



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

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

**BASIC INFORMATION**

<b>Title and UNFCCC reference number of the programme of activities (PoA)</b>	Biomass Energy Conservation Programme 10182		
<b>Version number(s) of the PoA-DD(s) to which this report applies</b>	08		
<b>Version number of the verification and certification report</b>	2.1		
<b>Completion date of the verification and certification report</b>	02/08/2021		
<b>Monitoring period number and duration of this monitoring period</b>	Monitoring period No.: 6 <sup>th</sup> Monitoring Period Duration: 12/01/2020 – 31/12/2020 (both the days are included)		
<b>Number and version number of the monitoring report to which this report applies</b>	Number of Monitoring Report: 2 <sup>nd</sup> Version of Monitoring Report: 2.1, dated 02/08/2021		
<b>Coordinating/managing entity (CME)</b>	Hestian Innovation Ltd.		
<b>Host Parties</b>	<b>Host Parties of the PoA</b>	<b>Is this a host Party to a CPA covered in this report? (yes/no)</b>	
	Malawi	Yes	
	Rwanda	No	
<b>Applied methodologies and standardized baselines</b>	AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass --- Version 6.0		
<b>Mandatory sectoral scopes</b>	Sectoral Scope 3 (Energy Demand)		
<b>Conditional sectoral scopes, if applicable</b>	None		
<b>Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report</b>	170,198 tCO <sub>2e</sub>		
<b>Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report</b>	Amount before 1 January 2013	Amount from 1 January 2013 until 31 December 2020	Amount from 1 January 2021
	NA	110,188 tCO <sub>2e</sub>	NA
<b>Name and UNFCCC reference number of the DOE</b>	Earthood Services Private Limited: E0066		
<b>Name, position and signature of the approver of the verification and</b>			

certification report



Dr. Kaviraj Singh  
Managing Director

## 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 and Rwanda. The target areas in this monitoring report 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., CPA 27 - 10182-P1-0031-CP1, CPA 29 - 10182-P1-0034-CP1, CPA 31 - 10182-P1-0036-CP1, CPA 33 - 10182-P1-0038-CP1, CPA 35 - 10182-P1-0040-CP1, CPA 37 - 10182-P1-0042-CP1, 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/1/ & CPA-DDs/2-7/
- 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 2.0/10/
- v. The CDM Project Standard (PS)/9/ and Project Cycle Procedure (PCP) for PoA version 2.0/11/
- 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 remote audit (including sampling approach (refer Section C of this report) to be applied)
- e) Remote audit was conducted for this verification due to COVID-19 outbreak (refer Section D.2 of this report for details). Interview with relevant stakeholders by verification team consistent of Team Leader and all Technical Experts, as a minimum to confirm the implementation status of the PoA.
- 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 10182-P1-0031-CP1, 10182-P1-0034-CP1, 10182-P1-0036-CP1, 10182-P1-0038-CP1, 10182-P1-0040-CP1, 10182-P1-0042-CP1, for the monitoring period 12/01/2020 – 31/12/2020 (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/1/ and the CPA DDs/2-7/.

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 12/01/2020 – 31/12/2020 (including both dates) amount to 110,188 tCO<sub>2e</sub>. 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.	Methodology 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	IR	Katundu	Enea	Central Office	Y	N	Y	Y

\*No on-site inspection was conducted for this batched issuance.

### 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	Mahala	Deepika	Central office
2.	Technical Expert	IR	Mahala	Deepika	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	Low	CME enters the data in calculation of ERs as available through	Since most of the monitoring parameter is confirmed through ex post monitoring survey

	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.		survey/sampling. The monitored parameters are used in the calculation of emission reductions.	conducted by CME, the verification team checked and verified the 8 households during current monitoring period 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 spreadsheet 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

In accordance with CDM VVS for PoA, Version 02.0 /10/ the prescribed thresholds for materiality for CDM PoA is as under;

Type of PoA	PoAs comprising large-scale CPAs			PoAs comprising only small-scale CPAs	PoAs comprising only micro-scale CPAs
Emission Reductions (tCO <sub>2e</sub> )/year	500,000 or more	300,001 to 499,999	300,000 or less		
Materiality Threshold (as per CDM VVS for PoAs Version 02.0, para 308)	0.5%	1.0%	2.0%	5.0%	10.0%

The applicable materiality threshold is 5% as PoA comprises only small-scale CPAs.

Particulars / Monitoring Report	MR Version (Public)	MR Version (Revised/Final)*
Emission Reductions Achieved (tCO <sub>2e</sub> ) in this monitoring period	110,356 tCO <sub>2e</sub>	110,188 tCO <sub>2e</sub>
Applicable Threshold (%) as per CDM VVS for PoAs Version 02.0	5.0%	5.0%

\*The decrease in the ERs in the final version of MR (Version 2.1)/13/ is due to the inconsistent values mentioned for the number of stoves and CAR#01 was raised in this regard.

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)
10182-P1-0031-CP1, 10182-P1-0034-CP1, 10182-P1-0036-CP1, 10182-P1-0038-CP1, 10182-P1-0040-CP1, 10182-P1-0042-CP1						
For ICS:						

$B_{y=1, \text{new}, i, \text{survey}}$  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	145	8 (based on acceptance sampling)	None	NA	NA
$\mu_{y, i} / 365$  Number of days of utilization of project device during	Annually	145	8 Based on acceptance sampling	None	NA	NA
$\Delta \eta_{y, i, a}$  Factor to consider the efficiency loss of the project device type i due to its aging at the year y, %	Monitored for the first batch of stoves	19	19(100% data was checked)	None	NA	NA
$\eta_{\text{new}, i, a}$  Thermal efficiency of device of type i being deployed as part of the project activity with the age a	Annually	19	8 Based on acceptance sampling	None	NA	NA

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 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 for this batched issuance due to outbreak of global pandemic Covid-19 and increased risk of exposure and contraction due to travel.

#### **Mandatory Site-Visit:**

The site-visit for the current verification was mandatory, as one of the conditions for verification that require a mandatory site visit were applicable.

Para 321 of VVS for PoA, version 2.0 /10/ says that It is mandatory for the DOE to conduct an on-site inspection at verification for the included CPA if:

- It is the first verification for the DOE with regard to this CPA;
- More than three years have elapsed since the last on-site inspection conducted for verification for the CPA; or
- The CPA has achieved more than 300,000 tCO<sub>2e</sub> of GHG emission reductions or net anthropogenic GHG removals since the last verification when an on-site inspection was conducted.

During this verification, 4 (10182-P1-0036-CP1, 10182-P1-0038-CP1, 10182-P1-0040-CP1 and 10182-P1-0042-CP1) out of 6 CPAs are being verified by the DOE for the first time. Apart from these, 2 CPAs were covered in the fifth verification for the Monitoring Period, 01/06/2019 – 11/01/2020 but because of the prevailing pandemic situation, Remote Site Visit was conducted. Thus, for all 6 CPAs, site-visit was mandatory.

At the time of verification, the country where DOE office is based, India is witnessing a sudden increase in the new COVID cases, and total number of infected cases reaching at 12.58 million /15/. Under such circumstances, the verification team is avoiding the risk of contracting the virus by not doing the on-site visit. Therefore, site visit was not conducted for this issuance due to outbreak of global pandemic Covid-19, increased risk of exposure and contraction due to travel as the cases in the country are spurring.

Also, it was duly assessed if the site visit can be postponed /16/. The delay to site visit would mean that the verification would have to be postponed. However, communications on this topic were made with CME, and evidence was provided by CME that delay to the verification site visit would lead to a delayed issuance. This would result in a contractual breach of (and termination/rescission of) underlying Emissions Reductions Purchase Agreement and loss of all future revenue for the CME as verified from ERPA /17/ by the verification team. On the basis of the above, the verification team decided to follow the UN EB 106 Para 26 decision, and adopted an alternative approach for site visit, which is discussed in the below paragraphs.

#### **UN EB decision on Mandatory DOE on-site visits:**

UN EB 106 report (Para 26) mentions the decision EB took on 20th March, in relation to DOE on-site visit which was applicable from 23<sup>rd</sup> March 2020 to 23<sup>rd</sup> June 2020/19/. The Executive Board of the Clean Development Mechanism (CDM) agreed on 23 June 2020, on an exceptional basis considering the COVID-19 pandemic, to extend the period in which CDM Designated Operational Entities (DOEs) may apply

alternative measures of validation/verification to mandatory on-site inspections until 31 December 2020/20/ which has now been extended till 31/12/2021 in EB 110/20/ when the RSV was conducted.

Therefore, for reasons provided above, and in line with UN EB guidelines, the assessment team conducted the verification for this PoA batch using alternative means as defined in the CDM VVS-PoA, ver. 2.0/10/. DOE verification team applied standard auditing techniques while verifying the PoA verification, as discussed below.

### **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 personnel 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 evidence 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 evidence (ER sheet, Usage and monitoring sheet, WBT analysis sheet)

### **D.3. Interviews**

No	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Fox	Conor	CME	01/04/2021	Monitoring Plan, Project Implementation	Shreya Garg, Vaishali Vatsa
2.	Shlapak	Mykola	CPA Implementer	01/04/2021	ER calculation and Monitoring Report (Via Skype)	Shreya Garg, Vaishali Vatsa
3.	Botha	Yamungu	Sunfire	01/04/2021	Monitoring Survey	Shreya Garg, Vaishali Vatsa
4.	Kabota	Martin	Sunfire	01/04/2021	Monitoring Survey	Shreya Garg, Vaishali Vatsa
5.	Kathewera	Vera	DOE remote Field Survey	01/04/2021	ICS End User	Shreya Garg, Vaishali Vatsa
6.	Mtenthath	Triza	DOE remote Field Survey	01/04/2021	ICS End User	Shreya Garg, Vaishali Vatsa
7.	Cyhibaya	Eliza	DOE remote Field Survey	01/04/2021	ICS End User	Shreya Garg, Vaishali Vatsa
8.	George	Patricia	DOE remote Field Survey	01/04/2021	ICS End User	Shreya Garg, Vaishali Vatsa
9.	Salesi	Dija	DOE remote Field Survey	01/04/2021	ICS End User	Shreya Garg, Vaishali Vatsa
10.	Katwatsa	Agnes	DOE remote Field Survey	01/04/2021	ICS End User	Shreya Garg, Vaishali Vatsa
11.	Sukweya	Annie	DOE remote Field Survey	01/04/2021	ICS End User	Shreya Garg, Vaishali Vatsa
12.	Kudzara	Frone	DOE remote Field Survey	01/04/2021	ICS End User	Shreya Garg, Vaishali Vatsa

### **D.4. Sampling approach**

#### **CME's sampling approach:**

A Stratified random 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, in-line to the standard for sampling and surveys for CDM project activities and programme of activities/21/. 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,"/21/ 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:

- The estimated volume of annual emission reductions of the project activity or the PoA being verified is equal to or less than 100,000 tCO<sub>2</sub>e;
- The security conditions in the project region prevents inspection of many samples (e.g. conflict zones); or
- 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/cooperation_and_support/ldc/items/3097.php) / [http://unfccc.int/resource/docs/publications/ldc\\_brochure2009.pdf](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': /21/

- 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 from 2021 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/no response. 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,"/21/.

The samples from Usage survey 2020 has already been verified by the same verification team in batch 1 /14/.

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
<b>General</b>			
Compliance of the monitoring report with the monitoring report form	-	-	-
Remaining forward action requests from validation and/or previous verifications	-	-	-

CPAs considered for verification and covered in this report	-	-	-
<b>Programme of activities</b>	-	-	-
Compliance of the programme implementation with the registered PoA-DD	-	-	-
Implementation and operation of the management system	-	-	-
Post-registration changes	-	-	-
• 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 <sup>1</sup>	-	-	-
• Changes to the programme design	-	-	-
• Addition of CPA inclusion template	-	-	-
• Change of coordinating/managing entity	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
<b>Component project activities</b>	-	-	-
Compliance of the CPA implementation with the included CPA design document	CL#01 CL#02	-	-
Post-registration changes	-	-	-
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	-	-	-
• Corrections	-	-	-
• Changes to the start date-of the crediting period	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	-	-	-
• Changes to the project design	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	-	-	-
Compliance of monitoring activities with the registered monitoring plan	-	CAR#01	-
• Data and parameters fixed ex ante or at renewal of crediting period	-	-	-
• Data and parameters monitored	CL#02	CAR#01	FAR#01
• Implementation of sampling plan	CL#03	CAR#01	-
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	-	-	-

<sup>1</sup> 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).

• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	-	-	-
• Remarks on difference from estimated value in included CPA	-	-	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
<b>Total</b>	<b>03</b>	<b>01</b>	<b>01</b>

## SECTION E. Verification findings

### E.1. General

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

<b>Means of verification</b>	The verification team has compared the final monitoring report /13/ with the applicable monitoring report form, i.e., CDM-PoA-MR-FORM /8/. The verification team confirms that the monitoring report has been appropriately prepared using the latest applicable monitoring report form/8/, and that all sections are completed.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The final Monitoring Report was prepared using the applicable and correct template i.e., CDM-PoA-MR-FORM Version 04.0 /8/. The verification team confirms that the monitoring report has been appropriately prepared using the applicable monitoring report form, and that all sections are completed in line with the guidelines.

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

One FAR (listed as FAR#01) was raised during the fifth verification/14/: because at the time of 5th verification of the registered PoA 10182 it was observed that the monitoring frequency for parameter  $\mu y, i / 365$ : Number of days of utilization of the project device during the year 'y' as mentioned in the CPA-DD was not found to be in-line with the frequency mentioned in the CPA-DDs/2-7/

Therefore, the DOE raised the FAR#01.

CME had revised the CPA-DDs and the monitoring frequency of the parameter  $\mu y, i / 365$ : Number of days of utilization of the project device during the year 'y' has been consistently mentioned in all the CPA-DDs. The revised CPA-DDs were approved under the following PRC request:

CPA-Reference number	PRC request Number	Approval Date
10182-P1-0001-CP1	PRC-10182-002	19/08/2020
10182-P1-0002-CP1	PRC-10182-003	30/08/2020
10182-P1-0003-CP1	PRC-10182-004	19/08/2020
10182-P1-0004-CP1	PRC-10182-005	19/08/2020
10182-P1-0005-CP1	PRC-10182-006	19/08/2020
10182-P1-0006-CP1	PRC-10182-007	19/08/2020
10182-P1-0007-CP1	PRC-10182-008	19/08/2020
10182-P1-0008-CP1	PRC-10182-009	19/08/2020
10182-P1-0009-CP1	PRC-10182-010	19/08/2020
10182-P1-0010-CP1	PRC-10182-011	19/08/2020
10182-P1-0011-CP1	PRC-10182-012	19/08/2020
10182-P1-0012-CP1	PRC-10182-013	19/08/2020
10182-P1-0013-CP1	PRC-10182-014	19/08/2020
10182-P1-0014-CP1	PRC-10182-051	19/08/2020
10182-P1-0015-CP1	PRC-10182-015	19/08/2020
10182-P1-0016-CP1	PRC-10182-016	19/08/2020
10182-P1-0017-CP1	PRC-10182-017	19/08/2020
10182-P1-0018-CP1	PRC-10182-018	19/08/2020
10182-P1-0019-CP1	PRC-10182-019	19/08/2020
10182-P1-0020-CP1	PRC-10182-020	19/08/2020
10182-P1-0021-CP1	PRC-10182-021	19/08/2020
10182-P1-0022-CP1	PRC-10182-022	19/08/2020
10182-P1-0023-CP1	PRC-10182-023	19/08/2020

10182-P1-0024-CP1	PRC-10182-024	19/08/2020
10182-P1-0025-CP1	PRC-10182-025	19/08/2020
10182-P1-0026-CP1	PRC-10182-026	19/08/2020
10182-P1-0027-CP1	PRC-10182-027	19/08/2020
10182-P1-0028-CP1	PRC-10182-028	19/08/2020
10182-P1-0029-CP1	PRC-10182-029	19/08/2020
10182-P1-0030-CP1	PRC-10182-030	19/08/2020
10182-P1-0031-CP1	PRC-10182-031	19/08/2020
10182-P1-0032-CP1	PRC-10182-032	19/08/2020
10182-P1-0033-CP1	PRC-10182-033	19/08/2020
10182-P1-0034-CP1	PRC-10182-034	19/08/2020
10182-P1-0035-CP1	PRC-10182-035	19/08/2020
10182-P1-0036-CP1	PRC-10182-036	19/08/2020
10182-P1-0037-CP1	PRC-10182-037	19/08/2020
10182-P1-0038-CP1	PRC-10182-038	19/08/2020
10182-P1-0039-CP1	PRC-10182-039	19/08/2020
10182-P1-0040-CP1	PRC-10182-040	19/08/2020
10182-P1-0041-CP1	PRC-10182-041	19/08/2020
10182-P1-0042-CP1	PRC-10182-042	19/08/2020
10182-P1-0043-CP1	PRC-10182-043	19/08/2020
10182-P1-0044-CP1	PRC-10182-044	19/08/2020
10182-P1-0045-CP1	PRC-10182-045	19/08/2020
10182-P1-0046-CP1	PRC-10182-046	19/08/2020
10182-P1-0047-CP1	PRC-10182-047	19/08/2020
10182-P1-0048-CP1	PRC-10182-048	19/08/2020
10182-P1-0049-CP1	PRC-10182-049	19/08/2020
10182-P1-0050-CP1	PRC-10182-050	19/08/2020

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 v2.0/10/. the details are given below in the table:

<b>Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period</b>	<b>Is the CPA considered for this verification? (yes/no)</b>	<b>The date when the CPA was included</b>	<b>Version of the PoA-DD</b>	<b>Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)</b>
Malawi Biomass Energy Conservation Programme CPA 1 – 10182-P1-0001-CP1	No	13/08/2015	08	NA
Malawi Biomass Energy Conservation Programme CPA 2 - 10182-P1-0002-CP1	No	15/10/2016	08	NA
Malawi Biomass Energy Conservation Programme CPA 3 - 10182-P1-0003-CP1	No	15/10/2016	08	NA

Malawi Biomass Energy Conservation Programme CPA 4 - 10182-P1-0004-CP1	No	15/10/2016	08	NA
Malawi Biomass Energy Conservation Programme CPA 5 - 10182-P1-0005-CP1	No	15/10/2016	08	NA
Malawi Biomass Energy Conservation Programme CPA 6 - 10182-P1-0006-CP1	No	15/10/2016	08	NA
Malawi Biomass Energy Conservation Programme CPA 13 - 10182-P1-0007- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 15 - 10182-P1-0008- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 14 - 10182-P1-0009- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 16 - 10182-P1-0010- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 17 - 10182-P1-0011- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 18 - 10182-P1-0012- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 19 - 10182-P1-0013- CP1	No	11/08/2017	08	NA

Malawi Biomass Energy Conservation Programme CPA 20 - 10182-P1-0014- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 21 - 10182-P1-0015- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 22 - 10182-P1-0016- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 23 - 10182-P1-0017- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 24 - 10182-P1-0018- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 25 - 10182-P1-0019- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 8 - 10182-P1-0020-CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 9 - 10182-P1-0021-CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 10 - 10182-P1-0022- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 11 - 10182-P1-0023- CP1	No	11/08/2017	08	NA

Malawi Biomass Energy Conservation Programme CPA 12 - 10182-P1-0024- CP1	No	11/08/2017	08	NA
Malawi Biomass Energy Conservation Programme CPA 7 - 10182-P1-0025-CP1	No	11/08/2017	08	NA
Rwanda Biomass Energy Conservation Programme CPA 1 - 10182-P1-0026-CP1	No	18/03/2019	08	NA
Rwanda Biomass Energy Conservation Programme CPA 2 - 10182-P1-0027-CP1	No	18/03/2019	08	NA
Rwanda Biomass Energy Conservation Programme CPA 3 - 10182-P1-0028-CP1	No	18/03/2019	08	NA
Rwanda Biomass Energy Conservation Programme CPA 4 - 10182-P1-0029-CP1	No	18/03/2019	08	NA
Rwanda Biomass Energy Conservation Programme CPA 5 - 10182-P1-0030-CP1	No	18/03/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 27 - 10182-P1-0031- CP1	Yes	11/12/2019	08	Yes <sup>2</sup>
Malawi Biomass Energy Conservation Programme CPA 26 - 10182-P1-0032- CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 28 - 10182-P1-0033- CP1	No	11/12/2019	08	NA

<sup>2</sup> [https://cdm.unfccc.int/PoAIssuance/iss\\_db/poaiss337508536/view](https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss337508536/view)

Malawi Biomass Energy Conservation Programme CPA 29 - 10182-P1-0034- CP1	Yes	11/12/2019	08	Yes <sup>3</sup>
Malawi Biomass Energy Conservation Programme CPA 30 - 10182-P1-0035- CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 31 - 10182-P1-0036- CP1	Yes	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 32 - 10182-P1-0037- CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 33 - 10182-P1-0038- CP1	Yes	11/12/2019	08	No
Malawi Biomass Energy Conservation Programme CPA 34 - 10182-P1-0039- CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 35 - 10182-P1-0040- CP1	Yes	11/12/2019	08	No
Malawi Biomass Energy Conservation Programme CPA 36 - 10182-P1-0041- CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 37 - 10182-P1-0042- CP1	Yes	11/12/2019	08	No
Malawi Biomass Energy Conservation Programme CPA 38 - 10182-P1-0043- CP1	No	11/12/2019	08	NA

<sup>3</sup> [https://cdm.unfccc.int/PoAIssuance/iss\\_db/poaiss337508536/view](https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss337508536/view)



Malawi Biomass Energy Conservation Programme CPA 39 - 10182-P1-0044-CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 40 - 10182-P1-0045-CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 41 - 10182-P1-0046-CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 42 - 10182-P1-0047-CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 43 - 10182-P1-0048-CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 44 - 10182-P1-0049-CP1	No	11/12/2019	08	NA
Malawi Biomass Energy Conservation Programme CPA 45 - 10182-P1-0050-CP1	No	11/12/2019	08	NA

\* There are total 50 CPAs but only 6 CPAs are covered for this verification.

## E.2. Programme of activities

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

<b>Means of verification</b>	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 with the CME representative and also confirmed from the previous verification report/14/. This is consistent with PoA DD/1/. The CPAs of PoA involves dissemination of improved household cookstoves:	
	<b>Model Name</b>	<b>Chjtetezo Mbaula</b>
	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 4/1/. The details were verified from the stove test report /22/ provided by the CME.

During the interviews, the installation of cookstoves claimed by the PP was 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/1/ and Monitoring report/13/.

This monitoring period includes the implementation and monitoring of 6 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/1/.

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

CPA (10182-P1-0031-CP1)

Cookstove deployed/ Model	Number
Chitetezo Mbaula ceramic Stove	13,422

CPA (10182-P1-0034-CP1)

Cookstove deployed/ Model	Number
Chitetezo Mbaula ceramic Stove	3,463

CPA (10182-P1-0036-CP1)

Cookstove deployed/ Model	Number
Chitetezo Mbaula ceramic Stove	7,907

CPA (10182-P1-0038-CP1)

Cookstove deployed/ Model	Number
Chitetezo Mbaula ceramic Stove	18,694

CPA (10182-P1-0040-CP1)

Cookstove deployed/ Model	Number
Chitetezo Mbaula ceramic Stove	18,288

CPA (10182-P1-0042-CP1)

Cookstove deployed/ Model	Number
Chitetezo Mbaula ceramic Stove	17,282

The verification team confirms that the quantity, specification and target group of the ICSs is consistent with the PoA DD/1/ and respective CPA DDs/2-7/. Further based on the review of the sales database/23/ 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/1/.
- The CME is the same as that mentioned in the registered PoA-DD/1/
- The implementation and operation of the project activity have been conducted in accordance with the description contained in the registered PoA-DD/1/ and included CPA-DDs/2-7/.
- All physical features of the CPA proposed in the included CPA-DDs/2-7/ are in place.
- The project participants/CPA implementer has operated the CPAs as per the included CPA-DDs/2-7/.

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

	<p>(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/23/ available with the CME through the hard copies of the ER contracts /24/ 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.</p> <p>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:</p> <table><tr><th>CPA UNFCCC reference number</th><th>Amount achieved during this Monitoring period (t CO<sub>2</sub>e)</th><th>Amount estimated ex ante (t CO<sub>2</sub>e)</th></tr><tr><td>10182-P1-0031-CP1</td><td>33,466</td><td>37,716</td></tr><tr><td>10182-P1-0034-CP1</td><td>8,613</td><td>37,716</td></tr><tr><td>10182-P1-0036-CP1</td><td>11,960</td><td>37,503</td></tr><tr><td>10182-P1-0038-CP1</td><td>28,646</td><td>29,004</td></tr><tr><td>10182-P1-0040-CP1</td><td>17,021</td><td>15,511</td></tr><tr><td>10182-P1-0042-CP1</td><td>10,482</td><td>12,749</td></tr><tr><td>Total</td><td>110,188</td><td>170,198</td></tr></table> <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/1/.</p> <p>The verification team found the project description contained in the registered PoA-DD/1/ to be complete and accurate. The monitoring report was compared and verified against the PoA-DD/1/ and was found in line with it.</p>	CPA UNFCCC reference number	Amount achieved during this Monitoring period (t CO <sub>2</sub> e)	Amount estimated ex ante (t CO <sub>2</sub> e)	10182-P1-0031-CP1	33,466	37,716	10182-P1-0034-CP1	8,613	37,716	10182-P1-0036-CP1	11,960	37,503	10182-P1-0038-CP1	28,646	29,004	10182-P1-0040-CP1	17,021	15,511	10182-P1-0042-CP1	10,482	12,749	Total	110,188	170,198
CPA UNFCCC reference number	Amount achieved during this Monitoring period (t CO <sub>2</sub> e)	Amount estimated ex ante (t CO <sub>2</sub> e)																							
10182-P1-0031-CP1	33,466	37,716																							
10182-P1-0034-CP1	8,613	37,716																							
10182-P1-0036-CP1	11,960	37,503																							
10182-P1-0038-CP1	28,646	29,004																							
10182-P1-0040-CP1	17,021	15,511																							
10182-P1-0042-CP1	10,482	12,749																							
Total	110,188	170,198																							
Findings	None																								
Conclusion	<ul style="list-style-type: none"><li>• The verification team confirms that the physical features (technology/type of ICS) of the implementation were in accordance with the registered PoA-DD/1/.</li><li>• 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/25/.</li><li>• The actual operation is in line to the respective CPA-DD/2-7/, which is further explained under Section E.3 of this report.</li><li>• The total number of CERs achieved for 1 CPA (10182-P1-0040-CP1) is 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.</li><li>• 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.</li></ul>																								

## E.2.2. Implementation and operation of the management system

<b>Means of verification</b>	<p>The verification team through the interview of the CME personnel and O&amp;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 evidence 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 &amp; data recording personnel, the maintenance schedules/records of the stoves and cross-checked the sales data records /23/. The roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system have</p>
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	been provided in the MR /13/.
<b>Findings</b>	None
<b>Conclusion</b>	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/9/, hence, request for approval of permanent changes was 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 approved on 03/04/2020/12/.

#### E.2.3.2. Inclusion of a monitoring plan

Not Applicable

#### 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

Not Applicable

#### E.2.3.4. Changes to the programme design

Not Applicable

#### E.2.3.5. Addition of CPA inclusion template

Not Applicable

#### E.2.3.6. Change of coordination/managing entity

Not Applicable

#### E.2.3.7. Changes specific to afforestation and reforestation activities

Not Applicable

### E.3. Component project activities

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

<b>Means of verification</b>	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: There are three CPA implementers at the time of monitoring report preparation: 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, CPA 10182-P1-0036-CP1), Sunfire (CPA 10182-P1-0003-CP1, CPA 10182-P1-0025-CP1, CPA 10182-P1-0022-CP1, CPA 10182-P1-0024-
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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, CPA 10182-P1-0032-CP1, CPA 10182-P1-0038-CP1, CPA 10182-P1-0040-CP1, and CPA 10182-P1-0042-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, CPA 10182-P1-0034-CP1). The same has been confirmed during the interview of the CME and also from the Sales database /23/.

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, remote audit during the current assessment and through the onsite audit of the previous verification that CPA stoves are isolated units and are under 750 kW installed capacity.

The current verification which includes verification of 6 CPAs viz., CPA 27 - 10182-P1-0031-CP1, CPA 29 - 10182-P1-0034-CP1, CPA 31 - 10182-P1-0036-CP1, CPA 33 - 10182-P1-0038-CP1, CPA 35 - 10182-P1-0040-CP1 and CPA 37 - 10182-P1-0042-CP1.

The implementation status of 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 evidence provided by the CME during the desk review and the photos provided during the remote survey, which is in line to the PoA DD/01/.

The CPAs of PoA involve dissemination of improved household cookstoves:

	Chitetezo Mbaula
<b>Size/Dimensions (Outer body) (cm)</b>	23x27.6x 22.4
<b>Size/Dimensions (combustion chamber) (cm)</b>	20x22x17.5
<b>Efficiency</b>	30.6%
<b>Pot Stand</b>	1.5X3.3
<b>Air/Ash Entry (cm)</b>	10.6x12.8
<b>Insulation (material)</b>	Clay
<b>Average life span</b>	47 months
<b>Daily firewood consumption (per household per day)</b>	4.48

The specification for the cookstove provided meets the eligibility requirements of the PoA-DD page 4/1/. The details were verified from the stove test report/22/ 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/1/ 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 12/01/2020 to 31/12/2020 (both days included). 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	11/12/2019	11/12/2019	Chitetezo Mbaula	13,422

	27 - 10182-P1-0031-CP1			ceramic stove	
	Malawi Biomass Energy Conservation Programme CPA 29 - 10182-P1-0034-CP1	11/12/2019	11/12/2019	Chitetezo Mbaula ceramic stove	3,463
	Malawi Biomass Energy Conservation Programme CPA 31 - 10182-P1-0036-CP1	11/12/2019	14/01/2020	Chitetezo Mbaula ceramic stove	7,907
	Malawi Biomass Energy Conservation Programme CPA 33 - 10182-P1-0038-CP1	11/12/2019	01/02/2020	Chitetezo Mbaula ceramic stove	18,694
	Malawi Biomass Energy Conservation Programme CPA 35 - 10182-P1-0040-CP1	11/12/2019	01/03/2020	Chitetezo Mbaula ceramic stove	18,288
	Malawi Biomass Energy Conservation Programme CPA 37 - 10182-P1-0042-CP1	11/12/2019	01/04/2020	Chitetezo Mbaula ceramic stove	17,282
	<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/28/ 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/23/.</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/2-7/. The monitoring procedures are in place and the CME has operated the PoA &amp; CPAs as per the registered PoA-DD/01/ and CPA-DDs/2-7/.</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 /2-7/ and PoA DD /1/.</p>				
<b>Findings</b>	CL#01 and CL#02 was raised and resolved.				
<b>Conclusion</b>	<ul style="list-style-type: none"> <li>The verification team confirms that physical features of the CPAs have been implemented in accordance with the registered CPA-DDs/2-7/.</li> <li>No specific monitoring equipment had to be installed according to the monitoring plan.</li> </ul>				

	<ul style="list-style-type: none"> <li>• 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/2-7/.</li> <li>• The CPAs were also found to be completely operational in line with the CPA-DDs/2-7/.</li> <li>• The information provided in the relevant sections of the monitoring report appropriately describe the implementation and operational status of the PoA.</li> </ul>
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### 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

The CME monitoring team was not able to perform the physical visits for conducting the monitoring surveys in-line with the registered monitoring plan. This happened due to the outbreak of Pandemic COVID-19. Therefore, in lieu of the same, CME took temporary deviations from the registered monitoring plan. The temporary deviations are as follows:

1. The monitored parameter  $N_{y,i,a}$  (Proportion of ICS still in operation) has been determined without conducting the physical visit to the end-user houses. As an alternative to the physical site visit, telephonic calls were made to arrive at the survey results. The alternative measures were in-line with the host country government guidelines on COVID-19 lockdown/restricted movement and contact with other people. The surveys are also statistically valid for the confidence/precision requirements stated in the registered PoA-DD and CPA-DDs. This deviation from monitoring plan is applied for the current monitoring period (i.e., 12/01/2020 – 31/12/2020)
2. The monitored parameter  $\mu_{y,i}/365$  (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")) has been determined without conducting the physical visit to the end-user houses. As an alternative to the physical site visit, telephonic calls were made to arrive at the survey results. The alternative measures were in-line with the host country government guidelines on COVID-19 lockdown/restricted movement and contact with other people. The surveys are also statistically valid for the confidence/precision requirements stated in the registered PoA-DD and CPA-DDs as discussed under section E.3.4.3. This deviation from monitoring plan is applied for the current monitoring period (i.e., 12/01/2020 – 31/12/2020).

#### E.3.2.2. Corrections

No corrections were proposed as part of this request for issuance

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

Not applicable

#### E.3.2.4. Inclusion of a monitoring plan

>>

Not applicable

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

No changes observed.

#### E.3.2.6. Changes to the project design

Not applicable

#### E.3.2.7. Changes specific to afforestation and reforestation activities

Not applicable

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

<b>Means of verification</b>	The monitoring plan as contained in respective CPA DDs/2-7/ were reviewed against the monitoring requirements of the applied methodology AMS-II.G. version 06 /30/ as well as PoA DD/01/ with reference to the technology involved. Based on this review it was found that the monitoring plan contained in the CPA DDs/2-7/ 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/01/ and applied methodology AMS-II.G version 06/30/. 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.
<b>Findings</b>	None
<b>Conclusion</b>	The monitoring plan is concordant to the approved methodology AMS-II.G. version 06 /30/, that is included in each respective CPA DD/2-7/.

### 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, %,  $f_{NRB,y}$**

<b>Means of verification</b>	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/28/. The value for Malawi is 0.81. The value of this parameter was checked with the registered PoA-DD/1/ and included CPA-DDs/2-7/. Findings
<b>Findings</b>	None
<b>Conclusion</b>	The value in the monitoring report and corresponding emission reduction calculations spreadsheet/25/ are consistent with the registered PoA-DD/1/ & CPA DDs/2-7/. The applied value is correct and justified.

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

<b>Means of verification</b>	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/2-7/. The value was also cross-verified with applied methodology/30/ and found to be correct.
<b>Findings</b>	None
<b>Conclusion</b>	The value in the monitoring report and corresponding emission reduction calculations spreadsheet/25/ are consistent with the registered PoA-DD/1/ & CPA DDs/2-7/. The applied value is correct and justified.

**Emission factor for the substitution of non-renewable biomass by similar consumers,  $tCO_2/TJ$ ,  $EF_{projected\ fossilfuel}$**

<b>Means of verification</b>	The value of this parameter is 81.6 as checked from the CPA DDs/2-7/. This was checked with the regd. PoA-DD/1/ and ER calculation sheet/25/ also. The value was also cross-verified with applied methodology/30/ and found to be correct.
<b>Findings</b>	None
<b>Conclusion</b>	The value in the monitoring report and corresponding emission reduction calculations spreadsheet/25/ are consistent with the registered PoA-DD/1/ & CPA DDs/2-7/. The applied value is correct and justified.

**Efficiency of the system being replaced, %,  $\eta_{old}$**

<b>Means of verification</b>	The value of the parameter considered is 0.10. This was checked with the registered PoA-DD/1/ and included CPA-DDs/2-7/ The value was also cross-verified with applied methodology/30/ and found to be correct.
<b>Findings</b>	None
<b>Conclusion</b>	The value in the monitoring report and corresponding ER spreadsheet/25/ are in concordance with the registered PoA-DD/1/ and CPA-DDs/2-7/. The applied value is correct and justified.



**Leakage adjustment factor for period y, Fraction,  $L_y$** 

<b>Means of verification</b>	The value of this parameter considered is 0.95. This was checked with the registered PoA-DD/1/ and included CPA-DDs/2-7/. The value was also cross-verified with applied methodology/30/ and found to be correct.
<b>Findings</b>	None
<b>Conclusion</b>	The value in the monitoring report and corresponding ER spreadsheet/25/ are in concordance with the registered PoA-DD/1/ and CPA-DDs/2-7/. 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,**  
**( $B_{y=1,new,i,survey}$ )**

<b>Means of verification</b>	<b>Criteria/Requirements</b>	<b>Assessment/Observation</b>
	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/01/ and applied methodology/30/
	Monitoring equipment	The source of data is Sample surveys – Kitchen performance tests/31/. Digital high precision weighing scale and moisture meter are used.
	Calibration frequency /interval:	The calibration frequency for the monitoring equipment is not defined in the registered PoA-DD/1/ and CPA-DDs/2-7/, so considering the SSC guideline EB 61, annex 21/32/ 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/26/ 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., its CPA-10182-P1-0031-CP1, CPA-10182-P1-0034-CP1, CPA-10182-P1-0036-CP1, CPA-10182-P1-0038-CP1, CPA-10182-P1-0040-CP1, CPA-10182-P1-0042-CP1 is 1.881 tonnes/household/ year which is verified by the review of survey sheets/33/ and KPT data/31/.</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 on the following dates:</p> <table border="1" data-bbox="719 309 1431 707"> <thead> <tr> <th>CPA Ref.No.</th> <th>Technology</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>CPA-10182-P1-0031-CP1, 10182-P1-0034-CP1, 10182-P1-0036-CP1, 10182-P1-0038-CP1, 10182-P1-0040-CP1, 10182-P1-0042-CP1</td> <td>Improved cookstoves</td> <td>25/03/2021</td> <td>29/03/2021</td> </tr> </tbody> </table> <p>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 usage and monitoring survey of 2021, the discount factor for more than 1 stove installed was 4.76%. These values are calculated by monitoring survey where number of HHs with more than 1 ICS is taken into account and then it is divided by the total number of stoves surveyed by CME. The discount factor is multiplied with the actual usage rate to achieve the discounted usage rate.</p> <p>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>	CPA Ref.No.	Technology	From	To	CPA-10182-P1-0031-CP1, 10182-P1-0034-CP1, 10182-P1-0036-CP1, 10182-P1-0038-CP1, 10182-P1-0040-CP1, 10182-P1-0042-CP1	Improved cookstoves	25/03/2021	29/03/2021
CPA Ref.No.	Technology	From	To							
CPA-10182-P1-0031-CP1, 10182-P1-0034-CP1, 10182-P1-0036-CP1, 10182-P1-0038-CP1, 10182-P1-0040-CP1, 10182-P1-0042-CP1	Improved cookstoves	25/03/2021	29/03/2021							
	If applicable, has the reported data been cross-checked with other available data?	The survey result/33/, assumptions and sales records were assessed by the verification team and were found accurate and acceptable. The results are reproducible in the ER sheet/25/ of the final monitoring report/13/. The assessment team has reviewed the KPT data/31/ 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	No such issues.								

	by Appendix 1 to the CDM Project Standard?	
<b>Findings</b>	None	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/30/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

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

Means verification of	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 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/1/ and applied methodology/30/.																	
	Monitoring equipment	Not applicable																	
	Calibration frequency /interval:	Not applicable																	
	How were the values in the monitoring report verified?	<p>The values in the MR/13/ have been verified from the sales database/23/.</p> <p>The value of the parameter for all the CPAs i.e.,</p> <table><tr><td>CPA Reference number</td><td>Value applied</td></tr><tr><td><b>10182-P1-0031-CP1</b></td><td>13,422</td></tr><tr><td><b>10182-P1-0034-CP1</b></td><td>3,463</td></tr><tr><td><b>10182-P1-0036-CP1</b></td><td>7,907</td></tr><tr><td><b>10182-P1-0038-CP1</b></td><td>18,694</td></tr><tr><td><b>10182-P1-0040-CP1</b></td><td>18,288</td></tr><tr><td><b>10182-P1-0042-CP1</b></td><td>17,282</td></tr></table> <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</p> <p>Age 2: Stoves operating for 365-729 days.</p> <p>Age-3: Stoves operating for 730-1094 days.</p> <p>Age-4: Stoves operating for 1095-1417 days.</p> <p>Values of the adjusted usage rate on the basis of duration of stove operation in 2021 were found to be as follows:</p> <table><tr><td>CPA Reference number</td><td>Value applied</td></tr><tr><td><b>10182-P1-0031-CP1</b></td><td>2,044 of age 1; 9,620 of age 2:</td></tr></table>	CPA Reference number	Value applied	<b>10182-P1-0031-CP1</b>	13,422	<b>10182-P1-0034-CP1</b>	3,463	<b>10182-P1-0036-CP1</b>	7,907	<b>10182-P1-0038-CP1</b>	18,694	<b>10182-P1-0040-CP1</b>	18,288	<b>10182-P1-0042-CP1</b>	17,282	CPA Reference number	Value applied	<b>10182-P1-0031-CP1</b>
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		<table><tr><td><b>10182-P1-0034-CP1</b></td><td>1,688 of age 1; 1,340 of age 2;</td></tr><tr><td><b>10182-P1-0036-CP1</b></td><td>4,247 of age 1</td></tr><tr><td><b>10182-P1-0038-CP1</b></td><td>10,172 of age 1</td></tr><tr><td><b>10182-P1-0040-CP1</b></td><td>6,044 of age 1</td></tr><tr><td><b>10182-P1-0042-CP1</b></td><td>3,722 of age 1</td></tr></table> <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 age of stoves can be referred from the ER calculation sheet/25/.</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/34,35/ and sales database/23/. The approach followed by the CME was found acceptable including the sampling technique which was found representative.</p>	<b>10182-P1-0034-CP1</b>	1,688 of age 1; 1,340 of age 2;	<b>10182-P1-0036-CP1</b>	4,247 of age 1	<b>10182-P1-0038-CP1</b>	10,172 of age 1	<b>10182-P1-0040-CP1</b>	6,044 of age 1	<b>10182-P1-0042-CP1</b>	3,722 of age 1
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<b>10182-P1-0040-CP1</b>	6,044 of age 1											
<b>10182-P1-0042-CP1</b>	3,722 of age 1											
If applicable, has the reported data been cross-checked with other available data?	<p>The sales records/23/ of randomly selected stoves were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/25/ of final Monitoring Report/13/.</p> <p>The verification team randomly selected 8 samples for DOE's field survey and via remote survey/36/ 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/34,35/.</p>											
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established through the evidences provided by the CME assessed during the telephonic interview the CME representative and monitoring survey personnel.</p> <p>The assessment team has duly verified the CME's QA/QC procedures through the telephonic interview of the CME and 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 to ascertain the reliability and correctness of the entered data in the excel sheet.</p>											

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Following parameter was not monitored in-line to the registered monitoring plan during the current monitoring period. Thus, as this parameter has not been monitored for 12/01/2020 to 31/12/2020 as per the registered monitoring plan, a temporary deviation has been proposed for the same in-line to para 228 of PS for PoA version 2.0 /9/. Please refer to PRC Validation Report /40/ for details
<b>Findings</b>	CAR#01 was raised and resolved.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/30/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/01/.	

**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 is in line with CDM PoA DD/1/ and applied methodology/30/.
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	<p>The values have been verified from the Usage and monitoring survey conducted by CME/34,35/. 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' (<math>\mu_{y,i} / 365</math>). The assessment team has checked the usage survey sheet /34,35/ and found it correct.</p> <p>The value of the parameter '<math>\mu_{y,i}</math>' for all the CPAs is 342 days as per the survey conducted in January/February 2020 which was achieved after applying discount factor of 6.20% to account for continued use of baseline stove. As per the surveys conducted in March 2021 (for the stoves distributed after the initial survey) the value of the parameter for all the CPAs is 337 days which was achieved after applying discount factor of 4.76% to account for continued use of baseline stove. An average number of days of utilization of the project device obtained is 340 and the value of number of days of utilization of the project device during the year 'y' (<math>\mu_{y,i} / 365</math>) is equivalent to 0.930.</p> <p>The monitoring survey was conducted in January/February 2020 and March 2021 in order to include new stoves distributed post the monitoring survey conducted in year 2020. Surveys for 2021 were conducted via phone calls as permitted (page 7) in the revised approved POA DD/1/ and it ensured that all the CPAs considered under current verification are part of the sampling. As the mode of conduct for the monitoring survey was via phone</p>

		<p>calls thus there was a deviation in the registered monitoring plan for which CME has proposed temporary deviation which has been discussed in the PRC validation report/40/. Following the two surveys CME considered the average value of 342 (for year 2020) and 337 (for year 2021) which was found to be 340 and the Number of days of utilization of the project device during the year 'y' was found to be 0.930.</p> <p>Thus, the value applied for the number of days of utilization of project device over a year was found to be acceptable.</p>
	If applicable, has the reported data been cross-checked with other available data?	<p>The survey results/34,35/, assumptions and sales records/23/ were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/25/ of final Monitoring Report.</p> <p>The verification team has already verified samples from usage survey 2020 during the previous batch verification <sup>4</sup> and during the current monitoring period randomly selected 8 samples from usage survey 2021 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/34,35/.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure is in place, internal checks have been done by the CPA implementer and established during the remote site 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 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</p>
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	<p>Following parameter was not monitored in-line to the registered monitoring plan during the current monitoring period. Thus, as this parameter has not been monitored for 12/01/2020 to 31/12/2020 as per the registered monitoring plan, a temporary deviation has been proposed for the same in-line to para 228 of PS for PoA version 2.0 /9/. Please refer to PRC Validation Report /40/ for details</p>
<b>Findings</b>	FAR#01 was resolved.	
<b>Conclusion</b>	The parameter has been monitored annually which is in-line with the monitoring frequency stated in the revised PoA-DD/1/.	

<sup>4</sup> [https://cdm.unfccc.int/PoAIssuance/iss\\_db/poaiss331754472/view](https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss331754472/view)

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 / No)	Yes. The measuring and reporting frequency is in line with registered CDM PoA DD/1/ and applied methodology/30/.
	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 21/32/, para 17(c), the frequency is once in 3 years. All the monitoring equipment's are duly calibrated/37/. The calibration is conducted by a capable person with a 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/26/. The ER sheet/25/ was checked for the calculated value of the parameter and found to be correct. The verified values for all the CPAs are:  88.53% for age group 1, 89.80% for age group 2, 90.42% for age group 3, 88.37% 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 is in place, internal checks have been done by the CPA implementer and established during the remote site 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/33/ 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	No such issues

	stipulated by Appendix 1 to the CDM Project Standard?	
<b>Findings</b>	None	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/30/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/01/.	

**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 is in line with registered CDM PoA DD/1/ and applied methodology/30/.
	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/01,2-7/, so considering the SSC guideline EB 61, Annex 21/32/, para 17(c), the frequency is once in 3 years. All the monitoring equipment's are duly calibrated as checked from the calibration certificates/37/. The calibration is conducted by a capable person with a 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?	<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%-27.67%/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, 27.48% for age 2, 27.67% for age 3, 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>CME has followed the WBT protocol for conducting the WBT tests of the stoves. The assessment team has checked the WBT results /27/ and also interviewed the personnel who conducted the WBTs.</p>



		<p>It can be concluded that the WBTs were carried out appropriately and in accordance with the WBT protocol version 4.2.3/38/.</p> <p>A total of 19 stoves (including all ages) were selected by CME for the WBT test which was in accordance to the sampling requirements stated under the registered monitoring plan/1/. The results of tests of these 19 stoves conducted by trained personnel were reviewed from the WBT results sheet/27/ .</p> <p>The efficiency for all the age of stoves (i.e., from 27.04%-27.67%) was found acceptable as the tests were conducted as per the protocol and the achieved efficiency values are lower than the rated efficiency of the stove (i.e.,30.6%)..</p>
	If applicable, has the reported data been cross-checked with other available data?	The hard copies of the WBT records /26/ are checked as well as the WBT analysis sheet/27/.
	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 remote site 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/26/ 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.
<b>Findings</b>	CL#02 was raised and resolved.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/01/ (as per measurement methods and procedures to be applied) and applied methodology/30/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/01/.	

#### E.3.4.3. Implementation of sampling plan

<b>Means of verification</b>	<p>The assessment of CME's sampling is discussed below:</p> <p>The CME has applied single sampling plan for all the 6 CPAs. According to Sampling and Survey standards./21/, 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/1/, 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/1/. The revised PoA DD/01/ consistently mentions annual monitoring the actual monitoring also has also been conducted annually.</p>
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**Target Population-** As per page 10 of revised PoA-DD/01/ 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.

**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.)

**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),  $N_{y,i,a}$  ( $n_{y,j}$  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 were conducted in January 2020 and March, 2021 and WBTs were conducted in February, 2020 respectively/27/.

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 4.0"/21/.
- 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 4.0/21/.

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"/39/.

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 (for year 2020):

- 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 years old stoves
- CPA Implementer Area 55 implementing 3 years old stoves
- CPA Implementer Sunfire implementing 3 years old stoves
- CPA Implementer Area 55 implementing 4 years old stoves
- CPA Implementer Sunfire implementing 4 years old stoves

The CPA DDs/2-7/ mention a reliability level of 95/10 which was followed as evident from the sampling calculations in the ER sheet/25/.

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"/21/, 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)

For year 2021:

There were 11 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 years old stoves,
- CPA Implementer Eden implementing 3 year old stoves,
- CPA Implementer Area 55 implementing 4 years old stoves
- CPA Implementer Sunfire implementing 4 years old stoves.

The CPA DDs/2-7/ mention a reliability level of 95/10 which was followed as evident from the sampling calculations in the ER sheet/25/.

The expected parameter values (mean, standard deviation and proportion) have been determined based on CME'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"/21/, 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"))

The sample size is chosen using the equation inline to CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities/39/.

In this regard, sample size calculation spreadsheet /25/ 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 user 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.

For year 2021

	10182-P1-0031-CP1 10182-P1-0034-CP1 10182-P1-0036-CP1 10182-P1-0038-CP1 10182-P1-0040-CP1 10182-P1-0042-CP1	Improved cookstoves	25/03/2021	29/03/2021
	<p>WBT was conducted from 01/02/2020-13/02/2020 and it was found to be applicable for the current monitoring period as the WBT is conducted annually and during the start of the monitoring period.</p> <p>The revised PoA DD/1/ requires the parameter to be monitored annually. The frequency is in line with the applied methodology/30/.</p> <p>The CME has conducted the monitoring surveys for previous and current monitoring period on the following dates:</p> <ol style="list-style-type: none"> <li>1. Previous MP (01/06/2019- 11/01/2020): monitoring was done in August 2019.</li> <li>2. Current Monitoring Period (12/01/2020 – 31/12/2020): monitoring was done in January and February 2020. The survey was valid till January,2021 for this MP following the annual frequency.</li> <li>3. It should be noted that new stoves (post February 2020) were included in the CPAs covered under the concerned monitoring report for this Monitoring period (12/01/2020 – 31/12/2020): hence, the monitoring survey was re-conducted in: March,2021.</li> </ol> <p>The WBT was carried out from 01/02/2020 to 13/02/2020 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/27/.</p> <p>The DOE has reviewed the ER sheet/25/ thoroughly and observed that the result has been applied only to a monitoring period of 12-months (i.e,12/01/2020 to 31/12/2020) and the monitoring has been conducted immediately at the beginning of the current monitoring period. Thus, it was confirmed that the monitoring plan has been followed.</p> <p>The approach was found to be correct and reasonable. The result met the required confidence/precision.</p> <p><b>Reliability and precision calculation:</b></p> <p>The verification team has verified the Monitored survey results /34,35/ 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” /21/ and confirms that the calculation of achieved reliability was done correctly.</p> <p>All parameters of interest are included in the ER spreadsheet/25/ 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 /34,35/ and WBT sheet/27/ corresponding to final Monitoring Report /13/, which were also found correct.</p> <p>Thus, the verification team confirms that required precision has been met and the results are reliable.</p>			
<b>Findings</b>	CAR#01 and CL#03 was raised and resolved.			
<b>Conclusion</b>	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD /01/.			

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

<b>Means of verification</b>	<p>The monitoring plan (included in CPA DDs/2-7/ and registered PoA DD/01/) does not state the calibration requirements for any of the parameter. However, the verification team has checked if the monitoring equipment used during WBT test (mass balance, moisture meter and thermometer) were duly calibrated. As a result, the following information was verified from the calibration certificate/37/ of the equipment used for efficiency test;</p> <table border="1" data-bbox="448 405 1439 904"> <thead> <tr> <th>Equipment</th><th>Sr. No.</th><th>Type</th><th>measuring range -</th><th>accuracy</th></tr> </thead> <tbody> <tr> <td>Thermometer</td><td>080506150, 060300261</td><td>Voltcraft K 102</td><td>200°C to +1370°C (reversible °C/°F);</td><td>-200°C to +200°C accuracy of 0.3% of the display, +1 °C</td></tr> <tr> <td>Mass Balance</td><td>--</td><td>MyWeigh KD- 8000</td><td>8 kg capacity</td><td>accurate to 1 g</td></tr> <tr> <td>Moisture Meter</td><td>12117541, 12117617</td><td>Voltcraft FM-300</td><td>measuring range 6% to 99.9%,</td><td>±1% (in moisture range 6% ~ 40%).</td></tr> </tbody> </table> <p>Calibration Details-</p> <table border="1" data-bbox="448 1025 1439 1279"> <thead> <tr> <th>Equipment</th><th>Brand</th><th>Date of calibration</th><th>Expiry date</th></tr> </thead> <tbody> <tr> <td>Thermometer</td><td>Voltcraft K 102</td><td>29/01/2020</td><td>28/01/2021</td></tr> <tr> <td>Mass Balance</td><td>MyWeigh KD-8000 (Sr#04)</td><td>29/01/2020</td><td>28/01/2021</td></tr> <tr> <td>Mass Balance</td><td>MyWeigh KD- 8000 (Sr#01)</td><td>29/01/2020</td><td>28/01/2021</td></tr> <tr> <td>Moisture Meter</td><td>Voltcraft FM-300</td><td>31/01/2020</td><td>30/01/2021</td></tr> </tbody> </table> <p>The monitoring survey/WBT was done from 1<sup>st</sup> February 2020 to 13<sup>th</sup> 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.</p> <p>It is noteworthy that in the registered PoA DD/01/ as well as CPA DDs/2-7/, 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 21/32/, 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 is calibrated before completion of three years from the date of last calibrations of the respective equipment which is calibrated as per the guidelines as per "General Guidelines to SSC CDM methodologies" EB 61, Annex 21/32/, para 17 (c).</p>	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%).	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
Equipment	Sr. No.	Type	measuring range -	accuracy																																					
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Mass Balance	MyWeigh KD- 8000 (Sr#01)	29/01/2020	28/01/2021																																						
Moisture Meter	Voltcraft FM-300	31/01/2020	30/01/2021																																						
<b>Findings</b>	None																																								
<b>Conclusion</b>	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/01/ and in monitoring methodology/30/. Therefore, the approach presented by CME was accepted.
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### 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

<b>Means of verification</b>	The PoA-DD/01/, CPA DDs/2-7/ prescribes direct calculation emission reduction as discussed under section E.3.6.4 of the verification report.
<b>Findings</b>	None
<b>Conclusion</b>	No separate baseline GHG emission calculations were required in accordance with the methodology AMS-II G, version 06/30/.

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

<b>Means of verification</b>	The PoA-DD/1/, CPA DDs/2-7/ and applied monitoring methodology/30/ do not prescribe any project emission to be considered.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	No project emissions were calculated, and the approach used is found to be correct.

#### E.3.6.3. Calculation of leakage GHG emissions

<b>Means of verification</b>	The PoA DD/01/, CPA DDs/2-7/ and applied monitoring methodology/30/ 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.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	No additional leakage emissions (other than what is already considered in baseline calculations) were required in accordance with the methodology AMS-II G, version 06/30/.

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

<b>Means of verification</b>	<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/25/. The expressions used were found consistent with the registered PoA DD/1/, CPA DDs/2-7/ and the applied methodology AMS-II.G, version 06/30/:</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: Emission reductions are calculated as follows:</p> $ER_{y,i} = \sum_{a=y} B_{y,savings,i,a} \times N_{y,i,a} \times \left(\frac{\mu}{365}\right) \times f_{NRB,y} \times NCV_{biomass} \times EF_{projectedfossilfuel} - LE_y$ <p>Where:</p> <p><math>ER_{y,a}</math> – emission reductions, t CO<sub>2</sub>e, ‘a’ –the indices for the age (in years) of the cook stoves that are operating in the year y of the crediting period.</p> <p><math>B_{y,savings,i,a}</math> – annual quantity of woody biomass that is saved in tonnes per cook stove device of type i and age a in year y</p> <p><math>N_{y,i,a}</math> – number of project devices of type i and age a that are operating in year y</p> <p><math>\mu_{y,i}</math> – number of days of utilization of the project device during the year y</p> <p><math>f_{NRB,y}</math> – fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass</p> <p><math>NCV_{biomass}</math> – net calorific value of the non-renewable biomass that is</p>
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	<p>substituted</p> <p>EF<sub>projected_fossilfuel</sub> – emission factor for the substitution of non-renewable biomass by similar consumers</p> <p>LE<sub>y</sub> – Leakage adjustment factor for period y</p> <p>B<sub>y, savings, i, a</sub> 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<sub>y=1, new, i, survey</sub> – annual quantity of woody biomass used by project devices in tonnes per device of type I</p> <p><math>\eta_{new, i, a}</math> – the thermal efficiency of the device 'i' at age 'a' determined using the water boiling test</p> <p><math>\eta_{new, i, a=1}</math> – the thermal efficiency of the device at its first year of operation</p> <p><math>\Delta\eta_{y, i, a}</math> – factor to consider the efficiency loss of the project device type i due to its aging at the year y</p> <p><math>\eta_{old}</math> – 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 /25/ were found appropriate and complying with provisions prescribed in the registered monitoring plan/1/ of the respective CPA-DDs/2-7/, PoA-DD/1/ and applied methodology/30/.</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>
<b>Findings</b>	None.
<b>Conclusion</b>	<p>The verification team confirms that:</p> <p>a) The complete data was available and is duly reported.</p> <p>b) As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section E.3.4.2 of this report);</p> <p>c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed;</p> <p>d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied.</p> <p>e) There is no pro-rata approach was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p> <p>The total number of ERs achieved during the current monitoring period is 110,188 tCO<sub>2</sub>e.</p>

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO <sub>2</sub> e)	Project GHG emissions or actual net GHG removals (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (t CO <sub>2</sub> e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
Malawi Biomass Energy	N/A	N/A	N/A	0	33,466	33,466

Conservation Programme CPA 27 - 10182-P1-0031- CP1, CPA DD Version 2.3						
Malawi Biomass Energy Conservation Programme CPA 29 - 10182-P1-0034- CP1, CPA DD Version 2.4	N/A	N/A	N/A	0	8,613	8,613
Malawi Biomass Energy Conservation Programme CPA 31 - 10182-P1-0036- CP1, CPA DD Version 2.3	N/A	N/A	N/A	0	11,960	11,960
Malawi Biomass Energy Conservation Programme CPA 33 - 10182-P1-0038- CP1, CPA DD Version 2.3	N/A	N/A	N/A	0	28,646	28,646
Malawi Biomass Energy Conservation Programme CPA 35 - 10182-P1-0040- CP1, CPA DD Version 2.3	N/A	N/A	N/A	0	17,021	17,021
Malawi Biomass Energy Conservation Programme CPA 37 - 10182-P1-0042- CP1, CPA DD Version 2.3	N/A	N/A	N/A	0	10,482	10,482
<b>Total</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>0</b>	<b>110,188</b>	<b>110,188</b>

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

<b>Means of verification</b>	<p>As verified and evident from the final Monitoring Report/13/ and corresponding ER calculations sheet/25/, the actual emission reductions achieved by CPAs included in the current monitoring period were less than estimated for all the CPAs except for CPA 10182-P1-0040-CP1 which has the achieved ERs more than the estimated ERs. The estimated ERs were checked with the respective CPA DDs/2-7/ 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 1 CPA 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%)/22,26-27/.</p>
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	The assessment team has checked the details regarding the efficiency and found it correct. Another factor that led to a 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.
<b>Findings</b>	None
<b>Conclusion</b>	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 CPA(s) during this monitoring period (tCO <sub>2</sub> e)	Value estimated in ex ante calculation in the included CPA-DD(s) (tCO <sub>2</sub> e)
Malawi Biomass Energy Conservation Programme CPA 27 - 10182-P1-0031-CP1, CPA DD Version 2.3	33,466	37,716
Malawi Biomass Energy Conservation Programme CPA 29 - 10182-P1-0034-CP1, CPA DD Version 2.4	8,613	37,716
Malawi Biomass Energy Conservation Programme CPA 31 - 10182-P1-0036-CP1, CPA DD Version 2.3	11,960	37,503
Malawi Biomass Energy Conservation Programme CPA 33 - 10182-P1-0038-CP1, CPA DD Version 2.3	28,646	29,004
Malawi Biomass Energy Conservation Programme CPA 35 - 10182-P1-0040-CP1, CPA DD Version 2.3	17,021	15,511
Malawi Biomass Energy Conservation Programme CPA 37 - 10182-P1-0042-CP1, CPA DD Version 2.3	10,482	12,749
<b>Total</b>	<b>110,188</b>	<b>170,198</b>

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

<b>Means of verification</b>	As verified and evident from the final Monitoring Report/13/ and corresponding ER calculations sheet/25/, the actual emission reductions achieved by 1 CPA included in the current monitoring period was more than estimated for that CPA and less than the estimated quantity for rest CPAs. The estimated ERs were checked with the respective CPA DDs/2-7/ for the comparable period and was found to be correct. 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%)/22,26-27/. 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.
<b>Findings</b>	None
<b>Conclusion</b>	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

<b>Means of verification</b>	The coordinating/managing entity did not identify and establish the monitoring of the sustainable development benefits of the registered CDM PoA /1/ and no such
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	document was developed and published on the UNFCCC CDM website. Therefore, assessment is not required.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The CME is not required to monitor the sustainable development benefits of the registered CDM PoA.

### E.3.8. Global stakeholder consultation

<b>Means of verification</b>	The global stakeholder consultation was not found applicable because period under verification is 6th monitoring period.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	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 sixth independent verification for batch 2 of the emission reductions for the registered CDM PoA 10182 "Biomass Energy Conservation Programme" in Malawi for the monitoring period 12/01/2020 – 31/12/2020 (both days included) as reported in the Monitoring Report (final) Version 2.1 dated 02/08/2021. 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 (CPA 27 - 10182-P1-0031-CP1, CPA 29 - 10182-P1-0034-CP1, CPA 31 - 10182-P1-0036-CP1, CPA 33 - 10182-P1-0038-CP1, CPA 35 - 10182-P1-0040-CP1, CPA 37 - 10182-P1-0042-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 2.1 dated 02/08/2021 and corresponding ER sheets for the monitoring period 12/01/2020 – 31/12/2020 (both days included) amount to 110,188 tCO<sub>2</sub>e. 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 sixth independent verification for batch 2 of the emission reductions for the registered CDM PoA 10182 "Biomass Energy Conservation Programme" in Malawi for the monitoring period 12/01/2020 – 31/12/2020 (both days included) as reported in the Monitoring Report Version 2.1 dated 02/08/2021/13/.

The verification is based on the registered PoA-DD/1/, CPA-DDs/2-7/ 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 2.1 dated 02/08/2021/13/. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 2.1 dated 02/08/2021/13/.

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 12/01/2020 up to 31/12/2020 (including both dates) based on the reported emission reductions in the Final Monitoring Report Version 2.1 dated 02/08/2021/13/ 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: 12/01/2020 to 31/12/2020 (both days included)

Verified and certified emission in the above reporting period:

	Amount	Unit
Certified emission reductions (CERs)	110,188	tCO <sub>2</sub> 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	Greenhouse Gas(es)
GS	Gold Standard
ICS	Improved Cook Stove
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 (with in Sectoral Scope)
TR	Technical Reviewer
VVS	Validation and Verification Standard
UNFCCC	United Nations 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	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	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

Name	Deepika Mahala		
Country	India		
Education	M. Sc. (Environmental Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU		
Experience	5 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2 & TA 3.1)		
Reviewed by	Shreya Garg	Date	15/04/2021
Approved by	Anshika Gupta	Date	15/04/2021

## Appendix 3. Documents reviewed or referenced

No	Author	Title	References to the document	Provider
1.	Hestian Innovation Ltd.	Registered PoA-DD Revised PoA-DD	Version 7.0 Dated: 07/07/2015 Version 8.0 Dated: 25/10/2019	Others
2.	Hestian Innovation Ltd.	CPA-DD for CPA – 27 (CPA-10182-P1-0031-CP1)	Version: 2.3 Dated: 08/07/2020	Others
3.	Hestian Innovation Ltd.	CPA-DD for CPA- 29 (CPA-10182-P1-0034-CP1)	Version: 2.4 Dated: 08/07/2020	Others
4.	Hestian Innovation Ltd.	CPA-DD for CPA-31 (CPA-10182-P1-0036-CP1)	Version: 2.3 Dated: 08/07/2020	Others
5.	Hestian Innovation Ltd.	CPA-DD for CPA- 33 (CPA-10182-P1-0038-CP1)	Version: 2.3 Dated: 08/07/2020	Others
6.	Hestian Innovation Ltd.	CPA-DD for CPA-35 (CPA-10182-P1-0040-CP1)	Version: 2.3 Dated: 08/07/2020	Others
7.	Hestian Innovation Ltd.	CPA-DD for CPA-37 (CPA-10182-P1-0042-CP1)	Version: 2.3 Dated: 08/07/2020	Others
8.	UNFCCC	CDM-MR-PoA-FORM	Version 4.0	Others
9.	UNFCCC	CDM PS for PoA	Version 2.0	Others
10.	UNFCCC	CDM VVS for PoA	Version 2.0	Others
11.	UNFCCC	CDM PCP for PoA	Version 2.0	Others
12.	ESPL	<a href="https://cdm.unfccc.int/PRCContainer/DB/prcp228115052/view">https://cdm.unfccc.int/PRCContainer/DB/prcp228115052/view</a>	-	Others
13.	Hestian Innovation Limited	CDM Monitoring report (Public) CDM Monitoring report (Final)	Version 1.3 Dated: 02/03/2021 Version: 2.1 Dated: 02/08/2021	CME
14.	UNFCCC	Previous verification report	Version 1.1 Dated: 03/04/2020	Others
15.	Times of India	<a href="https://timesofindia.indiatimes.com/india/coronavirus-pandemic-live-updates-india-second-wave-april-4/liveblog/81893273.cms">https://timesofindia.indiatimes.com/india/coronavirus-pandemic-live-updates-india-second-wave-april-4/liveblog/81893273.cms</a>	Dated: 05/04/2021	Others
16.	ESPL	OSV exemption form	Approved on: 26/03/2021	Others
17.	Hestian Innovation Ltd.	ERPA	12/12/2016	CME
18.	UNFCCC	EB 106 Meeting report	<a href="https://cdm.unfccc.int/Meetings/MeetingInfo/DB/UOTJ9DN2736GFQE/view">https://cdm.unfccc.int/Meetings/MeetingInfo/DB/UOTJ9DN2736GFQE/view</a>	Other
19.	UNFCCC	EB announcement <a href="https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html">https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html</a>	23/06/2020	Other
20.	UNFCCC	EB-110 Meeting report Link: <a href="https://cdm.unfccc.int/filestorage/5/0/J/50J8EUT9SAMWY74V26GONDK1QIHPL3/eb110_meeting_report.pdf?t=cDV8cXloZW04fDB1fzEB6foTL EG5kB6DeZFX">https://cdm.unfccc.int/filestorage/5/0/J/50J8EUT9SAMWY74V26GONDK1QIHPL3/eb110_meeting_report.pdf?t=cDV8cXloZW04fDB1fzEB6foTL EG5kB6DeZFX</a>	Version 1.0	Others
21.	UNFCCC	Standard for Sampling and surveys for CDM	Version 8 & 9	Others

		project activities and programmes of activities, (Version 8 was valid at the time of CME sampling)		
22.	CREEC	Stove testing report	August 2012	CME
23.	Hestian Innovation Ltd.	Sales database sheet	-	CME
24.	Hestian Innovation limited	ER contracts	Various	CME
25.	Hestian Innovation limited	ER sheet	Corresponding to this MP	CME
26.	Hestian Innovation limited	WBT Survey Sheets	Various	CME
27.	Hestian Innovation limited	WBT result sheet	Various	CME
28.	Hestian Innovation limited	<a href="https://cdm.unfccc.int/ProgrammeOfActivities/po_a_db/4A2PCYSNBTWG81Z3L5FUH9RMJKQDV6/view">https://cdm.unfccc.int/ProgrammeOfActivities/po_a_db/4A2PCYSNBTWG81Z3L5FUH9RMJKQDV6/view</a>	Accessed on: 05/04/2021	Others
29.	Hestian Innovation limited	UN notification mail	01/03/2021	CME
30.	Hestian Innovation limited	Methodology: AMS-II.G.	Version 6.0	Others
31.	Hestian Innovation limited	Kitchen Performance tests (B <sub>y=1,new,i,survey</sub> sheet)	2017	Others
32.	UNFCCC	SSC guideline EB 61, annex 21 Link: <a href="https://cdm.unfccc.int/filestorage/B/7/L/B7LDP00KY4C9HAVTX5WIZQUMJ8SNR1/eb61_rep an21.pdf?t=c0R8cTAydWN6fDB9dOubZSmMwZjM6lejYWuF">https://cdm.unfccc.int/filestorage/B/7/L/B7LDP00KY4C9HAVTX5WIZQUMJ8SNR1/eb61_rep an21.pdf?t=c0R8cTAydWN6fDB9dOubZSmMwZjM6lejYWuF</a>	03/06/2011	Others
33.	Hestian Innovation limited	Survey sheets	-	CME
34.	Hestian Innovation limited	Usage and Monitoring survey 2020	2020	CME
35.	Hestian Innovation limited	Usage and Monitoring survey 2021	2021	CME
36.	ESPL	RSV files	26/03/2021-27/03/2021 (for 2020)  01/04/2021 (for 2021)	Others
37.	Malawi Bureau of Standards	Calibration certificates of the monitoring equipment	Various	CME
38.	GACC	WBT Protocol	Version 4.2.3	CME
39.	UNFCCC	CDM Guideline "Sampling and surveys for CDM project activities and programmes of activities"	version 4.0	Others
40.	ESPL	PRC Validation report	Dated:02/08/2021	Others

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

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

<b>FAR ID</b>	01	<b>Section no.</b>	E.3.4.2.	<b>Date :</b> 01/04/2021
<b>Description of FAR</b>				
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)”.				
<b>Project participant response</b>				<b>Date :</b> 19/04/2021
The monitoring frequency of the parameter “μ y, i / 365: Number of days of utilization of the project device during the year ‘y’” has been revised.				
<b>Documentation provided by project participant</b>				
-				
<b>DOE assessment</b>				<b>Date:</b> 21/04/2021
The monitoring frequency for the parameter “μ y, i / 365: Number of days of utilization of the project device during the year ‘y’” was found to be revised in the CPA-DDs as confirmed from the approved CPA-DDs uploaded on the project webpage. (Closed) Thus, FAR#01 stands closed.				

Table 2. CLs from this verification

<b>CL ID</b>	01	<b>Section no.</b>	E.3.1	<b>Date :</b> 01/04/2021
<b>Description of CL</b>				
CME is requested to provide following evidence: 1. CPA start date evidence. 2. Monitoring survey forms of the surveys conducted in 2021				
<b>Project participant response</b>				<b>Date :</b> 19/04/2021
<i>The documented evidence has been provided.</i>				
<b>Documentation provided by project participant</b>				
1. CPA start date evidence. 2. Monitoring survey forms of the surveys conducted in 2021				
<b>DOE assessment</b>				<b>Date:</b> 22/04/2021
1. CME has provided the requested evidence. 2. CME has provided the requested evidence.				
Thua,CL#01 stands closed.				
<b>CL ID</b>	02	<b>Section no.</b>	E.3.1.	<b>Date :</b> 01/04/2021
<b>Description of CL</b>				



1. During the RSV, for one of the end-users named Annie Sukhweya (UID: CZ/UP/02/68486, BLK/SF/02/1150) it was observed that the end-user owns two cookstoves and uses both the stoves. CME shall clarify how the usage rate for this end user was taken into account.

It was also observed that the end-user was using baseline stove occasionally, CME shall clarify how the continued usage of baseline stove is accounted and how the usage percentage has been considered for this end user.

2. In the spreadsheet titled "CDM 10182 PoA- ER calculation- MP6- 17022021" and under each of the sales database it is observed that it does not contain any location/ contact information/ CPA serial number for many purchasers. CME is requested to clarify how the samples selected for monitoring survey are representative of the population as the spreadsheet does not list actual end-user information including location/contact.

Project participant response	Date : 19/04/2021
<ol style="list-style-type: none"> <li>1. <i>Described cases are taken into consideration in the monitoring procedures. Potential usage of two stoves as well as occasional use of baseline stoves is taken into account during calculation of emission reductions.</i></li> </ol> <p><i>Through annual usage surveys the number of stoves per household is monitored. To ensure conservative calculation of generated emission reductions the usage rate estimated via Usage and Monitoring survey was discounted to account for households using &gt;1 project stoves. The approach and discount factors used are described in section E.3 of the monitoring report.</i></p> <p><i>In cases, where users retain the baseline technology as a backup or auxiliary technology in parallel with the improved technology, the extent to which the baseline technology is used has been quantitatively assessed through monitoring surveys and an appropriate and conservative adjustment factor has been applied - proportion of discontinued use of baseline stoves. The average daily cooking time in households using baseline stoves and the average daily cooking time using baseline stove were used to estimate baseline stoves usage in households using baseline stoves in % of cooking time. Baseline stoves usage was multiplied by percentage of households using baseline stoves to estimate the discount factor to account for baseline stove use</i></p> <ol style="list-style-type: none"> <li>2. <i>The description of the monitoring plan of the registered PoA DD clearly states that user details (name, address and telephone if available) will be collected for the majority of customers (please, refer to page 35). As per the PoA DD "Although it is difficult to track 100% of households that will eventually use the stove(s) promoted by the PoA, the CME will encourage project implementers to track as many as possible and definitely more than half" (see footnote 44 at page 35). In reality, CME has collected such details for the vast majority of end users. The traceability level for project stoves in the sales database per usage survey conducted in January-February 2020 was 78.5%. Out from 130 households, the enumerators were able to identify and survey 102 households based on the information provided in total sales records (78.5%). There are different levels of details provided for the purchasers of stoves in the total sales records database. The analysis of the database conducted in 2020 revealed that for 90% of households in the total sales database (446k households from 498k entries in the database) there is a contact information such as phone number or village or GVVH (Group Village Headman) administrative unit, which allows the possibility to track the stove user for usage and monitoring survey. Even assuming the 78.5% response rate achieved during the usage and monitoring surveys, this allows to track 71% of households (i.e. 78.5% of 90%), which is significantly higher than "more than half" as defined in the registered PoA DD. Therefore, missing end user information for some households do not undermine the representativeness of the monitoring activities as prescribed by the registered PoA DD. This is further discussed in section E.3 of the monitoring report.</i></li> </ol>	
Documentation provided by project participant	
DOE assessment	Date: 21/04/2021

1. CME has applied the appropriate discount factor for the respective HH as mentioned in the registered monitoring plan. The application of discount factor was found to be appropriate as mentioned in the usage and monitoring survey sheet .

2. CME has followed the registered monitoring plan. Also, has accounted for complete information of 71% of total HHs in total sales database and has explained appropriately how the missing entries do not hamper the monitoring activities. Thus, the justification provided by CME regarding incorporation of maximum information of data available per HH which can help in tracking the user for usage and monitoring survey was found to be acceptable and appropriate (Closed).

Thus,CL#02 stands closed.

<b>CL ID</b>	03	<b>Section no.</b>	E.3.4.2	<b>Date :</b> 27/04/2021
<b>Description of CL</b>				
<ol style="list-style-type: none"> <li>The average life span of the project stove is 47months or 4 years. However, the Usage Survey sheet 2021 has samples from year 2015. For example: Username: MR Fidesi, Serial Number: MA/15/0557.CME shall clarify how is the project stove considered for ER calculation beyond its life span.</li> <li>The design efficiency of project stove is 30.6%. However, the efficiency considered for ex-ante calculation is 25%. CME shall clarify why the design efficiency was not considered for ex-ante calculation. Also, how the monitored efficiency of stove has increased from 27.04% to 27.67%.</li> </ol>				
<b>Project participant response</b>				<b>Date :</b> 08/05/2021
<ol style="list-style-type: none"> <li><i>The average life span of the project stove has been determined based on the usage surveys and conservatively assumed to be 47 months. This value represents average technical lifespan of the project stove at which more than half of stoves are still being used. Monitoring results reported in the current monitoring report demonstrate that on average approximately 64% of age 4 stoves are still being used. Therefore, the stoves mentioned were considered for sampling to reflect the actual usage rates. If the stove is not in use due to some reason it is reflected in the usage rate. If the stove is still being used, it is also reflected in the usage rate but in any case stoves above the average lifespan are not considered for emission reduction calculation. The emission reduction model limits assumed usage of the stoves at 1417 days.</i></li> <li><i>The approach for ex-ante calculation is described in each CPA DD. As stated in the CPA DDs, it is assumed that the actual thermal efficiency in the field is 25%, while laboratory thermal efficiency tests estimate an efficiency of over 30.6%. The experience of the CME based on monitoring activities of Project stoves is that the efficiency of the stoves does demonstrate a clear tendency for decline over time of the average technical lifespan. There are some variabilities of the results, however the efficiency of the stoves is in the range of 27.04% - 27.67%.</i></li> </ol>				
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date:</b> 25/05/2021
<ol style="list-style-type: none"> <li>From the monitoring data sheet in the ER calculation sheet , it was confirmed that 64% age-4 stoves were still in use and the usage rate for the age-4 stoves in use has been accounted accordingly in the Usage and monitoring survey sheet. Also, it was confirmed from the monitoring data sheet of the ER sheet that for ER calculation stoves beyond the average life span of 1417 days have not been considered for calculating the final ER values. Thus, the approach followed by CME of not considering the stoves beyond the lifespan was found to be evident for each of the CPAs from the monitoring data sheet and thus was found to be acceptable.</li> <li>The CME assumed the efficiency value as 25% in the field. However, the actual efficiency of the stove was found out to be 30.6%. It was also confirmed from the efficiency results that there is drop in efficiency over time and the stove efficiency ranges between 27.04%-27.67%. From the efficiency check of the 19 stoves picked up by CME the value for stoves belonging to each age were determined. The efficiency for all the age of stoves (i.e., from 27.04%-27.67%) lies within the rated efficiency of the stove (i.e.,30.6%). Thus, DOE found the determined value for each age to be acceptable.</li> </ol>				
Thus,CL#02 stands closed.				

<b>CL ID</b>	03	<b>Section no.</b>	E.3.4.3	<b>Date :</b> 27/04/2021
<b>Description of CL</b>				
<p>As per SSC 787, The coordinating/managing entity shall prepare, for each monitoring period, either a single monitoring report or multiple separate monitoring reports in the following manner: (a) In the case of a single monitoring report, the report shall contain all monitoring results of all CPAs included in the registered CDM PoA; (b) In the case of multiple separate monitoring reports, each CPA shall be included only in one of the monitoring reports and all the monitoring reports shall collectively contain all monitoring results of all CPAs that have been included in the registered CDM PoA (i.e. all the monitoring reports shall contain mutually exclusive batches of CPAs). Also, all the monitoring reports shall have the same monitoring period that encompasses all monitoring results to be obtained during the period. The start of the first monitoring period shall be the earliest date of the crediting periods of all CPAs having been included in the PoA at the time of the preparation of the first monitoring reports. The multiple separate monitoring reports covering the same monitoring period may be published and the corresponding requests for issuance may be submitted to the secretariat separately at different points in time; (c) In both cases referred to in subparagraphs (a) and (b) above, the monitoring results of individual CPAs shall be separated and grouped by CPA type defined in the corresponding generic CPA-DD.</p> <p>However, CME has single sampling for different batches. Kindly clarify.</p>				
<b>Project participant response</b>				<b>Date :</b> 08/05/2021
<p><i>CME has prepared two separate monitoring reports and each CPA is included only in one of the monitoring reports and all the monitoring reports collectively contain all monitoring results of all CPAs that have been included in the registered CDM PoA. Monitoring reports have the same monitoring periods. The monitoring results of individual CPAs are separated and only one type of CPA is used in the PoA. Therefore, monitoring reports are prepared in line with the requirements cited above. Monitoring activities and sampling is performed PoA wide in line with the registered PoA DD. The description of the sampling plan provided in the PoA DD states that sampling will be conducted on PoA level (page 35).</i></p>				
<b>Documentation provided by project participant</b>				
-				
<b>DOE assessment</b>				<b>Date:</b> 24/05/2021
<p>As per the registered PoA-DD , the sampling is conducted PoA wide thus, CME has applied single sampling for different batches in-line to sampling requirements stated on page 35 of the registered PoA-DD. Thus,CL#03 stands closed.</p>				

Table 3. CARs from this verification

<b>CAR ID</b>	01	<b>Section no.</b>	E.3.4.3., E.3.4.2.	<b>Date :</b> 01/04/2021
<b>Description of CAR</b>				
<ol style="list-style-type: none"> <li>MR (version 1.3) under section E.3 mentions that the total population of cookstoves considered for sampling is 498,037. However, as per sample size calculation sheet the total population size is mentioned as 582,772.</li> <li>As per the usage and survey sheet (2021), the survey results mentioned was found to be inconsistent with the survey results mentioned under section E.3 of the MR (version 1.3).</li> <li>The number of stoves distributed under CPA 10182-P1-0031-CP1 was found to be mentioned as 13,422 in ER sheet (Tab: MR tables, Cell: C33) which was found to be inconsistently mentioned in the MR (version 1.3) under section C.1.</li> </ol>				
<b>Project participant response</b>				<b>Date :</b> 19/04/2021
<ol style="list-style-type: none"> <li>498,037 is the number of improved cookstoves distributed at the time of monitoring activities in 2020 and 582,772 is the number of improved cookstoves distributed as of the end of the monitoring period. Information has been updated in the monitoring report.</li> <li>The information has been updated.</li> <li>The information has been corrected.</li> </ol>				
<b>Documentation provided by project participant</b>				
Monitoring report, Version 2.0				
<b>DOE assessment</b>				<b>Date:</b> 21/04/2021

1. As the monitoring survey was conducted both in year 2020 and 2021 thus, the population of cookstoves mentioned is respectively for year 2020 and 2021.
2. CME has updated the information in the MR version 2.0.
3. CME has updated the number of stoves under section C.1 of the MR version 2.0.

Thus, CAR#01 stands closed.

**Table 4. FARs from this verification**

<b>FAR ID</b>	NA	<b>Section No.</b>	NA	<b>Date:</b> NA
<b>Description of FAR</b>				
NA				
<b>CME response</b>				<b>Date:</b> NA
NA				
<b>Documentation provided by the CME</b>				
NA				
<b>DOE assessment</b>				<b>Date:</b> NA
NA				

\*There is no FAR from this verification.

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**Document information**

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