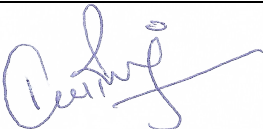
 Verification and certification report form for CDM programme of activities (Version 03.0)		
Complete this form in accordance with the instructions attached at the end of this form.		
BASIC INFORMATION		
Title and UNFCCC reference number of the programme of activities (PoA)	10182: Biomass Energy Conservation Programme	
Version number(s) of the PoA-DD(s) to which this report applies	08	
Version number of the verification and certification report	3.0	
Completion date of the verification and certification report	27/01/2020	
Monitoring period number and duration of this monitoring period	Fourth(4 th) Monitoring Period Duration: 01/06/2018-31/05/2019	
Number and version number of the monitoring report to which this report applies	Monitoring Report Number:1 st Version 2.3	
Coordinating/managing entity (CME)	Hestian Innovation Ltd.	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Malawi Rwanda	Yes No
Applied methodologies and standardized baselines	AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass --- Version 6.0	
Mandatory sectoral scopes	Sectoral Scope 3: Energy Demand	
Conditional sectoral scopes, if applicable	NA	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	548,319 tCO ₂	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	564,212 tCO ₂	
Name and UNFCCC reference number of the DOE	Earthood Services Private Limited; E-0066	
Name, position and signature of the approver of the verification and certification report	 Dr. Kaviraj Singh Managing Director	

SECTION A. Executive summary

The PoA involves the distribution of highly efficient biomass fired improved Cookstoves (ICS). The improved cookstoves installed under this programme replace the in-efficient three stone fired or equivalent stoves. The programme stoves combust wood more efficiently and improve thermal transfer to pots; hence saving fuel and lowering greenhouse gas emissions. Each CPA supports the project goals of reducing fuel consumption, improving health of the people in the country, and reducing deforestation in Malawi. The target areas are all regions of Malawi with traditional biomass stove users.

The fuel type used by improved household cook-stoves is predominantly fire-wood. Apart from this, other fuel like biomass agricultural residue (e.g. pigeon pea stalks, maize hobs, etc.) is also used to some extent.

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

Scope of Verification:

The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. The verification includes review of implementation and operation of the PoA as set out in the revised PoA-DD & CPA-DDs viz., 10182-P1-0001-CP1, 10182-P1-0002-CP1, 10182-P1-0003-CP1, 10182-P1-0004-CP1, 10182-P1-0005-CP1, 10182-P1-0006-CP1, 10182-P1-0025-CP1 (CPA-07), 10182-P1-0020-CP1 (CPA-08), 10182-P1-0021-CP1 (CPA-09), 10182-P1-0022-CP1 (CPA-10), 10182-P1-0023-CP1 (CPA-11), 10182-P1-0024-CP1 (CPA-12), 10182-P1-0007-CP1 (CPA-13), 10182-P1-0009-CP1 (CPA-14), 10182-P1-0008-CP1 (CPA-15), 10182-P1-0010-CP1 (CPA-16), 10182-P1-0011-CP1 (CPA-17), 10182-P1-0012-CP1 (CPA-18), in the monitoring period.

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

- (i) The approved methodology AMS II.G version 06 "Energy efficiency measures in thermal applications of non-renewable biomass", applied in the POA-DD/2/ & CPA-DDs/4-10/
- (ii) The registered PoA-DD & CPA-DD and monitoring plan
- (iii) UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
- (iv) The CDM Validation and Verification Standard (VVS) for PoA, version 2.0/29/
- (v) The CDM Project Standard (PS)/30/ and Project Cycle Procedure (PCP) for PoA version 2.0/31/
- (vi) Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions

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

Verification Process:

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

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

- i) Reporting and closure of TR comments/findings (refer Section D.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section G and H of this report).
- j) Issuance of final verification report to contracted CME (or authorized representatives) and submission of request for issuance, as appropriate.

Verification Conclusion:

Based on the outcome of the verification process of the registered PoA "Biomass Energy Conservation Programme" and its 18 CPAs (10182-P1-0001-CP1, 10182-P1-0002-CP1, 10182-P1-0003-CP1, 10182-P1-0004-CP1, 10182-P1-0005-CP1, 10182-P1-0006-CP1, 10182-P1-0025-CP1 (CPA-07), 10182-P1-0020-CP1 (CPA-08), 10182-P1-0021-CP1 (CPA-09), 10182-P1-0022-CP1 (CPA-10), 10182-P1-0023-CP1 (CPA-11), 10182-P1-0024-CP1 (CPA-12), 10182-P1-0007-CP1 (CPA-13), 10182-P1-0009-CP1 (CPA-14), 10182-P1-0008-CP1 (CPA-15), 10182-P1-0010-CP1 (CPA-16), 10182-P1-0011-CP1 (CPA-17), 10182-P1-0012-CP1 (CPA-18), for the monitoring period **01/06/2018 – 31/05/2019** (including both dates) we confirm that the implementation of referenced registered PoA and CPAs is complying with applicable CDM rules and regulations. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodologies, AMS II.G Version 06 and the monitoring plan contained in the PoA-DD and the CPA DDs.

Earthood Services Private Limited is able to certify that the emission reductions from the registered CDM PoA "Biomass Energy Conservation Programme" in Malawi having UNFCCC reference 10182 during the period 01/06/2018 – 31/05/2019 (including both days) amount to 564,212 tCO₂e. Therefore, this is being submitted for request for issuance, as per UNFCCC procedures.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
2.	Verifier	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
3.	Meth. Expert	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
4.	Technical Expert	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
5.	Local Expert	EI	Katundu	Enea	Central Office	Y	Y	Y	Y
5.	Trainee (Verifier)	IR	Vatsa	Vaishali	Central office	Y	N	N	Y

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Gautam	Ashok	Central office
2.	Technical Expert	IR	Gautam	Ashok	Central office
3.	Approver	IR	Singh	Kaviraj	Central office

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

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Error in Data Transfer from Digital Records, Hard copy Records to ER Spread sheet for the monitoring parameters and sampling survey results. The errors could result from human errors during the information transfer from the source to emission reduction sheet.	Low	CME enters the data in calculation of ERs as available through survey/sampling. The monitored parameters are used in the calculation of emission reductions.	Since most of the monitoring parameter is confirmed through ex post monitoring survey conducted by CME, the verification team physically checked and verified the 8 households from ex post monitoring survey and project database on sampling basis. The efficiency test result of stoves and sample surveys for other parameters (hard copies) were also checked. PoA-DD, CPA-DD and reference documents are also compared with ER spread sheet to check for any material error during data transfer. Interview were also conducted to the end users to confirm the primary data on sampling basis.
2.	Erroneous consideration of fixed parameters, error in calculation.	Low	The details of the parameters fixed ex-ante are provided in PoA-DD/CPA-DD used for emission reduction calculation.	All parameters are checked from the registered documents (i.e. CPA-DD/PoA/DD). The formula used are also checked from the registered documents.

C.2. Consideration of materiality in conducting the verification

>>

Prescribed range of ERs/annum	500,000 or more	300,001 to 499,999	300,000 or less	PoAs comprising only small-scale CPAs	PoAs comprising only micro-scale CPAs
Prescribed threshold	0.5%	1.0%	2.0%	5.0%	10.0%

The identified/selected materiality threshold for the PoA under current monitoring period is 5% as PoA is small scale in accordance with para 308 of CDM VVS for PoA, Version 2.0.

	MR Version (Public)	MR Version (Final)*
Emission reductions	585,969	564,212
Identified Threshold	5.0%	5.0%

*The increase in the ERs in the final monitoring report/12/ is due to the errors identified in the ER sheet which have been corrected now.

The verification team has identified the impact of errors observed and those have been corrected by the CME during verification for all monitoring parameter at individual and aggregate level.

Monitored Parameter (Symbol /	Reporting Frequency	Number of Discrete Data* (Total)	Sample selected for verification	Type of error identified	Impact on ERs	
					ERs impacted	ERs impacted

Description n)		Total (100%)	Sample (100%)		(Sample)	(Population based on extrapolatio n)
CPA 10182-P1-0001-CP1 (CPA-1) to CPA 10182-P1-0012-CP1 (CPA-18)						
<u>For ICS:</u>						
B y=1,new,i, survey Annual quantity of woody biomass used by project devices in tonnes per device of type I.	Monitored during the first year of crediting period	1	1*	None	NA	NA
N y,i,a Number of project devices of type i and age a that are operating in year y, Number of items	Continuousl y and aggregated annually	94	8 (based on acceptance sampling)	None	NA	NA
$\mu_{y,i} / 365$ Number of days of utilization of project device during	Annually	94	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	4	4(100% data was checked)	None	NA	NA
$\eta_{new,i,a}$ Thermal efficiency of device of type i being deployed as part of the project activity with the	Annually	18	18(100% data was checked)	None	NA	NA

age a, %						
----------	--	--	--	--	--	--

*The value was determined at the time of first verification and has been used since then. The value for current verification has corroborated from the previous verification report/32/.

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

SECTION D. Means of verification

D.1. Desk/document review

The desk review involves;

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

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

D.2. On-site inspection

Duration of on-site inspection: 10/09/2019-11/09/2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening meeting	Balaka, Malawi	10/09/2019	Deepika Mahala
2.	Physical site visit: Households visited (implementation of PoA)	Balaka, Malawi	10/09/2019	Deepika Mahala & Enea Katundu
3.	Review of information flows for generating, aggregating and reporting the monitoring parameters	Balaka, Malawi	10/09/2019	Deepika Mahala & Enea Katundu
4.	Cross check between information provided in the monitoring report and data from other sources such as test reports, inventories, purchase records or similar data sources;	Mangochi, Malawi	11/09/2019	Deepika Mahala & Enea Katundu
5.	Documents review, discussion with CME representatives regarding monitoring process, stove distribution process, stove efficiency test and sampling.	Mangochi, Malawi	11/09/2019	Deepika Mahala & Enea Katundu
6.	Closing meeting and discussion on observed issues.	Mangochi, Malawi	11/09/2019	Deepika Mahala & Enea Katundu

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Shlapak	Mykola	CPA Implementer	10/09/2019- 11/09/2019 24/09/2019, 31/10/2019, 10/11/2019	ER calculation and Monitoring Report (Via Skype)	Deepika Mahala
2.	Botha	Yamungu	Sunfire	10/09/2019- 11/09/2019	Monitoring Survey	Deepika Mahala
3.	Matiki	Adamsara	Sunfire	10/09/2019- 11/09/2019	Monitoring Survey	Deepika Mahala
4.	Milimo	Edwini	Sunfire	10/09/2019- 11/09/2019	Monitoring Survey	Deepika Mahala
5.	Kabota	Martin	Sunfire	10/09/2019- 11/09/2019	Monitoring Survey	Deepika Mahala
6.	Ngwira	Emmie	Eden by Design	10/09/2019- 11/09/2019	Monitoring Survey	Deepika Mahala
7.	Nuzira	Josephine	Area 55	10/09/2019- 11/09/2019	Monitoring Survey	Deepika Mahala
8.	Chimbalame	Dorophy	DOE field Survey	10/09/2019	ICS end user	Deepika Mahala
9.	Banda	Chikondi	DOE field Survey	10/09/2019	ICS end user	Deepika Mahala
10.	Sitaniry	Mercy	DOE field Survey	10/09/2019	ICS end user	Deepika Mahala
11.	Mphalasa	Pilirani	DOE field Survey	10/09/2019	ICS end user	Deepika Mahala
12.	Mazungwi	Lucy	DOE field Survey	10/09/2019	ICS end user	Deepika Mahala
13.	Jasten	Rosalio	DOE field Survey	11/09/2019	ICS end user	Deepika Mahala
14.	Mocha	Micheal	DOE field Survey	11/09/2019	ICS end user	Deepika Mahala
15.	Manganda	Charity	DOE field Survey	10/09/2019	ICS end user	Deepika Mahala

D.4. Sampling approach

CME Sampling Approach

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

DOE's sampling approach:

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

As per para 33 of "Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 7,"/22/ A DOE may select a different sample size than the one indicated in paragraph 31, either by choosing a different value for the consumer risk and producer risk (e.g. 20% for the consumer risk) when applying acceptance sampling or by using another approach, if any of the following conditions apply:

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

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

The verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgement and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities': /26/

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

Considering the above input values, a sample size of 8 was required as per Table 1 in the referred Standard for the monitoring period. The assessment team has picked up random 8 samples with the help of excel sheet. The team leader arranged it in order of districts and assigned a serial number to each entry in CME survey sheet. Random number generator command was applied to all the values and then the 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. The team leader visited only 8 available samples. The screenshots of the random samples/36/ have been kept as an evidence. All the households had same answer as reported in the survey sheet. thus, no discrepancy was observed. Accordingly, Acceptance number (c) thus determined for the sample size is 0 and a sample size of 8 meets the criteria in line with "Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 7,"/26/.

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General	-	-	-
Compliance of the monitoring report with the monitoring report form	CL#03	-	-
Remaining forward action requests from validation and/or previous verifications	-	-	FAR#01 FAR#02
CPAs considered for verification and covered in this report	-	-	-
Programme of activities	-	-	-
Compliance of the programme implementation with the registered PoA-DD	-	-	FAR#09
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	-	-	-
• Changes to the programme design	-	-	-
• Addition of CPA inclusion template	-	-	-
• Change of coordinating/managing entity	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
Component project activities	-	-	-
Compliance of the CPA implementation with the included CPA design document	CL#03	CAR#05, CAR#08	FAR#01 FAR#10
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	CL#04 CL#06	-	-
• Data and parameters fixed ex ante or at renewal of crediting period	CL#03	-	-
• Data and parameters monitored	CL#04	-	FAR#02 FAR#11
• Implementation of sampling plan	-	CAR#07	FAR#09
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	CL#04	CAR#05	-
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	-	-	-
• Calculation of project GHG emissions or actual net	-	-	-

GHG removals by sinks			
• Calculation of leakage GHG emissions	-	-	-
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	-	-	-
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	-	CAR#05	-
• Remarks on difference from estimated value in included CPA	-	-	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
Total	03	03	05

SECTION E. Verification findings

E.1. General

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

Means of verification	Monitoring report is prepared using the correct and latest template available on UN-webpage for PoA i.e. CDM-PoA-MR-FORM Version 03.0/01/. The verification team confirms that the monitoring report has been appropriately prepared using the latest applicable monitoring report form/1/, and that all sections are completed.
Findings	CL#03 was raised and resolved.
Conclusion	Latest version of MR has been used and all the guidelines of the template have been followed by the CME to prepare the monitoring report.

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

There was one FAR (listed as FAR#01) raised during the Validation (CPA-7 to CPA 25)/28/ because at the time of validation of the CPA for inclusion into the registered PoA 10182 there was no documentary evidence to confirm the start date of CPA.

Therefore, the DOE raised the FAR#01. Based on the response of the CME and the start date evidence/33/ shared by CME, the start date of each CPA was confirmed.

Second, FAR#02 was raised during the previous verification/32/ due to the inconsistent information provided in the PoA-DD and CPA-DDs for the monitoring frequency of the parameter Ny,i,a- Number of project devices of type i and age a that are operating in year y.

Therefore, the DOE raised the FAR#02. 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 v2.0/29/. the details are given below in the table:

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
Malawi Biomass Energy Conservation Programme CPA 1 - CPA 10182-P1-0001-CP1	Yes	13/08/2015	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-P1-0002-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-P1-0003-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-P1-0004-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-P1-0005-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-P1-0006-CP1	Yes	15/10/2016	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-P1-0025-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 8 - CPA 10182-P1-0020-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes

Malawi Biomass Energy Conservation Programme CPA 9 - CPA 10182-P1-0021-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	Yes
Malawi Biomass Energy Conservation Programme CPA 10 - CPA 10182-P1-0022-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 11 - CPA 10182-P1-0023-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 12 - CPA 10182-P1-0024-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 13 - CPA 10182-P1-0007-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 14 - CPA 10182-P1-0009-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 15 - CPA 10182-P1-0008-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 16 - CPA 10182-P1-0010-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 17 - CPA 10182-P1-0011-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*
Malawi Biomass Energy Conservation Programme CPA 18 - CPA 10182-P1-0012-CP1	Yes	11/08/2017	Version 08, dated 25/10/2019	NA*

Malawi Biomass Energy Conservation Programme CPA 19 - CPA 10182- P1-0013-CP1	No	11/08/2017	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 20 - 10182-P1- 0014-CP1	No	11/08/2017	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 21 - 10182-P1- 0015-CP1	No	11/08/2017	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 22 - 10182-P1- 0016-CP1	No	11/08/2017	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 23 - 10182-P1- 0017-CP1	No	11/08/2017	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 24 - 10182-P1- 0018-CP1	No	11/08/2017	Version 08, dated 25/10/2019	NA
Malawi Biomass Energy Conservation Programme CPA 25 - 10182-P1- 0019-CP1	No	11/08/2017	Version 08, dated 25/10/2019	NA
Rwanda Biomass Energy Conservation Programme CPA 1 - 10182-P1-0026- CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA
Rwanda Biomass Energy Conservation Programme CPA 2 - 10182-P1-0027- CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA
Rwanda Biomass Energy Conservation Programme CPA 3 - 10182-P1-0028- CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA

Rwanda Biomass Energy Conservation Programme CPA 4 - 10182-P1-0029-CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA
Rwanda Biomass Energy Conservation Programme CPA 5 - 10182-P1-0030-CP1	No	18/03/2019	Version 08, dated 25/10/2019	NA

*There are total 30 CPAs but only 18 CPAs are considered for this verification. From CPA 10(CPA 10182-P1-0022-CP1) to CPA 18 (CPA 10182-P1-0012-CP1), this is the first verification. The CME has changed the start date of the crediting period which is approved by UN and appears on UN webpage.

E.2. Programme of activities

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

Means of verification	The registered PoA involves the promotion, distribution and sale of improved cook stoves (ICS) in Malawi. CME has implemented the CPAs through coordination with the monitoring team and further with local CPA implementers/distributors. The overall responsibility of implementation and operation is with CME (Hestian Innovation Ltd.), which was also evident during the site visit. This is consistent with PoA DD/2/. The CPAs of PoA involves dissemination of improved household cookstoves:	
	Model name	Chjtetezo Mbaula
	Size / Dimensions (outer body) (cm)	23x27.6x22.4
	Size / Dimensions (combustion chamber) (cm)	20x22x17.5
	Efficiency	30.6%
	Pot Stand (cm)	1.5x3.3
	Air/Ash entry (cm)	10.6x12.8
	Insulation (material)	Clay
	Average Life span	47 months
	Daily firewood consumption (per household per day)	4.48
	The specification for the cookstove provided meets the eligibility requirements of the PoA-DD page 4/2/. The details were verified from the stove test report /34/ provided by the CME.	
	During the on-site visit the installation of cookstoves claimed by the PP were checked and found to be in-line with the technical description provided in the PoA-DD/2/ and Monitoring report/12/.	
	This monitoring period includes the implementation and monitoring of 18 CPAs as part of registered PoA.	
	The implementation of all CPAs, as referenced above, are within the geographical boundary of PoA as mentioned in PoA DD/2/.	
	The ICS (Improve Cook Stoves) models deployed under each CPA is verified as following:	
	CPA (10182 -P1- 0001-CP1):	
	Cook stove deployed/ Model	Number
	Chitetezo Mbaula ceramic stove	22,496
	CPA (10182 – P1-0002-CP1):	

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	22,311

CPA (10182 –P1- 0003-CP1):

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

CPA (10182 –P1- 0004-CP1):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	21,120

CPA (10182 –P1- 0005-CP1):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	21,385

CPA (10182 – P1-0006-CP1):

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

CPA (10182 – P1-0025-CP1(CPA-07)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	24,639

CPA (10182 –P1- 0020-CP1(CPA-08)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	9,263

CPA (10182 –P1- 0021-CP1(CPA-09)):

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

CPA (10182 –P1- 0022-CP1(CPA-10)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,223

CPA (10182 – P1-0023-CP1(CPA-11)):

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

CPA (10182 – P1-0024-CP1(CPA-12)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,417

CPA (10182 – P1-0007-CP1(CPA-13)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,390

CPA (10182 – P1-0009-CP1(CPA-14)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	19,700

CPA (10182 – P1-0008-CP1(CPA-15)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,906

CPA (10182 – P1-0010-CP1(CPA-16)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	20,321

CPA (10182 – P1-0011-CP1(CPA-17)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	14,027

CPA (10182 – P1-0012-CP1(CPA-18)):

Cook stove deployed/ Model	Number
Chitetezo Mbaula ceramic stove	18,472

The verification team is able to confirm that the quantity, specification and target group of the ICSs is consistent with the PoA DD/2/ and respective CPA DDs/4-10/. Further based on the review of the sales database/3/, physical observations and interview conducted during the site visit, 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 same as that mentioned in the registered PoA-DD/1/
- The implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PoA-DD/1/ and included CPA-DDs/4-10/.
- All physical features of the CPA proposed in the included CPA-DDs/4-10/ are in place.
- The project participants/CPA implementer has operated the CPAs as per

the included CPA-DDs/4-10/.

The verification team has visited 8 households during site visit; It was observed that each ICS was assigned a unique identification number (serial number), and unique household mobile number. The unique serial number on each ICS visited during onsite assessment, personal information of ICS owners and date of purchase of ICS was checked and cross checked with the information in sales database/3/ available with the CME. The operation of the ICSs was confirmed through interviews of owners/representatives (of ICSs) during the site visit.

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

The exact figures are given in the table below:

CPA UNFCCC reference number	Amount achieved during this Monitoring period (t CO2e)	Amount estimated ex ante (t CO2e)
10182-P1-0001-CP1	32,456	39,771
10182- P1-0002-CP1	41,815	39,771
10182- P1-0003-CP1	42,274	39,771
10182- P1-0004-CP1	37,851	39,771
10182- P1-0005-CP1	42,160	39,771
10182- P1-0006-CP1	47,740	39,771
10182- P1-0025-CP1	54,202	38,778
10182- P1-0020-CP1	20,032	38,778
10182- P1-0021-CP1	44,362	38,778
10182- P1-0022-CP1	44,651	38,778
10182- P1-0023-CP1	38,621	38,353
10182- P1-0024-CP1	33,824	29,004
10182- P1-0007-CP1	28,586	23,479
10182- P1-0009-CP1	17,726	19,123
10182- P1-0008-CP1	14,327	13,705
10182- P1-0010-CP1	5,066	6,056
10182- P1-0011-CP1	17,411	22,629
10182- P1-0012-CP1	1,108	2,231
Total	564,212	548,319

The information (including data and variables) as mentioned in the MR/12/ is found to be in line with the details provided in the PoA-DD/2/.

The verification team found the project description contained in the registered PoA-DD/02/ to be complete and accurate. The monitoring report was compared and verified against the PoA-DD/2/ and was found in line with it.

CAR#07 was raised, which led to change in the monitoring period under verification. As per para 224 PCP for PoA/31/, following requirements have been checked:

(a) The end-date of the monitoring periods of all the CPAs covered by the revised monitoring report shall be aligned to the end-date of the different monitoring period;

This is the first batch under the PoA, FAR#10 has been raised to ensure that all the CPAs covered by the revised monitoring report shall be aligned to the end-date of the different monitoring period.

(b) The request for issuance is for the first batch of CPAs included in the registered CDM PoA, thus meeting the condition (b) of para 224 of PCP for PoA.

(c) The verification team has indicated the change of monitoring period in the "CDM programme of activities issuance request form" (CDM-PoA-ISS-FORM submitted along with this issuance request.

(d) The final date of the changed monitoring period is before the date of the DOE's onsite inspection. The reduction of monitoring period did not impact the DOE

	verification observation as the samples were incidentally from the period before the end date of the monitoring period. Another reason for no impact of this change on the DOE sampling is that the proportion of distribution done in last one month, which has been reduced, is very small as compared to the rest of the period. Thus, an additional on-site inspection is not required.
Findings	FAR#02 and CAR#07 were raised and resolved. FAR#09 to be resolved in the next verification.
Conclusion	<p>The verification team confirms that the physical features (technology/type of ICS) of the implementation were in accordance with the registered PoA-DD/02/.</p> <ul style="list-style-type: none"> • 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/11/. • The actual operation is in line to the respective CPA-DD/4-10/, which is further explained under Section E.3 of this report. • The total number of CERs achieved for 11 CPAs are more than the estimated ERs for the same period. The reason for increase is higher monitored stove efficiency as compared to the efficiency assumed for the ex-ante calculation. The total actual CERs for CPAs (combined) were high for comparable monitoring period. • The difference in emission reductions achieved for each specific case CPA DD in comparison to the estimated quantity in the registered CPA DD are justified in detail under section E.3.6.5 and E.3.6.6.

E.2.2. Implementation and operation of the management system

Means of verification	The verification team during the site visit assessed the management systems in place to implement the monitoring of the PoA. This included the roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system through physical inspection. The assessment team has also checked training of the monitoring & data recording personnel, the maintenance schedules/records of the stoves and cross checked the sales data records /3/. The roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system have been provided in the MR /12/.
Findings	No findings were raised
Conclusion	The verification team confirms that the monitoring management system of the PoA is in place with the responsibilities properly identified and established.

E.2.3. Post-registration changes

E.2.3.1. Corrections

During this monitoring period (01/06/2018-31/05/2019), there was a post-registration change to correct the inconsistent frequency of parameters μ 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/30/, hence, request for approval of permanent changes is requested under the issuance track. The changes are reflected in PoA-DD version 8.0 dated 25/10/2019 and PRC validation report dated 31/10/2019 version 1.0/37/.

E.2.3.2. Inclusion of a monitoring plan

N/A

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

N/A

E.2.3.4. Changes to the programme design

N/A

E.2.3.5. Addition of CPA inclusion template

N/A

E.2.3.6. Change of coordination/managing entity

N/A

E.2.3.7. Changes specific to afforestation and reforestation activities

N/A

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

Means of verification	<p>The CPAs are grouped together in this section (i.e., Section E.3) for the purpose of verification and reporting as these are of similar nature (technology and type). The CPAs involve the promotion and installation of ICS (portable) in rural areas of Malawi. There are three CPA implementers involved in the PoA: Area 55 (CPA 1, CPA 2, CPA 4, CPA 5, CPA 6, CPA 8), Sunfire (CPA 3, CPA 7, CPA 10, CPA 12, CPA 13, CPA 14, CPA 15, CPA 16, CPA 18), and Eden by Design (CPA 9, CPA 11 and CPA 17). The same has been confirmed during onsite assessment and also from the Sales database /3/.</p> <p>The product is disseminated in residential households of the area. It has been checked by the verification team that the CPA is below the threshold of 180 GWh/year (thermal) for Type II. It is also observed during onsite audit that CPA stoves are isolated units and are under 750 kW installed capacity.</p> <p>The current verification which includes verification of 18 CPAs viz. 10182-P1-0001-CP1 (CPA -01), 10182-P1-0002-CP1 (CPA -02), 10182- P1-0003-CP1 (CPA -03), 10182- P1-0004-CP1 (CPA -04), 10182- P1-0005-CP1 (CPA-05), 10182- P1-0006-CP1 (CPA-06), 10182- P1-0025-CP1 (CPA-07), 10182- P1-0020-CP1 (CPA-08) and 10182- P1-0021-CP1 (CPA-09), 10182- P1-0022-CP1 (CPA-10), 10182- P1-0023-CP1 (CPA-11), 10182- P1-0024-CP1 (CPA-12), 10182- P1-0007-CP1 (CPA-13), 10182- P1-0009-CP1 (CPA-14), CPA 10182- P1-0008-CP1 (CPA-15), 10182- P1-0010-CP1 (CPA-16), 10182- P1-0011-CP1 (CPA-17), 10182- P1-0012-CP1 (CPA-18). The implementation status of the ICS has been checked during onsite assessment and the stoves have been physically verified on sampling basis. Chitetezo Mbaula type model have been installed by the CME as observed during onsite assessment, which is in line to the PoA DD/02/.</p> <p>The CPAs of PoA involve dissemination of improved household cookstoves:</p> <table border="1" data-bbox="448 1368 1110 1809"> <tr> <td></td><td>Chjtetezo Mbaula</td></tr> <tr> <td>Size / Dimensions (outer body) (cm)</td><td>23x27.6x22.4</td></tr> <tr> <td>Size / Dimensions (combustion chamber) (cm)</td><td>20x22x17.5</td></tr> <tr> <td>Efficiency</td><td>30.6%</td></tr> <tr> <td>Pot Stand (cm)</td><td>1.5x3.3</td></tr> <tr> <td>Air/Ash entry (cm)</td><td>10.6x12.8</td></tr> <tr> <td>Insulation (material)</td><td>Clay</td></tr> <tr> <td>Average Life span</td><td>47 months</td></tr> <tr> <td>Daily firewood consumption (per household per day)</td><td>4.48</td></tr> </table> <p>The specification for the cookstove provided meets the eligibility requirements of the PoA-DD page 4/2/. The details were verified from the stove test report/34/ provided by the CME.</p> <p>During the on-site visit the installation of cookstoves claimed by the PP were checked and found to be in-line with the technical description provided in the PoA-DD/2/ and Monitoring report/12/.</p> <p>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</p>		Chjtetezo Mbaula	Size / Dimensions (outer body) (cm)	23x27.6x22.4	Size / Dimensions (combustion chamber) (cm)	20x22x17.5	Efficiency	30.6%	Pot Stand (cm)	1.5x3.3	Air/Ash entry (cm)	10.6x12.8	Insulation (material)	Clay	Average Life span	47 months	Daily firewood consumption (per household per day)	4.48
	Chjtetezo Mbaula																		
Size / Dimensions (outer body) (cm)	23x27.6x22.4																		
Size / Dimensions (combustion chamber) (cm)	20x22x17.5																		
Efficiency	30.6%																		
Pot Stand (cm)	1.5x3.3																		
Air/Ash entry (cm)	10.6x12.8																		
Insulation (material)	Clay																		
Average Life span	47 months																		
Daily firewood consumption (per household per day)	4.48																		

the monitoring plan. The monitoring period in this monitoring report is from 01/06/2018 to 31/05/2019. The details of each CPA are as follows:

CPA Ref.	Inclusion date	Crediting period start date	ICS type	Total ICS sold
Malawi Biomass Energy Conservation Programme CPA 1-CPA 10182-P1-0001-CP1	13/08/2015	13/08/2015	Chitetezo Mbaula ceramic stove	22,496
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-P1-0002-CP1	15/10/2016	15/10/2016	Chitetezo Mbaula ceramic stove	22,311
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-P1-0003-CP1	15/10/2016	15/10/2016	Chitetezo Mbaula ceramic stove	22,308
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-P1-0004-CP1	15/10/2016	15/10/2016	Chitetezo Mbaula ceramic stove	21,120
Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-P1-0005-CP1	15/10/2016	03/05/2017	Chitetezo Mbaula ceramic stove	21,385
Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-P1-0006-CP1	15/10/2016	01/09/2017	Chitetezo Mbaula ceramic stove	21,403
Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-P1-0025-CP1	11/08/2017	11/08/2017	Chitetezo Mbaula ceramic stove	24,639

	Malawi Biomass Energy Conservation Programme CPA 8 - CPA 10182-P1-0020-CP1	11/08/2017	06/04/2018	Chitetezo Mbaula ceramic stove	9,263
	Malawi Biomass Energy Conservation Programme CPA 9 - CPA 10182-P1-0021-CP1	11/08/2017	29/03/2018	Chitetezo Mbaula ceramic stove	19,889
	Malawi Biomass Energy Conservation Programme CPA 10 - CPA 10182-P1-0022-CP1	11/08/2017	01/06/2018	Chitetezo Mbaula ceramic stove	20,223
	Malawi Biomass Energy Conservation Programme CPA 11 - CPA 10182-P1-0023-CP1	11/08/2017	05/06/2018	Chitetezo Mbaula ceramic stove	19,742
	Malawi Biomass Energy Conservation Programme CPA 10182-P1-0024-CP1	11/08/2017	01/09/2018	Chitetezo Mbaula ceramic stove	20,417
	Malawi Biomass Energy Conservation Programme CPA 13 - CPA 10182-P1-0007-CP1	11/08/2017	23/10/2018	Chitetezo Mbaula ceramic stove	20,390
	Malawi Biomass Energy Conservation Programme CPA-14-CPA 10182-P1-0009-CP1	11/08/2017	03/12/2018	Chitetezo Mbaula ceramic stove	19,700
	Malawi Biomass Energy Conservation Programme CPA 15 - CPA 10182-P1-	11/08/2017	23/01/2019	Chitetezo Mbaula ceramic stove	20,906

	0008-CP1				
	Malawi Biomass Energy Conservation Programme CPA 16 - CPA 10182-P1-0010-CP1	11/08/2017	05/04/2019	Chitetezo Mbaula ceramic stove	20,321
	Malawi Biomass Energy Conservation Programme CPA 17 - CPA 10182-P1-0011-CP1	11/08/2017	31/10/2018	Chitetezo Mbaula ceramic stove	14,027
	Malawi Biomass Energy Conservation Programme CPA 18 - CPA 10182-P1-0012-CP1	11/08/2017	01/09/2018	Chitetezo Mbaula ceramic stove	18,472
<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/14/ and the details are found correct and consistent. The ICS are distributed across Malawi. The location where the ICS were distributed was verified during the onsite visit and PoA-DD/02/ and CPA-DDs/4-10/. The type and number of ICS sold is verified from the sales database/3/.</p> <p>The model of ICS has been verified during the on-site inspection of sample verifications in order to assess that the physical features of the stoves as available in registered CPA-DDs/4-10/. The monitoring procedures are in place and the CME has operated the PoA & CPAs as per the registered PoA-DD/02/ and CPA-DDs/4-10/.</p> <p>Each of the independent subsystems/measures included in the CPA of a PoA is no larger than 1% of the small-scale thresholds defined by the applied methodology (i.e. not exceeding 180 GWh for SSC type II methodologies) thus fulfilling the additionality criteria stated in the CPA DD /4-10/ and PoA DD /2/.</p>					
Findings	FAR#01, CL#03, CAR#05 ,CAR#07 was raised and resolved. FAR#11 is raised and to be resolved prior to or during the next verification.				
Conclusion	<ul style="list-style-type: none"> The verification team is in opinion that physical features of the CPAs have been implemented in accordance with the registered CPA-DDs/4-10/. No specific monitoring equipment had to be installed according to the monitoring plan. It is also confirmed, through the physical site visit and review of the supporting documentation that physical features of the component CPAs have been implemented in accordance with the CPA-DDs/4-10/. The CPAs were also found to be completely operational in line with the CPA-DDs/4-10/. The information provided in the relevant sections of the monitoring report appropriately describe the implementation and operational status of the PoA. 				

E.3.2. Post-registration changes**E.3.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents**

No Changes observed

E.3.2.2. Corrections

No corrections observed

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

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

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

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

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

Reference number	CPA title	The new start date of the crediting period	Notification date
10182-P1-0022-CP1	Malawi Biomass Energy Conservation Programme CPA 10	01/06/2018	31/10/2019
10182-P1-0023-CP1	Malawi Biomass Energy Conservation Programme CPA 11	05/06/2018	31/10/2019
10182-P1-0024-CP1	Malawi Biomass Energy Conservation Programme CPA 12	01/09/2018	31/10/2019
10182-P1-0007-CP1	Malawi Biomass Energy Conservation Programme CPA 13	23/10/2018	31/10/2019

10182-P1-0009-CP1	Malawi Biomass Energy Conservation Programme CPA 14	03/12/2018	31/10/2019
10182-P1-0008-CP1	Malawi Biomass Energy Conservation Programme CPA 15	23/01/2019	31/10/2019
10182-P1-0010-CP1	Malawi Biomass Energy Conservation Programme CPA 16	05/04/2019	31/10/2019
10182-P1-0011-CP1	Malawi Biomass Energy Conservation Programme CPA 17	31/10/2018	31/10/2019
10182-P1-0012-CP1	Malawi Biomass Energy Conservation Programme CPA 18	01/09/2018	30/05/2018

The details of the crediting start date changes have been checked from UN notification mail/38/ and found correct.

E.3.2.4. Inclusion of a monitoring plan

Not Applicable

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

No changes observed

E.3.2.6. Changes to the project design

No changes observed

E.3.2.7. Changes specific to afforestation and reforestation activities

N/A

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

Means of verification	The monitoring plan as contained in respective CPA DDs/4-10/ were reviewed against the monitoring requirements of the applied methodology AMS-II.G. version 06 /13/ as well as PoA DD/02/ with reference to the technology involved. Based on this review it was found that the monitoring plan contained in the CPA DDs/4-10/ includes all the required parameters to be monitored in the context of the CPA design and description and allows proper determination of emission reductions in accordance with PoA DD/02/ and applied methodology AMS-II.G version 06/13/.
Findings	no findings.
Conclusion	The monitoring plan is concordant to the approved methodology AMS-II.G. version 06 /13/, that is included in each respective CPA DD/4-10/.

E.3.4. Compliance of monitoring activities with the registered monitoring plan

E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period

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

Means of verification	This is a default value of fraction of non-renewable biomass approved by CDM EB and accepted by the host country DNA as available on the UNFCCC website/14/. The value for Malawi is 0.81. The value of this parameter was checked with the registered PoA-DD/2/ and included CPA-DDs/4-10/.
Findings	No Findings were raised.
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet/11/ are consistent with the registered PoA-DD/2/ & CPA DDs/4-10/. The applied value is correct and justified.

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

Means of verification	The value of this parameter is 0.015 TJ/t as mentioned below as per CPA DDs. This was checked with the registered. PoA-DD/2/ and included CPA-DDs/4-10/. The value is not mentioned in the CPA-DDs for CPA 7-18 but was checked with applied methodology/13/ and found to be correct.
Findings	CL#03 was raised and resolved.
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet/11/ are consistent with the registered PoA-DD/2/ & CPA DDs/4-10/. The applied value is correct and justified.

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

Means of verification	The value of this parameter is 81.6 as checked from the CPA DDs/4-10/. This was checked with the regd. PoA-DD/2/ and ER calculation sheet/11/ also. The value is not mentioned in the CPA-DDs for CPA 7-18 but was checked with applied methodology/13/ and found to be correct.
Findings	CL#03 was raised and resolved.
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet/11/ are consistent with the registered PoA-DD/2/ & CPA DDs/4-10/. The applied value is correct and justified.

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

Means of verification	The value of the parameter considered is 0.10. This was checked with the registered PoA-DD/2/ and included CPA-DDs/4-10/. The value is not mentioned in the CPA-DDs for CPA 7-18 but was checked with applied methodology/13/ and found to be correct.
Findings	CL#03 was raised and resolved.
Conclusion	The value in the monitoring report and corresponding ER spreadsheet/11/ are in concordance with the registered PoA-DD/2/ and CPA-DDs/4-10/. The applied value is correct and justified.

Leakage adjustment factor for period y, Fraction, L_y

Means of verification	The value of this parameter considered is 0.95. This was checked with the registered PoA-DD/2/ and included CPA-DDs/4-10/. The value is not mentioned in the CPA-DDs for CPA 7-18 but was checked with applied methodology/13/ and found to be correct.
Findings	CL#03 was raised and resolved.
Conclusion	The value in the monitoring report and corresponding ER spreadsheet/11/ are in concordance with the registered PoA-DD/2/ and CPA-DDs/4-10/. The applied value is correct and justified.

E.3.4.2. Data and parameters monitored**Annual quantity of woody biomass used by project devices in tonnes per device of type I, t/HH/yr, (B_{y=1,new,i,survey})**

Means of verification	Criteria/Requirements	Assessment / Observation
	Measuring /Reading /Recording frequency	Measured. Monitored in the first year of introduction of the devices (e.g. during the first year of the crediting period, y=1).
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in accordance to the registered PoA-DD/02/ and applied methodology/13/
	Monitoring equipment	The source of data is Sample surveys – Kitchen performance tests/15/. Digital high precision

		weighing scale and moisture meter are used.
	Calibration frequency /interval:	The calibration frequency for the monitoring equipment's are not defined in the registered PoA-DD/02/ and CPA-DDs/4-10/, so considering the SSC guideline EB 61, annex 21/16/ 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/17/ administered to a sample of end users elicit the quantification of wood used by the household user.</p> <p>The value of the parameter for all the CPAs i.e. CPA-01, CPA-02, CPA-03, CPA-04, CPA-05, CPA-06, CPA-07, CPA-08, CPA-09, CPA-10, CPA-11, CPA-12, CPA-13, CPA-14, CPA-15, CPA-16, CPA-17, CPA-18 is 1.881 tonnes/household/ year which is verified by the review of survey sheets/17/ and KPT data/15/.</p> <p>It is noteworthy that PP has done sampling across the CPA due to the similar nature of the technology employed in the PoA.</p> <p>A discount factor is used in the calculation of Emission Reduction in case any household has more than one stove. This factor is determined based on monitoring survey done by CME. Discount factor to account for households with more than 1 stove installed has been used to discount usage rate for each age group monitored. According to the usage and monitoring survey results conducted in August 2019, the discount factor for more than 1 stove installed was 6.10%. 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.</p>
	If applicable, has the reported data been cross-checked with other available data?	The survey results/18/, assumptions and sales records were assessed by the verification team and were found accurate and acceptable. The results are reproducible in the ER sheet/11/ of the final monitoring report/12/. The assessment team has reviewed the KPT data/15/ and found the

		value correct.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CL#04 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/2/ (as per measurement methods and procedures to be applied) and applied methodology/13/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/2/.	

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

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Measured continuously and aggregated annually.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The monitoring is conducted on an annual basis which is in compliance with the information provided in Monitoring frequency section. The measuring and reporting frequency are in line to registered CDM PoA DD/2/ and applied methodology/13/.
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The values in the MR/12/ have been verified from the sales database/3/. The value of the parameter for all the CPAs i.e. CPA 1 – 22,496 CPA 2 – 22,311 CPA 3 – 22,308 CPA 4 – 21,120 CPA 5 – 21,385 CPA 6 – 21,403 CPA 7 – 24,639 CPA 8 – 9,263 CPA 9 – 19,889 CPA 10 – 20,223 CPA 11 – 19,742 CPA 12 – 20,417 CPA 13 – 20,390 CPA 14 – 19,700

		<p>CPA 15 – 20,906 CPA 16 – 20,321 CPA 17 – 14,027 CPA 18 – 18,472</p> <p>The total number of stoves in each CPA have been indicated above, the PP has segregated the stoves into four age groups. The age group has been identified based on the days of operation of the stove in the monitoring period. The four age groups covered under the current monitoring period are: Age 1: Stoves operating for less than 365 days Age 2: Stoves operating for 365-729 days. Age-3: Stoves operating for 730-1094 days. Age-4: Stoves operating for 1095-1417 days.</p> <p>The reference for the calculation of days of operation has been taken as the end date of the monitoring period which was found acceptable by the assessment team.</p> <p>The detailed calculation of the of the number of age of stoves can be referred from the ER calculation sheet/11/.</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/18/ and sales database/3/. The approach followed by the PP was found acceptable including the sampling technique which was found representative.</p>
	If applicable, has the reported data been cross-checked with other available data?	<p>The sales records/3/ of randomly selected stoves were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/11/ of final Monitoring Report/12/.</p> <p>The verification team randomly selected 8 samples for DOE's field survey and via on-site interview found out that all the ICS which are picked up for sampling are installed at the household and are in working condition, and the details of the stoves were consistent with the CME's sample survey result/18/.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment. During the site visit, the assessment team has duly verified the CME's QA/QC procedures in which the data transfer from hard copies to excel sheets are randomly cross checked by the senior management either from the hard copies/sales receipts/19/ telephonic calls to ascertain the reliability and correctness of the entered data in the excel sheet.</p>

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	FAR#02 and CL#04 were raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/2/ (as per measurement methods and procedures to be applied) and applied methodology/13/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/02/.	

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

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Calculated Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to CDM PoA DD/2/ and applied methodology/13/.
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report verified?	The values have been verified from the Usage and monitoring survey conducted by CME/18/. Use of other types of stoves is taken into account during the calculation of the Number of days of utilization of the project device during the year 'y' ($\mu_{y,i} / 365$). The assessment team has checked the usage survey sheet /18/ and found it correct. The value of the parameter for all the CPAs i.e. CPA1, CPA 2, CPA 3, CPA 4, CPA 5, CPA 6, CPA 7, CPA 8, CPA 9, CPA 10, CPA 11, CPA 12, CPA 13, CPA 14, CPA 15, CPA 16, CPA 17, CPA 18 is 342 days which is equivalent to 0.937.
	If applicable, has the reported data been cross-checked with other available data?	The survey results/18/, assumptions and sales records/3/ were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet/11/ of final Monitoring Report. The verification team randomly selected 8 samples for DOE's field survey and via on-site interview found out the usage of the installed ICS which was consistent with the CME's sample survey result/18/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment. During the site visit, the assessment team has duly verified the CME's QA/QC procedures in which the

	necessary QA/QC processes in place?	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/19/ telephonic calls to ascertain the reliability and correctness of the entered data in the excel sheet.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues
Findings	FAR#11 raised and to be resolved in the next verification.	
Conclusion	The parameter has been monitored annually which is in-line with the monitoring frequency stated in the revised PoA-DD. But, is different from the frequency stated in the CPA-DDs (once in every two years i.e., biennial). FAR#11 has been raised during the current verification to correct the monitoring frequency of the parameter and make it consistent with the revised PoA-DD/2/. However, the annual frequency followed was found to be acceptable in the current monitoring period it is a better practice / more frequent than the biennial monitoring.	

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 are in line to registered CDM PoA DD/2/ and applied methodology/13/.
	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 21/16/, para 17(c), the frequency is once in 3 years. All the monitoring equipment's are duly calibrated/20/. The calibration is conducted by a capable person with thorough understanding of internationally recognised WBT protocols, updated by the Partnership for Clean Indoor Air and the Global Alliance for Clean Cook-stoves. Use of calibrated measurement equipment.
	How were the values in the monitoring report verified?	The parameter was calculated based on the values from WBT tests/22/. The ER sheet was checked for the calculated value of the parameter and found to be correct. The verified values for all the CPAs are:

		87.94 for age group 1, 86.93 for age group 2, 82.78 for age group 3, 82.78 for age group 4;
	If applicable, has the reported data been cross-checked with other available data?	N/A
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment. During the site visit, the assessment team has duly verified the CME's QA/QC procedures in which the data transfer from hard copies to excel sheets are randomly cross checked by the senior management either from the hard copies, survey sheet/24/ to ascertain the reliability and correctness of the entered data in the excel sheet.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	No Findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/02/ (as per measurement methods and procedures to be applied) and applied methodology/13/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/02/.	

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

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Annually.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology/13/.
	Monitoring equipment	Scales, thermometer, timer, wood moisture meter are used as the monitoring equipment. Please refer section E.3.4.4 for details.
	Calibration frequency /interval:	Since the calibration frequency for the monitoring equipment's are not defined in the registered PoA DD/CPA DDs/02,4-10/, so considering the SSC guideline EB 61, Annex 21/43/, para 17(c), the frequency is once in 3 years. All the monitoring equipment's are duly calibrated as checked from the calibration certificates/20/. The calibration is conducted by a capable person with thorough understanding of internationally recognised WBT protocols, updated by the Partnership for Clean

		Indoor Air and the Global Alliance for Clean Cookstoves. Use of calibrated measurement equipment.
	How were the values in the monitoring report verified?	<p>The efficiency of each group has been calculated as an average of efficiency of each tested stove. Actual efficiency based on the WBTs conducted within monitoring activities in 2018 was in the range of 25.33%-26.91%/21/. (comparing to the laboratory test efficiency of 30.6%).</p> <p>The verified values of efficiency for the current monitoring period are:</p> <p>26.91% for age 1, 26.60% for age 2, 25.33% for age 3, 25.33% for age 4</p> <p>The tests were conducting choosing the samples across the CPAs so the results are valid for all the CPAs under this verification.</p> <p>The assessment team has checked the WBT results /21/ and also interviewed the persons involved in the WBT and found that the WBT was carried out appropriately and correctly and in accordance with the WBT protocol version 4.2.3/23/.</p>
	If applicable, has the reported data been cross-checked with other available data?	The hard copies of the WBT records /24/ are checked as well as the WBT analysis sheet/21/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment. During the site visit, the assessment team has duly verified the CME's QA/QC procedures in which the data transfer from hard copies to excel sheets are randomly cross checked by the senior management either from the hard copies/24/, telephonic calls to ascertain the reliability and correctness of the entered data in the excel sheet
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/02/ (as per measurement methods and procedures to be applied) and applied methodology/13/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/02/.	

E.3.4.3. Implementation of sampling plan

Means of verification	The assessment of CME's sampling is discussed below: The CME has applied single sampling plan for all the 18 CPAs. According to
------------------------------	--

Sampling and Survey standards,' version 7.0/26/, the sampling plan applied by the PP for the following CPAs are found to be appropriate. As per the sampling plan stated in the PoA DD/2/, a minimum 95% confidence interval and a 10% margin of error requirement is achieved for the sampled parameters. When a single sampling plan covers a group of CPAs or when monitoring is conducted atleast biennially (every two years) or annually (which is a conservative approach for more frequent monitoring and lies within the frequency stated by the applied methodology) , confidence/precision of 95/10 for the sample size calculation is applicable. Since the sampling has been done across the CPAs, the CME has taken 95/10 as the confidence precision levels which is found to be in line with the registered monitoring plan/2/. The revised PoA DD consistently mentions annual monitoring now, the actual monitoring has also been conducted annually.

Target Population- As per page 10 of revised PoA-DD/02/ the target population for all the parameters are those ICS that are found in operation under the current CPA's. As per PoA-DD "the population will be divided into primary sampling units (PSU) by same country and fuel consumption cluster, ICS type, ICS vintage and CPA implementer". Thus, the strata were defined by the PP in the MR which has been found to be correct and acceptable. Once the PSUs are defined, ICS will be randomly selected based on the relative size of the strata. To ensure a random selection of ICS, random number generator has been used.

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 and WBTs were conducted in August 2019/21/.

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

- overall proportion and overall variance for proportional parameters were calculated based on equations (5) and (6); overall mean and overall variance for mean parameters were calculated based on equations (22) and (23) of CDM Guideline "Sampling and surveys for CDM project activities and programmes of activities version 3.0"/25/.
- the minimum sample size required is calculated based on equation (4) for proportional parameters and equation (21) for mean parameters of CDM Guideline "Sampling and surveys for CDM project activities and programmes of activities" version 3.0/25/.

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"/25/.

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 8 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 Area 55 implementing 3 years old stoves

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

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

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"/26/, which is acceptable to the assessment team as per the guidance.

Sample Size for Parameter of Interest:

The sampling has been applied to the following monitoring parameters

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

The sample size is chosen using the equation inline to CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities/25/.

In this regard, sample size calculation spreadsheet /35/ was checked and found correct as per registered monitoring plan. The complete details are given in E.3 section of Monitoring Report/12/.

Implementation of Sampling Survey and Field Test Records:

Based on interviews with the CME, HHs and surveyors during the site visit, in addition to simply asking this question to the end users surveyors were also checking whether it was operational or not. Therefore, the implementation of surveys was considered reliable. The surveyors also took photos of cookstoves which were checked during the on-site visit by the verification team.

Monitoring survey (by CME) duration:

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

CPA Ref.No.	Technology	From	To
CPA-10182-P1-0001-CP1 to CPA-10182-P1-0012-CP1 (CPA1 to CPA18) 18 CPAs	Improved cookstoves	09/08/2019	18/08/2019

The revised PoA DD/2/ requires the parameter to be monitored annually. The frequency is in line with the applied methodology/13/.

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

1. Previous MP (01/02/2018-31/05/2018): monitoring was done in February 2018
2. Current Monitoring Period (01/06/2018- 31/05/2019): monitoring was done in August 2019

The CME has conducted the monitoring in Aug 2019 for following reasons:

1. The CME's representatives interviewed have explained that the main reason for the delaying the tests and surveys was logistics and cost related limitations. The reason for delay was found to be rational.
2. The second reason was to avoid the question of applicability of results. The previous monitoring results were applied to a period after conducting the test as the test were conducted in Feb 2018 and third monitoring period ended in May 2018. The current monitoring period ends on 31/05/2019 and

	<p>tests and surveys have been conducted in august 2019 which is just two months after the end of the monitoring period.</p> <p>Also, though the gap between the last monitoring dates and the recent monitoring dates is more than one year, the monitoring results have only been applied to a period of one year (01/06/2018- 31/05/2019).</p> <p>The DOE has reviewed the ER sheet/11/ thoroughly and observed that the result has been applied only to a monitoring period of a year only(i.e, 01/06/2018-31/05/2019) and the monitoring has been conducted immediately after the end of the current monitoring period(two months after the end date of current MP(31/05/2019). Thus, it was confirmed that the monitoring plan has been followed. CAR#06 was raised and resolved. As a result of CAR#06, the monitoring period has been shortened by the CME. Please refer to section E.2.1. for detailed assessment of changed monitoring period.</p> <p>The approach was found to be correct and reasonable. The result met the required confidence/precision.</p> <p>The final date of the changed monitoring period is before the date of the DOE's onsite inspection. The reduction of monitoring period did not impact the DOE verification observation as the samples were incidentally from the period before the end date of the monitoring period. Another reason for no impact of this change on the DOE sampling is that the proportion of distribution done in last one month, which has been reduced, is very small as compared to the rest of the period. Thus, an additional on-site inspection is not required.</p> <p>Reliability and precision calculation:</p> <p>The verification team has verified the Monitored survey results /18/ 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" /26/ and confirms that the calculation of achieved reliability was done correctly.</p> <p>All parameters of interest are included in the ER spreadsheet/11/ 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 /18/ and WBT sheet/21/ corresponding to final Monitoring Report /12/, which were also found correct.</p> <p>Thus, the verification team confirms that required precision has been met and the results are reliable.</p>
Findings	CAR#07 was raised and resolved. FAR#09 to be resolved in the next verification.
Conclusion	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD /02/.

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

Means of verification	<p>The monitoring plan (included in CPA DDs/4-10/ and registered PoA DD/02/) does not state the calibration requirements for any of the parameter. However, the verification team has checked if the monitoring equipment used during WBT test (mass balance, moisture meter and thermometer) were duly calibrated. As a result, following information was verified from the calibration certificate/20/ of the equipments used for efficiency test;</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%).

Calibration details –

Equipment	Brand	Date of calibration	Expiry date
Thermometer	Voltcraft K 102	28/01/2019	27/01/2020
Mass Balance	MyWeigh KD-8000 (Sr#04)	28/01/2019	27/01/2020
Mass Balance	MyWeigh KD- 8000 (Sr#01)	28/01/2019	27/01/2020
Moisture Meter	Voltcraft FM-300	29/01/2019	28/01/2020

The monitoring survey/WBT was done during the month of August 2019. Thus, the calibration is valid during the monitoring survey. It is noteworthy that in the registered PoA DD/02/ as well as CPA DDs/4-10/, 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 21/16/, para 17 (c): "Measuring equipment should be certified to national or IEC standards and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years". Hence, the monitoring equipment will be calibrated before completion of three years from the date of last calibrations of the respective equipment.

Findings	No Findings were raised.
Conclusion	The verification team confirm that CME applied good practices (as per manufacturer recommendation) while using the monitoring equipment and these were under the state of calibration. There is no specific requirement prescribed in this regard in the registered monitoring plan/02/ and in monitoring methodology/13/. Therefore, the approach presented by PP was accepted.

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

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

Means of verification	The PoA-DD/02/, CPA DDs/4-10/ prescribes direct calculation emission reduction as discussed under section E.3.6.4 of the verification report.
Findings	CL#04 was raised and resolved.
Conclusion	No separate baseline GHG emission calculations were required in accordance with the methodology AMS-II G, version 06/13/.

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

Means of verification	The PoA-DD/02/, CPA DDs/4-10/ and applied monitoring methodology/13/ do not prescribe any project emission to be considered.
Findings	No findings raised.
Conclusion	No project emissions were calculated and the approach used is found to be correct.

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	The PoA DD/02/, CPA DDs/4-10/ and applied monitoring methodology/13/ do not prescribe any leakage emissions to be considered. However, the leakage adjustment factor that is required to adjust the baseline emissions has been duly accounted in emission reduction calculations.
Findings	No findings raised.
Conclusion	No additional leakage emissions (other than what is already considered in baseline calculations) were required in accordance with the methodology AMS-II G, version 06/13/.

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

Means of verification	<p>The following equations were used to determine the Emission reduction as provided in the monitoring report/12/ and applied in the corresponding ER calculations sheets/11/. The expressions used were found consistent with the registered PoA DD/02/, CPA DDs/4-10/ and the applied methodology AMS-II.G, version 06/13/:</p> <p>Total ER reductions achieved in the current monitoring period by all types of ICS distributed in the relevant CPA is calculated using the following expressions:</p> <p>Emission reductions are calculated as follows:</p> $ER_{y,i} = \sum_{a=1}^{a=y} B_{y,savings,i,a} \times N_{y,i,a} \times \left(\frac{\mu}{365} \right) \times F_{NRB,y} \times NCV_{biomass} \times EF_{projectedfossilfuel} - LE_y$ <p>Where:</p> <p>ER_y – emission reductions, t CO₂e, 'a' – the indices for the age (in years) of the cook stoves that are operating in the year y of the crediting period. B_{y, savings, i, a} – annual quantity of woody biomass that is saved in tonnes per cook stove device of type i and age a in year y N_{yia} – number of project devices of type i and age a that are operating in year y μ_{y, i} – number of days of utilization of the project device during the year y f_{NRB,y} – fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass NCV_{, biomass} – net calorific value of the non-renewable biomass that is substituted EF_{projected_fossilfuel} – emission factor for the substitution of non-renewable biomass by similar consumers LE_y – Leakage adjustment factor for period y</p> <p>B_{y, savings, i, a} is calculated using Equation 6 of the methodology AMS-II.G Version 6.0:</p> $B_{y, savings, i, a} = B_{y=1, new, i, survey} \times ((\eta_{new, i, a=1} \times \Delta\eta_{y, i, a} / \eta_{old}) - 1)$ <p>and</p> $\Delta\eta_{y, i, a} = (\eta_{new, i, a} / \eta_{new, i, a=1})$ <p>Where</p> <p>B_{y=1, new, i, survey} – annual quantity of woody biomass used by project devices in tonnes per device of type i η_{new, i, a} – the thermal efficiency of the device 'i' at age 'a' determined using the water boiling test η_{new, i, a=1} – the thermal efficiency of the device at its first year of operation Δη_{y, i, a} – factor to consider the efficiency loss of the project device type i due to its</p>
------------------------------	---

	<p>aging at the year y η_{old} – efficiency of the device being replaced</p> <p>Detailed assessment of all the parameters used to calculate emission reductions is provided under section E.3.4.2.</p> <p>The calculations presented in the monitoring report /12/ and the corresponding ER sheet /11/ were found appropriate and complying with provisions prescribed in the registered monitoring plan/2/ of the respective CPA-DDs/4-10/, PoA-DD/2/ and applied methodology/13/.</p> <p>The verification team affirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found legitimate.</p>
Findings	No findings were raised
Conclusion	<p>The verification team confirms that:</p> <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 564,212 tCO₂e.</p>

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
Malawi Biomass Energy Conservation Programme CPA 1 - CPA 10182-P1-0001-CP1	--	00	00	00	32,456	32,456
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-P1-0002-CP1	--	00	00	00	41,815	41,815

Malawi Biomass Energy Conservation Program me CPA 3 - CPA 10182-P1- 0003-CP1	--	00	00	00	42,274	42,274
Malawi Biomass Energy Conservation Program me CPA 4 - CPA 10182-P1- 0004-CP1	--	00	00	00	37,851	37,851
Malawi Biomass Energy Conservation Program me CPA 5 - CPA 10182-P1- 0005-CP1	--	00	00	00	42,160	42,160
Malawi Biomass Energy Conservation Program me CPA 6 - CPA 10182-P1- 0006-CP1	--	00	00	00	47,740	47,740
Malawi Biomass Energy Conservation Program me CPA 7 - CPA 10182-P1- 0025-CP1	--	00	00	00	54,202	54,202
Malawi Biomass Energy Conservation Program me CPA 8 - CPA 10182-P1- 0020-CP1	--	00	00	00	20,032	20,032

Malawi Biomass Energy Conservation Programme CPA 9 - CPA 10182-P1-0021-CP1	--	00	00	00	44,362	44,362
Malawi Biomass Energy Conservation Programme CPA 10 - CPA 10182-P1-0022-CP1	--	00	00	00	44,651	44,651
Malawi Biomass Energy Conservation Programme CPA 11 - CPA 10182-P1-0023-CP1	--	00	00	00	38,621	38,621
Malawi Biomass Energy Conservation Programme CPA 12 - CPA 10182-P1-0024-CP1	--	00	00	00	33,824	33,824
Malawi Biomass Energy Conservation Programme CPA 13 - CPA 10182-P1-0007-CP1	--	00	00	00	28,586	28,586
Malawi Biomass Energy Conservation Programme CPA 14 - CPA 10182-P1-0009-CP1	--	00	00	00	17,726	17,726

Malawi Biomass Energy Conservation Programme CPA 15 - CPA 10182-P1-0008-CP1	--	00	00	00	14,327	14,327
Malawi Biomass Energy Conservation Programme CPA 16 - CPA 10182-P1-0010-CP1	--	00	00	00	5,066	5,066
Malawi Biomass Energy Conservation Programme CPA 17 - CPA 10182-P1-0011-CP1	--	00	00	00	17,411	17,411
Malawi Biomass Energy Conservation Programme CPA 18 - CPA 10182-P1-0012-CP1	--	00	00	00	1,108	1,108
Total	--	00	00	00	564,212	564,212

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

Means of verification	<p>As verified and evident from the final Monitoring Report/12/ and corresponding ER calculations sheet/11/, the actual emission reductions achieved by CPAs is included in the current monitoring period were more than estimated for 11 CPAs and less than the estimated quantity for rest 7 CPAs, The estimated ERs were checked with the respective CPA DDs/4-10/ for the comparable period due to gradual introduction of project technology (improved portable clay stoves). Also, the total emission reduction achieved during the monitoring period is more than the estimated emission reduction for the same period.</p> <p>The actual emission reductions achieved 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.25.33%-26.91%) 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%)/21-24,34/.</p> <p>The assessment team has checked the details regarding the efficiency and found it correct.</p> <p>Another factor which led to increase in ERs is the higher number of distributions</p>
------------------------------	---

	done under the CPAs as compared to the stated number in the CPA DDs. However, the CME has ensured that the maximum energy saved is capped at the threshold for small scale project.
Findings	CAR#05 was raised.
Conclusion	The actual emission reductions achieved in monitoring period is more than the estimated quantity of ERs for the same period due to the slightly higher monitored stove efficiency. The justification provided by the CME was found to be sufficient and thus it was accepted by the verification team

Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period	Value estimated in ex ante calculation in the included CPA-DD(s)
Malawi Biomass Energy Conservation Programme CPA 1 - CPA 10182-0001	32,456	39,771
Malawi Biomass Energy Conservation Programme CPA 2 - CPA 10182-0002	41,815	39,771
Malawi Biomass Energy Conservation Programme CPA 3 - CPA 10182-0003	42,274	39,771
Malawi Biomass Energy Conservation Programme CPA 4 - CPA 10182-0004	37,851	39,771
Malawi Biomass Energy Conservation Programme CPA 5 - CPA 10182-0005	42,160	39,771
Malawi Biomass Energy Conservation Programme CPA 6 - CPA 10182-0006	47,740	39,771
Malawi Biomass Energy Conservation Programme CPA 7 - CPA 10182-0025	54,202	38,778
Malawi Biomass Energy Conservation Programme CPA 8 - CPA 10182-0020	20,032	38,778
Malawi Biomass Energy Conservation Programme CPA 9 - CPA 10182-0021	44,362	38,778
Malawi Biomass Energy Conservation Programme CPA 10 - CPA 10182-0022	44,651	38,778
Malawi Biomass Energy Conservation Programme CPA 11 - CPA 10182-0023	38,621	38,353
Malawi Biomass Energy Conservation Programme CPA 12 - CPA 10182-0024	33,824	29,004
Malawi Biomass Energy Conservation Programme CPA 13 - CPA 10182-0007	28,586	23,479
Malawi Biomass Energy Conservation Programme CPA 14 - CPA 10182-0009	17,726	19,123
Malawi Biomass Energy Conservation Programme CPA 15 - CPA 10182-0008	14,327	13,705

Malawi Biomass Energy Conservation Programme CPA 16 - CPA 10182-0010	5,066	6,056
Malawi Biomass Energy Conservation Programme CPA 17 - CPA 10182-0011	17,411	22,629
Malawi Biomass Energy Conservation Programme CPA 18 - CPA 10182-0012	1,108	2,231
Total	564,212	548,319

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

Means of verification	As verified and evident from the final Monitoring Report/12/ and corresponding ER calculations sheet/11/, the actual emission reductions achieved by CPAs is included in the current monitoring period were more than estimated for 11 CPAs and less than the estimated quantity for rest 7 CPAs, The estimated ERs were checked with the respective CPA DDs/4-10/ for the comparable period due to gradual introduction of project technology (improved portable clay stoves). The actual emission reductions achieved 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.25.33%-26.91%) 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%)/21-24,34/. Another factor which led to increase in ERs is the higher number of distributions done under the CPAs as compared to the stated number in the CPA DDs. However, the CME has ensured that the maximum energy saved is capped at the threshold for small scale project.
Findings	No findings raised.
Conclusion	The actual emission reduction is less than the estimated ERs for the monitoring period. The total actual emission reductions achieved for all during the crediting period is more than the estimated quantity of ERs for the same period. The justification provided by the CME was found to be sufficient and thus it was accepted by the verification team

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

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

E.3.8. Global stakeholder consultation

Means of verification	The global stakeholder consultation was not found applicable because period under verification is 4 th monitoring period.
Findings	None
Conclusion	The requirement is applicable for situations when global stakeholder consultation was carried out after the publication of first monitoring report. Therefore, this was not found applicable.

SECTION F. Internal quality control

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

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

SECTION G. Verification opinion

Earthood Services Private Limited (ESPL), contracted by Hestian Innovation Ltd. (the CME for the PoA), has performed the fourth independent verification of the emission reductions for the registered CDM PoA 10182 "Biomass Energy Conservation Programme" in Malawi for the monitoring period 01/06/2018-31/05/2019(both days included) as reported in the Monitoring Report (final) Version 2.3 dated 23/01/2020. The CME is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

This verification report is for the CPAs (10182-P1-0001-CP1, 10182- P1-0002-CP1, 10182- P1-0003-CP1, 10182- P1-0004-CP1, 10182- P1-0005-CP1, 10182- P1-0006-CP1, 10182- P1-0025-CP1,10182- P1-0020-CP1, 10182- P1-0021-CP1, 10182- P1-0022-CP1, 10182- P1-0023-CP1, 10182- P1-0024-CP1, 10182- P1-0007-CP1, 10182- P1-0009-CP1, 10182- P1-0008-CP1, 10182- P1-0010-CP1, 10182- P1-0011-CP1, 10182- P1-0012-CP1) which were included at the UNFCCC webpage at the end of the current monitoring period. A single monitoring report has been prepared by the CME for the same in which implementation of all referred CPAs along with monitoring results is included.

ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. This verification report has been prepared using the latest available template specified by UNFCCC and complies with the instructions to follow as per CDM VVS for PoA Version 2.

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

As a result, it is confirmed that the emission reductions from the CDM PoA 10182 "Biomass Energy Conservation Programme" are correctly reported in the Monitoring Report (final) Version 2.3 dated 23/01/2020 and corresponding ER sheets for the monitoring period 01/06/2018-31/05/2019 (including both days) amount as 564,212 tCO₂e. Therefore, this will be submitted as part of 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 fourth independent verification of the emission reductions for the registered CDM PoA 10182 "Biomass Energy Conservation Programme" in Malawi for the monitoring period 01/06/2018-31/05/2019 (both days included) as reported in the Monitoring Report Version 2.3 dated 23/01/2020/12/.

The verification is based on the registered PoA-DD/2/, CPA-DDs/4-10/ 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 2.3 dated 23/01/2020/12/. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 2.3 dated 23/01/2020/12/.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the monitoring period 01/06/2018 up to 31/05/2019 (including both dates) based on the reported emission reductions in the Final Monitoring Report Version 2.3 dated 23/01/2020/12/ for the same period.

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

ESPL confirms the following;

Reporting period: From 01/06/2018 up to 31/05/2019 (including both dates)

Verified and certified emission in the above reporting period:

	Amount	Unit
Certified emission reductions (CERs)	564,212	tCO ₂ e

Appendix 1. Abbreviations

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

Appendix 2. Competence of team members and technical reviewers

Competence Statement			
Name	Deepika Mahala		
Country	India		
Education	M. Sc. (Environmental Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU		
Experience	3 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	14/09/2018
Approved by	Anshika Gupta	Date	14/09/2018

Competence Statement			
Name	Ashok Gautam		
Country	India		
Education	M. Sc. (Environmental Sciences) M. Tech. (Energy & Environmental Management)		
Experience	16 Years +		
Field	Energy, Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-I.A., AMS-I.C., AMS-I.E, AMS-II.D., AMS-II.G., AMS-III.E., AMS-III.H., AMS-III.Q, AMS-III.Z., AMS-III.AV., AM0029, AM0025, AM0056, ACM0001, ACM0002, ACM0004, ACM0012, ACM0006, AM0018, ACM0009, AM0034, AMS.I.B		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
Reviewed by	Shreya Garg	Date	25/01/2019
Approved by	Anshika Gupta	Date	25/01/2019

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

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	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	Validator/ Verifier		
Reviewed by	Shreya Garg	Date	28/06/2019
Approved by	Anshika Gupta	Date	28/06/2019

Appendix 3. Documents reviewed or referenced

No	Author	Title	References to the document	Provider
1	UNFCCC	Monitoring Report Form for PoA (CDM-PoA-MR-FORM)	Version 03.0	Others
2	Hestian Innovation Ltd.	Registered PoA DD Revised PoA DD	Version 7.0, Dated 07/07/2015 Version:8.0 Dated:25/10/2019	Others
3	Hestian Innovation Ltd.	Sales database (ER calculation sheet)	Dated:14/08/2019	PP
4.	Hestian Innovation Ltd	CPA DD – 1	Version 05, dated – 07/07/2015	Others
5.	Hestian Innovation Ltd	CPA DD – 2	Version 04, dated – 19/09/2016	Others
6.	Hestian Innovation Ltd	CPA DD for CPA 3, 4, 5, 6	Version 04, dated - 19/09/2016 respectively.	Others
7.	Hestian Innovation Ltd	CPA DD for CPA 7	Version 2.1, dated - 12/07/2017	Others
8.	Hestian Innovation Ltd	CPA DD for CPA 8	Version 2.1 dated 12/07/2017	Others
9.	Hestian Innovation Ltd	CPA DD for CPA 9	Version 2.1 dated 12/07/2017	Others
10	Hestian Innovation Ltd	CPA DD for CPA 10 CPA DD for CPA 11 CPA DD for CPA 12 CPA DD for CPA 13 CPA DD for CPA 14 CPA DD for CPA 15 CPA DD for CPA 16 CPA DD for CPA 17 CPA DD for CPA 18	Version 2.1 dated 12/07/2017 respectively	Others
11	Hestian Innovation Ltd	ER calculation sheet	Corresponding to current monitoring period	PP
12	Hestian Innovation Ltd	Monitoring report	Version 2.3 Dated:23/01/2020	PP
13	UNFCCC	AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass	Version 6.0	Others
14	UNFCCC	UN Project Webpage https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/4A2PCYSNBW81Z3L5FUH9RMJKQDV6/view	-	Others
15	Hestian Innovation Ltd	Kitchen Performance tests (B _{y=1,new,i,survey} sheet)	2017	PP
16	UNFCCC	SSC guideline EB 61, annex 21 Link: https://cdm.unfccc.int/filestorage/B/7/L/B7LDP00KY4C9HAVTX5WIZQUMJ8SNR1/eb61_rep an21.pdf?t=c0R8cTAydWN6fDB9dOubZSmMwZjM6lejYWuF	03/06/2011	Others
17	Hestian Innovation Ltd	Survey sheets	10/09/2019	PP
18	Hestian Innovation Ltd	Usage and Monitoring survey	August 2019	PP
19	Hestian Innovation Ltd	Sales receipt	Various	PP

20	Malawi Bureau of Standards	Calibration certificates of the monitoring equipment	Various	PP
21	Hestian Innovation Ltd	WBT result sheet	Various	PP
22	Hestian Innovation Ltd	WBT raw data copies	Various	PP
23	GACC	WBT protocol Document	Version 4.2.3	Others
24	Hestian Innovation Ltd	WBT survey sheets	Various	PP
25	UNFCCC	Guidelines: Sampling and surveys for CDM project activities and programmes of activities version 3.0	Version 3.0	Others
26	UNFCCC	Standard: Sampling and surveys for CDM project activities and programmes of activities	Version 7.0	Others
27	IPCC	IPCC default factors	2016	Others
28	Bureau Veritas Certification Holding SAS	Validation Report (CPA-7 to CPA-25)	20/07/2017	Others
29	UNFCCC	CDM VVS for PoA	Version 2.0	Others
30	UNFCCC	CDM PS for PoA	Version 2.0	Others
31	UNFCCC	CDM PCP for PoA	Version 2.0	Others
32	ESPL	Previous Verification Report (3 rd MP)	Dated: 30/04/2019	Others
33	Hestian Innovation Ltd	CPA Start date evidence	Various	Others
34	CREEC	Stove testing report	August 2012	PP
35	Hestian Innovation Ltd	Sample Size calculation sheet	-	PP
36	ESPL	Screenshot of random samples picked up by the DOE	-	Other
37	ESPL	PRC Validation opinion	24/01/2020	Other
38	Hestian Innovation Ltd	UN notification mail	31/10/2019	PP

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

Table 1. Remaining FAR from validation

FAR ID	01	Section no.	E.1.2., E.3.1	Date : 16/09/2019
Description of FAR				
At the time of validation of the CPA for inclusion into the registered PoA 10182, there was no documentary evidence to confirm the start of the CPA. It was indicated that the CPA had not yet started (start date indicated as 01/08/2017). The DOE has raised this as a forward action request, that, at the time of verification of the CPA, the verifying DOE is requested verify the start date of the CPA.				
Project participant response				Date : 23/09/2019
Documentary evidences for the start dates of all CPAs have been provided.				
Documentation provided by project participant				
DOE assessment				Date: 08/10/2019
Start date of all the CPAs have been verified from the evidence. Thus, the finding is closed.				

Remaining FAR from previous verification

FAR ID	02	Section no.	E.1.2., E.3.4.2.	Date : 16/09/2019
Description of FAR				

Inconsistent information is provided in PoA-DD and CPA-DDs for the monitoring frequency of the parameter Ny,i,a-Number of project devices of type i and age a that are operating in year y. The inconsistent information to be corrected during this verification of the PoA.

Project participant response	Date : 23/09/2019
The information has been corrected.	
Documentation provided by project participant	
DOE assessment	Date: 08/10/2019
The information about the monitoring frequency of the parameter Ny,i,a-Number of project devices of type i and age a that are operating in year y has now been corrected in the PoA-DD. PP has followed para 227 of PS of PoA and requested for PRC approval under the issuance track for incorporating the correction of the monitoring frequency in the PDD. (Closed)	

Table 2. CL from this verification

CL ID	03	Section no.	E.3.1, E.3.4.1, E.1.1.	Date : 16/09/2019
Description of CL				
<ol style="list-style-type: none"> As per the template guidelines, under section F.7.of MR, the PP shall demonstrate that the combined scale of the activities belonging to the same small-scale project type (Type I, II or III) remained under the limit of that type every year during the crediting period, or if, during any year of its crediting period, the combined scale goes beyond the limit of that type, cap the GHG emission reductions that are claimed for that year at the amount calculated with the limit of its type. Section A.8.1 of the respective CPA-DDs mention the start date of the CPAs as the first date of sale of cookstoves under each of the CPA. However, the start dates mentioned in the sales data log and the MR was found to be different. Please clarify. CPA DDs for CPA 7-18 do not list NCV, EFprojected_FF, nold, Ly under data and parameter fixed. 				
Project participant response				Date : 23/09/2019
<ol style="list-style-type: none"> Section F.7 of the monitoring report has been amended. Corrected. Start dates of the CPAs are indicated in a consistent way both in the MR and ER calculation file. CPA DDs for CPAs 7-18 do not list NCV, EFprojected_FF, nold, Ly under data and parameter fixed since they are default values prescribed by the methodology. Since, the MR is prepared at the PoA level and these parameters are mentioned in CPA DDs for CPAs 1-6 they were referenced in the monitoring report as well. 				
Documentation provided by project participant				
DOE assessment				Date: 08/10/2019
<ol style="list-style-type: none"> PP has revised the section F.7.of the MR as per the MR instruction guidelines. (Closed) CPA start dates for all the CPAs was now found to be consistent both in revised MR and ER sheet. (Closed) As all the ex-ante parameters could be traced from PoA-DD and the CPA-DDs (for CPA 7 to CPA 18) mentions under section ex-ante parameter that default parameters are referenced from the applied methodology. Hence, the justification provided by the PP was found to be appropriate and acceptable. (Closed) 				
CL ID	04	Section no.	E.3.6, E.3.4.2	Date : 16/09/2019
Description of CL				

1. Sample size calculation is not provided in the ER sheet or survey sheet.
2. In ER sheet provided by the PP, the monitored cookstoves data contains a number of repeated serial numbers. PP is requested to clarify the discrepancy
3. Some of the stove do not have id in the usage survey sheet. PP is requested to clarify how the non-repetition of unique ID (serial number) in stoves has been ensured.
4. It is observed from the spreadsheet of 'CDM 10182 PoA - ER Calculation – VP4 - 14082019.xlsx' that some purchasers have more than one stove. PP is requested to clarify the appropriateness of applying the values 1.881 Tonne/year/stove in determining the emission reductions considering that there are households which have more than one stove.
5. It is also observed that the spreadsheet of 'CDM 10182 PoA - ER Calculation – VP4 - 14082019.xlsx' indicates that it does not contain any location/contact information for many purchasers. PP 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 : 23/09/2019**

1. Sample size calculation has been provided in a separate file.
2. The TSR has been checked and serial numbers records have been corrected.
3. Serial numbers were missing for the households, which reported that project stoves were not in use anymore. The enumerator could not record the serial number in such cases. The serial numbers have been added based on the information from the sample (i.e. information from total sales database).
4. The value of 1.881 Tonne/year/stove for the parameter $B_{y=1, \text{new}, i, \text{survey}}$ (Annual quantity of woody biomass used by project devices in tonnes per device of type I) has been determined in the first year of introduction of the devices (e.g. during the first year of the crediting period, $y=1$) in line with the registered monitoring plan. From the project's earliest stages the CME understood that some households will have more than one stove and discounted accordingly. Discounting factor to account for households with more than one stove was included in POA10182 on voluntary basis in pursuit of self-imposed conservativeness. According to the registered PoA DD (please, refer to page 20), CPA implementers are to share information on how households can use broken stoves as fixed stoves and households are encouraged to have more than one stove. Moreover, under market conditions, 'permission' to sell multiple stoves to households is not controllable by PoA DD and it would be morally reprehensible to suspend sales to a household suspected of buying or having more than 1 stove per house. The fact that there are households, which have more than one stove, is taken into account during monitoring activities. Through annual usage surveys the number of stoves per household is monitored and recorded and the usage rate used in calculation of emission reduction is discounted. Discount factor to account for households with more than 1 stove installed has been used to discount usage rate for each age group monitored. According to the usage and monitoring survey results conducted in August 2019, the discount factor for more than 1 stove installed was 5.88%.
5. 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.

There are different levels of details provided for the purchasers of stoves in the total sales records database. The analysis of the database revealed that for 89% of households in the total sales database (335,313 entries in the database) there is a contact information such as phone number or village or GVH administrative unit, which allows the possibility to track the stove user for usage and monitoring survey. This is a significant improvement comparing to the previous monitoring period, where 78% of entries contained such levels of details. Therefore, missing end user information for some households do not undermine the representativeness of the monitoring activities as prescribed by the registered PoA DD. The CME will continue ensuring that maximum available end user information is entered in the total sales database for the majority of households to safeguard the conservative approach for the representativeness of the sample.

Documentation provided by project participant			
DOE assessment			Date: 08/10/2019
<ol style="list-style-type: none"> 1. PP has provided the sample size calculation sheet. (Closed) 2. The repetitive serial numbers have been corrected by the PP as checked from the revised sales database. (Closed) 3. The serial numbers of the households are now incorporated in the sales database sheet provided. (Closed) 4. As PP has taken into account the discount factor for the HH with more than one stove. Thus, following the conservative approach PP's justification was found to be appropriate and acceptable. (Closed) 5. PP has followed the registered monitoring plan. Also, has accounted for complete information of 89% 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 the PP regarding the incorporation of maximum information of data available per household which can help in tracking the user for usage and monitoring was found to be acceptable and appropriate. (Closed) 			
CL ID	06	Section no.	E.3.4.3.
Date : 31/10/2019			
Description of CL			
Section 3 of MR states that the usage and monitoring survey for this MP was conducted in August 2019 whereas the usage and monitoring survey in the previous MP was conducted in February 2019. PP is requested to clarify, how as per PoA-DD annual monitoring frequency was met as the difference between the last and the current usage and monitoring survey is more than one-year.			
Project participant response			Date : 31/10/2019
1. The monitoring activities are performed each calendar year. In 2019, due to logistical and financial limits the monitoring activities were slightly delayed and conducted in August, 2019.			
Documentation provided by project participant			
DOE assessment			Date: 06/11/2019
<p>1. PP had conducted the usage and monitoring survey in August 2019 for the current MP whereas the survey for previous MP was conducted in February 2018 and the reason stated by the CME related to the delay in the test because of the financial and logistical issues was found to be acceptable as CME had conducted the survey just after the end of the current monitoring period which is applied for a period of one year.</p> <p>Thus, the CL stands closed.</p>			

Table 3. CAR from this verification

CAR ID	05	Section no.	E.3.1, E.3.6.5	Date : 16/09/2019
Description of CAR				
<ol style="list-style-type: none"> 1. The PP has estimated ex-ante value for this monitoring period using 39,771 tCO₂e as an annual average for all the CPAs. However, the CPA DDs for CPA-7 to CPA-18 has an estimated annual average 38,778 tCO₂e mentioned in it. 2. PP shall enlist in the sales database sheet 'TSR Sunfire', about the sales of cookstoves under CPA 10, CPA 12, CPA 13, CPA 14, CPA 15, CPA 16, CPA 18 as there is no information given regarding the sales of cookstoves under respective CPAs. Again, the TSR Eden sheet does not reflect any CPA number against distribution of each cookstoves. 				
Project participant response				Date : 23/09/2019
<ol style="list-style-type: none"> 1. The values have been corrected. 2. The information on CPAs has been added to the total sales records database. 				
Documentation provided by project participant				
DOE assessment				Date: 08/10/2019
<ol style="list-style-type: none"> 1. Estimated ex-ante values and also the calculation for the ERs for CPA-7 to CPA-18 has been revised as per the CPA-DDs. (Closed) 2. The sales database now incorporates the sales of cookstoves under respective CPAs by each of the CPA implementers. (Closed) 				
CAR ID	07	Section no.	E.3.4.3.	Date: 31/10/2019

Description of CAR	
Section 3 of MR states that the usage and monitoring survey for this MP was conducted in August 2019 whereas the usage and monitoring survey in the previous MP was conducted in February 2018. PP is requested to clarify, how as per PoA-DD annual monitoring frequency was met as the difference between the last and the current usage and monitoring survey is more than one-year.	
Project participant response	Date: 31/10/2019
1. The monitoring activities are performed each calendar year. In 2019, due to logistical and financial limits the monitoring activities were slightly delayed and conducted in August 2019.	
Documentation provided by project participant	
DOE assessment	Date: 06/11/2019
PP had conducted the usage and monitoring survey in August 2019 for the current MP whereas the survey for previous MP was conducted in February 2018 and the reason stated by the CME related to the delay in the test because of the financial and logistical issues. However, the current monitoring period is longer than 1 year (01/06/2018- 31/05/2019) and thus the monitoring results are applied to a period of more than one year. As per the clarification SSC 743 of AMS-II.G., the PP shall request for temporary deviation if the monitoring plan has not been followed.	
(Open)	
Project participant response	Date: 07/11/2019
The monitoring period has been updated and reduced to 12-month period from 01/06/2018 to 31/05/2019 (both dates included). Monitoring results are applied for 1-year period only. The calculation of emission reduction has been updated to reflect shorter time of stove operation during the monitoring period, as well as updated monitoring results with respect to stoves efficiency and usage and monitoring surveys. The monitoring results have been updated as 1 stove tested via WBT was distributed outside the shortened monitoring period and was excluded from the calculations of the average stove efficiency per age group. Similarly, three stoves from the usage and monitoring surveys results were also excluded and the usage rates were updated. The updated monitoring results met the required confidence/precision levels for all parameters. The CPA 19 has been removed from the monitoring report and will be covered in the next monitoring period.	
Documentation provided by project participant	
Monitoring report version 2.2 in track changes and clean versions (CDM 10182 MR4 - version 2.2.pdf, CDM 10182 MR4 - version 2.2 TC.docx) Emission reduction calculation file (!CDM 10182 PoA - ER Calculation - 12112019 V 2.2.xlsx) Usage and monitoring surveys results (Usage and Monitoring Surveys results - PoA 10128 - MP4 - V 2.2.xlsx) WBTs results (WBT results - PoA 10182 - MP4 - V 2.2.xlsx) Sample size calculation file (CDM 10182 PoA - VP4 - Sample Size - V 2.2.xlsx)	
DOE assessment	Date: 12/11/2019
To comply with the set frequency of annual monitoring, the CME has reduced the monitoring period by a month as the monitoring report published had a period of 13months. This has impacted several areas which are:	
<ol style="list-style-type: none"> 1. All the distribution from the database which were done after the end date of the new monitoring period (01/06/2018 to 31/05/2019) have been removed. Because of this change, some units under CPA 17 and CPA 18 and all the units of CPA 19 have been removed from this verification as the first stove distribution under CPA started after 31/05/2019. 2. The sample size was determined again using the reduced population. 3. All the samples distributed after 31/05/2019 were removed from the monitored samples. The monitored samples still are more than minimum samples required. 4. The results meet the required confidence and precision. 	
For the changed monitoring period, the verification team has checked and confirmed the requirement of para 224 for PCP for PoA version 2.0. Please refer to section E.2.1 for the detailed assessment.	
For the gap, the team has raised FAR#09.	
Thus, the CAR stands closed.	

CAR ID	08	Section no.	E.3.1	Date : 20/01/2020
Description of CAR				
<p>In the MR, version 2.2, under section F.7, PP has mentioned that “For CPAs 2, 3, 5 and 7, the combined scale of energy savings slightly exceeded the limit of energy savings for Type II small-scale projects. GHG emission reductions are claimed for 2018 at the amount calculated within the small-scale limit (the amount of emission reductions have been discounted based on the percentage of exceeding the small-scale limit energy savings and thus the GHG emission reductions that are claimed were capped)”.</p> <p>However, as per the ER sheet, there is no calculation that substantiates that the energy saved in year 2018 of the discounted emission reductions is within the threshold for type II small scale project.</p> <p>PP is requested to refer to Paragraph 272 of the PS-PoA (Version 02.0) and comply with requirements for each CPA to remain within the threshold for type II project.</p>				
Project participant response				Date : 21/01/2020
<p>The changes made in the MR Tables worksheet of the ER sheet are as follows:</p> <ul style="list-style-type: none"> cells D4:D21 - the approach for adjusted emission reduction calculation has been changed and is now based on the calculated amount of GJ exceeding the small-scale limit cells I118:L136 - added calculation to estimate exceedance of the small-scale limit used in adjusted ER calculation and also a check on meeting small-scale limit based on the adjusted values. <p>The Monitoring report has also been updated accordingly.</p>				
Documentation provided by project participant				
Updated MR (Version 2.3) and ER sheet (Version 2.3)				
DOE assessment				Date: 24/01/2020
<p>PP has now updated the ER calculations in the ER sheet (Version 2.3) for the year 2018 and has ensured that the CPAs (CPA 2,3, 5 and 7) that were exceeding the limit of energy savings for Type II small-scale projects are now capped to stay within the limit.</p> <p>It has been verified by the assessment team that the energy savings for all CPAs will stay within the small-scale limit of 6,48,000 GJ per year as per the applied methodology.</p> <p>Thus, the final value of the ERs claimed under the 4th monitoring period have now been revised from 567,413 tonnes of CO₂ equivalent to 564,212 tonnes of CO₂ equivalent due to the adjustment of the ERs in order to meet the small-scale limit.</p> <p>The MR sheet (version 2.3) has also been updated accordingly and the CAR now stands closed.</p>				

Table 4. FAR from this verification

FAR ID	09	Section No.	E.3.4.3.	Date : 12/11/2019
Description of FAR				
<p>The DOE involved in the next verification shall ensure that the gap between the current monitoring and the next monitoring period is not more than one year.</p>				
Project participant response				Date : DD/MM/YYYY
XX				
Documentation provided by project participant				
XX				
DOE assessment				Date: DD/MM/YYYY
XX				

FAR ID	10	Section No.	E.2.1	Date : 12/11/2019
Description of FAR				
<p>The DOE involved in the next verification shall ensure the end-date of the monitoring periods of all the CPAs covered by the revised monitoring report shall be aligned to the end-date of the different monitoring period.</p>				
Project participant response				Date : DD/MM/YYYY
XX				
Documentation provided by project participant				
XX				

DOE assessment	Date: DD/MM/YYYY
XX	

FAR ID	11	Section No.	D.3	Date : 24/01/2020
Description of FAR				
<p>For the parameter "$\mu_{y,i}$ / 365: Number of days of utilization of the project device during the year 'y'", PP has corrected the frequency of the surveys to annually in the PoA-DD.</p> <p>However, the frequency for monitoring mentioned in the respective CPA-DDs (biennial) of each CPA is not in line with the correction made in the PoA-DD (annual).</p> <p>It shall be ensured by the verifying/validating DOE that the CPA-DDs are revised inline to revised PoA-DD prior to or during the next verification.</p>				
Project participant response				Date : DD/MM/YYYY
XX				
Documentation provided by project participant				
XX				
DOE assessment				Date: DD/MM/YYYY
XX				

- - - - -

Document information

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

Decision Class: Regulatory

Document Type: Form

Business Function: Issuance

Keywords: programme of activities, verifying and certifying

History of the document*						
Version	Date of issue	Nature of Revision	Prepared by		Reviewed by	
			Name	Date	Name	Date
2.0	11/06/2019	Adoption of latest forms	Shreya Garg	11/06/2019	Anshika Gupta	13/06/2019
1.0	04/05/2018	Guidelines updated	Shreya Garg	04/05/2018	Anshika Gupta	04/05/2018
<i>*This table is for ESPL internal document control purpose only</i>						