MP is in-line with the end-date of the different monitoring period (11/01/2020) as verified from the ‘Usage and Monitoring survey sheet’. Thus, the finding stands closed.				

FAR ID	03	Section no.	E.1.2	Date : 03/03/2020
Description of FAR				
The FAR raised during 4 th Verification states that “the DOE involved in the next verification shall ensure that the monitoring frequency of the parameter “μ y, i / 365: Number of days of utilization of the project device during the year ‘y’”, in each of the CPA-DD(s) is revised in-line to the correction made in the PoA-DD (annual)”.				
Project participant response				Date : 16/03/2019
<i>The monitoring frequency of the parameter “μ y, i / 365: Number of days of utilization of the project device during the year ‘y’” in the PoA-DD has been followed during the current monitoring period. the measure has been followed due to the time constrain owing to the delay in delivery. The revision in each of the CPA-DD(s) in-line to the correction made in the PoA-DD (annual) shall be done before the next issuance .</i>				
Documentation provided by project participant				

DOE assessment	Date: 18/03/2020
<p>The monitoring frequency for the parameter “$\mu y, i / 365$: Number of days of utilization of the project device during the year ‘y’” in-line with the correction made in the PoA-DD (annual) has been followed in the current monitoring period.</p> <p>However, the revised CPA-DDs shall get approved prior to next verification as committed by CME. Considering that the prescribed requirement have been met during the current verification and owing to time constraint the finding could not be closed. However, there is no impact on the current verification due to non closure of the finding. Therefore, in order to ensure the consistency between PoA DD and CPA DDs, the FAR has been carried forward to the next verification as FAR 09.</p>	

Table 2. CL from this verification

CL ID	04	Section no.	-	Date : 09/03/2020
Description of CL				
PP is requested to provide the following evidences: 1. CPA start date evidence (for CPA-20 onwards) 2. Moisture meter calibration certificate 3. WBT Sheets (Hard copies) 4. Monitoring Survey Forms 5. Emission Reduction Contracts				
Project participant response				Date : 16/03/2019
<i>The documents have been provided.</i>				
Documentation provided by project participant				
1. CPA start date evidence (for CPA-20 onwards) – Emission Reduction Contracts 2. Moisture meter calibration certificate 3. WBT Sheets (Hard copies) 4. Monitoring Survey Forms				
DOE assessment				Date: 18/03/2020
1. PP has provided evidence for CPA start date (CPA-1 to CPA-25, CPA-27 and CPA-29) 2. Moisture meter calibration certificate has been provided. However, the calibration details stated in the monitoring report (version 2.1) under monitoring equipment section of parameter “n new’ on page 31 is inconsistent with the details stated in the moisture meter calibration certificate. (Open) 3. WBT sheets (hard copies) were provided. 4. Monitoring survey forms were provided 5. PP has provided Emission reduction contracts related to the PoA.(Closed)				
Project participant response				Date : 20/03/2019
<i>2. The information has been corrected.</i>				
Documentation provided by project participant				
Monitoring report, version 2.1				
DOE assessment				Date: 23/03/2020
The calibration details of the moisture meter are now updated under section E.2. in the revised monitoring report (version 2.2) (Closed)				

CL ID	05	Section no.	E.3.4.2	Date : 09/03/2020
Description of CL				
The applied methodology (AMS-II.G version 6.0) on page 5 states that “cookstoves show significant efficiency losses over time”. However, efficiency of cookstoves deployed during current monitoring period is not decreasing over the year of operation rather the efficiency for age 3 and age 4 stove has increased with respect to age 1 and age 2 stoves. PP is requested to clarify the same.				
Project participant response				Date : 16/03/2019

The stove promoted by the PoA has a laboratory test efficiency of 30.6% and the experience of the CME gained during the 4 rounds of monitoring activities for PoA 10182 is that improved cookstoves distributed within the PoA do demonstrate efficiency less than the lab tests but do not demonstrate a clear tendency of efficiency loss during the initial 4 years of operation.

Monitoring period	Age 1	Age 2	Age 3	Age 4
First monitoring period, WBTs conducted in February, 2017	25.92%	26.50%	-	-
Second and third monitoring periods, WBTs conducted in February, 2018	26.41%	25.63%	26.42%	-
Fourth monitoring period, WBTs conducted in August, 2019	26.91%	26.60%	25.33%	25.33%
Fifth monitoring period, WBTs conducted in February, 2020	27.09%	27.48%	27.67%	27.04%
Average value	26.58%	26.55%	26.47%	26.19%

The efficiency for different ages ranges between 25.33% and 27.67% with the average efficiency values for all ages in a range of 26.19% and 26.58%.

For each stove 9 test results have been recorded and the average value was used for the purpose of monitoring. The range of efficiency values received in specific tests is between 17% and 38%. The laboratory tests efficiencies reported by Regional Stove Testing Centre, Centre for Research in Energy and Energy Conservation (CREEC) ranged between 26% and 39%. Therefore, WBTs results achieved are in line with the previous tests conducted both during the previous monitoring activities and laboratory testing.

The stoves could probably demonstrate efficiency losses after the fourth year of operation, however, to ensure conservativeness of emission reduction calculation the operational lifetime of the stoves is limited to 47 months (see page 4 of the PoA DD) or 1417 days as reflected in the emission calculation excel file (Fixed Data worksheet). No emission reductions are claimed after the expiration of this operational lifetime for the stoves included in the PoA. Still, usage and monitoring surveys demonstrate that about 50% of stoves are still operational at age 4 and significant share of them could be expected to continue operation at age 5 and more.

Documentation provided by project participant

DOE assessment Date: 18/03/2020

The average efficiency of the stoves ranges between 27.04%- 27.67% which is less than the lab test efficiency of the stoves i.e. 30.6%. Also, the operational lifetime of the project device is 3.91 years and the ERs are claimed only within this operational lifetime. Though, as per the monitoring and usage survey it is evident that half of the stoves are still operational at the age of 4 and still can function for next few years with a reduced efficiency. As per the efficiency data of the 4 monitoring periods it can be confirmed that efficiency loss over a period of time is not prominent in these project devices.

Thus, CL#05 stands closed.

CL ID	06	Section no.	E.3.4.2	Date	09/03/2020
Description of CL					
<p>1. In the Usage and survey sheet (Title: Usage Survey MR5) provided by the PP, serial number of one of the monitored cookstoves user named "Faume Njewa" (Tab: Survey Results; Cell: C39) is mentioned as 'Not Visible'. PP is requested to clarify how is the non-repetition of the unique ID (serial numbers) in the cookstove has been ensured.</p> <p>2. Sales database sheet for respective CPA Implementers (under ER sheet Titled: CDM 10182 PoA- ER Calculation- MP5-05032020) does not list information regarding sales of cookstoves for the CPAs listed below:</p> <p>i) 'TSR Area 55'- does not list information regarding sales of cookstoves under CPA 25.</p> <p>ii) 'TSR Sunfire' - does not list information regarding sales of cookstoves under CPA 20,22,23,24,27.</p> <p>iii) 'TSR Eden' - does not list information regarding sales of cookstoves under CPA 21,29.</p>					
Project participant response					Date
					16/03/2019

1. Stoves serial number etched on the stoves sometimes becomes not visible during the operation. In this case, serial numbers from the total sales database used for emission reduction calculation are cross-checked with the serial numbers indicated in emission reduction contracts.	
2. Information has been updated and reference to CPAs numbers have been added to the ER calculation file for all CPAs.	
Documentation provided by project participant	
Updated ER calculation file	
DOE assessment	Date: 18/03/2020
1. The ICS serial number for the HH name 'Faume Njewa' is mentioned in the sales database and the emission reduction contract of the respective ICS user. Thereby, avoiding non-repetition of the unique ID in the cookstove. (Closed)	
2. Sales database for respective CPA implementers is now updated and lists information regarding the sales of all the CPAs mentioned above. However, Sales database sheet of CPA Implementer 'TSR Area 55' still does not lists information of the sales under CPA 25. (Open)	
Project participant response	Date : 20/03/2019
2. Information has been updated and reference to CPAs numbers have been added to the ER calculation file for CPA 25.	
Documentation provided by project participant	
Updated ER calculation file	
DOE assessment	Date: 23/03/2020
2. ER sheet (Tab: TSR Area55 01102018-31122018+19) is now updated with the information of the sales under CPA 25. (Closed)	
Finding from TR:	
a) The reference number format for the CPA have not been used consistently in the monitoring report.	
b) The values in the MR are inconsistent from the values indicated in the ER sheet.	
PP is requested to provide details on the monitoring equipment involved in conducting the monitoring survey and WBTs for the project devices.	
Project participant response	Date : 02/04/2020
a) The reference numbers have been updated throughout the monitoring report and emission reduction calculation file;	
b) The values are consistent in the updated monitoring report and emission reduction calculation file;	
c) Information on the monitoring equipment used is provided in the parameter table for the parameter "Thermal efficiency of device of type i being deployed as part of the project activity with the age a". Two scales, two thermometers and one moisture meter has been used for testing. 19 stoves (three tests for each stove with each test lasting about 2 hours) were tested during the period 1-13 of February, 2019.	
Documentation provided by project participant	
Monitoring report version 2.3 dated 02.04.2020	
ER calculation file dated 02.04.2020	
DOE assessment	Date: 03/04/2020
a) PP has now consistently mentioned the CPA reference number throughout the monitoring report (Version 2.3) and emission reduction calculation sheet (dated 02/04/2020)	
b) The values have been made consistent in the revised MR (Version 2.3) and ER sheet (Dated: 02/04/2020)	
c) The information about the monitoring equipment used in measuring the "Thermal Efficiency of device of type i being deployed as part of the project activity with the age a" is listed under Monitoring equipment section of the parameter. 19 stoves were tested during the period of 1-13 of February, 2019 as verified from the WBT results using two thermometers, Two Scales and One moisture meter. (Closed)	

CL ID	07	Section no.	E.2.1.	Date : 09/03/2020
Description of CL				
The registered PoA-DD version as per the project webpage is 7.0. But PoA-DD version 8.0 has been referred by the PP in the current monitoring period. Please clarify.				
Project participant response				Date : 16/03/2019

PoA-DD, version 8 has been submitted for approval along with the monitoring report and request for issuance for the forth monitoring period (please, refer to https://cdm.unfccc.int/PoAIssuance/iss_db/poaiiss644546618/view). PoA-DD, version 8 has been referenced in the monitoring report for the fourth monitoring period (Please refer to the 10182 MR4 MR - version 2.3.pdf (707 KB) file attached to the PoA Issuance web-page). PoA-DD, version 8 is expected to be approved in the coming weeks after the end of the period for requesting review.	
Documentation provided by project participant	
DOE assessment	Date: DD/MM/YYYY
PoA-DD version 8.0 has been referred in the previous monitoring period (MP4). Thus, it was submitted along with the request for issuance for the fourth monitoring period and will be approved by April 03 after the end of requesting review period. Hence, PoA-DD version 8.0 can be referred. (Closed)	

CL ID	09	Section no.	E.3.1.	Date : 17/03/2020
Description of CL				
The no. of ICS sold under few CPAs have increased from the previous monitoring period (01/06/2018-31/05/2019) to current monitoring period (01/06/2019- 11/01/2020). PP is requested to clarify how has the number of stoves sold under few CPAs increased (e.g CPA 7 and CPA 8) as no new sales could be traced from the sales database (CDM 10182 PoA- ER calculation MP5-05032020).(Open)				
Project participant response				Date : 20/03/2020
For each CPA the distribution of stoves have been conducted within the time periods indicated in the monitoring report and the date periods have not been changed from the previous monitoring period (01/06/2018-31/05/2019). Additional ICS have been included in the total sales records database for some CPAs due late reporting by CPA implementers. During the distribution of stoves CPA implementers record users data on hard copies of emission reduction contracts. After that the documents are scanned or photocopied and the data are recorded electronically in excel files. Due to delays within this process caused by logistical reasons and limited resources, as well as frequent blackouts in Malawi, some of the data were not available in electronic form at the date of monitoring report preparation for the previous monitoring period (01/06/2018-31/05/2019). They were included in the current monitoring period (01/06/2019- 11/01/2020) and emission reductions are accounted only from the start date of the current monitoring period (01/06/2019).				
Documentation provided by project participant				
DOE assessment				Date: 23/03/2020
The sales of the stove have been conducted within the periods stated in the monitoring report as checked from the sales database and the sales period have remained the same as the previous monitoring report (MP4_MR) for all the CPAs. The increase in the number of the stoves under certain CPAs was due to the late reporting of stoves by CPA- Implementers and the ERs have been claimed for the monitoring period.(Closed)				

Table 3. CAR from this verification

CAR ID	08	Section no.	E.3.4.2	Date : 09/03/2020
Description of CL				
1. Total no. of days in the current monitoring period is 225. PP is requested to clarify the application of 342 days in the number of days of utilization of the project device during the year 'y' ($\mu_{y,i}$).				
Project participant response				Date : 16/03/2019
The parameter Number of days of utilization of the project device during the year 'y' ($\mu_{y,i}$) in days (342 days for MP5) is used for the calculation of the share $\mu_{y,i} / 365$ - the relative share of usage of the project ICS if a baseline (replaced) stove is still being used in addition to ICS (i.e. "retention use of ICS"). Therefore, it does not depend on the duration of monitoring period. According to the formula described in section F.4 this relative share discounts the number of project devices of type i and age a that are operating in year y. Moreover, as described in the parameter table for parameter "Number of project devices of type i and age a that are operating in year y" (see section Calculation method (if applicable)), the number of stoves operating during a year (365 days) was calculated based on the number of technology days for each year (number of technology days divided by 365). Such approach allows conservative calculation of emission reduction independently of the duration of the monitoring period.				
Documentation provided by project participant				

DOE assessment	Date: 18/03/2020
As per PP's explanation, it is evident that the number of days applied for calculating the parameter number of days of utilization of the project device during the year 'y' ($\mu_{y,i}$) is not related to the number of days in the monitoring period rather is the number of days a project device is utilised in a year. Thus, the value of 342 days was found to be appropriate and acceptable (Closed).	

Table 4. FAR from this verification

FAR ID	09	Section No.	E.1.2	Date : 18/03/2020
Description of FAR				
The DOE involved in the next verification shall ensure that the monitoring frequency of the parameter “μ y, i / 365: Number of days of utilization of the project device during the year ‘y’”, in each of the CPA-DD(s) is revised in-line to the correction made in the PoA-DD (annual)”.				
Project participant response				Date : DD/MM/YYYY
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Documentation provided by project participant				
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DOE assessment				Date: DD/MM/YYYY

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN); • Make structural and editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying		