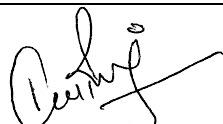



Verification and certification report form for CDM programme of activities
(version 01.0)

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

VERIFICATION AND CERTIFICATION REPORT

Title of the programme of activities (PoA)	GS 1265 – African Biomass Energy Conservation PoA	
GS reference number of the PoA	GS1265	
Earthhood reference number	GS.VER.16.24	
Version number(s) of the PoA-DD(s) applicable to this report	Version 13	
Version number of the verification and certification report	1.1	
Completion date of the verification and certification report	13/06/2018	
Monitoring period number	First Monitoring	
Duration of this monitoring period	VPA MP: 01/05/2014 - 15/03/2017 (inclusive of both days)	
Number and version number of the monitoring report to which this report applies	Monitoring report number: 1 Version Number of the Monitoring Report: 3.1 Monitoring report dated: 11/06/2018	
Coordinating/managing entity (CME)	Hestian Innovation Limited	
Host Party(ies)	Host Party(ies) of the PoA	Is this a host Party to a VPA covered in this report? (yes/no)
	Malawi Rwanda	Yes No
Sectoral scope(s)	Sectoral Scope 3 (Energy Demand)	
Selected methodology(ies)	Gold Standard Methodology: Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 1.0	
Selected standardized baseline(s)	Not Applicable	
Total estimated GHG emission reductions or net GHG removals for this monitoring period in the included VPA(s) covered in this report	173,824 tCO ₂ eq	
Total certified GHG emission reductions or net GHG removals for this monitoring period for the included VPA(s) covered in this report	172,539 tCO ₂ eq	
Name of DOE	Earthood Services Private Limited	
Name, position and signature of the approver of the verification and certification report	 Dr. Kaviraj Singh Managing Director	

SECTION A. Executive summary

The programme of activities involves dissemination of improved wood and stoves in low income households and institutions in Malawi and Rwanda. The project stove replaces the traditional/unimproved/low-efficiency stove and consumes less fuel and produces less smoke. This leads to reduction in GHG emissions. The monitoring period for PoA is 17/10/2012 - 15/03/2017.

The programme of activities includes 6 VPAs namely:

1. VPA GS 2397
2. VPA GS 1330
3. VPA GS 2444
4. VPA GS 2445
5. VPA GS 2446
6. VPA GS 2447

Three types of cook stoves have been disseminated:

- a. Chitetezo Mbaula stoves which is a domestic ceramic cook-stove model were disseminated in Malawi
- b. Canarumwe stoves (domestic ceramic cook-stove model) were disseminated in Rwanda.
- c. Mayankho Fixed Institutional Stove target institutions that regularly cook for large groups of people, were disseminated in Malawi.

This verification report includes assessment information for VPA 2446 only which is located in Malawi. The dissemination under this VPA started from 2014. Thus, actual monitoring of the VPA is 01/05/2014.

1,78,344 household cook stoves and 1,040 institutional cook stoves have been disseminated during the current monitoring period under the programme of activities/1/. Out of which 25,035 PCS (portable clay stoves) have been disseminated under VPA 2446/2/. The households visited during the site visit were found to have the cook stove in operational condition. No household was found to be using the baseline stove.

The Total emission reductions achieved during the current monitoring period is 172,539 tCO₂e/4/.

The basic details of the project activity are mentioned below:

Project title	GS 1265 – African Biomass Energy Conservation PoA
GS registration number	GS1265
Date of GS registration	23/04/2014
Sectoral scope	3, Energy Demand
Methodology/ies applied	Gold Standard Methodology: Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 1.0
Project participants	Hestian Innovation Limited
Location of Project Activity	Malawi
Geographical coordinates	Malawi - 13.9500° S, 33.7000° E

Scope of verification:

This verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. The verification addresses the implementation and operation of the GS PoA and tests the data and assertions set out in the monitoring report based on the following:

- (i) The registered GS PoA DD and VPA DD and Passport
- (ii) The approved methodology mentions in the PoA DD and passport
- (iii) The registered monitoring plan,
- (iv) 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
- (v) The latest Gold Standard (GS) tool kit version 2.2
- (vi) CDM Validation and Verification Standard (VVS)
- (vii) CDM Project Standard (PS) and Project Cycle Procedure (PCP)
- (viii) 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 Gold standard, 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.

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

- a) Contract with Hestian Innovation Limited and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
- b) Upload of the workplan at the registry
- c) Completeness check of Monitoring Report
- d) Desk review (refer Section C.1 of this report) of Monitoring Report and corresponding ER sheet by verification team and planning of onsite audit (including sampling approach (refer Section C.4 of this report) to be applied)
- e) On site audit (refer Section C.2 of this report) (physical implementation and interview with relevant stakeholders) by verification team
- f) Follow up activities e.g., interviews
- g) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section C.5 of this report)
- h) Independent technical review (refer Section D of this report) 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 C.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section E and F of this report).
- j) Issuance of final verification report to contracted PP (or authorized representatives) and submission of request for issuance, as appropriate.

Based on the outcome of the verification process of the registered PoA “GS 1265 – African Biomass Energy Conservation PoA” and its VPA 2446 “GS 2446 – GS 1265 – African Biomass Energy Conservation PoA – Malawi Biomass Conservation” for the monitoring period 17/10/2012 - 15/03/2017 we confirm that the implementation of referenced registered VPA 2446 of PoA GS 1265 is complying with applicable GS and CDM rules and regulations as stated in the Monitoring Report (final) Version 3.1 dated 11/06/2018. Earthood Services Private Limited is able to certify that the emission reductions from the registered VPA 2446 of GS PoA (GS1265) “GS 1265 – African Biomass Energy Conservation PoA” in ‘Malawi’ during the period 17/10/2012 - 15/03/2017 (including both days) amount to 172,539 tCO_{2e}. Therefore, this is being submitted for request for issuance, as per applicable Gold Standard 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 review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	1. Mahala 2. Deka	Deepika Nayan*	Central Office	Y	Y	Y	Y
2.	Verifier	IR	Mahala	Deepika	Central Office	Y	N	N	Y
3.	Technical Expert	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
4.	Methodology Expert	IR	Mahala	Deepika	Central Office	Y	Y	Y	Y
5.	Local Expert	EI	Katundu	Enea	Central Office	Y	N	N	Y

*Site visit was conducted by previous team leader – Nayan Jyoti Deka

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

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

SECTION C. Means of verification

C.1. Desk review

The verification is performed primarily as a desk review of the documents submitted at various stages of assessments. The review is performed by assessment team using dedicated protocols (checklists). The assessment team cross checks the information provided in the documents (MR) and information from sources other than those used, if available, and also conducts independent background investigations. Earthood conducted a desk review as under;

- a) A review of the data and information presented to verify their completeness
- b) A review of the monitoring plan (as described in PoA-DD, VPA-DD and passport, 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
- c) A review of calculations and assumptions made in determining the GHG data and emission reductions;
- d) An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions

The list of documents reviewed during the verification is provided under appendix 3 of this report.

C.2. On-site inspection

Duration of on-site inspection: 19/04/2017– 22/04/2017				
No.	Activity performed on-site	Site location	Date	Team member*
1.	Implementation and operation of project activity (project boundary, technology, project equipment, monitoring and metering equipment) as per registered PDD/previous verification.	Malawi	19/04/2017-20/04/2017	Nayan Jyoti Deka
2.	Management and monitoring procedures followed at project site.	Malawi	20/04/2017	Nayan Jyoti Deka
3.	Physical inspection of the project activity: Site visit and interview of monitoring personnel	Malawi	20/04/2017	Nayan Jyoti Deka
4.	Management and operational system: Documentation, allocation of responsibilities, qualification and training, data recording & archiving, internal audit and management review and emergency procedures.	Malawi	20/04/2017	Nayan Jyoti Deka
5.	Verification checklist: compliance of monitoring procedures followed at project site with registered PoA-DD and monitoring methodology.	Malawi	21/04/2017	Nayan Jyoti Deka
6.	Review of monitored data and relevant document in accordance with registered monitoring plan and applied monitoring methodology.	Malawi	21/04/2017	Nayan Jyoti Deka
7.	Interview with the local stakeholders	Malawi	21/04/2017	Nayan Jyoti Deka
8.	Review of ER calculations in accordance with applied methodology and relevant tools.	Malawi	22/04/2017	Nayan Jyoti Deka

*since the site visit was carried out by the previous team the activities listed above were conducted by the previous team leader.

C.3. Interviews**C.3.1. Interview with PP/CME/VPA Implementers**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Sydney	Nkolola	CME	19/04/2017-22/04/2017	Recording of data and other QA/QC procedures, implementation of VPA	Nayan Jyoti Deka
2.	Bojha	Yamungu	CME	19/04/2017-22/04/2017	Recording of data and other QA/QC procedures, implementation of VPA	Nayan Jyoti Deka
3.	Shlapak	Mykola	CME	31/08/2017 (through phone call)	Project implementation, monitoring procedures	Deepika Mahala, Nayan Jyoti Deka

*since the site visit was carried out by the previous team the PP representatives listed above were interviewed by the previous team leader.

C.3.2. Type of questions asked by Team member

No.	Questions asked by Team member	Nature of Responses Received
	to Local Stakeholders	
1.	Are you using this equipment?	Positive
2.	Is this equipment proving to be useful to you?	Positive
3.	Do you feel improvement in your health and surrounding air quality after using the provided cookstove?	Positive
4.	Are you aware of continuous input/grievance mechanism?	Positive
5.	Is the equipment working properly?	Positive

C.3.3. Interview with Local Stakeholders(users)

No.	Interviewee			Date	Mode (Email / In Person / Phone)	Feedback (Positive / Negative / Neutral)
	Last name	First name	Serial Number			
1.	Jackson	James	BLK/CU1/83 /13679	19/04/2017	In person	Positive for all
2.	Masola	Ireen	BLK/CU2/13 /930	19/04/2017	In person	Positive for all
3.	Samson	Lucy	BLK/CU1/16 /2009	19/04/2017	In person	Positive for all
4.	Agness	Juliyasi	BLK/CU1/13 /810	20/04/2017	In person	Positive for all
5.	Kanga	Iness	BLK/CU/1/1 3/810	20/04/2017	In person	Positive for all
6.	Kanchule	Merca	BLK/CU1/13 /85	20/04/2017	In person	Positive for all
7.	Chutaja	Josephi	BLK/CU1/13 /929	21/04/2017	In person	Positive for all
8.	Kunjilima	Mercey	BLK/CU1/13 /818	22/04/2017	In person	Positive for all
9.	Mawewe	Siyen	BLK/CU1/13 /848	22/04/2017	In person	Positive for all

*since the site visit was carried out by the previous team the end users listed above were interviewed by the previous team leader.

C.4. Sampling approach**DOE's sampling approach:**

In order to meet the requirements of Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 06 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 "Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 6," A DOE may select a different sample size than the one indicated in paragraph 28, either by choosing a different value for the consumer risk and producer risk (e.g. 20% for the consumer risk) when applying acceptance sampling or by using another approach, if any of the following conditions apply:

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

In case of the current verification, the estimated annual emission reduction of the PoA being verified is less than 100,000 tCO₂ thus meeting the requirement of the standard. Secondly, the PoA is located in a least developed country i.e. Malawi, which has been confirmed through UNFCCC website

(http://unfccc.int/resource/docs/publications/ldc_brochure2009.pdf), thus also meeting the requirement of para 31(c). Hence DOE has considered 8 samples from each type of ICS for the current verification.

The verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgement and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities' version 06.0:

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

Considering the above input values, a sample size of 8 was required as per Table 1 in the referred Standard for the monitoring period. Accordingly, Acceptance number (c) thus determined for the sample size is 0. A sample size of 8 meets the criteria. The assessment team has verified 9 sample considering one additional sample.

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General	-		-
Compliance of the monitoring report with the monitoring report form	-	-	-
Remaining forward action requests from validation and/or previous verification	-	-	-
Specific-case VPA(s) considered for verification and covered in this report	-	-	-
Programme of activities	-	-	-
Compliance of the programme implementation with the registered PoA-DD	-	CAR#04, CAR#05	-
Implementation and operation of the management system	-	-	-
Post-registration changes	-	-	-
<ul style="list-style-type: none"> • Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline 	-	-	-
<ul style="list-style-type: none"> • Corrections 	-	-	-
<ul style="list-style-type: none"> • Inclusion of a monitoring plan in a registered PoA-DD (including its generic VPA-DD(s)) 	-	-	-
<ul style="list-style-type: none"> • Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline 	-	-	-
<ul style="list-style-type: none"> • Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic VPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case VPAs in the PoA 	-	-	-
<ul style="list-style-type: none"> • Types of changes specific to afforestation and reforestation activities 	-	-	-
Component project activity(ies)	-	-	-
Compliance of the VPA implementation with the included VPA design document	-	CAR#05	-
Post-registration changes	-	-	-
<ul style="list-style-type: none"> • Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline 	-	-	-
<ul style="list-style-type: none"> • Corrections 	-	-	-
<ul style="list-style-type: none"> • Changes to the start date of the crediting period 	-	-	-
<ul style="list-style-type: none"> • Inclusion of a monitoring plan to an included VPA-DD 	-	-	-

<ul style="list-style-type: none"> Permanent changes to the monitoring plan as described in the included VPA-DD, applied methodology, or applied standardized baseline 	-	-	-
<ul style="list-style-type: none"> Changes to the programme design of the included VPA-DD 	-	-	-
<ul style="list-style-type: none"> Types of changes specific to afforestation and reforestation component project activities 	-	-	-
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	-	-	-
Compliance of monitoring activities with the registered monitoring plan	-	-	-
<ul style="list-style-type: none"> Data and parameters fixed ex ante or at renewal of crediting period 	-		
<ul style="list-style-type: none"> Data and parameters monitored 	-	CAR#01, CAR#07	-
<ul style="list-style-type: none"> Sustainability parameter monitored 	-	CAR#04, CAR#05, CAR#06	-
<ul style="list-style-type: none"> Implementation of sampling plan 	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	-	CAR#02, CAR#03, CAR#06	-
<ul style="list-style-type: none"> Calculation of baseline GHG emissions or baseline net GHG removals by sinks 	-	-	-
<ul style="list-style-type: none"> Calculation of project GHG emissions or actual net GHG removals by sinks 	-	-	-
<ul style="list-style-type: none"> Calculation of leakage GHG emissions 	-	-	-
<ul style="list-style-type: none"> Summary of calculation of GHG emission reductions or net GHG removals by sinks 	-	-	-
<ul style="list-style-type: none"> Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case VPA 	-	-	-
<ul style="list-style-type: none"> Remarks on difference from estimated value in registered PDD 	-	-	-
Others (please specify)	-	-	-
Total	-	7	-

SECTION D. Internal quality control

A draft verification report prepared by assessment team is reviewed by an independent Technical Review team (one or more members) to confirm if the internal procedures established and implemented by Earthood were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable Gold Standard and CDM 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 validation team. The report approved by Quality Manager is endorsed by Managing Director, who is overall responsible to ensure quality, before final release. The further details of applicable procedures and responsibilities about Earthood Quality Management System (QMS) are available on its website (www.earthood.in).

SECTION E. Verification opinion

Earthood Services Private Limited (Earthood), contracted by Hestian Innovation Limited, has performed the independent verification of the emission reductions for the GS Project 1265 "GS 1265 – African Biomass Energy Conservation PoA" and its VPA 2446 in "Malawi" for the monitoring period 17/10/2012 to 15/03/2017 as reported in the Monitoring Report, Version 3.1 dated 11/06/2018. The Hestian Innovation Limited is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity. Earthood commenced the verification against the baseline and monitoring methodology "Gold Standard Methodology: Technologies and Practices to Displace Decentralized Thermal Energy Consumption Version 1.0, the monitoring plan contained in the PDD Version 13 dated

10/07/2016, GS PoA Passport Version 13 dated 10/07/2016 and Monitoring Report Version 2.7 dated 30/04/2018.

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 para 406 and 407 of CDM VVS Version 9. The verification activities were conducted in accordance with ESPL’s CDM Quality Manual System as per the steps indicated under Section A of this report.

As a result, it is confirmed that the emission reductions from the VPA 2446 of GS PoA 1265 “GS 1265 – African Biomass Energy Conservation PoA” are correctly reported in the Monitoring Report (final) Version 3.1 dated 11/06/2018 and corresponding ER sheet for the monitoring 17/10/2012 - 15/03/2017 (including both days) amounted as 172,539 tCO₂e. Therefore, this will be submitted as part of request for issuance as per CDM PCP Version 9 and GS tool kit 2.2.

SECTION F. Certification statement

ESPL’s verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion, the GHG emissions reductions reported for the project activity are fairly stated in the Monitoring Report (final) Version 3.1 dated 11/06/2018. ESPL, based on outcome of verification activities, certifies in writing that, during the monitoring period 17/10/2012 - 15/03/2017(including both days), the registered GS VPA 2446 under the registered GS PoA 1265 achieved the verified amount of 172,539 tCO₂e tCO₂e reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the PA.

The verified amount of emission reductions is stated below as per each VPAs and as per commitment period;

Year	Emission Reductions (Amount) in this monitoring period	
	Duration	Emission reduction
2012	17/10/2012-31/12/2012	0 tCO ₂ e
2013	01/01/2013-31/12/2013	0 tCO ₂ e
2014	01/01/2014-31/12/2014	15,460 tCO ₂ e
2015	01/01/2015-31/12/2015	78,060 tCO ₂ e
2016	01/01/2016-31/12/2016	65,730 tCO ₂ e
2017	01/01/2017-15/03/2017	13,289 tCO ₂ e
Total	Nil	172,539 tCO ₂ e

SECTION G. Verification findings - General

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

Means of verification	No template for PoA monitoring has been provided by Gold Standard. The CME has used CDM-PoA-MR-FORM version 01/47/ which has been issued by UNFCCC for verification of PoAs. The form is valid for the PoA as per UNFCCC implementation plan for CDM regulations version 1.0/48/.
Findings	None
Conclusion	Appropriate form has been used for information reporting.

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

There is No FAR applicable from the previous verification or validation/21/.

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

Reference number of the specific-case VPA included in the PoA as of the end of this monitoring period	Is the specific-case VPA considered for this verification? (yes/no)	Version number of the registered PoA-DD to which the specific-case VPA complies with	Confirmation that a request for issuance including the specific-case VPA has been published for the previous monitoring period (Y/N)
VPA GS 2397	No	Version 13.0	N
VPA GS 1330	No	Version 13.0	N
VPA GS 2444	No	Version 13.0	N
VPA GS 2445	No	Version 13.0	N
VPA GS 2446	Yes	Version 13.0	Y
VPA GS 2447	No	Version 13.0	N

SECTION H. Verification findings – Programme of activities**H.1. Compliance of the programme implementation with the registered programme design document**

Means of verification	<p>The PoA is distribution of improved wood stoves in low income households and institutions in Malawi and Rwanda, where the improved cook stove improves the air quality and also reduces the fuel consumption. The CME of the PoA is Hestian Innovation Limited as verified from the registered PoA DD/1/ and VPA DD/2/.</p> <p>The programme of activities includes 6 VPAs namely:</p> <ol style="list-style-type: none"> 1. VPA GS 2397 2. VPA GS 1330 3. VPA GS 2444 4. VPA GS 2445 5. VPA GS 2446 6. VPA GS 2447 <p>This validation report includes assessment information for VPA 2446 only which is located in Malawi.</p> <p>178,344 household cook stoves and 1,040 institutional cook stoves have been disseminated during the current monitoring period under the programme of activities/10/. Out of which 25,053 PCS (portable clay stoves) have been disseminated under VPA 2446. The households visited during the site visit were found to have the cook stove in operational condition. No household was found to be using the baseline stove</p> <p>Three types of cook stoves have been disseminated:</p> <ul style="list-style-type: none"> • Chitetezo Mbaula stoves which is a domestic ceramic cook-stove model were disseminated in Malawi. • Canarumwe stoves (domestic ceramic cook-stove model) were disseminated in Rwanda. • Mayankho Fixed Institutional Stove target institutions that regularly cook for large groups of people, were disseminated in Malawi. <p>The improved household wood stoves and institutional wood stoves involves improved combustion and improved heat transfer which leads to reduction fuel consumption. The stoves raise the cooking pot to the hottest point above the flame and thus, provides higher efficiency than traditional stoves that were present before the project activity.</p> <p>Technical specifications of the stoves were verified from the stoves preparation manuals of the cookstoves provided by supplier /15-18,30/, and found to be consistent with information given in monitoring report.</p>
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	<p>Efficiency of the ICS: The efficiency of the chitetezo cookstove is 30.6% as checked from the registered VPA DD/2/ and test report for the cook stove disseminated/23/.</p> <p>The verification team has confirmed that aggregate annual thermal energy savings from the number of ICS operational under the current VPA is under the limit as set by the CME during the inclusion of each VPA and thus VPA remains under the threshold of 180 GWh thermal energy savings/year. The detailed calculation to demonstrate the same for every year covered under the current monitoring report is clearly shown in the ER sheet/4/.</p> <p>The households considered for ER calculation is less than the actual households to which the product has been disseminated because the number has been adjusted for threshold of small scale VPA and exclusion of cookstoves for which the lifetime (when product works efficiently) period is over.</p> <p>The households visited during the site visit were found to have the cook stove in operational condition. No household was found to be using the baseline stove. The verification team confirms that the quantity, specification and target group of the ICS are consistent with the PoA DD /1/ and VPA DD/2/. Further, based on the review of ICS distribution database in ER sheet/4/, physical observations and interview conducted during the site visit, the verification team found that:</p> <ul style="list-style-type: none"> • The VPA is implemented within the boundary of the PoA as described in the PoA-DD. • The CME is same as that mentioned in the PoA-DD/1/ • The implementation and operation of the project activity has been conducted in accordance with the description contained in the PoA-DD/1/ and included VPA-DD/2/. • All physical features of the VPA proposed in the included VPA-DD/2/ is in place <p>Total sales records database/10/ has also been maintained so that end users can be traced. The database also contains the stove serial number and the VPA information. Different VPA were installed in the same areas, but can always be distinguished by a sales record keeping system with a unique serial number for every device sold, which will ensure that each device can be traced to one specific VPA to avoid double counting. The information is found to be consistent with the PoA-DD/1/ and VPA DD/2/.</p> <p>The sample sales records/10/ were checked to confirm the details of the end users.</p> <p>The monitoring report was compared and verified against the description provided in the PoA-DD/1/ and VPA DD/2/ and found to be correct.</p> <p>Grievance Mechanism- As required by registered passport (PoA and VPA), complaint mechanism was very well established through:</p> <ul style="list-style-type: none"> • Grievance Expression Process book • Telephone Access 00265 999 383 457 (Malawi) • Email Access mukafrancy@yahoo.co.uk • Address: Area 55 Consulting Office in Lilongwe, Malawi <p>All the above listed grievance mechanisms were found to be working and accessible. During the site visit, the customers interviewed were found to be aware of the mechanism. The responses were positive. No issues in terms of stove design or project implementation were found. Issues related to damaged stove have been addressed.</p>
Findings	CAR#04 and CAR#05 were raised and resolved.
Conclusion	The implementation of the programme was found to be in compliance with the description provided in the registered PoA-DD/1/. The unique information of each unit sample was found to be consistent onsite concluding that the data

	<p>management system is working efficiently and in compliance with the system mentioned in registered PoA-DD/1/.</p> <p>a) The verification team confirms that the physical features (technology/type of ICS) of the implementation were in accordance with the PoA DD/1/.</p> <p>b) The actual operation is in line to VPA DD/2/, which is further explained under Section I.1, J.1 and K.1 of this report.</p> <p>The number of installations in each VPA for the type of ICS were in compliance with VPA-DD/2/. The actual CERs for VPA were higher for comparable monitoring period.</p>
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H.2. Implementation and operation of the management system

Means of verification	The implementation and operation of management system was verified through onsite visit which included interaction with end-users and CME representatives as well. Along with the model, serial number, name, address, installation date, contact number etc. had also been noted which were found to be consistent on ground. For data survey, a monitoring team has been organized by the CME consisting of trained monitoring staff, who conducted the surveys and WBTs. The monitoring manager at the CME is responsible for QA/QC of the data, analysis and reporting into the monitoring report. QA/QC procedures were found being followed during the site visit. Scanned copies of completed survey forms and WBT test reports /51/, KPT reports/52/ and usage survey records/50/ are made available to the assessment team for verification of the information of users inserted in the database sheets. All the documents are also retained by the VPA implementer.
Findings	None
Conclusion	The assessment team, with the help of onsite verification and document review that implementation and operation of the management system is as per the registered PoA-DD/1/.

H.3. Post-registration changes

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

Not Applicable

H.3.2. Corrections

As per the correction made during the design change request/8/, the baseline fuel consumption is fixed for the whole crediting period and the project fuel consumption is updated by biennial project KPTs or aging test approach for project fuel updates.

The Change approval date is 24/11/2016.

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

The Design change to PoA was proposed by CME and approved by Gold standard before the current verification/8/. Monitoring plan was included during this design change.

The Change approval date is 24/11/2016.

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

Not Applicable

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

The following changes to the programme design in the registered PoA-DD, including corresponding changes to the project design in the registered generic VPA-DD(s) were approved:

1. GS 1265 PoA was changed from micro to small scale PoA.

2. VPA GS613 (last issued up until 1/10/13) was migrated into VPA GS2444;
3. micro-scale activities GS 2444, GS 2445, GS 2446, GS 2447 (all Malawi) were migrated to SSC VPA GS1330;
4. micro-scale activities GS 1329, GS 2397, GS 2398, GS 2449, GS 2450 (all Rwanda) were migrated to SSC activity VPA GS2397;

All VPAs have been set to be populated up to the SSC threshold limit (180GWh/year).

The design change/8/ has already been approved by gold standard on 24/11/2016.

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

Not Applicable

SECTION I. Verification findings – Component project activity(ies)

I.1. Compliance of the VPA implementation with the included VPA design document

Means of verification	VPA included in this monitoring period targets the promotion, distribution and sale of ICS (Improved Cook Stoves) i.e., Chitetezo Mbuala (VPA 2446).		
	Hestian Innovation Limited is the Coordinating and Managing Entity (CME) for the implementation of the VPA. The details of the VPA are as follows		
	VPA Ref. #	Description	Verified from the document
	Location / State	The VPAs were implemented within the geographical boundaries of Malawi	Geo coordinates (13.9500° S, 33.7000° E) of the location mentioned in the MR have been verified from the online website itouchmap.com/25/
	ICS Model	Chitetezo Mbuala stove	The model and the technical specification have been verified from the stove preparation manual provided the CME/15-18,30/.
	VPA Implementer/ Distribution Organization	All the VPAs have been implemented by the CME.i.e, Hestian Innovation Limited	Scanned copies of user details/41/, sales database/10/ attached with monitoring survey questionnaire/50,51,52/ also have the name of Hestian Innovation Limited.
	Total Quantity Sold / Disseminated	25,053	The value has been verified from the distribution database/10/
ICS sales start date	01/03/2013 (The start date of the VPA is 01/03/2013 after design change however, actual sale got delayed and started from 01/05/2014)	It has been confirmed from the distribution database/10/ and sale record of first cookstove /55/	

	Estimated CERs (comparable period)	173,824 tCO ₂ e	ER sheet/4/ provides a clear calculation of the estimated ER reduction for the current monitoring period.
	Actual CERs from the CEP Type	172,539 tCO ₂ e	ER sheet/4/ provides a clear calculation of the achieved ER reduction for the current monitoring period. Each parameter used for the calculation has also been verified under section I.4.2 separately.
Review of distribution database/10/ and calculation results in ER sheet/4/ confirm that the methodology threshold has not been compromised. The calculation provided in the ER sheet/4/ has been checked by the verification team that the VPA is below the threshold of 180 GWh/year (thermal).			
Findings	CAR#05 was raised and resolved.		
Conclusion	<ul style="list-style-type: none"> The verification team is of the opinion that physical features of the VPA have been implemented in accordance with the VPA-DD/2/. 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 VPA have been implemented in accordance with the VPA-DD/2/. The VPA was also found to be completely operational in line with the VPA-DD/2/. <p>The information provided in the relevant sections of the monitoring report are appropriately describe the implementation and operational status of the PoA/1/.</p>		

I.2. Post-registration changes

I.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

The CME has missed to conduct monitoring activities in some periods of PoA implementation due to logistical and financial reasons. The details of deviation is as follows:

- For VPA 2446 implemented in Malawi, WBT was not conducted in 2014 and results of WBTs were conducted in 2015 were found to be erroneous and did not properly follow sampling procedure. The CME conducted the WBTs again in 2016 following the rule update of December 2015 for stoves of all age groups. The results were found to be conservative as the results of reduced efficiency has been applied to the previous years as well.
- Usage and Monitoring surveys for 2016 did not account for discount factor and 2017 did not include leakage and discount factor. For these two year a highest value of leakage out the results of previous years (2013,2014,2015) has been applied. The approach was found to be conservative and thus accepted

The deviation is temporary and for future monitoring period, the monitoring will be done in monitoring plan given in the registered PoA DD/1/.

Since, the approach was conservative it was accepted by the DoE. The PP has also sought gold standard opinion on the temporary deviation/56/ and followed the steps prescribed in final decision.

I.2.2. Corrections

As per the correction made during the design change request/8/, the baseline fuel consumption is fixed for the whole crediting period and the project fuel consumption is updated by biennial project KPTs or aging test approach for project fuel updates.

The Change approval date is 24/11/2016

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

The start date of the crediting period of each VPA after the design change was accepted are as follows:

Serial number	Specific VPAs	Start date of the VPA
1.	VPA GS 2397	29/08/2012
2.	VPA GS 1330	17/10/2012
3.	VPA GS 2444	24/11/2008
4.	VPA GS 2445	01/03/2013
5.	VPA GS 2446	01/03/2013
6.	VPA GS 2447	01/03/2013

The Change approval date is 24/11/2016 as checked from the GS review on design change/18/.

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

Not Applicable.

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

CME has used the values for non-CO2 emission factor from use of biomass $EF_{b,nonCO2}$ and $EF_{p,nonCO2}$ from calculation based on average of the range of values of CH4 and N2O emission factors given in table 2.9, chapter 2 of Vol. 2, 2006 IPCC Guidelines for National Greenhouse Gas Inventory/59/. The emission factors obtained by applying those values and NCV value as 0.0156TJ/ton were 0.529 tCO2/t wood valid for all VERs from January 01, 2013 onwards and 0.455 tCO2/t wood for all VERs until December 31, 2012. The change is in line to the design approved by GS and registered PoA DD/1/. However, the actual non-CO2 emission factor from use of biomass $EF_{b,nonCO2}$ and $EF_{p,nonCO2}$ used in emission reductions calculations are slightly different values : 0.509 tCO2/t wood valid for all VERs from January 01, 2013 onwards and 0.438 tCO2/t wood for all VERs until December 31, 2012. The reason for the changed values is the use of consistent and conservative value of NCV (0.015 TJ/t) for calculating Emission factor. The PoA DD/1/ also gives the same value of NCV under the list of ex-ante parameters.

The design change/8/ has already been approved by gold standard on 24/11/2016.

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

The following changes to the programme design in the registered PoA-DD/1/, including corresponding changes to the project design in the registered generic VPA-DD(s) were approved:

1. GS 1265 PoA was changed from micro to small scale PoA.
2. VPA GS613 (last issued up until 1/10/13) was migrated into VPA GS2444;
3. micro-scale activities GS 2444, GS 2445, GS 2446, GS 2447 (all Malawi) were migrated to SSC VPA GS1330;
4. micro-scale activities GS 1329, GS 2397, GS 2398, GS 2449, GS 2450 (all Rwanda) were migrated to SSC activity VPA GS2397;

All VPAs have been set to be populated up to the SSC threshold limit (180GWh/year).

New VPAs GS 2445, GS 2446, GS 2447, GS 1329, GS 2398, GS 2449, GS 2450 will be populated with stoves until they reach the SSC threshold. Out the new formed VPAs only 2445, 2446, 2447 have been included under this monitoring report V 3.1, 11/06/2018.

The design change/18/ has already been approved by gold standard on 24/11/2016.

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

Not Applicable

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

Means of verification	The monitoring plan as contained in the registered VPA DD/2/ were reviewed against the monitoring requirements of the applied methodology/9/ as well as PoA DD/1/ with reference to the technology involved. Based on this review it was found that the monitoring plan contained in the registered VPA DD/2/ includes all the required parameters to be monitored in the context of the VPA design and description and allows proper determination of emission reductions in accordance with PoA DD/1/ and applied methodology /9/.
Findings	None
Conclusion	The monitoring plan is in accordance with the approved methodology/9/ that is included in the VPA DD/2/.

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

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

I.4.1.1. Non-renewability status of woody biomass fuel in scenario I during year y, $f_{NRB,i,y}$, Fraction of non-renewability

Means of verification	The value of the parameter has been sourced from the Default values of fraction of non-renewable biomass approved by CDM EB and accepted by DNA. The values are also available at UNFCCC website/29/. The verified value of the parameter are as follows: <table border="1" data-bbox="459 891 1211 960"> <thead> <tr> <th>Sl no.</th> <th>Country</th> <th>Default values</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Malawi</td> <td>81%</td> </tr> </tbody> </table> The values were found to be in line to the registered PoA DD/1/. As per the applied methodology the values are fixed for the crediting period but it can be updated if necessary.	Sl no.	Country	Default values	1.	Malawi	81%
Sl no.	Country	Default values					
1.	Malawi	81%					
Findings	No findings.						
Conclusion	The values mentioned in the Monitoring Report /6/ and Emission Reduction Spreadsheet /4/ are consistent with the registered VPA DD/2/, The applied value is correct and justified.						

I.4.1.2. Net calorific value of the non-renewable biomass that is substituted, $NCV_{biomass}$, TJ/t

Means of verification	The value of the parameter is 0.015 TJ/t which was sourced from Default value based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2/59/. The value was found to be consistent with the registered PoA DD/1/ and the VPA DD/4/.
Findings	No findings.
Conclusion	The values mentioned in the Monitoring Report /6/ and Emission Reduction Spreadsheet /4/ are consistent with the registered PoA DD/1/ and VPA DD/2/, The applied value is correct and justified.

I.4.1.3. CO₂ emission factor arising from use of fuels in baseline and project scenarios, EF_{b,CO_2} and EF_{p,CO_2} , tCO₂ / t wood

Means of verification	The value of the parameter is 1.680 tCO ₂ /t wood calculated by multiplying EF for wood fuel and NCV for wood fuel was sourced from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2: Energy/49/. The registered PoA DD/1/ gives two values of NCV i.e. 0.015 and 0.0156. However, to keep the value consistent the PP has applied the lower value of 0.015 which gives EF_{b,CO_2} of 1.680 tCO ₂ /t wood. The approach was found to be conservative and acceptable.
Findings	CAR#03 was raised and resolved.
Conclusion	The values mentioned in the Monitoring Report /6/ and Emission Reduction Spreadsheet /4/ are consistent. The applied value is correct and justified

I.4.1.4. Non-CO₂ emission factor arising from use of fuels in baseline and project scenarios, EF_{b, nonCO2} and EF_{p, nonCO2}, tCO₂ / t wood

Means of verification	of	The value of the parameter is calculated by multiplying NON-CO ₂ EF for wood fuel and NCV for wood fuel was sourced from 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2: Energy/49/. The registered PoA DD gives two values of NCV i.e. 0.015 and 0.0156. However, to keep the value consistent the PP has applied the lower value of 0.015 which gives following value:									
		<table border="1"> <tr> <th>Effective date</th> <th>Parameter</th> <th>Value applied</th> </tr> <tr> <td>till 31.12.2012</td> <td>EF_{b, NON-CO2} and EF_{p, NON-CO2}</td> <td>0.438 tCO₂/t wood</td> </tr> <tr> <td>from 01.01.2013 onwards</td> <td>EF_{b, NON-CO2} and EF_{p, NON-CO2}</td> <td>0.509 tCO₂/t wood</td> </tr> </table>	Effective date	Parameter	Value applied	till 31.12.2012	EF _{b, NON-CO2} and EF _{p, NON-CO2}	0.438 tCO ₂ /t wood	from 01.01.2013 onwards	EF _{b, NON-CO2} and EF _{p, NON-CO2}	0.509 tCO ₂ /t wood
	Effective date	Parameter	Value applied								
	till 31.12.2012	EF _{b, NON-CO2} and EF _{p, NON-CO2}	0.438 tCO ₂ /t wood								
from 01.01.2013 onwards	EF _{b, NON-CO2} and EF _{p, NON-CO2}	0.509 tCO ₂ /t wood									
	The approach was found to be conservative and acceptable.										
Findings	CAR#03 was raised and resolved.										
Conclusion	The values mentioned in the Monitoring Report /6/ and Emission Reduction Spreadsheet /4/ are consistent. The applied value is correct and justified										

I.4.1.5. Thermal efficiency of the various baseline technologies i in year y, η_{baseline, i, y}, %

Means of verification	of	Default value sourced from applied methodology/9/ has been used for the parameter. The value applied is 10%. The value was found to be consistent with the registered PoA DD/1/ and VPA DD/2/.
Findings	No findings.	
Conclusion	The values mentioned in the Monitoring Report /6/ and Emission Reduction Spreadsheet /4/ are consistent with the registered PoA DD/1/ and VPA DD/2/, The applied value is correct and justified.	

I.4.1.6. Quantity of fuel that is consumed in baseline scenario b during year y for technology I, B_{b, i, y}, Kg/household day

Means of verification	of	The value of the parameter has been derived by using the formula [Fuel _{baseline} = $\eta_{project} / \eta_{baseline} \times \text{Fuel}_{project}$] given in the applied methodology/9/.						
		<table border="1"> <tr> <th>Sl no.</th> <th>Country</th> <th>Values applied</th> </tr> <tr> <td>1.</td> <td>VPA 2446</td> <td>14.16 kgs / HH / day (equivalent to 5.169 tonnes of wood / HH / year)</td> </tr> </table>	Sl no.	Country	Values applied	1.	VPA 2446	14.16 kgs / HH / day (equivalent to 5.169 tonnes of wood / HH / year)
	Sl no.	Country	Values applied					
1.	VPA 2446	14.16 kgs / HH / day (equivalent to 5.169 tonnes of wood / HH / year)						
	The values were different from the registered PDD as a consistent value of (NCV for wood fuel - 0.015) has been used to determine B _{b, i, y} . The formula applied was found to be consistent with the VPA DD/2/.							
Findings	No findings.							
Conclusion	The values mentioned in the Monitoring Report /6/ and Emission Reduction Spreadsheet /4/ are consistent. The applied value is correct and justified							

I.4.2. Data and parameters monitored (Carbon)

I.4.2.1. Usage rate in project scenario p during year y, U_{P, y}(U_{PCS, y} and U_{CS, y}), Percentage

Means of verification	of	Criteria/Requirements	DOE Assessment
		Measuring /Reading /Recording frequency	The measuring frequency for the parameter is Annual.
		Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line the monitoring plan given in the registered PoA DD/1/.
		Monitoring equipment	Not Applicable as the value of the parameter have been derived from usage survey carried out annually.

	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable												
	How were the values in the monitoring report verified?	<p>The usage rate was determined for each year age wise. Average of all the years of monitoring(2013-1017) was done for each age type.</p> <p>The value of the parameter applied are as follows:</p> <table border="1"> <thead> <tr> <th>VPA</th> <th>Age</th> <th>Value applied</th> </tr> </thead> <tbody> <tr> <td rowspan="4">VPA 2446(PCS)</td> <td>0-1</td> <td>86.29%</td> </tr> <tr> <td>1-2</td> <td>80.46%</td> </tr> <tr> <td>2-3</td> <td>71.73%</td> </tr> <tr> <td>3-4</td> <td>63.01%</td> </tr> </tbody> </table> <p>The average value were checked for the calculation in the ER sheet and the age wise values for each year values were verified from usage survey reports/19/ and usage survey sheet/20/.</p>	VPA	Age	Value applied	VPA 2446(PCS)	0-1	86.29%	1-2	80.46%	2-3	71.73%	3-4	63.01%
	VPA	Age	Value applied											
	VPA 2446(PCS)	0-1	86.29%											
		1-2	80.46%											
2-3		71.73%												
3-4		63.01%												
If applicable, has the reported data been cross-checked with other available data?	The response inserted in the usage survey excel sheet/20/ were cross checked with the scanned copies of filled Usage survey forms/50/.													
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The surveys were conducted by trained staff as verified from the training records/37,39/. The QA/QC procedures were found to be followed.													
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?	NA													
Findings	CAR#01 and CAR#02 were raised and resolved.													
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology/9/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan													

1.4.2.2. Technologies in the project database for project scenario p through year y, N_{p,y}, Project technology-days in project database for project scenario p through year y

Means of verification	Criteria/Requirements	DOE assessment
	Measuring /Reading /Recording frequency	The frequency is Continuous for the parameter.

	<p>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</p>	<p>The registered VPA DD/2/ and PoA DD/1/ also set the frequency as continuous.</p>														
	<p>Monitoring equipment</p>	<p>Not applicable. The parameter has been measured through total sales records/10/.</p>														
	<p>Calibration frequency /interval:</p>	<p>Not applicable</p>														
	<p>How were the values in the monitoring report verified?</p>	<p>Project technology days for a year is calculated by multiplying total number of stoves with total number of days from that particular year considered to be operative in monitoring period.</p> <p>The number of cookstoves operative checked with the linked sales database/10/ and calculation given in the ER sheet /4/ were checked for errors. The distribution database/10/ maintained by the CME. The database contains list of all the names of the customers, address/ description of location, Stove model, unique ID and date of sale. Only ICSs sold up to the end of the current monitoring period are included in the ER sheet/4/. The values reported in the final MR /6/ were found to be consistent with the ER sheet/4/.</p> <p>The verified value for Improved Cook Stoves distributed and operational under the VPA at the end of the current monitoring period is presented below as per the age of;</p> <table border="1" data-bbox="730 1137 1423 1444"> <thead> <tr> <th>VPA</th> <th>Total ICS disseminated</th> <th>Age</th> <th>Value applied (Project technology days)</th> </tr> </thead> <tbody> <tr> <td rowspan="4">VPA2446</td> <td rowspan="4">25,053</td> <td>0-1</td> <td>0</td> </tr> <tr> <td>1-2</td> <td>0</td> </tr> <tr> <td>2-3</td> <td>19,356,138</td> </tr> <tr> <td>3-4</td> <td>0</td> </tr> </tbody> </table>	VPA	Total ICS disseminated	Age	Value applied (Project technology days)	VPA2446	25,053	0-1	0	1-2	0	2-3	19,356,138	3-4	0
VPA	Total ICS disseminated	Age	Value applied (Project technology days)													
VPA2446	25,053	0-1	0													
		1-2	0													
		2-3	19,356,138													
		3-4	0													
	<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>Yes. The information provided in the VPA Database/10/ were verified randomly during the site visit with the sales receipt/41/ and through interview of the household representatives.</p> <p>The survey results were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet /4/ of final Monitoring Report /10/.</p> <p>The verification team randomly selected 9 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(operative), which was consistent with the CME's sample survey result.</p>														
	<p>Does the data management ensure correct</p>	<p>The CME supervises the training of staff, guidelines and templates to facilitate accurate record keeping in their</p>														

	transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	VPA database. During the site visit the sale process and record keeping were reviewed and were found reliable. QA/QC procedures were found to be appropriate and reliable. The person responsible for the monitoring & survey are well trained which is evident from the site visit interview.
	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?	Not applicable
Findings	CAR#07 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology/9/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan	

I.4.2.3. Leakage in project scenario p during year y, $LE_{p,y}$, tCO_{2eq} / year

Means of verification	Criteria/Requirements								
	Measuring /Reading /Recording frequency	The frequency is biennial (i.e. once in two years) for the parameter. However, the CME has monitored it annually. The increased frequency does not affect the ER calculation/4/, the approach was accepted by the DoE.							
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The registered VPA DD/2/ and PoA DD/1/ also set the frequency as biennial.							
	Monitoring equipment	Not applicable. The parameter has been measured through monitoring surveys/19,20/.							
	Calibration frequency /interval:	Not Applicable							
	How were the values in the monitoring report verified?	The parameter is a discount to account for institutions still using non-project stoves. The houses using more than one cookstove have also been added to the value and considered as leakage. The CME has monitored such households during the monitoring surveys conducted. The values of the parameter for each VPA was verified from usage and monitoring survey records/19,20/. The leakage for each year is as follows:							
	<table border="1"> <thead> <tr> <th>Year</th> <th>Deduction for HHs with more</th> <th>Leakge rate for HH with old cookstov</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Year	Deduction for HHs with more	Leakge rate for HH with old cookstov	Total				
Year	Deduction for HHs with more	Leakge rate for HH with old cookstov	Total						

		<table border="1"> <tr> <td></td> <td>than 1 PCS</td> <td>e still in use</td> <td></td> </tr> <tr> <td>2013</td> <td>17.95%</td> <td>2.14%</td> <td>20.09%</td> </tr> <tr> <td>2014</td> <td>11.46%</td> <td>2.32%</td> <td>13.78%</td> </tr> <tr> <td>2015</td> <td>18.56%</td> <td>6.61%</td> <td>25.17%</td> </tr> <tr> <td>2016</td> <td>18.56%</td> <td>6.61%</td> <td>25.17%</td> </tr> <tr> <td>2017</td> <td>18.56%</td> <td>6.61%</td> <td>25.17%</td> </tr> </table> <p>The average value of the parameter for each VPA for the entire monitoring period as varied from the above referred records are as follows:</p> <table border="1"> <thead> <tr> <th>SI no.</th> <th>VPA</th> <th>Value applied</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>VPA</td> <td>21.88%</td> </tr> </tbody> </table> <p>The survey was conducted across the VPA, and the results were found to be acceptable as the VPAs were homogeneous in nature, i.e. same type of cook stove was disseminated in same host country. The value of each year survey, listed in the ER sheet/4/ was cross checked with the usage and monitoring survey records/19,20/ and found to be consistent. The value has been consistently reported in the Monitoring report/6/.</p>		than 1 PCS	e still in use		2013	17.95%	2.14%	20.09%	2014	11.46%	2.32%	13.78%	2015	18.56%	6.61%	25.17%	2016	18.56%	6.61%	25.17%	2017	18.56%	6.61%	25.17%	SI no.	VPA	Value applied	1.	VPA	21.88%
		than 1 PCS	e still in use																													
	2013	17.95%	2.14%	20.09%																												
	2014	11.46%	2.32%	13.78%																												
	2015	18.56%	6.61%	25.17%																												
2016	18.56%	6.61%	25.17%																													
2017	18.56%	6.61%	25.17%																													
SI no.	VPA	Value applied																														
1.	VPA	21.88%																														
If applicable, has the reported data been cross-checked with other available data?	Filled survey forms/50/ were used to cross check the response received from end users. Also, during the site visit, the households sampled and visited by DOE, no household was found to be using non-project stoves.																															
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The CME supervises the training of staff, guidelines and templates to facilitate accurate record keeping. QA/QC procedures were found to be appropriate and reliable. The person responsible for the monitoring & survey are well trained which is evident from the site visit interview. The assessment team has also checked the monitoring survey results /19,20/ vis-à-vis the DOE site visit samples and found that the results are comparable.																															
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?	Usage and Monitoring surveys for 2016 did not account for discount factor and 2017 did not include leakage and discount factor. For these two year a highest value of leakage out the results of previous years (2013,2014,2015) has been applied. The approach was found to be conservative and thus accepted. The approach has also been discussed as temporary deviation under section I.2.1 of the report.																															
Findings	CAR#06 was raised and resolved.																															
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology/9/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan																															

I.4.2.4. Quantity of fuel that is consumed in project scenario p during year y for technology I, $B_{p,i,y}(B_{p,PCS,0})$, Kg/household day or Kg/adult equivalent meal

Means of verification	Criteria/Requirements	DOE Assessment								
	Measuring /Reading /Recording frequency	The frequency of the parameter is biennial for stoves/1/.								
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the registered PoA DD/1/ and VPA DD/2/. Please refer section I.2.1 for further information on temporary deviation sought by CME.									
Monitoring equipment	<p>Digital Weighing scales ad moisture meters.</p> <p>The details of the equipment are as follows:</p> <table border="1"> <thead> <tr> <th>Equipment</th> <th>Model</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>Digital high precision weighing scale</td> <td>MyWeigh KD- 8000, 8 kg capacity digital weighing scale</td> <td>8 kg capacity digital weighing scale</td> </tr> <tr> <td>Wood humidity measuring device -</td> <td>Voltcraft FM-300</td> <td>moisture measuring</td> </tr> </tbody> </table>	Equipment	Model	Type	Digital high precision weighing scale	MyWeigh KD- 8000, 8 kg capacity digital weighing scale	8 kg capacity digital weighing scale	Wood humidity measuring device -	Voltcraft FM-300	moisture measuring
Equipment	Model	Type								
Digital high precision weighing scale	MyWeigh KD- 8000, 8 kg capacity digital weighing scale	8 kg capacity digital weighing scale								
Wood humidity measuring device -	Voltcraft FM-300	moisture measuring								
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	No accuracy requirement was set in the registered monitoring plan. However, the equipment used were found to be within the acceptable range of manufacturer's specifications.									
Calibration frequency /interval:	No calibration frequency was set at the time of validation of the PoA.									
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	<p>No calibration frequency was set at the time of validation of the PoA.</p> <p>Weigh scale used in the process was checked with a fixed weight annually.</p> <p>New thermometer was used for conducting the test every year.</p> <p>The last calibration was carried in 13/01/2017 and the results were found to be within the permissible limit of error.</p>									
Is the calibration of measuring equipment carried out by an accredited person or institution?	The calibration has been carried out by Malawi Bureau of Standards which is an accredited institution/44,45/.									

	<p>Is(are) calibration(s) valid for the whole reporting period?</p>	<p>Weigh scale used in the process was checked with a fixed weight annually.</p> <p>New thermometer was used for conducting the test every year.</p> <p>The last calibration was carried on following dates:</p> <table border="1" data-bbox="869 383 1437 622"> <thead> <tr> <th>Equipment</th> <th>Date of Calibration</th> <th>Valid till</th> </tr> </thead> <tbody> <tr> <td>Weighing scale</td> <td>13/01/2017</td> <td>NA</td> </tr> <tr> <td>Moisture meter</td> <td>13/01/2017</td> <td>12/01/2018</td> </tr> </tbody> </table> <p>No calibration frequency was set at the time of validation of the PoA. However, the last calibration was carried in 13/01/2017 and the results were found to be within the permissible limit of error.</p>	Equipment	Date of Calibration	Valid till	Weighing scale	13/01/2017	NA	Moisture meter	13/01/2017	12/01/2018
Equipment	Date of Calibration	Valid till									
Weighing scale	13/01/2017	NA									
Moisture meter	13/01/2017	12/01/2018									
	<p>Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?</p>	<p>Yes, the calibration has been carried out for a measuring range comparable with the range for which measurements.</p>									
	<p>How were the values in the monitoring report verified?</p>	<p>Revision to the TPDDTEC Methodology for cookstove activities published by gold standard on 18/12/2015 has been followed by the CME. The amount of Quantity of fuel that is consumed in project cook stove (chitetezo Mbaula) was determined through KPT surveys conducted in 2009 and 2011/26/.</p> <p>For all the years in this monitoring period, No project field tests were conducted and the value of the parameter was determined by adjusting the result of pre-issuance project field test result with decrease in efficiency. The results of project field test// were checked from the field test reports for year 2009 and 2011/26/.</p> <p>The verified average value of the parameter determined pre-issuance is as follows:</p> <table border="1" data-bbox="869 1547 1246 1827"> <thead> <tr> <th>Pre issuance</th> <th>Verified Value</th> </tr> </thead> <tbody> <tr> <td>For Malawi</td> <td>4.63 kgs / HH / day (equivalent to 1.690 tonnes of wood / HH / year)</td> </tr> </tbody> </table> <p>The average verified value for each age calculated through decrease in efficiency are as follows:</p> <table border="1" data-bbox="869 1980 1246 2054"> <thead> <tr> <th>Age</th> <th>Verified Value of B_{p,1,y}</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	Pre issuance	Verified Value	For Malawi	4.63 kgs / HH / day (equivalent to 1.690 tonnes of wood / HH / year)	Age	Verified Value of B _{p,1,y}			
Pre issuance	Verified Value										
For Malawi	4.63 kgs / HH / day (equivalent to 1.690 tonnes of wood / HH / year)										
Age	Verified Value of B _{p,1,y}										

		<table border="1"> <tr> <td>0-1</td> <td>2.016</td> </tr> <tr> <td>1-2</td> <td>2.023</td> </tr> <tr> <td>2-3</td> <td>2.064</td> </tr> <tr> <td>3-4</td> <td>2.107</td> </tr> </table> <p>The value of each year listed in the ER sheet/4/ for calculation and the average value of efficiency applied and found to be consistent with WBT records .</p>	0-1	2.016	1-2	2.023	2-3	2.064	3-4	2.107
	0-1	2.016								
	1-2	2.023								
	2-3	2.064								
3-4	2.107									
If applicable, has the reported data been cross-checked with other available data?	Filled survey forms/52/ were used to cross check the response received from end users.									
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>The CME supervises the training of staff, guidelines and templates to facilitate accurate record keeping.</p> <p>QA/QC procedures were found to be appropriate and reliable. The person responsible for the monitoring & survey are well trained which is evident from the site visit interview.</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?	NA									
Findings	CAR#01 was raised and resolved									
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology/9/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan									

I.4.2.5. Thermal efficiency of project technology i in year y, $\eta_{projecti,y}$, %

Means of verification	Criteria/Requirements	DOE Assessment
	Measuring /Reading /Recording frequency	The frequency of the parameter is annual
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the PoA DD/1/ and VPA DD/4/ and applied methodology/8/.

	<p>Monitoring equipment</p>	<p>The parameter was measured by conducting WBT tests/28/. During the tests thermometer, weighing scale and moisture meters were used as monitoring equipment. The details of meters are as follows:</p> <table border="1" data-bbox="695 291 1347 562"> <thead> <tr> <th>Equipment</th> <th>Brand/ Model</th> </tr> </thead> <tbody> <tr> <td>Thermometer</td> <td>Voltcraft K 101 thermometer</td> </tr> <tr> <td>Digital thermometer</td> <td>TFA LT-101 Lab thermometer</td> </tr> <tr> <td>Mass Balance</td> <td>My Weigh KD- 8000</td> </tr> <tr> <td>Moisture Meter</td> <td>Voltcraft FM-300</td> </tr> </tbody> </table> <p>Digital phones were used as timers.</p>	Equipment	Brand/ Model	Thermometer	Voltcraft K 101 thermometer	Digital thermometer	TFA LT-101 Lab thermometer	Mass Balance	My Weigh KD- 8000	Moisture Meter	Voltcraft FM-300					
Equipment	Brand/ Model																
Thermometer	Voltcraft K 101 thermometer																
Digital thermometer	TFA LT-101 Lab thermometer																
Mass Balance	My Weigh KD- 8000																
Moisture Meter	Voltcraft FM-300																
	<p>Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?</p>	<p>The accuracy of the meters are as follows:</p> <table border="1" data-bbox="695 687 1394 1050"> <thead> <tr> <th>Equipment</th> <th>Serial Number</th> <th>Accuracy</th> </tr> </thead> <tbody> <tr> <td>Thermometer</td> <td>-</td> <td>+1 °C</td> </tr> <tr> <td>Digital thermometer</td> <td>TFA LT-101</td> <td>± 0.5 °C</td> </tr> <tr> <td>Mass Balance</td> <td>-</td> <td>1 g</td> </tr> <tr> <td>Moisture Meter</td> <td>12117541 12117617</td> <td>±1%</td> </tr> </tbody> </table>	Equipment	Serial Number	Accuracy	Thermometer	-	+1 °C	Digital thermometer	TFA LT-101	± 0.5 °C	Mass Balance	-	1 g	Moisture Meter	12117541 12117617	±1%
Equipment	Serial Number	Accuracy															
Thermometer	-	+1 °C															
Digital thermometer	TFA LT-101	± 0.5 °C															
Mass Balance	-	1 g															
Moisture Meter	12117541 12117617	±1%															
	<p>Calibration frequency /interval:</p>	<p>No frequency has been set for the equipment used during the validation.</p>															
	<p>Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?</p>	<p>Weigh scale used in the process was checked with a fixed weight annually.</p> <p>New thermometer was used for conducting the test every year.</p> <p>The last calibration was carried out on 13/01/2017 and the results were found to be within the permissible limit of error.</p>															

	<p>Is the calibration of measuring equipment carried out by an accredited person or institution?</p>	<p>No calibration frequency was set at the time of validation of the PoA. However, the last calibration was carried in 13/01/2017 and the results were found to be within the permissible limit of error.</p>																																								
	<p>Is(are) calibration(s) valid for the whole reporting period?</p>	<p>The calibration has been carried out by Malawi Bureau of Standards which is an accredited institution.</p>																																								
	<p>Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?</p>	<p>The last calibration was carried on following dates:</p> <table border="1" data-bbox="694 593 1268 996"> <thead> <tr> <th>Equipment</th> <th>Date of Calibration</th> <th>Valid till</th> </tr> </thead> <tbody> <tr> <td>Thermometer</td> <td>13/01/2017</td> <td>NA</td> </tr> <tr> <td>Digital thermometer</td> <td>13/01/2017</td> <td>NA</td> </tr> <tr> <td>Mass Balance</td> <td>13/01/2017</td> <td>NA</td> </tr> <tr> <td>Moisture Meter</td> <td>13/01/2017</td> <td>12/01/2018</td> </tr> </tbody> </table> <p>No calibration frequency was set at the time of validation of the PoA. However, the last calibration was carried in 13/01/2017 and the results were found to be within the permissible limit of error.</p>	Equipment	Date of Calibration	Valid till	Thermometer	13/01/2017	NA	Digital thermometer	13/01/2017	NA	Mass Balance	13/01/2017	NA	Moisture Meter	13/01/2017	12/01/2018																									
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Thermometer	13/01/2017	NA																																								
Digital thermometer	13/01/2017	NA																																								
Mass Balance	13/01/2017	NA																																								
Moisture Meter	13/01/2017	12/01/2018																																								
	<p>How were the values in the monitoring report verified?</p>	<p>The parameter is used to calculate the quantity of fuel used in project scenario and was determined through water boiling tests by a dedicated team of Hestian Innovation Ltd by following WBT protocol 4.1.2.</p> <p>The verified average values of the parameter are as follows:</p> <table border="1" data-bbox="694 1355 1412 1758"> <thead> <tr> <th colspan="5">Thermal Efficiency($\eta_{\text{projecti,y}}$)</th> </tr> <tr> <th>Age</th> <th>0-1</th> <th>1-2</th> <th>2-3</th> <th>3-4</th> </tr> </thead> <tbody> <tr> <td>2013</td> <td>25.61%</td> <td>25.15%</td> <td>24.69%</td> <td>24.23%</td> </tr> <tr> <td>2014</td> <td>25.61%</td> <td>25.15%</td> <td>24.69%</td> <td>24.23%</td> </tr> <tr> <td>2015</td> <td>25.61%</td> <td>25.15%</td> <td>24.69%</td> <td>24.23%</td> </tr> <tr> <td>2016</td> <td>25.73%</td> <td>25.67%</td> <td>25.61%</td> <td>25.55%</td> </tr> <tr> <td>2017</td> <td>-</td> <td>26.65%</td> <td>25.53%</td> <td>24.42%</td> </tr> <tr> <td>Average</td> <td>25.64%</td> <td>25.56%</td> <td>25.04%</td> <td>24.53%</td> </tr> </tbody> </table> <p>The reported values were checked for calculation and the have been verified from the WBT reports/28/ prepared by trained staff of CME. Since, the test was missed in 2014 and the test in 2015 was found to be erroneous, the lowest efficiency value out of the results for 2013,2016,2017 was used for 2014 and 2015. The approach was found to be conservative and temporary deviation described under section I.2.1 has also been sought by the PP.</p>	Thermal Efficiency($\eta_{\text{projecti,y}}$)					Age	0-1	1-2	2-3	3-4	2013	25.61%	25.15%	24.69%	24.23%	2014	25.61%	25.15%	24.69%	24.23%	2015	25.61%	25.15%	24.69%	24.23%	2016	25.73%	25.67%	25.61%	25.55%	2017	-	26.65%	25.53%	24.42%	Average	25.64%	25.56%	25.04%	24.53%
Thermal Efficiency($\eta_{\text{projecti,y}}$)																																										
Age	0-1	1-2	2-3	3-4																																						
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2017	-	26.65%	25.53%	24.42%																																						
Average	25.64%	25.56%	25.04%	24.53%																																						

	If applicable, has the reported data been cross-checked with other available data?	Filled survey forms/51/ were used to cross check the response received from end users.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The WBT test to calculate the efficiency of the cook stove of each age type have been conducted by trained staff of CME/39/. The staff has used calibrated instruments to measure and monitor the parameter. The CME supervises the training of staff, guidelines and templates to facilitate accurate record keeping. QA/QC procedures were found to be appropriate and reliable. The person responsible for the monitoring & survey are well trained which is evident from the site visit interview. The assessment team has also checked the monitoring survey forms /63/ vis-à-vis the DOE site visit samples and found that the results are comparable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Following temporary deviations have been sought by the CME: For VPA 2446 the results of WBTs were missed for 2014 and tests conducted in 2015 were found to be erroneous and did not properly follow sampling procedure. The CME conducted the WBTs again in 2016 following the rule update of December 2015 for stoves of all age groups. For 2014 and 2015, The results were found to be acceptable as the lowest value out of 2013,2016,2017 for each age type was used.. The final decision to address the deviation has been prescribed by the gold standard/56/.
Findings	CAR#01 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology/9/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan	

I.4.3. Data and parameters monitored (Sustainable Development)

I.4.3.1. Air Quality, Indoor Smoke linked to acute respiratory infections.

Means of verification	Criteria/Requirements	DOE Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is annual(Kitchen surveys), bienial(KPTs) and daily(sales record).
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency in line to the registered PoA DD passport/1/ and VPA DD passport/3/.
	How were the values in the monitoring report verified?	End users were questioned if they have observed reduction in smoke in their kitchen during cooking during usage and monitoring surveys.

		<p>Monitoring kitchen surveys records (Conducted annually) /19,20/ were checked to confirm the response of end users surveyed. Stove sales database/10/ was checked to confirm the total number of households that have received the improved cooktoves and kitchen performance tests/26,54/(after GS tpddec rule update WBTs were checked for ICS efficiency/28/) were checked if the product disseminated still reduces the smoke efficiently.</p> <p>Therefore, The reduction in smoke, as perceived by end users, can be listed under positive impact on air quality by the VPA.</p>
	If applicable, has the reported data been cross-checked with other available data?	The sampled numbers of end users were interviewed during on site visit to confirm that the have observed decline in smoke level after using the product.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were in place and the surveys have been conducted by trained staff of CME.
	In case project participants have temporarily not monitored the parameter	<p>Following temporary deviations have been sought by the CME:</p> <p>For VPA 2446 the results of WBTs were missed for 2014 and tests conducted in 2015 were found to be erroneous and did not properly follow sampling procedure. The CME conducted the WBTs again in 2016 following the rule update of December 2015 for stoves of all age groups. The results were found to be conservative as the results of reduced efficiency has been applied to the previous years as well.</p>
Findings	No findings.	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan of VPA passport/3/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting or QA/QC procedures was found	

I.4.3.2. Soil condition, Soil erosion due to deforestation and Soil degradation due to clay harvesting for stove production

Means of verification	Criteria/Requirements	DOE Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is annual(Kitchen surveys), biennial(KPTs) and daily(sales record).
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency in line to the registered VPA DD passports/3/.
	How were the values in the monitoring report verified?	The end users said that the wood consumption has decreased after they started using chitetezo mbaula stoves. Monitoring kitchen surveys

		<p>records (Conducted annually) /19,20/ were checked to confirm the response of end users surveyed. Stove sales database/10/ was checked to confirm the total number of households that have received the improved cooktoves and kitchen performance tests/26,54/(after GS tpddec rule update WBTs were checked for ICS efficiency/28/) were checked if the product disseminated still uses less fuel as compared to the old stove and difference in fuel consumption between the two stoves is significant. Less consumption of fuelwood shows that the deforestation in the areas has slow down which has resulted in improvement of soil condition.</p> <p>The clay excavated for manufacturing new stoves was monitored and regenerated through different ways such as above ground offtake for stove production groups using anthills and leaving it for regeneration and Backfill method for groups mining clay following an underground seam of clay. Photos of these activities/43/ have been provided by the CME to confirm their execution.</p> <p>Therefore, clay management and preventing soil erosion, were listed as positive impacts of the VPA.</p>
	<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>The sampled numbers of end users were interviewed during on site visit to confirm that thee have observed decline in smoke level after using the product.</p>
	<p>Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?</p>	<p>Yes, QA/QC procedures were in place and the surveys have been conducted by trained staff of CME.</p>
	<p>In case project participants have temporarily not monitored the parameter</p>	<p>Following temporary deviations have been sought by the CME: For VPA 2446 the results of WBTs were missed for 2014 and tests conducted in 2015 were found to be erroneous and did not properly follow sampling procedure. The CME conducted the WBTs again in 2016 following the rule update of December 2015 for stoves of all age groups. The results were found to be conservative as the results of reduced efficiency has been applied to the previous years as well.</p>
<p>Findings</p>	<p>No findings.</p>	
<p>Conclusion</p>	<p>Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan of VPA passport/3/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting or QA/QC procedures was found</p>	

I.4.3.3. Quality of employment, Employment conditions

Means of verification	Criteria/Requirements	DOE Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is Biennial.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency in line to the registered VPA DD passports/3/.
	How were the values in the monitoring report verified?	The CME has conducted training for new staff and all directly employed employees have been covered with health insurance. This has led to improvement in the employment condition. Training records/37, 39/ of the employees and competence of the trainer/38/ were checked to confirm that the parameter has been monitored. Insurance of all employees was confirmed through general policy and procedures manual of Hestian Innovation/32/.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were in place.
Findings	CAR#05 was raised and resolved.	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan of VPA passport/3/.	

I.4.3.4. Livelihood of the Poor, Poverty Alleviation

Means of verification	Criteria/Requirements	DOE Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is annual(Kitchen surveys), biennial(KPTs) and daily(sales record).
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency in line to the registered VPA DD passports/3/.
	How were the values in the monitoring report verified?	The end users said that the wood consumption and time of cooking has decreased after they started using chitetezo mbaula stoves. They were also questioned about in what activities they use their time saved. Monitoring kitchen surveys records (Conducted annually) /19,20/ were checked to confirm the response of end users surveyed. Stove sales database/10/ was checked to confirm the total number of households that have received the improved cooktoves and kitchen performance tests/26,54/(after GS tpddec rule update WBTs were checked for ICS efficiency/28/) were checked if the product disseminated still uses less fuel as compared to the old stove and

		<p>difference in fuel consumption between the two stoves is significant. The users are now using affordable and sustainable energy after implementation of the project. Since, the product disseminated under the PoA consumes less fuelwood, it requires less time and money to collect the fuel. Therefore, the livelihood of poor has improved through the project .</p> <p>Therefore, the parameter can be rated as positive.</p>
	If applicable, has the reported data been cross-checked with other available data?	The sampled numbers of end users were interviewed during on site visit to confirm that they have observed decline in smoke level after using the product.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were in place and the surveys have been conducted by trained staff of CME.
	In case project participants have temporarily not monitored the parameter	<p>Following temporary deviations have been sought by the CME:</p> <p>For VPA 2446 the results of WBTs were missed for 2014 and tests conducted in 2015 were found to be erroneous and did not properly follow sampling procedure. The CME conducted the WBTs again in 2016 following the rule update of December 2015 for stoves of all age groups. The results were found to be conservative as the results of reduced efficiency has been applied to the previous years as well.</p>
Findings	No findings.	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan of VPA passport/3/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting or QA/QC procedures was found	

I.4.3.5. Access to Clean and Affordable Energy, Improving energy access and security

Means of verification	Criteria/Requirements	DOE Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency is Biennial.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency in line to the registered VPA DD passports/3/.
	How were the values in the monitoring report verified?	<p>Distribution database/10/ revealed that total 25,053 portable clay cook stoves have been installed till the end of the current monitoring period. Based on this data it can be concluded that all the houses having improved cookstoves have access to affordable and clean energy services.</p> <p>Monitoring kitchen surveys records (Conducted annually) /19/ and kitchen performance tests/26,54/(after GS tpdtec rule update WBTs were checked for ICS efficiency/28/) confirms</p>

		monitoring of these disseminated improved cookstoves on fixed intervals.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were in place.
Findings	No findings.	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan of VPA passport/3/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting or QA/QC procedures was found	

I.4.3.6. Human and institutional capacity, Empowerment of men and women

Means of verification	Criteria/Requirements	DOE Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is Biennial.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency in line to the registered VPA DD passports/3/.
	How were the values in the monitoring report verified?	The employees count list/17/ was checked to confirm the total direct jobs, have been created as a result of project activity. The sheet revealed that in total 288 employees have been provided jobs and trained. Out of these, 77% are females. Thus, it can be concluded that the PoA has lead to empowerment of women and men.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were in place.
Findings	No findings.	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan of VPA passport/3/.	

I.4.3.7. Balance of payments and investments, Direct Investment

Means of verification	Criteria/Requirements	DOE Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is Biennial.
	Is measuring and reporting frequency in accordance with the monitoring plan and	Yes, the frequency in line to the registered VPA DD passport/3/.

	monitoring methodology? (Yes / No)	
	How were the values in the monitoring report verified?	The CME has increased the investments in improved cookstoves as checked from the confirmation letter obtained from the CME/27/. Distribution database/10/ revealed that total 25,053 portable clay cook stoves have been installed till the end of the current monitoring period.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were in place.
Findings	CAR#05 was raised and resolved.	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan/3/.	

I.4.3.8. Technology transfer and technological self-reliance, Number of workshops, seminars organized, and training-related opportunities held for masons/external audience who would be directly involved in replication of the technology; Number of participants who attend those capacity building activities.

Means of verification	Criteria/Requirements	DOE Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is Biennial.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency in line to the registered VPA DD passport/3/.
	How were the values in the monitoring report verified?	Distribution database/10/ revealed that total 25,053 portable clay cook stoves have been installed till the end of the current monitoring period which confirms the increase in access to improved stoves and continuous investment in improving production techniques. Numerous training/33-36/ have been conducted to train the replicators of the technology. The cookstoves user manuals/18,30/ were shared to ensure proper construction and use of ICS.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission	Yes, QA/QC procedures were in place.

	reductions and are necessary QA/QC processes in place?	
Findings	CAR#04 was raised and resolved.	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan/3/.	

I.4.4. Implementation of sampling plan

Means of verification	<p>The parameters, “Usage rate in project scenario”, Leakage rate and sustainability parameters (Air quality, livelihood of poor, soil condition) have been monitored through usage and monitoring surveys-</p> <p>For these surveys, CME has at least 30 households (HHs) and / or institutions are sampled for monitoring surveys every year and for usage surveys at least 100 HHs and/or institutions with at least 30 samples from each age-group being credited.</p> <p>For the parameter, “Quantity of fuel that is consumed in project”, at least 30 both HHs and institutions have been sampled by the CME with frequency of conducting the test biennially.</p> <p>For the parameter, “Thermal efficiency of project technology”, 3 stoves for each group have been sampled. The frequency of the test was annually and the approach of conducting WBTs instead of KPT to adjust project fuel consumption was adopted after Revision to the TPDDTEC Methodology for cookstove activities was published by Gold Standard/53/. The change was also proposed as design change and accepted by the gold standard/8/.</p> <p>The sampling calculation in the ER sheet/4/ has been checked and found that PP has correctly applied all the formulas in order to determine the required sample size.</p> <p>All parameters of interest included in the spread sheet/4/ were checked for the input values as well as formula applied and were found consistent and in line to the applied methodology/9/.</p>
Findings	CAR#03 was raised and resolved.
Conclusion	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD/1/.

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

Means of verification	<p>The registered monitoring plan (included in VPA DD/4/ and PoA DD/1/) does not state the calibration requirements for any of the parameter (Section I.4.2). However, the verification team has checked if the monitoring equipment used during WBT test (mass balance, moisture meter and thermometer) and KPT were calibrated. As a result, following information was verified;</p> <table border="1" data-bbox="459 1576 1193 2033"> <thead> <tr> <th></th> <th>Brand/Model</th> <th>Serial Number</th> <th>Accuracy</th> </tr> </thead> <tbody> <tr> <td>Thermometer</td> <td>Voltcraft K 101 thermometer</td> <td>-</td> <td>+1 °C</td> </tr> <tr> <td>Digital thermometer</td> <td>TFA LT-101 Lab thermometer</td> <td>TFA LT-101</td> <td>± 0.5 °C</td> </tr> <tr> <td>Mass Balance</td> <td>My Weigh KD- 8000</td> <td>-</td> <td>1 g</td> </tr> <tr> <td>Moisture Meter</td> <td>Voltcraft FM-300</td> <td>12117541 12117617</td> <td>±1%</td> </tr> </tbody> </table>		Brand/Model	Serial Number	Accuracy	Thermometer	Voltcraft K 101 thermometer	-	+1 °C	Digital thermometer	TFA LT-101 Lab thermometer	TFA LT-101	± 0.5 °C	Mass Balance	My Weigh KD- 8000	-	1 g	Moisture Meter	Voltcraft FM-300	12117541 12117617	±1%
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Mass Balance	My Weigh KD- 8000	-	1 g																		
Moisture Meter	Voltcraft FM-300	12117541 12117617	±1%																		

	<p>As checked from calibration certificates/44-46/ of the All the equipment were calibrated last time on carried out on 13/01/2017 and the results were found to be within the permissible limit of error. For the period before this calibration :</p> <ol style="list-style-type: none"> 1. Weigh scale used in the process was checked internally with a fixed weight annually. 2. New thermometer was used for conducting the test every year. <p>Thus, the DoE confirms that the values of parameters were determined by using calibrated instruments to conducts the tests.</p>
Findings	No findings.
Conclusion	The verification team confirm that CME has contracted Malawi Bureau of standards to conduct the calibration and conducted all the surveys with calibrated equipment.

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

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

Means of verification	<p>The equations listed below were used to determine the baseline emissions as provided in the monitoring report /6/ and applied in the corresponding ER calculations sheets /4/.</p> <p>Total baseline emission calculations for the VPA is calculated by using the following equation:</p> $BE_{b,y} = B_{b,y} * ((f_{NRB,y} * EF_{b,fuel,CO2}) + EF_{b,fuel,nonCO2}) * NCV_{b,fuel}$ <p>where,</p> <table border="1"> <tr> <td>$BE_{b,y}$</td> <td>Emissions for baseline scenario b during the year y in tCO₂e</td> </tr> <tr> <td>$B_{b,y}$</td> <td>Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors (cases with project performance field test only). The value has been kept fixed at the time of validation.</td> </tr> <tr> <td>f_{NRB}</td> <td>Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)</td> </tr> <tr> <td>$NCV_{biomass}$</td> <td>Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)</td> </tr> <tr> <td>$EF_{b,fuel,CO2}$</td> <td>CO₂ emission factor of the fuel that is substituted or reduced. 112 tCO₂/TJ for Wood/ Wood Waste, or the IPCC default value of other relevant fuel</td> </tr> <tr> <td>$EF_{b,fuel,NON-CO2}$</td> <td>Non-CO₂ emission factor of the fuel that is substituted or reduced</td> </tr> </table> <p>Calculation of $B_{b,y}$, has been done by using the following equation:</p> $B_{b,y} = (\eta_b / \eta_p) * B_{p,y}$ <p>Where,</p> <table border="1"> <tr> <td>η_b</td> <td>Efficiency of the pre-project device</td> </tr> <tr> <td>η_p</td> <td>Thermal efficiency of the device of type i being deployed as part of the project activity</td> </tr> <tr> <td>$B_{p,y}$</td> <td>Quantity of fuel consumed in project scenario p during year y, in tons, and as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field tests are performed, e.g. by-default baseline factors)</td> </tr> </table>	$BE_{b,y}$	Emissions for baseline scenario b during the year y in tCO ₂ e	$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during year y, in tons, as per by-default factors (cases with project performance field test only). The value has been kept fixed at the time of validation.	f_{NRB}	Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)	$NCV_{biomass}$	Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)	$EF_{b,fuel,CO2}$	CO ₂ emission factor of the fuel that is substituted or reduced. 112 tCO ₂ /TJ for Wood/ Wood Waste, or the IPCC default value of other relevant fuel	$EF_{b,fuel,NON-CO2}$	Non-CO ₂ emission factor of the fuel that is substituted or reduced	η_b	Efficiency of the pre-project device	η_p	Thermal efficiency of the device of type i being deployed as part of the project activity	$B_{p,y}$	Quantity of fuel consumed in project scenario p during year y, in tons, and as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field tests are performed, e.g. by-default baseline factors)
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	<p>The parameter was calculated from baseline field test and the value of the parameter has been fixed at the time of validation and listed under ex-ante parameters category.</p> <p>The values for all the parameters listed above have been assessed under section I.4.1 and I.4.2. of this report.</p> <p>As the efficiency and usage rate, may generally decrease over a period of time the age of ICS, therefore in order to discount that in the baseline emissions the total quantity of stoves as per relevant vintage is required. It has been verified that the corresponding ER calculations sheet /4/ to the final Monitoring Report /6/ has considered the number of stoves as per the vintage and accordingly the efficiency of such stoves in the ER calculation for each VPA.</p> <p>The expressions used were found consistent with the revised PoA DD/1/, VPA DD/2/ and the applied methodology /9/.</p>
Findings	No findings
Conclusion	<p>The verification team verified that</p> <ol style="list-style-type: none"> a) A complete set of data for the monitoring period was available for the monitoring period and the verification of each monitoring parameter is elaborated under Section I.4.2 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheet /4/ of final Monitoring Report /6/. b) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section I.4.2 of this report. c) The calculations of baseline emissions as presented in the corresponding ER calculations sheet /4/ of final Monitoring Report /6/ were checked and found to be consistent with the formulae and methods described in the registered monitoring plan of VPA-DD/2/, registered PoA-DD/1/ and the applied methodology/9/. d) All assumptions used in the emission calculations were found appropriate and therefore justified e) Appropriate emission factors, IPCC default factors and other reference values have been correctly applied. This has also been elaborated under Section I.4.1 of this report. f) No standardized baseline was prescribed in the registered PoA DD/1/ and therefore it has not been applied. g) The pro-rata approach has been correctly applied.

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

Means of verification	$PE_{p,y} = B_{p,y} * ((f_{NRB,y} * EF_{p,fuel,CO2}) + EF_{p,fuel,nonCO2}) * NCV_{p,fuel}$ <table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">PE_{b,y}</td> <td>Emissions for project scenario p during year y in tCO₂e</td> </tr> <tr> <td>B_{p,y}</td> <td>Quantity of fuel consumed in project scenario p during year y, in tons, and as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field test are performed, e.g. by-default baseline factors).</td> </tr> <tr> <td>f_{NRB}</td> <td>Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)</td> </tr> <tr> <td>NCV_{biomass}</td> <td>Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)</td> </tr> </table>	PE _{b,y}	Emissions for project scenario p during year y in tCO ₂ e	B _{p,y}	Quantity of fuel consumed in project scenario p during year y, in tons, and as derived from the statistical analysis conducted on the data collected during the project performance field tests (cases when no baseline performance field test are performed, e.g. by-default baseline factors).	f _{NRB}	Fraction of biomass used during year y for the considered scenario that can be established as non-renewable biomass (drop this term from the equation when using a fossil fuel baseline scenario)	NCV _{biomass}	Net calorific value of the fuel that is substituted or reduced (IPCC default for wood fuel, 0.015 TJ/ton)
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	EF _{b,fuel,CO2}	CO2 emission factor of the fuel that is substituted or reduced. 112 tCO ₂ /TJ for Wood/ Wood Waste, or the IPCC default value of other relevant fuel
	EF _{b,fuel,NON-CO2}	Non-CO2 emission factor of the fuel that is substituted or reduced
<p>The values for all the parameters listed above have been assessed under section I.4.1 and I.4.2. of this report.</p> <p>The expressions used were found consistent with the PoA DD/1/, VPA DD/2/ and the applied methodology /9/.</p>		
Findings	No findings	
Conclusion	<p>a) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section I.4.2 of this report.</p> <p>b) The calculations of baseline emissions as presented in the corresponding ER calculations sheet /4/ of final Monitoring Report /6/ were checked and found to be consistent with the formulae and methods described in the registered monitoring plan of VPA-DD/2/, registered PoA-DD/1/ and the applied methodology/9/.</p> <p>c) All assumptions used in the emission calculations were found appropriate and therefore justified</p> <p>d) Appropriate emission factors, IPCC default factors and other reference values have been correctly applied. This has also been elaborated under Section I.4.1 of this report.</p>	

I.6.3. Calculation of leakage GHG emissions

Means of verification	<p>For each VPA, leakages have been accounted by deducting the percentage of percentage of households, which continue use baseline technology in parallel with project technology from total emission reduction of year ‘y’. The households with more than one stove have also been deducted from the total emission reductions. The leakages were calculated from monitoring surveys results. Please refer to the parameter “Leakage in project scenario p during year y, LE_{p,y}, tCO₂eq / year” listed under section I.4.2.3 for detailed assessment of the parameter.</p>
Findings	CAR#06 was raised and resolved.
Conclusion	<p>a) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section I.4.2 of this report.</p> <p>b) The calculations of baseline emissions as presented in the corresponding ER calculations sheet /4/ of final Monitoring Report /6/ were checked and found to be consistent with the formulae and methods described in the registered monitoring plan VPA-DD/2/, registered PoA-DD/1/ and the applied methodology/9/.</p> <p>c) All assumptions used in the emission calculations were found appropriate and therefore justified</p> <p>d) Appropriate emission factors, IPCC default factors and other reference values have been correctly applied. This has also been elaborated under Section I.4.1 of this report.</p>

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

Means of verification	<p>The final emission reductions are calculated by deducting project emissions and leakages from baseline emissions.</p> $ER_y = BE_y - PE_y - LE_y$ <p>The value of baseline emission obtained by applying the equations provided in the registered PDD is 367,720 tCO₂e. The project emissions were 146,863 tCO₂e and leakages for the project activity are 48,318 tCO₂e. Therefore, the final value of net GHG emission reductions obtained is 172,539 tCO₂e.</p>
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	<p>The calculations presented in this regard in the final monitoring report /6/ and corresponding ER calculations sheet /4/ were found appropriate and complying with the provisions prescribed in the registered monitoring plan of VPA DD/2/, registered PoA-DD/1/ and applied methodology/9/.</p> <p>The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.</p>
Findings	CAR#02 was raised and resolved.
Conclusion	<p>The verification team confirms that</p> <ul style="list-style-type: none"> a) The complete data was available and is duly reported; b) As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section 1.4.2 of this report); c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed; d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied. e) The pro-rata approach has been correctly applied. <p>The total number of ERs achieved during the current monitoring period (for ICS only) is 172,539 tCO₂e.</p>

Specific-case VPA reference number	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)		
				Results achieved in the period up to 31 December 2012	Results achieved in the period from 1 January 2013 onwards	Results achieved in the entire monitoring period
VPA 2444	367,720	146,863	48,318	0	172,539	172,539
Total	367,720	146,863	48,318	0	172,539	172,539

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

Means of verification	The actual emission was lower than estimated for VPA 2446. The total actual emission reductions are 1% lower than the estimated emission. No further justification is required. The threshold for small scale activity of thermal energy 180GWh/year has not been exceeded.
Findings	No findings
Conclusion	No justification is required

Specific-case VPA reference number	Value estimated in ex ante calculation in the included specific-case VPA-DD(s)	Actual values achieved by the specific-case VPA(s) during this monitoring period
VPA 2444	173,824	172,539
Total	173,824	172,539

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

Means of verification	The actual emission was lower than estimated for VPA 2446. The total actual emission reductions are 1% lower than the estimated emission. No further
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	justification is required. The threshold for small scale activity of thermal energy 180GWh/year has not been exceeded.
Findings	No findings
Conclusion	No justification is required

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
CEP	Clean Energy Product
CL	Clarification Request
CME	Coordinating or Managing Entity
VPA	Component Project Activity
CP	Crediting period
DOE	Designated Operational Entity
DNA	Designated National Authority
EB	Executive Board
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
ICS	Improved Cook Stove
IPCC	Intergovernmental Panel on Climate Change
PDD	Project Design Document
RMP	Registered monitoring plan
TA	Technical Area (with in Sectoral Scope)
TR	Technical Reviewer
VVS	Validation and Verification Standard
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Level
ICS	Improve Cook Stoves
IPCC	Inter-Governmental Panel on Climate change
WBT	Water Boiling Test
QA/QC	Quality Assurance and Quality control
GS	Gold Standard
CREEC	Centre for research in energy and energy conservation
PCS	Portable Clay stove

Appendix 2. Competence of team members and technical reviewers

Competence Statement	
Name	Nayan Jyoti Deka
Country	India
Education	M.Tech. (Energy Technology), Tezpur University
Experience	8 Years +

Field	Climate Change & Energy Management		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-III.H., AMS-I.C., ACM0006, ACM0002, ACM0014		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert (1.1, 1.2, 3.1, 13.1)	YES		
Reviewed by	Abhishek Mahawar	Date	16/12/2016
Approved by	Ashok Kumar Gautam	Date	16/12/2016

Competence Statement			
Name	Enea Katundu		
Country	Malawi		
Education	Master of Science		
Experience	8 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	08/09/2016
Approved by	Ashok Kumar Gautam	Date	08/09/2016

Competence Statement			
Name	Deepika Mahala		
Country	India		
Education	M. Sc. (Environmental Mgmt), GGSIP University B.Sc. Honour (Chemistry), Sri Venkateshwar College, DU		
Experience	2 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	NO		

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

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

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	Hestian Innovation	Registered PoA DD	Version 13, dated 10/07/2016	CME
2.	Hestian Innovation	GS VPA 2446 VPA-PDD	Version 10, dated 10/07/2016	CME
3.	Hestian Innovation	GS VPA 2446 Passport	Version 5.0, dated 09/05/2016	CME
4.	Hestian Innovation	ER sheet	Undated	CME
5.	Hestian Innovation	PoA Passport	Version 04, dated 09/05/2016	CME
6.	Gold standard	GS monitoring report	Version 2.7, 22/09/2017	CME

CDM-PoA-VCR-FORM

7.	Hestian Innovation	Environment & sustainable indicators-Malawi (Project employment and skill development, livelihood of poor, training summary, environment management for clay source)	06/05/2016	CME
8.	Gold standard	GS1265 Design Change GS review	24/11/2016	CME
9.	Gold standard	Technologies and Practices to Displace Decentralized Thermal Energy Consumption	Version 1.0	Others
10.	Hestian Innovation Limited	Improved Cook Stoves database	Undated	CME
11.	Gold Standard	GS toolkit	Version 2.2	Other
12.	UNFCCC	CDM PS	Version 9.0	Other
13.	UNFCCC	CDM VVS	Version 9.0	Other
14.	UNFCCC	CDM PCP	Version 9.0	Other
15.	Hestian	Canarumwe Users guide	-	Other
16.	Maeve Project	Mayankho User manual	-	Other
17.	Area 55 consulting	Mayankho stove specification sheet	-	Other
18.	Clioma Ltd.	Manual for firing chitetetezo mbaula using a fuel-efficient kiln	2013	CME
19.	Hestian Innovation	Usage and monitoring survey reports-Malawi PCS	2013, 2014, 2015, 2016, 2017	CME
20.	Hestian Innovation	Usage and monitoring survey excel sheet- Malawi Portable Clay Stove	2013, 2014, 2015, 2016, 2017	CME
21.	TUV NORD	Inclusion report for VPA 2446	03/06/2016	CME
22.	Pamela Jagger et al.	Fuel efficiency and emissions of wood-burning improved cookstoves in Malawi: Implications for scaling up cookstove programmes	-	CME
23.	CREEC	Chitetetezo Mbaula CREEC test	2012	CME
24.	Hestian Innovation	Baseline Usage and monitoring	2011	CME
25.	ITouchmap	https://itouchmap.com/latlong.html	-	CME
26.	Hestian Innovation	Kitchen performance tests for PCS- Malawi	2009, 2011	CME
27.	Hestian Innovation	Letter for balance of payments	31/08/2017	CME
28.	Hestian Innovation	Water boiling test records for Malawi	2013, 2016, 2017	CME
29.	UNFCCC	https://cdm.unfccc.int/DNA/fNRB/index.html	-	Other
30.	Clioma Ltd.	Chitetetezo Mbaula cook stove preparation manual	2013	CME
31.	Clioma Ltd.	Quality control steps for chitetetezo mbaula	2013	CME
32.	Hestian rural innovation development	General policies and procedures manual	11/2011	CME
33.	Clioma Ltd.	Cleaner cooking camp report	03/2012	CME

CDM-PoA-VCR-FORM

34.	Clioma Ltd.	Cleaner cooking camp report	03/2013	CME
35.	Clioma Ltd.	Cleaner cooking camp report	04/2014	CME
36.	Clioma Ltd.	Cleaner cooking camp report	07/2015	CME
37.	Hestian Innovation	List of training areas and dates of training	08/2015-03/2017	CME
38.	-	Curriculum vitae of Yamungu Botha (Trainer)	-	CME
39.	Sun fire	Report on training of testers and enumerators (List of topics discussed, KPT, usage and WBT conduction and attendance sheet)	25/01/2017-27/01/2017	CME
40.	Gold Standard	Crediting period review feedback form(Final)	04/08/2017	CME
41.	Hestian Innovation	Sample sale records- (RH/2012/01, RH/2012/10, RH/2012/09, RH/2012/08, RH/2012/07, RH/2012/12) (BLK/CU/16/323, LL/PHU/003, LL/DWN/114-53)	29/08/2012, 26/10/2013, 01/09/2012, 01/05/2014	CME
42.	Hestian Innovation	Status Clay Site	Undated	CME
43.	Hestian Innovation	Photos of activities for clay management - Above ground offtake for stove production groups using anthills and Backfill method for groups mining clay following an underground seam of clay	Undated	CME
44.	Malawi Bureau of standards	Calibration certificate for moisture meter serial number 12117541 and 12117617(Calibration certificate number: GK20174005002 and GK20174005002)	17/01/2017	CME
45.	Malawi Bureau of standards	Calibration certificate for weighing counter scale serial number 01 and 04(Calibration certificate number: TM2017031301 and TM2017031301)	17/01/2017	CME
46.	Malawi Bureau of standards	Calibration certificate for digital thermometer serial number 0411, 080506150, 060300261 (Calibration certificate number: TM2017031303, TM2017031304, TM2017031305)	17/01/2017	CME
47.	UNFCCC	CDM-PoA-MR-FORM	version 01	Other
48.	UNFCCC	Implementation plan for CDM regulations	version 1.0	Other
49.	IPCC	IPCC Guidelines for National Greenhouse Gas Inventory, chapter 2 of Vol. 2	2006	Other
50.	Hestian Innovation	Filled sample survey forms for usage and monitoring survey-portable clay stoves	2013-2017	CME
51.	Hestian Innovation	Filled sample survey forms for WBT	2016,2017	CME
52.	Hestian Innovation	Filled sample survey forms for KPT	2009, 2011, 2013	CME
53.	Gold standard	http://www.goldstandard.org/sites/default/files/documents/tpddtec_-_rule_update_dec_2015_publication_181215.pdf	18/12/2015	Other
54.	Hestian Innovation	Kitchen performance test	2013	CME
55.	Hestian Innovation	sale record of first cookstove	26/10/2013	CME
56.	Gold standard	Copy of mail received from Gold decision on opinion request for temporary deviation sought during current monitoring period	06/07/2017	CME
57.	Hestian Innovation	Bulk sales datasheet titled "Bulk sales 011114 to 311215 140316 "	14032016	CME
58.	Hestian Innovation	Bulk sales datasheet titled "GS PCS TSR MR4 08042015"	08042015	CME

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

CAR from this verification

CAR ID	1	Section no.	1.4.2	Date : 10/04/2017
Description of CAR				
<ol style="list-style-type: none"> 1. PP has set a minimum limit of 20 HHs for KPTs. As per page 44 of applied meth v1, recommended size is 30. PP needs to provide justification how the approach is in line to the methodology. 2. PP needs to clarify that why trend analysis has been applied to the usage rate. Is the approach in line to applied methodology, PoA DD and VPA DD. 3. The age (1417 days) of the cook stove has been derived. The data used for trend analysis does not produce linear equation and the approach applied does not meet 90/10 confidence precision. 4. Values of usage rate, samples covered, dates, values of WBT results given in the MR and ER sheet is inconsistent with the source usage and monitoring report and excel sheet. For e.g. In MR, the value for the test conducted for (PCS Malawi) in 2016 age 0-1 – 71.16%; age 1-2 – 70.77%; age 2-3 – 70.39%; age 3-4 – 70.00% and the usage survey sheet gives a value of age 0-1 – 70.97%; age 1-2 – 70.97%; age 2-3 – 70.00%; age 3-4 – 70.00%. Please refer to the comments in the monitoring reports for other inconsistencies identified. 5. If the WBT tests have been conducted internally, please provide an evidence that the tests have carried out by trained staff. 				
Project participant response				Date : 22/05/2017
<ol style="list-style-type: none"> 1. The value has been corrected. A minimum limit of 30 HHs for KPTs has been used. 2. The trend analysis has been used to ensure consistence in usage rates for different age groups of stoves and in line with PoA DD. According to PoA DD usage rate in project scenario p during year y is defined for stoves with the age of 6 months, 18 months, 30 months, etc. ($U_{p, 0-1} = X\%$ (after 6 months) $U_{p, 1-2} = Y\%$ (after 18 months) $U_{p, 2-3} = Z\%$ (after 30 months) Etc.). As actual stove age of the sampled stoves differed from 6 months, 18 months, 30 months the TREND function was applied. 3. The lifetime of the stoves was defined based on a survey of 144 households sampled and surveyed and stratified into the age-groups within 16 geographic areas, locally known as GVHs. Statistical analysis gave a total days of technical life-time of Portable Clay Stoves (PCS) of 1,417 days. The appropriateness of such approach was confirmed within 4th Periodic Verification Report “Integrated Biomass Energy Conservation Project, Malawi (GS613), by TUV Nord, Page 29 of 115. The estimation of the stoves technical lifetime is conservative as its calculation is based on the period in time, when 50% of stoves are still operational. 4. The values have been corrected. 5. WBT tests have been conducted internally. A team of testers were trained experienced biomass projects manager and stoves efficiency tester. The testers were trained on the WBT protocol, and then later observed practicing, with the trainer pointing out common pitfalls that lead to mistakes in WBT tests. After the teams was deemed to be ready, they carried out the stove testing, under the supervision of experienced biomass projects manager and stoves efficiency tester. 				
Documentation provided by project participant				
<ol style="list-style-type: none"> 1. Updated version of the monitoring report (2.3 dated 22/05/2017). 2. Updated version of the emission reduction calculation file. 				
DOE assessment				Date: 14/06/2017

1. The statement has been corrected. And in actual implementation the PP has followed the limit of surveying minimum 30 HHs. (closed)
2. The PoA DD does not specify about the applicability of trend analysis. PP is requested to provide more evidences and demonstrate how the approach complies with the methodology
 - The calculation was found to be justified and acceptable and the PP has provided related document also. (Closed).
 - Please provide previous VCR and MRs to confirm the similar approach. (open). Please refer the exact para of the methodology which states the approach. (open).
3. The calculation was found to be justified and acceptable and the PP has provided related document also. (Closed).
4. The values have been corrected and the revised monitoring report has been submitted to the DOE. (Closed).
5. Please training attendance, training report and agenda to confirm that the staff that performed WBT tests were trained. (open)

Project participant response	Date : 14/06/2017
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2. According to the methodology, the usage parameter should be representative of the quantity of project technologies of each age being credited in a given project scenario. According to PoA DD usage rate in project scenario p during year y is defined for stoves with the age of 6 months, 18 months, 30 months, etc. ($U_{P,0-1} = X\%$ (after 6 months) $U_{P,1-2} = Y\%$ (after 18 months) $U_{P,2-3} = Z\%$ (after 30 months) Etc.). Each age group of stoves being credited in a project scenario could contain stoves with different age (age group 0-1 could cover stoves used for 1 month and for 12 months, age group 1-2 could cover stoves used for 13 months and for 24 months, etc.). The usage rate is reduced over time and therefore to ensure that monitored usage parameter is representative for the age group as a whole and in line with the PoA DD requirements stated above the usage parameter has been defined for stoves with the age of 6 months, 18 months, 30 months, etc. The TREND function returns values along a linear trend and allows to define the usage parameter for stoves with the age of 6 months, 18 months, 30 months, etc.

5. The methodology does not contained requirements on trainings for conducting WBTs. The information about the trained personnel (list of names) is included in WBT reports. Please, refer to Report on Water Boiling Tests 2017. Aging Chitetezo Mbaula Household Cookstoves. The testers were trained on the WBT protocol.

Documentation provided by project participant

1. Monitoring report version 6 dated 08/04/2015 for GS 613 (GS613 MR4 V6 08042015 clean.pdf)
2. Integrated Biomass Energy Conservation Project, Malawi (GS 613) Issuance Request (GS613_4th issuance_final_23042015 (1).pdf)
3. Intgrated Biomass Energy Conservation Project, Malawi (GS 613) Issuance Request (GS613_4th issuance_final_23042015 (1).pdf)
4. Report on Water Boiling Tests 2017. Aging Chitetezo Mbaula Household Cookstoves

DOE assessment	Date: 03/07/2017
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2. The trend analysis applied was found to be meeting the age requirement of the applied methodology. Thus, the approach was accepted by the DOE. Closed.

5. Section C, of WBT protocol version 4.2.3. requires testing should be done by well-trained technicians otherwise the results may vary. In line to this PP is needs to confirm that each test was conducted by trained staff.

The records referred above as a response list the names of the trained staff that has performed the tests. However, no details about the training reports prepared for each training day, and list of attendees with their signatures to confirming their attendance has submitted. Open

Project participant response	Date : 25/07/2017
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5. The details on training are provided in each WBT report. For instance, “Report on Water Boiling Tests 2017 - Aging Chitetezo Mbaua Household Cookstoves” contains a separate section “Training of testing personnel” with the information about trainers, team trained, scope of training, etc. At a national level, Cleaner Cooking Camps have been organised since 2012 to build local capacity. During Cleaner Cooking Camps local stakeholders are brought together for intensive learning facilitated by experienced biomass to energy professionals. Local authorities also collaborate with the Malawi Bureau of Standards to build capacity for conducting monitoring procedures.

Training report for 2017 has been provided (please, refer to Sunfire Report on Training of Testers and Enumerators in WBT, KPT and Usage Surveys for 2017.pdf). For previous years the training reports prepared for each training day, and list of attendees with their signatures to confirming their attendance were not required according to the design of the internal training procedures. The details on training were provided in each WBT report.

Documentation provided by project participant

1. Reports on Cleaner Cooking Camps (CCC 2015 Report (Full Resolution).pdf, CCC 2014 Final Report 041414.pdf, Stove Camp 2013 Report 042313.pdf, Stove Camp 2012 Final Report.pdf)
2. Updated version of the monitoring report (2.5 dated 18/07/2017).
3. Updated version of the emission reduction calculation file.
4. Training report (Sunfire Report on Training of Testers and Enumerators in WBT, KPT and Usage Surveys for 2017.pdf)

DOE assessment

Date: 23/08/2017

5. Training records of the team that conducted WBT has been submitted to the DOE. Attendance list attached with the training records have been submitted to the DOE.

Thus, the CAR stands closed.

CAR ID	02	Section no.	I.6.	Date : 10/04/2017
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Description of CAR

The Project description and eligibility criteria for inclusion of specific-case VPAs in the PoA-DD state “The target number of VERs for each VPA shall not exceed the small-scale VPA aggregate energy savings limit of 180 GWh thermal per year in fuel input”. However, the limit has been breached as per the ER sheet. Also, Please justify what steps would be taken to avoid the breaching of the limit 180 GWh in the next monitoring period for the values which are closed to it. For eg, VPA GS 2445 (2015, 2016).

Project participant response

Date : 22/05/2017

The calculation of emission reductions during the monitoring period has been updated. VPAs included in the monitoring report meet the eligibility criteria of the PoA as aggregate energy savings in most cases are limited 180 GWh thermal per year in fuel input. The limit of 180 GWh will not be exceeded during the future monitoring periods due to drop out of stoves reaching their lifetime limit and aging of the stoves and lower usage rates. No new additions of the stoves into existing VPAs are expected.

Documentation provided by project participant

1. Updated version of the monitoring report (2.3 dated 22/05/2017).
2. Updated version of the emission reduction calculation file.

DOE assessment

Date: 02/06/2017

ERs claimed have been calculated using no. of stoves considered after threshold of thermal energy savings limit of 180 GWh thermal per year in fuel input.

Thus, the Car stands closed.

CAR ID	03	Section no.	I.4.2, I.4.4. and I.4.1	Date : 10/04/2017
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Description of CAR

1. Sales data base provided has duplicate values inserted in the list.
2. The value of the parameter Non-CO₂ emission factor arising from use of fuels in baseline and project scenarios (EF_{b, nonCO2} and EF_{p, nonCO2}) effective from 01.01.2013 given in the MR is inconsistent with the PoA DD.
3. The value of the parameter CO₂ emission factor arising from use of fuels in baseline and project scenarios (EF_{b, CO2} and EF_{p, CO2}) given in the MR is inconsistent with the PoA DD.
4. Please add the calibration details of the equipment used in KPT tests and WBT tests in the MR. Please provide the supportive evidence also.
5. Please add values of monitored parameters VPA-wise in the monitoring report in section G.2.

Project participant response	Date : 22/05/2017
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1.Sales database has been checked for duplicates and entries with duplicated serial numbers have been deleted.

2.PoA DD contains two values of NCV for biomass: rounded value 0.015 in the description of the parameter NCV,biomass and 0.0156 in the description of CO2 emission factor. To ensure consistency with PoA DD in terms of NCV value used and conservativeness of emission reduction calculation 0.015 was used for the calculation of non-CO₂ emission factor. This resulted in inconsistency with PoA DD for the value of non-CO₂ emission factor.

3.PoA DD contains two values of NCV for biomass: rounded value 0.015 in the description of the parameter NCV, biomass and 0.0156 in the description of CO2 emission factor. To ensure consistency with PoA DD in terms of NCV value used and conservativeness of emission reduction calculation 0.015 was used for the calculation of CO₂ emission factor. This resulted in inconsistency with PoA DD for the value of CO₂ emission factor.

4.Information about calibration certificates of the monitoring equipment used for KPT and WBT has been added to the monitoring report. The copies of the calibration certificates have been provided.

5.Values of monitored parameters VPA-wise have been provided in the monitoring report.

Documentation provided by project participant

1. Copies of the calibration certificates for the monitoring equipment.
2. Updated version of the monitoring report (2.3 dated 22/05/2017).
3. Updated version of the emission reduction calculation file.

DOE assessment	Date: 02/06/2017
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1. Sales database has been corrected for duplicate entries. (Closed).
2. One consistent value of 0.15 for the parameter Non-CO₂ emission factor arising from use of fuels in baseline and project scenarios (EF_{b, nonCO2} and EF_{p, nonCO2}) has been used in the monitoring report. (Closed).
3. One consistent value of 0.15 for the parameter Non-CO₂ emission factor arising from use of fuels in baseline and project scenarios (EF_{b, nonCO2} and EF_{p, nonCO2}) has been used in the monitoring report. (Closed).
4. The calibration details given in the MR is for 2017. The monitoring period cover is Calibration details of monitoring equipment does not cover entire monitoring period. Please provide the complete details. (open).
5. Value of each parameters have been added to the revised report VPA wise. The values were checked and found to be consistent with the ER sheet and supporting evidences. (closed).

Project participant response	Date : 14/06/2017
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4. The methodology does not contain the detailed requirements for the calibration of the monitoring equipment. According to the methodology quality assurance and quality control should be ensured by transparent data analysis and reporting. WBT reports and KPT reports contain information on monitoring equipment used and data analysis procedures to ensure the correspondence with methodology requirements. Calibration certificates for the previous periods are not available.

Documentation provided by project participant

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DOE assessment	Date: 03/07/2017
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There are no calibration procedures and requirements set in the registered PoA DD or the applied methodology. The Latest calibration test records (2017) confirm that all the equipment were found to be within the permissible limit of error. Thus, the DOE accepts the values obtained from the tests. Closed.

Description of CAR	
<ol style="list-style-type: none"> Grievance mechanism for how PP addresses the complaints raised by the end users is not mentioned in the monitoring report. Please mention the training agenda and dates of the training in the monitoring report and provide the supportive evidence. 	
Project participant response	Date : 22/05/2017
<ol style="list-style-type: none"> The information about the grievance mechanism has been included in the monitoring report. Information about the trainings has been provided in monitoring report. The supportive evidences have been provided. 	
Documentation provided by project participant	
<ol style="list-style-type: none"> Updated version of the monitoring report (2.3 dated 22/05/2017) Cleaner Cooking Camp Malawi 2016.pdf List of Trainings Area 55 Staff.docx 	
DOE assessment	Date: 02/06/2017
<ol style="list-style-type: none"> Grievance mechanism has been added under section B.1. However, no information, about what issues were raised and how they have been addressed, has been added to the report. Please submit related evidence also(open). Please provide training agenda, training report and attendance sheet of team the team that conducted monitoring tests (KPTs, MKS and WBTs) for all three cases (PCS in Malawi, PCS in Rwanda, FIS in Malawi). (open) 	
Project participant response	Date : 14/06/2017
<ol style="list-style-type: none"> Local stakeholders have not provided any feedback, so there were no issues raised via the established grievance mechanism. The statement has been included in updated monitoring report The information about the trained personnel (list of names of the members of the team that conducted monitoring tests) is included in WBT reports and KPTs reports. Please, refer to Report on Water Boiling Tests 2017. Aging Chitetezo Mbaula Household Cookstoves and Usage Survey & Aging Stove KT Report Portable Ceramic Stoves Cluster - 2011 	
Documentation provided by project participant	
<ol style="list-style-type: none"> Updated version of the monitoring report (2.4 dated 08/06/2017). Report on Water Boiling Tests 2017. Aging Chitetezo Mbaula Household Cookstoves Usage Survey & Aging Stove KT Report Portable Ceramic Stoves Cluster – 2011 	
DOE assessment	Date: 03/07/2017
<ol style="list-style-type: none"> No complaint comments were raised during the current monitoring period. The same has been reported in the MR. Closed. KPTs, MKS and WBT records list the names of the trained staff that has performed the tests. However, no details about the training reports prepared for each training day, and list of attendees with their signatures to confirming their attendance has submitted. Open. 	
Project participant response	Date : 25/07/2017
<ol style="list-style-type: none"> Training report for 2017 has been provided (please, refer to Sunfire Report on Training of Testers and Enumerators in WBT, KPT and Usage Surveys for 2017.pdf). For previous years the training reports prepared for each training day, and list of attendees with their signatures to confirming their attendance were not required according to the design of the internal training procedures. 	
Documentation provided by project participant	
<ol style="list-style-type: none"> Sunfire Report on Training of Testers and Enumerators in WBT, KPT and Usage Surveys for 2017.pdf 	
DOE assessment	Date: 23/08/2017
<ol style="list-style-type: none"> Training records of the team involved in conducting WBT and KPT have been submitted to the DOE. <p>Thus, the CAR stands closed.</p>	

CAR ID	05	Section no.	H.1., I.4.2, I.2.1	Date : 27/08/2017
Description of CAR				
<p>1. Please provide cookstove preparation manual for Canarumwe and Mayankho cookstoves also with technical description of the cookstoves.</p> <p>2. On Page 5, The MR says “Mbuala and Canarmuwe stoves have a laboratory test efficiency of 30.6% (more than three times the default 10% efficiency of the baseline three stone and unimproved cookstoves)”. Please provide this test report. Also, define what was the ICS efficiency of the new Mayankho stove.</p> <p>3. Evidence for start date of each VPA.</p> <p>4. Please provide the response received from Gold Standard on temporary deviation sought by CME.</p> <p>5. Emission reduction achieved shall also be provided vintage wise for each VPA in the MR.</p> <p><u>Sustainability Parameter</u></p> <p>6. Please provide evidence for balance and payment investments.</p> <p>7. The parameter “Quantitative employment and income generation” is not a parameter listed in the registered Passport. The parameter was rated neutral in the registered Passports. However, the parameter has been reported in the MR.</p>				
Project participant response				Date : 29/08/2017
<p>1. Cookstove preparation manuals for Canarumwe and Mayankho cookstoves have been provided. The Canarumwe is the same stove as Chitetezo and different names are used for different countries.</p> <p>2. The Canarumwe is the same stove as Chitetezo and different names are used for different countries. Therefore, the efficiency test by CREEC is used for both Canarumwe and Chitetezo stoves for ex ante calculations. The report as been provided. For actual emission reduction estimation WBT efficiency tests are performed for both stoves. The Mayankho cookstoves have 40 to 200 litre pots. Therefore, using the WBT protocol is not appropriate to estimate the stove efficiency as it is for boiling of 5 litres of water. For this reason KPTs are preformed to calculate wood consumed per 10,000 adult equivalent meals. Based on the monitoring data the average efficiency of Mayankho Fixed Institutional Stoves is 0.386 tonnes of wood / 10,000 meals. This can be compared with the baseline scenario which consume approximately 3.6040 tonnes / 10,000 meals.</p> <p>3. Evidences for start date of each VPA have been provided.</p> <p>4. The response received from Gold Standard on temporary deviation sought by CME has been provided (email from Gold Standard dated 06/07/2017). The response states that the PP shall prepare a memo explaining the reasons for the deviation and clearly explain their approach to provide data that can be validated by the DOE as being a conservative estimate of emission reductions in light of the gaps in monitoring. The DOE must provide a positive opinion on the memo before GS considers the deviation request during the issuance review. The memo explaining the reasons for the deviation and the approach to provide data is provided in section E.1 of the monitoring report.</p> <p>5. The information on the emission reduction achieved vintage wise for each VPA has been provided in the MR (section H.4).</p> <p>6. The evidence has been provided.</p> <p>7. The information has been deleted from the monitoring report.</p>				
Documentation provided by project participant				
<p>1. Fuel efficient Mayankho User Manual (Mayankho User manual.pdf), MAYANKHO STOVE SPECIFICATION SHEET (Mayankho stove spec sheet.doc), Canarumwe Users Guide (Canarumwe Users Guide.jpg).</p> <p>2. CREEC Regional Stove Testing Centre Chitetezo Mbuala Water Boiling Test Report, August 2012 (Chitetezo Mbuala CREEC Test August 2012.pdf)</p> <p>3. Evidences for start date of each VPA</p>				
DOE assessment				Date: 06/09/2017

1	Manual for Canarmuwe and Mayankho cook stoves with detailed specifications of the stove has been provided to the DoE. Closed.
2	The document does not have this value (30.6%). How did you identify efficiency of mayankho at initial stage? (Open)
3	The response received on temporary deviation has been submitted to the DoE. Closed
4	Vintage wise break up of each VPA has been added to the revised monitoring report. Closed.
5	Declaration stating that excess than \$10,000 has been submitted to DoE. The letter confirms that the CME has made FDI in Malawi. Closed.
6	The parameter that was listed as neutral in the registered passport was erroneously added to MR. A revised MR has been submitted to the DoE with the parameter deleted. Closed.

Project participant response	Date : 06/09/2017
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2. The document contains rounded value of 31% on page 2: "The Chitetezo Mbaula has a thermal efficiency during high power is 33% and that during low power is 31%." The test values, based on which the value of 30.6% was calculated, are included in section 5.3 Water Boiling Test Results. The average of the values provided for Thermal efficiency for Lower power (simmer) is 30.6%.

3. Dates from the documented evidences could be cross-checked with total sales database. For VPA 2446 the date is 01/05/2014 and could be tracked in the TSR using the following information 01/05/14 LL/DWN/15864, Stawa Subeli.

Documentation provided by project participant

DOE assessment	Date: 08/09/2017
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The value of efficiency is lower bound value given in the report and it was also checked from the registered VPA DD and found to be 30.66%. thus, the CAR stands closed.

CAR ID	06	Section no.	H.1., I.4.2., I.6.	Date : 27/08/2017
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Description of CAR

1. The Values and the formulas in employment summary of Environment and sustainability excel file are not visible/active.
2. Cell 44, Sheet named fixed data and assumptions, the average value of leakages does not consider conservative value for year 2016 when the monitoring was missed
3. The data base sheet attached to the ER sheet does not specify which VPA does each cook stove belongs to. CME is requested to add required information to the ER sheet

Project participant response	Date : 29/08/2017
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1. The file has been updated.
2. The calculation of the average value of leakages have been updated. According to PoA DD the monitoring frequency for leakages is every 2 years. Therefore, the conservative value of leakage rate has been assumed for 2017
3. The columns with the VPA identifier for each stove as been added.

Documentation provided by project participant

- 1) Updated version of the MR version 2.6 dated 29/08/2017
- 2) Updated Environment & SD Indicators Malawi.xls
- 3) Updated version of ER file !!!GS 1265 PoA - ER Calculation – 29.08.17.xls

DOE assessment	Date: 06/09/2017
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1. The values are now visible in the updated sheet submitted for the sustainability parameters.
2. Conservative approach of taking maximum value from previous survey results has been used for the CME to determine the value of leakage for the year 2017.
3. VPA numbers have been added to the database. It is now clear for each product disseminated under the PoA, to which VPA does it belong.

Thus, the CAR stands closed.

CAR ID	07	Section no.	I.4.2.2	Date : 22/09/2017
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Description of CAR

1. Number of cookstoves in Bulk Sales is provided in fraction in many cells while it is expected to be a whole number.

Project participant response **Date : 22/09/2017**

1. The values has been corrected.

2. Due to the large size of the total sales records database the ER calculation file has large volume and it has been complicated to incorporate large number of the monitoring records for WBT and KPT into a single file. To ensure transparency and traceability all monitoring results have been provided to DOE in a separate excel files accompanying with the reports on the monitoring results.

Documentation provided by project participant

Revised ER sheet
MR version 2.7

DOE assessment **Date: 22/09/2017**

1. The fractions have been corrected in the ER sheet and revised ER sheet and MR have been submitted to the assessment team.

Thus, the CAR stands closed.

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	5 June 2015	Initial publication.

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