



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

BASIC INFORMATION

Title and UNFCCC reference number of the programme of activities (PoA)	Title: Madagascar Improved Cookstove Project by KCM UNFCCC Reference: 10443	
Version number(s) of the PoA-DD(s) to which this report applies	4.0	
Version number of the verification and certification report	04	
Completion date of the verification and certification report	23/07/2020	
Monitoring period number and duration of this monitoring period	Monitoring Period Number 02 01/06/2019 to 31/10/2019 (inclusive of both days)	
Number and version number of the monitoring report to which this report applies	Monitoring Report number 02 Version 03	
Coordinating/managing entity (CME)	Korea Carbon Management Ltd.	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report?(yes/no)
	Republic of Madagascar	Yes
Applied methodologies and standardized baselines	Applied Methodology: AMS II.G "Energy efficiency measures in thermal applications of non-renewable biomass" Version-09.0 Reference: EB 97 Annex-11, valid from 01/11/2017	
Mandatory sectoral scopes	Sectoral Scope 3 : Energy demand	
Conditional sectoral scopes, if applicable	NA	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	63,848 tCO ₂ e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	41,730 tCO ₂ e	
Name and UNFCCC reference number of the DOE	LGA Technological Center, S.A. (Applus+ Certification) - UNFCCC Ref. No.: E-0032	
Name, position and signature of the approver of the verification and certification report	Mr. Juan Sendín Caballero Applus+ Certification Business Unit Managing Director Signature:	

SECTION A. Executive summary

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The registered PoA involves the promotion and distribution of improved cooking stoves (ICS) in Madagascar. There are currently two types of ICS (“SoaRehitra” wood stove which is a portable model and “Lamasinina” wood stove which is a fixed stove model) that are disseminated through this programme has replaced the prevailing inefficient three-stone open fires or equivalent with stoves at baseline, which combust wood more efficiently, and improve thermal transfer to pots, hence saving fuel and lowering greenhouse gas emissions. This monitoring period includes the implementation and monitoring of seven CPAs (i.e. UN Ref. CPA 10443-P1-0001-CP1, CPA 10443-P1-0002-CP1, CPA 10443-P1-0003-CP1, CPA 10443-P1-0004-CP1, CPA 10443-P1-0005-CP1, CPA 10443-P1-0006-CP1 and CPA 10443-P1-0007-CP1 as referred under the reference number/14/ and also the respective approved validation reports under reference numbers /16/, /26/ and /27/) as part of the registered PoA within the geographical boundary of Madagascar. The CME, Korea Carbon Management Ltd.(hereinafter also referred to as KCM or simply as CME) has fully financed all improved cook stoves distributed to the households under the CPAs including CPA implementation costs.

Detailed implementation status of the implemented CPAs has been discussed in subsequent sections of this report and CME has also reported the same in monitoring report, thus complying with §259 of CDM PS for PoA, V2/17/ and §340 of CDM VVS for PoA, V2/17/.

LGA Technological Center, S.A.(hereafter referred to as Applus+ Certification) has performed the first verification of the CDM PoA “Madagascar Improved Cook-stove Project by KCM” having its UNFCCC PoA Reference Number 10443. The verification includes confirming the implementation of the monitoring plan of the registered PoA-DD, CPA-DDs and the application of the monitoring methodology as per AMS-II.G., Version 09/18/. A site visit was conducted to check the implementation of registered monitoring plan and verify the data submitted in the monitoring report.

Applus+ Certification confirms the following has been reviewed:

- (a) The registered PoA-DD (i.e. version 04, dated 15/10/2018), CPA-DDs (i.e. 10443-0001, 10443-0002, 10443-0003, 10443-0004, 10443-0005, 10443-0006 and 10443-0007) and the monitoring plan, and the corresponding validation opinion;
- (b) The validation report;
- (c) The applied monitoring methodology;
- (d) The monitoring report to verify that it is as per the standardized format;
- (e) CER calculations sheets and all supporting documents;
- (f) Any other information and references relevant to the project activity's emission reductions;
- (g) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;

Applus+ Certification confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor / Technical Expert	OR	Ahirwar	Vivek Kumar	GCEES (Outsourced entity)	Y	Y	Y	Y

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical Reviewer Technical Expert	EI	Díaz	Miguel A. Cortés	Central Office
3.	Approver	IR	Sendin	Juan	Central Office

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

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Error in Data Transfer from Digital Records, Hard copy Records to ER Spread sheet for the monitoring parameters and sampling survey results. The errors could result from human errors during the information transfer from the source to emission reduction sheet.	High	The parameters were used in the calculation of emission reductions.	Since most of the monitoring parameter were confirmed through ex-post monitoring survey conducted by CME, the verification team physically checked and verified the sample households from first ex post monitoring survey records/4/ and ICS registration database/5/. Also compared PoA-DD/14/, CPA-DD/14/ and reference documents with ER spread sheet/3/ to check for any material error during data transfer.

C.2. Consideration of materiality in conducting the verification

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The identified/selected materiality threshold for the PoA under current monitoring period is 5% as PoA is small scale in accordance with §308(d) of CDM VVS for PoA, V2/17/.

	MR Version (version 01)	MR Version (Final, version 03)
Emission reductions/annum	42,092	41,730
Identified Threshold	5.0%	5.0%

In accordance to the §40 of the applied methodology/18/, the sample size is determined by either 95/10 (for biennial inspection) or 90/10 (for annual inspection) confidence /precision. However, CME has considered 95/10 confidence /precision for annual sampling in the 2nd ex-post monitoring survey/4/. During the current monitoring period, 4 more CPAs were included as compared to the first monitoring period. Therefore, conducting the 2nd sampling survey for the ex-post monitoring parameters is found to be reliable in terms of representativeness of the samples as sampling frame proportionately includes samples from each CPA. Thus, the verification team confirms that the sample size and sample selection considered by CME during the current monitoring period is more conservative and shall give more accurate results.

Parameter	Reporting Frequency	No. of Discreet Data (100%)	Sample size selected for verification	Type of error identified (Isolated/ Systematic)	Impact on ERs	
					Extrapolate d for population size (Qty and %)	Within Threshold (Yes/No)
$N_{y,i,j}$	At least once every two years through Monitoring Survey	43 samples from CME's monitoring survey for sampling frame 1 (SR portable ICS); and 43 samples from CME's monitoring survey for sampling frame 2 (Fixed ICS)	18 samples from each sampling frame from CME's monitoring survey records (Acceptance sampling)	No error found.	No Impact	Yes
Date of commissioning of project device <i>i</i>	Continuous recording at the time of distribution of project devices	Total 64,936 ICS are included during the Monitoring period across the CPAs.	Random cross check of ICS records from ICS registration database/5/ and hard copy of End User Agreement/11/	No error found.	No Impact	Yes
$\mu_{y,i,j}$	At least once every two years through Monitoring Survey	13 samples from Sample Frame 1 of CME's monitoring survey 11 Samples from Sampling Frame 2 of CME's monitoring survey	18 samples from each of the sampling frame CME's monitoring survey records (Acceptance sampling)	No error found.	No Impact	Yes

$\eta_{new,i,j}$	At the time of commissioning or distribution, followed by annual loss of efficiency as per para 27(a) of the applied methodology	Not applicable for Sample Frame 1 of CME's monitoring survey. 11 Samples from Sampling Frame 2 of CME's monitoring survey.	Value of the parameter for SaoRehitra ICS has been referred from previous monitoring period, verified from the third party certified WBT sampling report. All WBT results under sampling frame 2 have been verified through WBT Survey reports certified by third party agency/6/	No error found.	No Impact	Yes
$N_{d,HH}$	Continuous recording at the time of distribution of project devices	Total 64,936 ICS are included during the Monitoring period across the CPAs. Each household received only one	Thorough crosscheck of ICS records from ICS registration database/5/ and hard copy of End User Agreements/11/	No error found.	No Impact	Yes

Based on the above table, it can be confirmed that materiality threshold applicable for the PoA as per §308(d) of CDM VVS for PoA, V2/17/ is not breached.

Since all the data related to ex-post parameters are confirmed through ex-post monitoring survey conducted by CME and verified from the third party reports, the verification team has cross verified the ex-post survey data by applying acceptance sampling approach (from the sampling size of the two sampling frames surveyed by CME, as stated above in the table). All ex-ante parameters were directly cross-checked from the PoA-DD/14/ and CPA-DDs/14/ and also the respective validation reports of the CPAs i.e. CPA 10443-P1-0001-CP1/16/, CPA 10443-P1-0002-CP1/26/, CPA 10443-P1-0003-CP1/27/, CPA 10443-P1-0004-CP1/28/, CPA 10443-P1-0005-CP1/28/, CPA 10443-P1-0006-CP1/28/ and CPA 10443-P1-0007-CP1/28/.

Verification team confirms that, there was no gap identified in the values of ex-ante parameters.

SECTION D. Means of verification

D.1. Desk/documenter view

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The desk review involves;

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

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

D.2. On-site inspection

Duration of on-site inspection: 21/01/2020 to 23/01/2020				
No.	Activity performed on-site	Site location	Date	Team member
1.	Implementation and Operation of the CDM programme of activity based on registered Monitoring Plan and physical features of the project activity as per approved POA-DD and CPA-DDs	Haute Matsiatra regions in Madagascar	21/01/2020, 22/01/2020, 23/01/2020	Vivek Kumar Ahirwar
2.	Information flows for generating, aggregating and reporting the monitoring parameters			
3.	Competency of the operating personnel, monitoring personnel and calibrating agencies			
4.	Data collection procedures			
5.	Calibration performance and monitoring practices followed for monitoring equipment's used in the project activity			
6.	Quality Control and Quality Assurance procedures against the approved monitoring plan			
7.	Calculation and assumptions made in determining the GHG data and emission reductions			
8.	Compliance with CDM criterion and relevant guidance with respect to monitoring plan			
9.	Physical site visit : Total of 36 Households visited (Implementation of PoA and CPAs) listed as below section D.3			

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	TIANA	MANANTSOA	NGO Tandavanala, Director	21/01/2020 – 23/01/2020	Implementation of CPAs, monitoring activities, record keeping; Ex post Monitoring Survey; Corrections in MR and ER sheet; Sampling approach, results and ER calculations	Vivek Kumar Ahirwar
2.	ANDRIAMAMPIHATONA	FAMATO	NGO Tandavanala, CDM manager			
3.	BORAH	DEEPJYOTI	Sr. Advisor, CME Representative			
4.	H	RIVO	Chief of Zone			

Physical site visit: Total of 36 Households visited listed as below

Sr. No.	CPAs	Unique Id	Household Representative	Male (M)/Female (F)	Village	Date	Team Member
1.	CPA 1	4534	RAZAFINDRAVAOARINIRINA JUSTINE	F	LALANGINA	21/01/2020 – 23/01/2020	Vivek Kumar Ahirwar
2.	CPA 1	8754	RANDRIANANDRASANA JEAN NOELSON	M	AMBALAVAO		
3.	CPA 1	11931	RAZANAPARANY JULIETTE	F	LALANGINA		
4.	CPA 1	12351	RAZAFINDRAVOLAMARIE THERESE	F	LALANGINA		
5.	CPA 2	2546	RANDRIANIRINA NOMENJANAHARY JEAN DE DIEU	M	LALANGINA		
6.	CPA 2	10080	RAZAINJAFY NOELINE	F	AMBALAVAO		
7.	CPA 2	10823	RABAKOLY MARIE ESTHER	F	AMBALAVAO		
8.	CPA 2	10846	RAMPIMIARINJATO ROSINE LICIA	F	AMBALAVAO		
9.	CPA 3	643	RAZAFINIRINA Samueline	F	VOHIBATO		
10.	CPA 3	3642	RAZAFITOAZAZA MARSON DONNE MARELAUT	M	VOHIBATO		
11.	CPA 3	12014	RAVAOMAMPIONONA OLGA MARIE NOELINE	F	VOHIBATO		
12.	CPA 3	12402	NARINDRANJANAHARY MIRANALISOA SAMUELIN	F	VOHIBATO		
13.	CPA 4	1970	RAMAROLAHY JUSTAPIERA	M	AMBALAVAO		
14.	CPA 4	4604	RAKOTOVAO JULIE FIDELE	M	ISANDRA		
15.	CPA 4	6130	RAZAINANDRASANA JULIE NOELLA	F	AMBALAVAO		
16.	CPA 4	7421	RANJARASOA VONIANA ELIANE	F	VOHIBATO		
17.	CPA6	328	RAFIHIRATA JOSEPH	M	AMBALAVAO		
18.	CPA6	1790	RAZAIARISOA HEONRIETTE	F	AMBALAVAO		
19.	CPA 5	19LW0501629	RAHOBINIAINA MARLINE	M	LALANGINA		
20.	CPA 5	19LW0502046	RAKOTOZAFY CHARLES	M	ISANDRA		
21.	CPA 5	19LW0503796	RANDRIANAIVO ELAND	M	ISANDRA		
22.	CPA 5	19LW0503272	RAVELOMAHARAVO MICHEL	M	ISANDRA		
23.	CPA 5	19LW0503672	RAVELONANDRO LOUISE	F	ISANDRA		
24.	CPA 5	19LW0501724	RAVOLASOA PASCALINE	F	LALANGINA		
25.	CPA 5	19LW0503734	RATALATA JEAN PIERRE	M	ISANDRA		
26.	CPA 5	19LW0504310	RATALATA FRANCOIS	M	ISANDRA		
27.	CPA 5	19LW0504618	RAMANDIMBISOA DIEU DONNE	M	ISANDRA		
28.	CPA 5	19LW0503082	RAZAFINDRASOA BERNADETTE	F	ISANDRA		
29.	CPA 5	19LW0503704	RANDRIANEVO	M	ISANDRA		
30.	CPA 5	19LW0502844	RAJOMA CHRISTINE	F	ISANDRA		
31.	CPA 5	19LW0502845	RAMANAMPAMONJY JACQUELINE	F	ISANDRA		
32.	CPA 5	19LW0504421	RAKOTOMALALA MILLIARD	M	ISANDRA		
33.	CPA 5	19LW0502667	RASOMARININA PAULINE	F	ISANDRA		
34.	CPA 5	19LW0503540	RANDRIAMANANTENA BONIFACE AIME	M	ISANDRA		

Sr. No.	CPAs	Unique Id	Household Representative	Male (M)/Female (F)	Village	Date	Team Member
35.	CPA 5	19LW0502068	RANDRIANOMENJANAHARY JEAN CHRISTIAN EMMANUEL	M	LALANGINA		
36.	CPA 5	19LW0502132	PATRICK	M	ISANDRA		

D.4. Sampling approach

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CME's sampling approach:

The CME has applied a sampling approach as per approved sampling plan registered under the PoA-DD/14/ and in registered CPA-DDs/14/. There are two types of stove type/models included – SaoRehitra Portable Stove and Lamasinina Fixed stove; both are wood based stove locally manufactured. The SaoRehitra is distributed under the CPA #1, 2, 3, 4 and 6 and also proposed to be distributed under the CPA #7; assessment team confirm that no distribution has been done under CPA 7 as on the end date of the current monitoring period; whereas Lamasinina is distributed under the CPA#5. Therefore, in line with the registered sampling plan, representative sampling has been undertaken as part of a PoA-wide Sampling Plan and two different sampling frames has been designed (i.e. by grouping and sampling across the CPAs for SaoRehitra and Lamasinina stove separately) which is in line with the requirements of the “Guideline for Sampling and surveys for CDM project activities and programme of activities”, version 04/24/. The CME has considered 95/10 confidence/precision sampling to consider sampling size for both the sampling frames. During the current monitoring period, 4 more CPAs (i.e. CPA #4 to 7) were included as compared to the first monitoring period (wherein only the first three CPAs were included). Therefore, CME has conducted the 2nd sampling survey for the ex-post monitoring parameters which is found to be appropriate and reliable in terms of representativeness of the samples as sampling frames proportionately include samples from each CPA. The sampling approach undertaken by CME is duly explained under Section E.3 of the Monitoring Report/2/.

DOE's sampling approach:

In order to meet the requirements of §24 of Standard for “Sampling and surveys for CDM project activities and programmes of activities”, Version 07 (as version 07 is applicable as per the registered sampling plan)/23/, the verification team applied acceptance sampling in the verification (in accordance with §27 of Standard for “Sampling and surveys for CDM project activities and programmes of activities”, Version 07/23/). The verification team selected random sub-samples of CME's sampled records for each CPA, 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.

The verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard for “Sampling and surveys for CDM project activities and programmes of activities”, Version 07/23/:

- The proportion of discrepancies between the CME's sample records and DOE's (field or onsite inspection results) sample records that can be considered acceptable. This is referred to as the AQL (Acceptable Quality Level): 1.0% was considered in this verification.
- The proportion of discrepancies between the CME's sample records and DOE's (field or onsite inspection results) sample records that would be considered unacceptable. This is the UQL (Unacceptable Quality Level): 20% was considered in this verification.
- The producer risk and consumer risk: 10% was considered for both.

Considering the above input values, a sample size of 18 was required as per Table in the Standard for “Sampling and surveys for CDM project activities and programmes of activities”, Version 07/23/.

Producer risk		10%		10%		10%		10%	
Consumer risk		5%		10%		15%		20%	
AQL	UQL	Sample size (n)	Acceptance number (c)	Sample size (n)	Acceptance number (c)	Sample size (n)	Acceptance number (c)	Sample size (n)	Acceptance number (c)
0.5%	10%	46	1	38	1	19	0	16	0
0.5%	15%	19	0	15	0	12	0	10	0
0.5%	20%	14	0	11	0	9	0	8	0
1.0%	10%	46	1	38	1	33	1	29	1
1.0%	15%	30	1	25	1	22	1	10	0
1.0%	20%	22	1	18	1	9	0	8	0

Accordingly, acceptance number (c) thus determined for the sample size is 1. A sample sizes of 18 meets the criteria. Therefore, the verification team together verified the 18 randomly¹ selected samples from each of the sampling frames (i.e. **for sampling frame 1**, Four samples from CPA 1, Four samples from CPA 2, Four samples from CPA 3, Four samples from CPA 4 and Two samples from CPA 6. And **for sampling frame 2**, total 18 samples from CPA 5 and no samples from CPA 7 as it is not implemented at the time of DOE audit) during the site visit and observed that all the stoves checked were in operation (100%) as against the CME's surveyed results, which also indicates 100%/4/, across all the CPAs. There was no drop out observed in sample done by the verification team and thus gives a drop out of 0%. This is considered in line with CMEs sampling records for both the frames and has been accepted by the verification team. It was observed that all the stoves were in working condition and thus less than or equal to c=0, discrepant records were observed with the MR/2/ and ER sheet/3/. Thus, CME's set of records has been accepted in line with §32 of the Standard for "Sampling and surveys for CDM project activities and programmes of activities", Version 07 (which is the registered applicable version for the PoA)/23/.

During site visit the verification team together verified the 36 randomly selected samples out of the total CME samples across both the sampling frames that cover all the CPAs and observed that all the results reported by CME for use of baseline stove were consistent with the survey results. None of the 36 ICS's users found using traditional stoves along with ICS, which means that 0% users still using traditional or baseline stoves or baseline stoves are decommissioned and no longer in use.

The CME has considered value of ICS Usage rate (100%) as derived from the survey and corresponds to a calculated adjustment factor for consumption value for baseline stove use in relative term, which is also 100% applied in the ER calculation; these applied values are consistent with the DOE onsite survey results. As there were no discrepant records, CME's set of samples were accepted in line with §32 of the Standard for "Sampling and surveys for CDM project activities and programmes of activities", Version 07/23/.

There was no specific or scheduled DOE field survey conducted for new ICS efficiency related parameter as these were checked with the WBT records retained by the CME. For the parameter efficiency, CME has adopted para 27(a) of the applied methodology in the registered PoA-PDD. Therefore, CME conducted WBT sampling only for the batch of vintage 1 ICS, for each ICS type, to estimate the applicable conservative value of efficiency for the vintage 1. And for subsequent vintages, efficiency has been adjusted for annual loss of efficiency as per para 27(a) of the methodology. The WBT tests were conducted on the selected samples from vintage year 1 (for both the stove types) by an experienced professional under "The National Centre of Industrial And Technological Research" of Madagascar, where WBT test for SaoRehitra ICS was conducted during the first monitoring period and the same for Lamasinina ICS has been conducted during the current monitoring period. The certified WBT reports were checked and the records were found to be consistent with the reported results. The verification team checked 100% of CME's WBT results and found them in order, based on correct practice, procedure and reliable. Also the approach considered by CME is conservative as the averaged out WBT values of the samples have been found to be conservative as compared to the values available at the time of CPA inclusion for ex-ante estimation of ERs. Hence, DOE would like to further opine that the value of efficiency of both the ICS considered for ER calculation is conservative, relevant and in line with the applicable provision of para 27(a) of the methodology; hence acceptable.

¹Using online software <https://www.randomizer.org/>

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General			
Compliance of the monitoring report with the monitoring report form	CL#1 & CL#2	0	0
Remaining forward action requests from validation and/or previous verifications	0	0	0
CPAs considered for verification and covered in this report	0	0	0
Programme of activities			
Compliance of the programme implementation with the registered PoA-DD	0	0	0
Implementation and operation of the management system	0	CAR#8	0
Post-registration changes			
• Corrections	0	0	0
• Inclusion of a monitoring plan	0	0	0
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents ²	0	0	0
• Changes to the programme design	0	0	0
• Addition of CPA inclusion template	0	0	0
• Change of coordinating/managing entity	0	0	0
• Changes specific to afforestation and reforestation activities	0	0	0
Component project activities			
Compliance of the CPA implementation with the included CPA design document	0	0	0
Post-registration changes			
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	0	0	0
• Corrections	0	0	0
• Changes to the start date-of the crediting period	0	0	0
• Inclusion of a monitoring plan	0	0	0
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	0	0	0
• Changes to the project design	0	0	0
• Changes specific to afforestation and reforestation activities	0	0	0
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	0	CAR#6	0
Compliance of monitoring activities with the registered monitoring plan			
• Data and parameters fixed ex ante or at renewal of crediting period	0	CAR#4 & CAR#8	0
• Data and parameters monitored	0	CAR#2, , CAR#5 & CAR#8	0
• Implementation of sampling plan	0	CAR#1& CAR#7	0
Compliance with the calibration frequency requirements for	0	0	0

²Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied (selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

CDM-PoA-VCR-FORM

measuring instruments			
Assessment of data and calculation of emission reductions or net removals			
<ul style="list-style-type: none"> Calculation of baseline GHG emissions or baseline net GHG removals by sinks 	0	0	0
<ul style="list-style-type: none"> Calculation of project GHG emissions or actual net GHG removals by sinks 	0	0	0
<ul style="list-style-type: none"> Calculation of leakage GHG emissions 	0	0	0
<ul style="list-style-type: none"> Summary of calculation of GHG emission reductions or net GHG removals by sinks 	0	0	0
<ul style="list-style-type: none"> Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA 	0	CAR#3	0
<ul style="list-style-type: none"> Remarks on difference from estimated value in included CPA 	0	0	0
Assessment of reported sustainable development co-benefits	0	0	0
Global stakeholder consultation	0	0	0
Others (please specify)	0	0	0
Total	2	8	0

SECTION E. Verification findings**E.1. General****E.1.1. Compliance of the monitoring report with the monitoring report form**

Means of verification	The verification team has compared the monitoring report/2/ with a latest applicable monitoring report form, version 03.0/21/. Same has been verified from CDM EB Website.
Findings	CL#1& CL#2 have been raised in this context. Refer Appendix 4 of this report for detailed finding.
Conclusion	The verification team confirms that the revised final version (version 03, dated 20/07/2020) of the monitoring report submitted to DOE has been appropriately prepared using the latest applicable monitoring report form/21/, and that all sections are complete.

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

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The verification team checked and confirmed that there is no pending FAR for this PoA.
Hence no forward action request is to be considered for the current verification.

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

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-001 (Ref. CPA 10443-P1-0001-CP1) /16/	Yes	24/12/2018	4.0	Yes.
Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-002 (Ref. CPA 10443-P1-0002-CP1) /26/	Yes	02/04/2019	4.0	Yes.
Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-003 (Ref. CPA 10443-P1-0003-CP1) /27/	Yes	02/04/2019	4.0	Yes.

Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-004 (Ref. CPA 10443-P1-0004-CP1) /27/	Yes	31/08/2019	4.0	No, this is the first verification for the CPA.
Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-005 (Ref. CPA 10443-P1-0005-CP1) /27/	Yes	31/08/2019	4.0	No, this is the first verification for the CPA.
Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-006 (Ref. CPA 10443-P1-0006-CP1) /27/	Yes	15/10/2019	4.0	No, this is the first verification for the CPA.
Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-007 (Ref. CPA 10443-P1-0007-CP1) /27/	Yes	15/10/2019	4.0	No, this is the first verification for the CPA.

E.2. Programme of activities

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

Means of verification	<p>The registered PoA involves the dissemination (distribution/installation) of improved cooking stoves (ICS) in Madagascar by CME through coordination with local team deployed by CME. The overall responsibility of implementation and operation is with CME (KCM), which was also evident during the site visit. KCM provided stoves free of cost to distribute/install ICS on a non-commercial basis to household using baseline stove. KCM also provided operation & maintenance cost of ICS procurement and distribution to operate the CPAs in financially sustainable condition. KCM has fully financed all ICS distributed to the households under the CPAs. This is consistent with PoA-DD and CPA-DDs/14/.</p> <p>This monitoring period includes the implementation and monitoring of total seven CPAs (i.e. also referred hereinafter as CPA-0001, CPA-0002, CPA-0003, CPA-0004, CPA-0005, CPA-0006 & CPA-0007) as part of PoA/14/wherein 1st, 2nd, 3rd and 4th CPAs have been fully distributed as per the small scale threshold (the calculation and demonstration are included in the ER sheet and also in the section F.7 of the MR), the 5th and 6th CPA are partially distributed; whereas the distribution under the 7th CPA has not been started during the current monitoring period. The details of distribution are submitted by CME in the form of excel sheet and also included under the Appendix 1 of the MR, which were verified by DOE during the site visit and found consistent. All the CPAs are within the geographical boundary of Madagascar confirmed through iTouchMap website, which constitutes the physical boundary of PoA as well.</p> <p>In the referenced CPAs, during the monitoring period, two models/types of the improved cookstove (ICS) have been disseminated i.e., "SaoRehitra" portable ICS and "Lamasinina" Fixed ICS. The CPA-0005 includes the fixed ICS "Lamasinina" whereas</p>
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other CPAs include SaoRehitra ICS. Every CPA, thus promotes only one type of ICS model which makes each CPA homogenous in terms of the technology. The assessment team has also visited the manufacturing unit of the ICS (i.e. SaoRehitra) to understand the ICS type and technology in detail manner. The “Lamasinina” fixed stoves are being manufactured by trained artisans and the processes is managed by representatives who have experience in working with clay and bricks or in manufacturing different types of cook stoves. Both the ICS types and details are found to be consistent with the distribution receipts that are provided under the CPA-DDs. DOE has verified both the ICS types during site visit inspection and found to be consistent distribution receipts and details provided in the CPA-DDs.



Stove Model SaoRehitra (or called as SR wood stove)



Stove Model LamasininaFixed Stove

The ICS (*SaoRehitra* stoves) under CPA-0001 have been implemented in several villages and households in the region of Haute Matsiatra, Madagascar.

The ICS (*SaoRehitra* stoves) under CPA-0002 have been implemented in several villages and commune of Districts Ambalavo and Lalangina in the region of Haute Matsiatra, Madagascar.

The ICS (*SaoRehitra* stoves) under CPA-0003 have been implemented in several villages and commune of Districts Vohibato in the region of Haute Matsiatra, Madagascar.

The ICS (*SaoRehitra* stoves) under the CPA-0004 have been implemented in several villages and commune of in the region of Haute Matsiatra, Madagascar, where there is no ICS distribution so far under the other CPAs of this PoA. The locations include Ambalavao, Lalangina, Isandra and Vohibato districts and will target around 30 different municipality zones.

The ICS (Lamasinina fixed stove) under the CPA-0005 have been implemented in several villages and commune of in the region of Haute Matsiatra, Madagascar, where there is no ICS distribution included under the other CPAs of this PoA.

The ICS (*SaoRehitra* stoves) under the CPA-0006 have been implemented in in several

villages and commune of in the region of Haute Matsiatra, Madagascar, where there is no ICS distribution occurred so far under the other CPAs of this PoA. The ongoing and proposed villages are mainly proposed under mainly two districts viz. Lalangina&Vohibato districts of Haute Matsiatra region.

The ICS (*SoaRehitra* stoves) under the CPA-0007 is yet to be implemented; however proposed to be implemented in several villages and commune of in the region of Haute Matsiatra, Madagascar, where there is no ICS distribution occurred so far under the other CPAs of this PoA. The proposed villages, commune, Fokontany etc. are mainly proposed under Ambalavao district of Haute Matsiatra region. During the site inspection DOE team confirm that there is no double accounting of ICS in other CPAs of the PoA.

All the CPAs are, therefore implemented in different villages and districts under the region Haute Matsiatra, under the province Fianarantsoa. The Fianarantsoa is the capital city from where the local implementation team manages the program for CME. This was confirmed through the ICS registration database of the CPAs/5/.

The start date of crediting period of the PoA is 01/01/2019/14/. The PoA was registered on 07/09/2018 and first CPA (i.e. CPA 10443-P1-0001-CP1) was included on 24/12/2018. The monitoring period considered under this verification is "01/06/2019 to 31/10/2019", which is the 2nd monitoring period. The first stove included under the first CPA was distributed on 09/10/2018/5/ and has been verified from the distribution database and the End user Agreement signed by the ICS User/11/. However, during the current monitoring period ICS numbers for the first four CPAs were complete (i.e. fully distributed as per CPA threshold numbers), for CPA 5th & 6th there were partial distribution completed, whereas 7th CPA has not been distributed during the period. Thus, stove numbers and respective start date of crediting period for each CPA is different, hence the emission reduction accounting for respective CPAs are considered based on their respective year fractions. The detail assessment of the CPA wise ICS numbers, their age, year fraction accountable for the ER calculation are submitted by CME under the ER sheet. Information has also been reported under the appendix 1 of the MR.

The total number of stoves that were distributed under the current monitoring period is 64,936. The CPA wise monthly distribution verified from the distribution database is as follows:

CPA Reference	Months	Nos. of ICS Distributed	Reference
CPA 10443-P1-0001-CP1	Oct-18	4,592	CPA-1 Database
	Nov-18	2,045	
	Dec-18	3,363	
	Jan-19	1,503	
	Feb-19	2,177	
Total =		13,680	
CPA 10443-P1-0002-CP1	Mar-19	2,240	CPA-2 Database
	Apr-19	966	
	May-19	1,866	
	Jun-19	2,926	
	Jul-19	3,403	
	Aug-19	2,351	
Total =		13,752	
CPA 10443-P1-0003-CP1	Feb-19	1	CPA-3 Database
	Mar-19	2,366	
	Apr-19	488	
	May-19	1,142	
	Jun-19	2,142	
	Jul-19	2,323	

		Aug-19	5,290	
	Total =		13,752	
	CPA 10443-P1-0004-CP1	Sep-19	7,000	CPA-4 Database
		Oct-19	6,752	
	Total =		13,752	
	CPA 10443-P1-0005-CP1	Jul-19	24	CPA-5 Database
		Aug-19	775	
		Sep-19	3,194	
		Oct-19	1,007	
	Total =		5,000	
	CPA 10443-P1-0006-CP1	Sep-19	1,000	CPA-6 Database
		Oct-19	4,000	
	Total =		5,000	
	CPA 10443-P1-0007-CP1	-	0	NA
	Total ICS distributed =		64,936	
<p>Here the start date of ER accounting for each month has been considered separately for a group of stoves distributed for that particular month. DOE has verified that fact that ICS are being continuously manufactured, developed and implemented at households, there is no batch wise nomination assigned separately. The CME has considered the last date of distribution of a particular month as the date of complete commissioning of the stove batch distributed for that particular month (here a batch is referred to as total numbers of stoves distributed in a particular month), hence this approach is found to be conservative. Therefore, start date of accounting of emission reductions for stoves distributed in a particular month has been considered as the next day of the last date of stove distribution for that month, which is a conservative approach. These practice has been properly demonstrated in the ER sheet which has been further verified from the distribution databases.</p> <p>Therefore, the quantity, specification and target group of the ICSs were found in accordance with the PoA-DD and respective CPA-DDs/14/. Further, based on the review of ICS registration database of ICS/5/, physical observations and interview conducted during the site visit, the verification team found that the actual implementation on ground of the PoA is consistent with PoA-DD and respective CPA-DDs/14/. Also, the distribution details and each ICS are reproducible from the distribution database backed up by the beneficiary agreements. The verification team therefore confirms the authenticity of the numbers and also accepts the application of ICS numbers, year fractions etc. into the ER calculation which is accurate, conservative and acceptable.</p>				
Findings	No finding has been raised.			
Conclusion	<p>The verification team confirms that -</p> <ul style="list-style-type: none"> The physical features (technology/type of ICS) of the implementation were in accordance with the registered PoA-DD and CPA-DDs/14/. The first four CPAs included ICSs up-to its full capacity (i.e. up-to the small scale threshold of the respective CPAs). However, the distribution of ICS is still ongoing under the 5th and 6th CPA as they have not yet reached the estimated quantity given in the respective CPA-DDs/14/. Whereas the ICS distribution under the 7th CPA has not been started during the current monitoring period. The actual operation is in line to respective CPA-DDs, which is further explained under Section I.1 of this report. No information with regard to data and variables was identified that may surpass the estimated quantity of ERs in the respective CPA-DD/14/. The emission reductions achieved for the CPAs were within the estimated quantity in the registered CPA-DDs/14/. 			

E.2.2. Implementation and operation of the management system

Means of verification	<p>Based on the interview of CME representative (CME) and monitoring team during the site visit, it was confirmed that the CME has organized an appropriate management and operational system for implementation, monitoring and reporting functions.</p> <p>Korea Carbon Management Ltd. (CME and CPA implementer) has a database manager who manages the process of collecting the information of installed/registered ICS from the field staff through stove distribution team and entering the data into the ICS registration database. The monitoring manager at the CME/14/ is then responsible for QA/QC of the data, analysis and reporting into the monitoring report. For survey data, a monitoring team has been organized by the CME's survey coordinator consisting of trained monitoring staff called survey supervisors and also a thermal energy expert/2/, who conducted the surveys and WBTs. The monitoring manager at the CME/14/ is responsible for QA/QC of the data, analysis and reporting into the monitoring report. Proper training/20/ of all field staff and survey supervisors was provided by the CME before starting distribution of ICSs and conducting the monitoring survey.</p> <p>Also, it was learnt that CME field staff conducts spot-checks at household by randomly selecting households included in the ICS registration database and visit them to cross-check the information on the ICS registration database with the actual evidence in the field, referred as spot check. As per prescribed practice, any inconsistencies found (e.g., change in the address of a user) or any other type of ICS is found to be exist in the household or there is any wear & tear in the project ICS, the same are to be recorded in a monitoring form and thereafter will be updated on the ICS registration database. In case, ICS are found to be no longer in use, they will be clearly marked as such and excluded from emission reductions calculations. There is provision of replacement in the registered PoA-DD which confirms that "in case a replacement stove is being issued to a customer already registered on the project database, a new registration will not be required. The replacement stove will be recorded in the project database in such a way that it is clear that the replaced stove ceases to be included in the CPA; and the replacement stove is associated with the customer's details as a new ICS, and is included in the CPA as a new ICS with a new serial number"/14/. The assessment team has cross checked this practice of spot-check during the on-site audit. There are primary records in the form of "monitoring forms"/33/ recorded as a part of the spot-check mechanism, which were physically verified by DOE. Such monitoring forms contain stamp of the local authority and information of chief of household, unique no. of ICS, date of visit, date of ICS distribution, view point/analysis about ICS and confirmation/remark on presence of other devices, etc. From the existing records/33/, the assessment team has further verified that the local monitoring agents visit households to check existence of project ICS and its operational conditions etc.; and also to ensure that there is no existence of the baseline device or any other device except the project ICS. During the spot-checks the agents fill out the monitoring form containing serial numbers of ICS after confirming/verifying its existence and then also take signature of the head of household. There is no case of any inconsistency or deviation of ICS operation in the households observed during the current monitoring period. Also, the assessment team visited around 36 randomly selected households during the audit and no any inconsistency or deviation was observed. Hence, the assessment team of DOE confirms that ICS are operational without any inconsistency and ICS users do not have other similar device.</p> <p>The ICS registration databases/5/ containing the monitored data were maintained by the CME. The ICS registration database (and its backup) was checked during the site visit. There is no case of any inconsistency or non-operational or replacement during the current monitoring period. The ICS registration database is stored in electronic format /5/ as well as hard copies of end user agreements/11/ and completed survey forms and WBT test reports/6/ are retained by the CME. PoA management system has been reviewed by the project manager at CME on regular basis for timely identification and resolution of issues related to the distribution of</p>
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	<p>ICS and monitoring of PoA.</p> <p>The organizational structure and roles and responsibilities for monitoring are in line with the situation on the ground as observed during the site visit and interview with monitoring staff, and the structure is considered appropriate. Moreover, CME has conducted sessions on capacity building, team training etc. on regular intervals. The records of such sessions have been checked by validation team during the site visit and CME has also submitted the copies of such records for reference purpose as prescribed under the MR.</p>
Findings	CAR#08 has been raised. Refer Appendix 4 of this report for detailed finding.
Conclusion	<p>The verification team assessed the management systems in place to verify the implementation status of the monitoring of the PoA/14/. This included the roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system. This has been described in detail in the MR version 03 dated 20/07/2020/2/. The verification team confirms that the monitoring management system of the PoA is in place with the responsibilities properly identified and established.</p>

E.2.3. Post-registration changes**E.2.3.1. Corrections**

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Not applicable, since there was no correction applied as post-registration change.

E.2.3.2. Inclusion of a monitoring plan

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Not applicable, since monitoring plan was included in the registered PoA-DD/14/.

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

>>

Not applicable, since there was no correction applied as post-registration change.

E.2.3.4. Changes to the programme design

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No project design changes were identified during the current monitoring period.

E.2.3.5. Addition of CPA inclusion template

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Not Applicable.

E.2.3.6. Change of coordination/managing entity

>>

No changes in CME during the current monitoring period.

E.2.3.7. Changes specific to afforestation and reforestation activities

>>

Not Applicable.

E.3. Component project activities

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

<p>Means of verification</p>	<p>There are 07 specific CPAs (Ref. nos. 10443-P1-0001-CP1, 10443-P1-0002-CP1, 10443-P1-0003-CP1, 10443-P1-0004-CP1, 10443-P1-0005-CP1, 10443-P1-0006-CP1 and 10443-P1-0007-CP1) included in the PoA/14/ at the end of the current monitoring period and all the CPAs were covered in the current monitoring period.</p> <p>CPAs target the promotion and distribution of portable ICS models “SaoRehitra” and a fixed ICS model “Lamasinina”. The Verification Team has carried out onsite visits at the fields and also at the production plant and conducted interviews to reach up-to a level of satisfaction and professional judgement. ICS models were checked and compared to that described in the respective CPA-DDs/14/. Korea Carbon Management Ltd.(also referred as KCM) is the Coordinating and Managing Entity (CME) for the implementation of the CPAs. The KCM coordinates and manages CPA implementation and manages each element of the monitoring plan. The implementation and operation status of the CPAs has been verified as follows:</p> <p>In CPA-0001, ICS were distributed in several villages and households in the region of Haute Matsiatra, Madagascar, in CPA-0002, ICS were distributed in several villages and commune of Districts Ambalavao and Lalangina in the region of Haute Matsiatra, Madagascar and in CPA-0003, ICS were distributed in several villages and commune of Districts Vohibato in the region of Haute Matsiatra, Madagascar, in CPA-0004 several villages and commune of in the region of Haute Matsiatra, Madagascar, mainly cover the locations include Ambalavao, Lalangina, Isandra and Vohibato districts and will target around 30 different municipality zones. All these four CPAs were fully distributed up-to their respective threshold defined limit as per registered CPA-DD. Similarly, the Lamasinina fixed stove is being distributed under the CPA-0005 which has been implemented in several villages and commune of in the region of Haute Matsiatra, Madagascar, where there is no ICS distribution included under the other CPAs of this PoA. The ICS (<i>SoaRehitra</i> stoves) under the CPA-0006 have been implemented in several villages and commune of in the region of Haute Matsiatra, mainly includes two districts viz. Lalangina & Vohibato districts. The distribution under these two CPAs (5th & 6th) are partially completed during the current monitoring period, whereas the ICS (<i>SoaRehitra</i> stoves) under the CPA-0007 is yet to be implemented; however proposed to be implemented in several villages and commune of in the region of Haute Matsiatra, across different villages, commune, Fokontany that are mainly under Ambalavao district.</p> <p>These information have been confirmed from ICS registration records and distribution database/5/ and also verified randomly during the onsite visit, which is consistent with the description given in the included the CPA-DDs (Section A.2)/14/. By the end of current monitoring period a total of 64,936 improved cook stoves (the breakup of ICS numbers across the 7CPAs are provided under the section E.2.1 above) were disseminated under the CPAs, which is within estimated quantity of the small scale threshold as per respective CPA-DDs/14/.</p> <p>The stoves are distributed to end users after each end user signs and accepts the End User Agreement/11/. The other details e.g., user name, identification number, address, phone number etc. are also recorded in Information Request Form, which is part of the End User Agreement/11/.</p> <p>The ICS registration database records the stove unique serial number ID and name of recipients with residential address. Stove IDs are used for unique identification of the units. Name of KCM (as shown below) is printed on the body of the stove and Unique Stove IDs are marked on the stoves, on a name plate that is attached to the stove (both in case of SaoRehitra & Lamasinina). Pictures of the stove unique ID are presented below as example.</p>
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ICS "SR Stove": Unique Serial Number



CME Logo



ICS "Lamasinina": Unique Serial Number

As shown in the images above, the unique serial codes of the project stove are nomenclature as <year><StoveType><fuel type><CPA number><number assigned to that particular stove>. For example, let's consider the following serial number "18SRWX1-XXXX1" for a project stove.

Here, the inscription "18" stands for particular year (i.e. 2018), "SR" for stove type e.g. "Soa-Rehitra" and "W" for fuel type, i.e. Woody biomass, Serial number X1 stands for CPA number and XXXX1 stand for serial number inscribed to the stove at the time of production.



The assessment team has also confirmed the unique identification system for the ICS are consistent with the prescribed method in the registered PoA-DD and CPA-DDs. Thus, each and every stove can be uniquely identified and can be cross checked from distribution database as well as from the user's agreement copy. This is in line with the procedure to avoid double counting of ICS, as mentioned in registered PoA-DD (page 8)/14/.

The operation/use of ICS starts from the same day or next day of the date of distribution of ICS to end User/5/. Same has been verified from the interview with end users during DOE onsite visit/13/ of randomly selected households. Once the ICS is installed it is revisited by CMEs field staff after few days/weeks (in general) to do spot-check whether the ICS functioning correctly. From the on-site verification and from the

	<p>interviews DOE has confirmed that there was no case of inconsistency or non-operation of stoves during the monitoring period, thus no replacement of ICS took place during the period.</p> <p>The type of stoves distributed was confirmed to be SaoRehitra wood stove which is a portable stove included under the CPA-0001, 0002, 0003, 0004, 0006 & 0007; whereas CPA-0005 includes fixed ICS "Lamasinina", this has been confirmed and verified based on site visit observations in households. This is consistent with the registered CPA-DDs/14/. In accordance with §364 of CDM VVS for PoA, version 02.0/17/, verification team confirms that the annual energy saving of the ICS type "SaoRehitra" is only 13.031MWh_{th}/3/ and that of for ICS type "Lamasinina" is 12.991 MWh_{th} which is very much less than 1% of the small-scale CDM thresholds i.e. 1800 MWh_{th} and satisfies the condition to qualify as a microscale CDM unit. The reference calculations are also submitted by CME under the ER sheet (final version 03) and explanation is provided under the MR section F.7 of the revised MR (final version 03)/2/.</p> <p>The final MR (i.e. version 03)/2/ includes complete description of the implementation status, which is consistent with the observations and interviews during the site visit as well as review of the ICS registration database/5/.</p>
Findings	No finding has been raised.
Conclusion	<p>The verification team confirms that physical features of the first six CPAs have been implemented in accordance with the registered CPA-DDs/14/. 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 CPAs have been implemented in accordance with the CPA-DDs/14/. The 7th CPA which is yet to be implemented shall also be in accordance with the CPA-DD. The same was discussed in detail with CEM during the verification.</p> <p>The implemented CPAs (i.e. CPA 1 to CPA 6) were also found to be completely operational in line with the CPA-DDs/14/. The information provided in the relevant sections of the monitoring report is appropriately described the implementation and operational status of the PoA/14/.</p>

E.3.2. Post-registration changes

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

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No deviations were identified during the verification of current monitoring period.

E.3.2.2. Corrections

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No corrections were identified during the verification of current monitoring period.

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

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No changes in the start date of the crediting period envisaged during the verification of current monitoring period.

E.3.2.4. Inclusion of a monitoring plan

>>

Not Applicable.

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

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No permanent changes were identified during the verification of current monitoring period

E.3.2.6. Changes to the project design

>>

No project design changes were identified during the verification of current monitoring period.

E.3.2.7. Changes specific to afforestation and reforestation activities

>>

Not Applicable.

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

Means of verification	The monitoring plan as contained in CPA-DDs/14/ was reviewed against the monitoring requirements of the applied methodology AMS-II.G, Version 09/18/ as well as PoA-DD/14/. Based on this review it was found the monitoring plan contained in the CPA-DDs/14/ includes all the required parameters to be monitored in the context of the CPA design and description and allows proper determination of emission reductions in accordance with PoA-DD/14/ and applied methodology/18/.
Findings	CAR#6 has been raised in this context. Refer Appendix 4 of this report for detailed finding.
Conclusion	The monitoring plan is in accordance with the approved methodology, AMS-II.G., Version 09/18/, that is included in the registered CPA-DDs/14/.

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

Means of verification	<p>The values of, f_{NRB}, $NCV_{biomass}$, η_{old}, $EF_{projected_fossilfuel}$, LF_y, Life Span, $B_{old,HH}$ and $B_{old,i,j}$ have been fixed ex-ante during registration of the CPA-DDs/14/. Accordingly, the values were checked and confirmed with the registered PoA-DD/14/ and respective CPA-DDs/14/.</p> <p>1. Data/Parameter, Unit: f_{NRB}, Fraction Description: Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass. Verified Value:0.966 (for all the CPAs)</p> <p>To be determined at CPA level as per approved revised PoA-DD/14/ and consistent with the respective CPA-DD/14/ and fixed ex-ante.</p> <p>The f_{NRB} value (i.e. 0.966) for all the CPAs included under the current monitoring period was already accepted by validating DOE at CPA level before their inclusion into the PoA; and this is an ex-ante parameter.</p> <p>In accordance with the requirement of Methodology AMS II G version 09 para 39 (a), CME has determined the local f_{NRB} value(sub national values) as per the methodological Tool 30 "Calculation of fraction of non-renewable biomass" version 01/29/. The seven CPAs included under the current verification are applied with the version 01 of the Tool30"Calculation of fraction of non-renewable biomass"/28/which was applicable at the time of CPA inclusion, hence applied tool is valid.</p> <p>The CME has provided the f_{NRB} value calculation sheet /29/where the fraction of woody biomass is calculated as per formula Equation (1), (3), (5) & (6) given in para 9, para 11, para 14 and para 17 of Tool 30 "Calculation of fraction of non-renewable biomass" version 01 /28/respectively.</p> <p>The input value used in the calculation are sourced from survey conducted by a local Centre for Information & Research named "CEDII", which was further validated and accepted by host country DNA in Madagascar/30/. The CME has submitted the DNA approved "f_{NRB} value calculation" /29/conducted by"CEDII"/30/. Based on review of this approved Report/30/ confirmed that the calculated f_{NRB} value, i.e. 96.6% is applicable in the regional and sub-national</p>
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level across the administrative regions in the Province of Fianarantsoa including: Haute Matsiatra, AtsimoAtsinanana, VatovavyFitovinany and Amoron'i Mania. All the seven CPAs included under the current monitoring period of the PoA are under the region "Haute Matsiatra" as confirmed through distribution database; hence f_{NRB} value used for ER calculation is applicable for all the CPAs. The calculation and formulae provided in the report are found to be correct and accordance with the Tool 30 version 01/28/. Thus the assessment team has confirmed that the f_{NRB} value for the 7 CPAs is found to correctly applied as 0.966 in accordance to AMS II G version 09 para 39 (a) and Tool 30 "Calculation of fraction of non-renewable biomass" version 01.

2. Data/Parameter, Unit: $NCV_{biomass}$, TJ/ tonne

Description: Net calorific value of biomass

Verified Value: 0.0156

IPCC 2006 default value for biomass applied in accordance with applied methodology AMS II.G, Version 09/18/. Consistent with the approved revised PoA-DD/14/ and respective CPA-DD/14/ and fixed ex-ante.

3. Data/Parameter, Unit: η_{old} , Fraction

Description: Efficiency of pre - project device, which is a three stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney; for other types of devices, a default value of 0.2 may be optionally used. Weighted average values will be used (taking the amount of woody biomass consumed by each device as the weighting factor) if more than one type of device is being replaced

Verified Value: 0.10

Default value in accordance with Data / Parameter AMS II.G, version 09/18/. Consistent with the registered PoA-DD/14/ and respective CPA-DDs/14/ and fixed ex-ante.

4. Data/Parameter, Unit: $EF_{projected_fossilfuel}$, TCO_2/TJ

Description: Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers

Verified Value: 63.7

IPCC 2006 default value in accordance with applied methodology AMS II.G, Version 09/18/. Consistent with the registered PoA-DD/14/ and respective CPA-DDs/14/ and fixed ex-ante.

5. Data/Parameter, Unit: LF_y , Fraction

Description: Leakage adjustment factor

Verified Value: 0.95

Default value in accordance with the AMS II.G, Version 09/18/.

Consistent with the registered PoA-DD/14/ and respective CPA-DDs/14/ and fixed ex-ante.

6. Data/Parameter, Unit: Life Span, Number of years

Description: Operating life time of the ICS (i.e. SaoRehitra & Lamasinina)

Verified Value: 5.5 (for SaoRehitra) and 15 (for Lamasinina)

Fixed and recorded at the time of commissioning/distribution and certified by Manufacturer/7/. Consistent with the respective CPA-DDs/14/ and fixed ex-ante.

7. Data/Parameter, Unit: $B_{old,HH}$, tonnes/household/year

Description: Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices

Verified Value: 4.39

Consistent with the respective CPA-DDs/14/ and fixed ex-ante at CPA level.

The verification team has cross checked this value for B_{old} from the "Baseline Survey Report conducted by CEDII (Regional Center of Documentation and Information)" /32/. The survey was conducted at the time of validation by an independent third party CEDII covering various sample households across the

	<p>administrative regions in the entire province of Fianarantsoa. There are four regions viz. Haute Matsiatra, Atsimo Atsinanana, Vatovavy Fitovinany and Amoron'i Mania regions which are covered in the survey. The assessment team has verified from the registered CPA locations and from the distribution database of the CPAs that all the CPAs included under the PoA during the current monitoring period is implemented within the region of "Haute Matsiatra". The assessment team has cross checked the location related information from the section 2.3 & 3.2 of the survey report and results are referred from the section 3.19 of the survey report which clearly specifies that baseline fuel consumption value (i.e. value for the parameter B_{old}) is representative of the entire regions that are included in the survey. Hence the value of the parameter B_{old} is applicable for all the CPAs.</p> <p>8. Data/Parameter, Unit: $B_{old,i,j}$, tonnes / year Description: Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type i and batch j Verified Value: 4.39 Consistent with the respective CPA-DDs/14/ and fixed ex-ante at CPA level. The value of $B_{old,i,j}$ is applicable for all the CPAs, as described above.(The number of ICS distributed per household is 1 as verified from the ex-post parameter $N_{d,HH}$).</p>
Findings	CAR#4 & CAR#08 has been raised, refer to Appendix 04 for details.
Conclusion	The values of ex ante fixed parameters have been verified from the registered PoA-DD/14/ and respective CPA-DDs/14/. Same has been crosschecked with the source mentioned in the CPA-DD/14/ and found to be consistent. The verification team confirms that the values used/applied are correct and justified. Also, the ex-ante values have been correctly applied in the calculation of emission reductions.

E.3.4.2. Data and parameters monitored

Means of verification	<p>The monitoring has been carried out in accordance with the monitoring plan contained in the registered PoA-DD/14/ and respective CPA-DDs/14/. During the verification, all relevant monitoring parameter have been verified about the appropriateness of the verification method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures:</p> <p>1. Data/Parameter, Unit: $N_{y,i,j}$, Number of units Description: Number of project devices of type i and batch j operating during year y</p> <table border="1"> <tr> <td>Measuring /Reading /Recording frequency</td><td> <p>The monitoring frequency is at least once every two years in the CPA-DD and PoA-DD/14/. In accordance with of CPA-DD and PoA-DD/14/ the required confidence level and precision for sampling is 95/10 for annual and 95/5 for biennial sampling across CPAs (as per Methodology AMS-II.G version 09.0). In case a single CPA is sampled 90/10 confidence/precision for annual and 95/5 confidence/precision shall be required for biennial sampling. As PP has taken monitoring period 5 month they have taken 95/10 confidence level and precision.</p> <p>As per PoA-DD/14/ the required confidence level and precision for sampling is 95/10.</p> </td></tr> </table>	Measuring /Reading /Recording frequency	<p>The monitoring frequency is at least once every two years in the CPA-DD and PoA-DD/14/. In accordance with of CPA-DD and PoA-DD/14/ the required confidence level and precision for sampling is 95/10 for annual and 95/5 for biennial sampling across CPAs (as per Methodology AMS-II.G version 09.0). In case a single CPA is sampled 90/10 confidence/precision for annual and 95/5 confidence/precision shall be required for biennial sampling. As PP has taken monitoring period 5 month they have taken 95/10 confidence level and precision.</p> <p>As per PoA-DD/14/ the required confidence level and precision for sampling is 95/10.</p>
Measuring /Reading /Recording frequency	<p>The monitoring frequency is at least once every two years in the CPA-DD and PoA-DD/14/. In accordance with of CPA-DD and PoA-DD/14/ the required confidence level and precision for sampling is 95/10 for annual and 95/5 for biennial sampling across CPAs (as per Methodology AMS-II.G version 09.0). In case a single CPA is sampled 90/10 confidence/precision for annual and 95/5 confidence/precision shall be required for biennial sampling. As PP has taken monitoring period 5 month they have taken 95/10 confidence level and precision.</p> <p>As per PoA-DD/14/ the required confidence level and precision for sampling is 95/10.</p>		

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The §40 of applied methodology/18/allows the monitoring frequency to be annual or biennial provided confidence level and precision 90/10 for annual and 95/5 for biennial for single CPA are appropriately considered. In the current monitoring period total 6 CPAs were sampled under two sampling frames (as discussed under section C.2) and both the samples are considered as per 95/10 confidence level and precision has been considered for monitoring at CPA level, which is acceptable considering required confidence level achieved.
	Monitoring equipment	Not applicable
	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?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	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?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
How were the values in the monitoring report verified?	The value of parameter is calculated based on the results of the sampling survey that was conducted by CME at PoA level by grouping all the CPAs that are considered in the current monitoring period. One sampling frame is designed for ICS type	

			<p>“SaoRehita” covering the CPA 1st, 2nd, 3rd, 4th and 6th and other frame is for ICS type “Lamasinina” covered under the 5th CPA. This information are reported under the section C.2 above.</p> <p>For this particular parameter, the surveys provided the fraction of ICS type for the CPAs. In all, total 87 samples (43 samples from the Sampling Frame 1 and 43 samples from the sampling frame 2) which were proportionately selected from all the CPAs were surveyed for this particular parameter. Moreover, another 24 samples (13 from sampling frame 1 and 11 from frame 2) which were considered for the baseline usages parameter (i.e. $\mu_{y,i,j}$) are also surveyed by CME for this parameter $N_{y,i,j}$. Thus, total sample surveyed samples for this parameter was 110. However, the result for this parameter is presented only against the minimum sample size required across both the frames.</p> <p>The sample size calculator required a minimum of 43 samples to be surveyed from each of the sampling frame 1 & 2. The calculation for determining the sample size were checked by the verification team from Sample size calculation spreadsheet/4/ and found to be appropriate and consistent with equation in the registered PoA-DD/14/. The verified values are included in the final MR (version 02)/2/. The required level of precision i.e. 10% or less has been achieved at 95% confidence level as mentioned in section E.3.4.3 of this report.</p> <p>100% ICS found operating for during the DOE sampling survey.</p> <p>Final verified values for ICS operating during this monitoring period = $64,936 * 100\% = 64,936$.</p>	
		If applicable, has the reported data been cross-checked with other available data?	Yes. The survey results/6/, assumptions and registration records/5/ were checked by the verification team and were found acceptable. The results are	

		<p>reproducible in the corresponding ER spreadsheet (version 02)/3/ of final MR (version 02)/2/.</p> <p>The verification team randomly selected 18 samples for DOE's field survey from each of the two sampling frames submitted by CME and found that all the ICS were operational, which confirms the CME's sample survey results.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the on-site assessment.
	<p>2. Data/Parameter, Unit: Date of commissioning of project device i , Date Description: Actual date of commissioning of the project device i</p>	
	Measuring /Reading /Recording frequency	The data is recorded from start date of ICS distribution 09/10/2018 up to 31/10/2019, which is the end date of monitoring period. The month wise distribution details across all the CPAs are discussed under the section E.2.1 above, which were verified by DOE in the ICS registration database/5/.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The PoA-DD and CPA-DDs/14/ follow the continuous recording frequency.
	Monitoring equipment	Not applicable
	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?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	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?	Not applicable

	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
	How were the values in the monitoring report verified?	<p>The data of distribution of ICS is recorded in End User Agreement/11/ signed by ICS User at the time of ICS distribution to the individual household. After completion of distribution of ICS the data is transferred in electronic form (excel sheet) at CPA level by CME.</p> <p>The verification team checked the ICS distribution records (End User Agreements)/11/ and ICS registration database/5/. Also, verification team confirmed the same during on site visit for sample households against the entry in End User Agreements/11/ and ICS registration database/5/. Verification team hereby confirms that the recorded dates of distribution of ICS in ICS registration Database/5/are correctly mentioned.</p> <p>However, CME assumed that some end user may have got the ICS at the end of the day or in late afternoon during distribution to the end user. So, they may not start using the ICS on same day. Hence, consideration of ICS operation date as the next day from the date of distribution to end user is considered appropriate and also conservative.</p>
If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team cross checked the start date and end date of distribution as mentioned in the MR/02/ with the dates of ICS distribution as per signed end user agreement for individual ICS/11/ as well as from ICS registration database/5/ during on site visit.	

		Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.
	3.	Data/Parameter, Unit: μ_y , Fraction Description: Adjustment to account for any continued use of pre-project devices during the year y	
		Measuring /Reading /Recording frequency	The monitoring frequency is at least once every two years in the CPA-DDs and PoA-DD. In accordance with the CPA-DDs and PoA-DD/14/ the required confidence level and precision for sampling is 95/10 for annual and 95/5 for biennial sampling.
		Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	The PoA-DD and CPA-DDs/14/ allows the monitoring frequency to be annual or biennial provided confidence level and precision are appropriately considered. In the current monitoring period total seven CPAs are included and sampled in two different sampling frames (as discussed under the section C.2 above)and monitoring frequency is within the first year of the crediting period.CME has consideration 95/10 confidence level and precision, thus it is found to be acceptable and conservative.
		Monitoring equipment	Not applicable
		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?	Not applicable
		Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
		Calibration frequency /interval:	Not applicable
		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?	Not applicable

	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
	How were the values in the monitoring report verified?	<p>The value of parameter is calculated based on the results of the sampling surveys that were conducted by CME at PoA level across the group of the CPAs sampled under the two sampling frames (as discussed under the section C.2) which are covered in the current monitoring period. The monitoring of this parameter was done through interviews with end users as part of the monitoring survey performed by the monitoring team using the questionnaire developed by the CME. The survey and sampling practice was demonstrated in the form of survey report and survey data are also submitted in Survey excel file. The survey conducted was found to be in line with the requirement of the page 14 of the applied methodology. The value (i.e. fraction) derived from this survey provided the value for the μ_y is applicable for each CPA.</p> <p>In all, total 24 samples (13 samples from the Sampling Frame 1 and 11 samples from the sampling frame 2) which were proportionately selected from all the CPAs were surveyed for this particular parameter. These are the required minimum sample size calculated using the appropriate sampling size equations. The calculation for determining the sample size were checked by the verification team and found to be appropriate and consistent with equation in the registered PoA-DD/14/. The required level of precision i.e. 10% or less has been achieved at 95% confidence level as mentioned in section E.3.4.3 of this report.</p> <p>None of the pre-project stove found in operation for during the</p>

		<p>DOE's sampling survey at time of site visit. Thus, as per CME's survey an adjustment factor for baseline usages has been considered as 100% (or 1). DOE has found that the results are based on the survey data captured during the sampling survey period "11th Nov 2019 to 15th Nov 2019". DOE has reviewed the survey data and calculation practice demonstrated under the sampling survey excel files/6/ separately submitted for both the sampling frames and found to be in accordance with the prescription of the applied methodology (version 9, AMS II G) and in line with registered sampling plan.</p> <p>Thus, the value for the parameter μ_y is 1 (or 100%) which is the adjustment factor applied in the ER calculation, which is found to be accurate as also consistent with the DOE's onsite survey results. (more details related to this parameter μ_y are discussed under the section E.3.4.3). Moreover, as per page 14 of the methodology (AMS II G, ver 09) : "If the pre-project devices are decommissioned and no longer used, as determined by the monitoring survey its value is 1.0". This is the case applicable for the current monitoring period.</p>	
	If applicable, has the reported data been cross-checked with other available data?	<p>Yes. The survey results/6/ were checked by the verification team and the applied value was found acceptable. The results are reproducible in the corresponding ER spreadsheet/3/ of final MR/2/.</p> <p>The verification team randomly selected 18 samples from each of the sampling frame for DOE's field survey and found that there is no traditional stove is operational along with ICS installed under the CPAs, which confirms the CME's sample survey results are appropriate and conservative.</p>	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. Based on the interaction during on site visit the verification team confirmed that trainings were provided to the staff responsible for collection of data and that the QA/QC procedure</p>	

		are in place.																					
	<p>4. Data/Parameter, Unit: N_{d,HH}, Number Description: Number of project devices distributed per household</p> <table border="1"> <tr> <td>Measuring /Reading /Recording frequency</td> <td>The data is recorded from start date of ICS distribution 09/10/2018 up to 31/10/2019, which is the end date of the current monitoring period as verified from the ICS distribution in ICS registration database/5/.</td> </tr> <tr> <td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td> <td>Yes. It is in line with the PoA-DD and CPA-DDs.</td> </tr> <tr> <td>Monitoring equipment</td> <td>Not applicable</td> </tr> <tr> <td>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?</td> <td>Not applicable</td> </tr> <tr> <td>Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?</td> <td>Not applicable</td> </tr> <tr> <td>Calibration frequency /interval:</td> <td>Not applicable</td> </tr> <tr> <td>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?</td> <td>Not applicable</td> </tr> <tr> <td>Is the calibration of measuring equipment carried out by an accredited person or institution?</td> <td>Not applicable</td> </tr> <tr> <td>Is(are) calibration(s) valid for the whole reporting period?</td> <td>Not applicable</td> </tr> <tr> <td>Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?</td> <td>Not applicable</td> </tr> <tr> <td>How were the values in the monitoring report verified?</td> <td>The minimum value can be 1 e.g., for only one ICS provided to each household.</td> </tr> </table>	Measuring /Reading /Recording frequency	The data is recorded from start date of ICS distribution 09/10/2018 up to 31/10/2019, which is the end date of the current monitoring period as verified from the ICS distribution in ICS registration database/5/.	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. It is in line with the PoA-DD and CPA-DDs.	Monitoring equipment	Not applicable	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?	Not applicable	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable	Calibration frequency /interval:	Not applicable	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?	Not applicable	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable	Is(are) calibration(s) valid for the whole reporting period?	Not applicable	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable	How were the values in the monitoring report verified?	The minimum value can be 1 e.g., for only one ICS provided to each household.
Measuring /Reading /Recording frequency	The data is recorded from start date of ICS distribution 09/10/2018 up to 31/10/2019, which is the end date of the current monitoring period as verified from the ICS distribution in ICS registration database/5/.																						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. It is in line with the PoA-DD and CPA-DDs.																						
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How were the values in the monitoring report verified?	The minimum value can be 1 e.g., for only one ICS provided to each household.																						

			<p>The verification team has verified the same through the interview with Individual households during DOE on site visit. Moreover, the unique serial numbers of the ICS are verified against the distribution database and also from the copies of registration card available with the households, which confirm that only one ICS has been provided to each household under the CPAs. The verified results are included in the final MR/2/ and corresponding ER spreadsheet/3/.</p>	
		<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>Yes. All the input values used to calculate this parameter were cross-checked by verification team against ICS registration database/5/ any similar names and address appearing for more than 1 ICS number.</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. Once the ICS is distributed to the beneficiary it is registered into respective ICS registration database. The spot checks were regularly conducted by CME through the ground team in order to correct the ICS registration database, if required or as may be appropriate. During the site visit the ICS distribution process, record keeping (distribution dates) and process of spot check were reviewed and were found reliable.</p>	
		<p>5. Data/Parameter, Unit: $\eta_{new,i,j}$, Fraction Description: Efficiency of the project device of each type <i>i</i> and batch <i>j</i></p>		
		<p>Measuring /Reading /Recording frequency</p>	<p>The efficiency of project devices (both for SaoRehitra & Lamasinina) was calculated for the vintage 1, following Water Boiling Test protocol 4.2.4/22/ based on approach 3 of Data/Parameter of the applied methodology, version 09/18/.</p> <p>Also, the loss in efficiency has been accounted for by applying the adjustment factor in line with para 27(a) of the methodology and the efficiency for subsequent years determined by deducting this annual loss %.</p>	
<p>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</p>	<p>Yes. As per CPA-DDs/14/.</p> <p>The value has been measured and reported based on WBT results on a batch of operational ICS during the vintage 1, followed by application of para 27(a) of the methodology; which is in accordance with the monitoring plan.</p>			

			<p>The Stove technologies (both SaoRehitra & Lamasinina) provider is a reputed organization (Tandavanala) in Madagascar and also the stove design specifications, development and quality etc. are tested by CNRIT Lab, Department of Energy, Madagascar. Therefore, approach 3 of Data / Parameter table 11 of applied methodology /18/ can be applied for the monitoring of efficiency of the project device.</p>
	Monitoring equipment		<p>Not applicable as value is taken from the third party certified WBT report.</p> <p>The WBT tests were coordinated by the CME and undertaken following the requirements of WBT protocol 4.2.4/22/ by experienced professional and team which were trained/20/ to conduct WBT. The tester is a Researcher at the National Centre for Industrial and Technological Research, having 30 years of work experience in the field of Thermal Energy & Industrial processes. Thus, the WBT tests were conducted by credible and experienced professional who represents the third party.</p> <p>The PoA-DD or CPA-DDs do not prescribe any specific monitoring equipment but weighing scale, digital moisture meter and digital thermometer were required and used to conduct WBT, as reported by the third party</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?		Yes
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?		Yes
	Calibration frequency /interval:		Not applicable as value has been considered from third party report.

	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?	Yes
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes
	Is(are) calibration(s) valid for the whole reporting period?	Yes
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes
	How were the values in the monitoring report verified?	<p>For SaoRehitra ICS: 31.50% (value considered for ICS in 'vintage period 1') 29.41% (adjusted value considered for ICS in 'vintage period 2' as per para 27(a) of the applied methodology)</p> <p>For Lamasinina ICS: 31.71% (value considered for ICS in 'vintage period 1')</p> <p>Details: For ICS type "SaoRehitra", the operational efficiency for vintage 1 was tested during the first monitoring period on a batch of operational ICS (through a sampling WBT, conducted by a third party agency). This value was 31.5% which is conservative as compared to the value estimated at the time of validation and CPA inclusion (i.e. 32.2%). Therefore, the final value considered for ICS type "SaoRehitra" for the 1st vintage is 31.5%.</p> <p>The value of η_{new} for subsequent vintages (i.e. for vintage 2, applicable during the current monitoring period) was calculated as per the provision of para 27(a) of the applied methodology (version 09). Therefore, the loss in yearly efficiency has been calculated considering the base efficiency of vintage-1 as 31.5%. Thus, the value resulted for 'vintage 2' is 29.41% which is applied in the ER calculation.</p> <p>For the ICS type "Lamasinina", the same practice has been adopted. This ICS model has been included under the CPA-5 and CPA-5 was included into the PoA during the</p>

		<p>current monitoring period. The ICS distribution also took place during the current monitoring period. Therefore, a sampling WBT survey was conducted (by a third party agency) on a batch of operational ICS to measure the value of η_{new} for the ICS operational in the vintage 1. The resulted value is 31.71% which is found to be conservative as compared to the value estimated at the time of CPA inclusion (i.e. 33%). Therefore, the final value considered for ICS type "Lamasinina" for the 1st vintage is 31.71%. Whereas, there is no Lamasinina ICS in the 2nd vintage during the current monitoring period, hence para 27(a) of the methodology is not applicable for Lamasinina.</p> <p>The reported values were checked with the actual WBT results obtained from test conducted by the professional from CNRIT Lab, Department of Energy, Madagascar/6/ and filled in Data Sheets (for this purpose) and were found consistent. The consideration of value of this parameter η_{new} has been cross checked in the ER sheet and found to be correct.</p> <p>For the sampling WBT conducted during the current monitoring period for Lamasinina ICS, a total of 11 samples (under the sampling frame 2) were considered for WBT and the WBT was conducted as per the latest applicable WBT protocol. The sample survey approach is included under Section E.3.4.3 of this report. The detailed calculation of sample data, results and adjusted final values are reported under the sampling sheet, which are further verified from primary records during the site visit.</p> <p>Thus, the verified value of η_{new} for SaoRehitra is 31.50% and 29.41% for vintage 1 & vintage 2 respectively and that for Lamasinina is 31.71% for vintage 1. The reported values are found to be consistent with the previous monitoring report, test results, certified WBT report. Also the approach and application of this parameter found to be conservative and appropriate.</p>	
	If applicable, has the reported data been cross-checked with other available data?	<p>Not applicable.</p> <p>The values are based on actual WBT tests conducted at standard conditions and conducted by experienced professional, thereafter further adjusted for loss in efficiency as per para 27(a) of the methodology, therefore approach is in line with registered monitoring plan and in accordance with the applied methodology, hence considered acceptable.</p>	

	<table border="1" data-bbox="501 152 1422 584"> <tr> <td data-bbox="501 152 852 584">Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?</td><td data-bbox="852 152 1422 584">Yes. Based on the interaction during on site visit the verification team confirmed that trainings were provided to the staff responsible for conducting the WBT and that the QA/QC procedure is in place. WBT Protocol Version 4.2.3 (WBT spreadsheet 4.2.4) /22/ was applied, which is acceptable. Moreover, the WBT tests on the selected samples were conducted by experienced professional and results were verified and certified by a third party "CNRIT Lab, Department of Energy, Madagascar"; which itself confirms the reliability and quality of the WBT practice.</td></tr> </table> <p data-bbox="453 613 1441 1010">6. One of the monitoring parameters "Date of commissioning of batch j" as mentioned in the CPA-DD/14/ was not monitored by CME, since CME considered date for commissioning for each individual ICS in ER Calculation rather than single date for commissioning for batch of ICS. This is in line with the applied methodology AMS-II.G., version 09, which states that CME may opt to group the devices in batches and the latest date of commissioning of a device within the batch shall be used as the date of commissioning for the entire batch. However, CME opted to report the date of commissioning of each project device separately which is properly recorded in the distribution database and are available to cross check from the beneficiary agreement signed at the time of distribution and still available a copy with the beneficiaries at their houses and another back copy with the CME. Same is explained above in detail.</p> <p data-bbox="501 1039 1441 1435">Moreover, from the on-site visit DOE confirms that the production of particular type of ICS (i.e. SaoRehitra) and development & commissioning of fixed stove (i.e. Lamasinina) at identified households are based on a continuous process, which means there is no batch-wise production. Similarly distribution and commissioning of stoves are also a continuous process however there are different numbers of stoves distributed in each month which can be counted from the distribution database (also from the user's agreement copies). In this regard, the start date of accounting of emission reductions for stoves distributed in a particular month has been considered as the next day of the last date of stove distribution for that month. This practice adequately addresses the requirement of the parameter "Date of commissioning of batch j" and DOE finds this is to be the most conservative approach and hence justifies the particular parameter.</p>	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. Based on the interaction during on site visit the verification team confirmed that trainings were provided to the staff responsible for conducting the WBT and that the QA/QC procedure is in place. WBT Protocol Version 4.2.3 (WBT spreadsheet 4.2.4) /22/ was applied, which is acceptable. Moreover, the WBT tests on the selected samples were conducted by experienced professional and results were verified and certified by a third party "CNRIT Lab, Department of Energy, Madagascar"; which itself confirms the reliability and quality of the WBT practice.
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. Based on the interaction during on site visit the verification team confirmed that trainings were provided to the staff responsible for conducting the WBT and that the QA/QC procedure is in place. WBT Protocol Version 4.2.3 (WBT spreadsheet 4.2.4) /22/ was applied, which is acceptable. Moreover, the WBT tests on the selected samples were conducted by experienced professional and results were verified and certified by a third party "CNRIT Lab, Department of Energy, Madagascar"; which itself confirms the reliability and quality of the WBT practice.		
Findings	CAR#2, CAR#5 & CAR#8 have been raised in this context. Refer Appendix 4 of this report for detailed finding.		
Conclusion	Corresponding to the §346 of CDM VVS for PoA, V2/17/, the verification team confirm that the monitoring has been carried out in accordance with the registered PoA-DD/14/ and CPA-DDs/14/. The monitoring system follows the information flow for the parameters as mentioned in monitoring plan in registered PoA-DD and registered CPA-DDs/14/. The monitored data for the parameters has been verified by checking the procedure for information flow and found to be complete and consistent with registered CPA-DDs/14/.		

E.3.4.3. Implementation of sampling plan

Means of verification	<p data-bbox="453 1852 1441 1921">The monitoring has been carried out in accordance with the monitoring plan contained in the PoA-DD/14/ and respective CPA-DDs/14/.</p> <p data-bbox="453 1957 1441 2049">Sampling Design/Target Population/Sampling Frame/Reliability: CME has followed the sampling plan as prescribed under the registered PoA-DD, section B.5.2. As per the same, the share of operating stoves and the continued</p>
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use of pre-project devices are determined based on sampling procedures.

A Simple Random Sampling technique has been used, which is in line with the monitoring plan of the PoA-DD (Section I.7.2)/14/ as referred in the respective CPA- DDs/14/. In this sampling design, all the seven CPAs(i.e. CPA-0001, 0002, 0003, 0004, 0005, 0006& 0007) that were implemented under the current monitoring period was subjected. However, CPA-0005 includes fixed cook stove design “Lamasinina” and other CPAs are with portable “SaoRehitra”. Therefore two different sampling frames have been designed and required sampling size calculated separately for both the sampling frames. The sampling frames can consider confidence level and precision as 95/10 for annual and 95/5 for biennial sampling survey in order to meet the requirement of Standard/23/. CME has applied 95/10 for sampling option for both the sampling frames. And samples were selected proportionately from all CPAs such that each ICS had the equal chance of selection.

Sampling Method:

As per the provision of registered sampling plan, the simple random sampling method has been considered. Thereafter, ICS/households present in various locations were randomly selected as per the outcome of sampling size calculation for respective parameter across the two sampling frames and for sampling frame 1 (i.e. for SaoRehitra ICS covered under CPA 1st to 4th and 6th) the total sample size has been proportionately broken up for each CPAs considering the ratios of ICS distributed under the CPAs. Since the ICSs are of same type and the end beneficiaries are homogenous (i.e. baseline with three stone open fire) therefore, simple random sampling is justified. Similarly, sampling frame 2 is only for CPA-0005 that covers only the fixed ICS type Lamasinina. Thus, simple random sampling is suited for this frame as well.

Sample Size (Required and Actual) for Parameter of Interest:

The sampling is applied to the following monitoring parameters:

$N_{y,i,j}$: Number of project devices of type i and batch j operating during year y

μ_y : Adjustment to account for any continued use of pre-project devices during the year y

Also, an additional sampling was conducted for the parameter “efficiency ($\eta_{new,i,j}$)” of the project ICS type Lamasinina, which was calculated based on sampling Water Boiling Tests (WBT). The purpose of consideration of WBT sampling is to measure the η_{new} value for the ICS operational in the 1st year of operation as compared to value available at the time of CPA inclusion. The ICS type Lamasinina has been included under the CPA-5 during the current monitoring period.

The representative sampling has been undertaken as part of a PoA-wide Sampling Plan (by grouping and sampling across the CPAs in under two sampling frames as discussed above) that is designed in line with the requirements of the “Sampling and surveys for CDM project activities and programme of activities”, version 04. The minimum sample size for each monitoring parameter has been calculated based on 95/10 confidence/precision which suffices for annual sampling.

The procedure to determine the sample of households will ensure that they adequately represent the broader project population, minimizing sampling error.

Under both the sampling frames, the sample size was determined for the total population of stoves for **$N_{y,i,j}$** and **μ_y** both being proportional value. Also, efficiency of

the project ICS ($\eta_{\text{new},i,j}$) is a monitoring parameter, which was calculated based on sampling Water Boiling Tests (WBT).

$N_{y,i,j}$: Visual inspection of the premises to see if ICS is operational and in use. Interview with enduser if required to verify that ICS is still in use (Yes/No)

Hence the survey was designed and data collected accordingly.

$\mu_{y,i,j}$: Pre project device only is in use then fraction to be used to calculate total number, however if pre project device is used along with project ICS, proportion of usage of each will be determined by cooking habits evaluated by survey questionnaire during the monitoring period.

The verification team has checked the survey forms and the reports submitted during the verification process. Hence it can be concluded that the survey was designed and data collected according to the requirements of the methodology and in line with the sampling guidelines. Here, option 2 of the page 14 of the applied methodology has been referred and sampling survey was designed in line with the same.

Using the formulas as given in the section "Sample Size" in registered sampling plan of the PoA-DD, the CME has randomly sampled the required number of ICS from the primary sampling units.

For the parameter " $N_{y,i,j}$ " the resulting sampling size for a 95/10confidence/precision is calculated for the total population size, which comes out to be

$$n \geq \frac{1.96^2 N \times p (1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.96^2 \times p (1-p)}$$

Where:

n = Sample size

N = Population size (Total number of households/ICS)

p = Expected proportion

1.96 = Represents the 95% confidence required

(In the case of 90% confidence, 1.645 shall be used)

0.1 = Represents the 10% relative precision

$$n \geq 42.55$$

$$n = 43$$

(the calculation has been checked from the two sample size calculation excel sheets/4/ submitted by CME and is found to be correct)

However in case of sampling frame 1, since the total population is combination of 5 CPAs with SaoRehitra ICS (7th CPA has not been distrusted under the current monitoring period), therefore the sample size of this sample frame is proportionately distributed for each CPA and a total sample size of 43 has been selected proportionately. The calculation of sample size has been verified from the sample survey sheet. In case of sampling frame 2, similar approach was taken and this sample size is 43 which are randomly selected from the CPA-005.

Similarly, for the other parameter $\mu_{y,i,j}$, the resulting sampling size for a 95/10confidence/precision is calculated for the total population size, which comes out to be

$$n \geq 4, \text{ i.e. } n = 4.$$

Since the calculated sample size was found to be less than 30, therefore, CME has

applied t-Distribution to have an adjusted sample size. After applying the t-Distribution, the adjusted sample size is found to be 11. Therefore, in this case a sample size of 11 is supposed to be sampled from the primary sampling unit. However, since the total population is combination of five CPAs, therefore the sample size of the sample frame is proportionately distributed for CPAs and rounded up values have been considered to ensure a proportionate selection from each CPA in the frame, which resulted a total sample size of 13. The calculation of sample size has been verified from the sample survey sheet. In case of sampling frame 2, this sample size is 11 as it covers only one CPA (i.e. 5thCPA).

Similarly, the required sample size calculation has been conducted for the parameter, η_{new} , for Lamasinina ICS under sampling frame 2. Since sample size calculated was below 30, so t-Distribution has been applied to adjust the sample which has resulted into a sample size of 11 for the sampling frame 2. The details of calculation, sample selection, sample data, results all are transparently referred in the sample survey sheets. The data and results were verified from the primary sampling data collection sheets and also randomly verified during the interaction with households during site visit.

Thus, the sample size finalized for all the three parameters are as follows:

Parameter	Sample size calculated (for Sampling Frame 1)	Sample size calculated (for Sampling Frame 2)
$N_{y,i,j}$	43	43
$\mu_{y,i,j}$	13	11
$\eta_{new,i,j}$	NA	11

The sample size calculation spreadsheets/4/ were checked and found correct as per registered monitoring plan mentioned in CPA-DDs/14/.

As can be seen that the sampling requirements were met for all the stoves. The actual surveyed ICS were equal to the required number, as mentioned above. As these were based on sampling approach, hence respective reliability of precision was checked for each parameter using the specific formula in line with the Sampling Guideline (version 04) and Sampling Standard (version 07); and found the results to be within the prescribed limits (<10%).

Sample selection:

The CME has considered selection of samples based on Random selection; and for such random selections an online randomizer has been used (<https://www.randomizer.org/>). Also, in order to confirm the random selection based on this online randomizer, the screen shoots of the randomizer website at the point of random result generation were kept for references. The same samples which were generated by the randomizer were considered for monitoring survey and testing. DOE has checked the copies of the survey forms submitted by CME which are further crosschecked with the "sample selection" sheet to confirm that the same samples were surveyed/tested during the monitoring survey conducted for this verification. There was no non-response in any of the samples, and sampling results were found to be within the prescribed precision range during the reliability check. Hence re-sampling or over-sampling was not required.

The random sample selection has been verified by the verification team from the sample size calculation sheets/4/. The samples were drawn from the complete ICS registration databases. The same is found to be justified and appropriate. Hence the verification team able to confirm that the samples are representative of the total population.

Based on interviews with the CME and surveyors during the site visit, in addition to simply asking this question to the end users, the surveyors were also trained to visually inspect the stoves to corroborate the responses received. Therefore, the implementation of survey was considered reliable.

Survey Results:

For parameter N_y : As confirmed from the sampling survey sheet/4/, the survey was done based on visual inspection of the premises to see if project ICS is operational and in use. During Interview with end-users, the presence of ICS and its unique numbers were physically verified.

For parameter μ_y : As confirmed from the sampling survey sheet/4/, the CME has designed the survey by adopting sampling approach in accordance with the page option 2 of the page 14 of the applied methodology, as per the provision of Sampling Standard and also the sampling Guideline, which is also in line with the monitoring section of the registered PoA-DD. However survey confirmed that there is no existence of any baseline stove that is operational along with the project ICS. Thus, it eliminates the risk of any probable continued use of baseline stove at project scenario. The CME has submitted the sampling survey excels (separately for both the sampling frames), with detailing of the calculation practice from the survey data, and also the primary data collection sheets. All details are consistent and are in conformity with DOE's on-site observation.

For parameter η_{new} :

As confirmed from the sampling survey sheet/4/, the result of this parameter was drawn based on the Water Boiling Test (WBT) conducted on the selected samples. The WBT assessment sheets were checked during the onsite audit and found to be consistent with the data and results included in the sampling sheets. WBT tests were conducted by an experienced professional, by following standard requirements of WBT protocol. For each stove sample all three required tests of Cold Start, Hot Start and Simmer performed using pre-calibrated equipment and values were properly reported and certified by the expert under 'National Centre of Industrial and Technological Research of the Ministry of Higher Education and Scientific Research of Antananarivo, Madagascar.

The objective of considering this parameter for sampling was to derive the value of efficiency from the actual ICS (Lamasinina) samples operational in the 'vintage 1'. The WBT was conducted by a third party as per WBT protocol, the result has been compared with the efficiency value considered at the time of CPA inclusion and found to be conservative. Hence this result is considered as the ex-ante fixed value for the ICS type in 'vintage 1'. The details are verified from the section E.2 of the MR and further referred in the ER sheet.

Reliability and precision calculation:

The verification team has verified the sample size calculation spreadsheets/4/ with the monitored data, where the actual achieved precision is calculated against the Guidelines outlined under "Standard for sampling and surveys for CDM project activities and programme of activities" (version 07)/23/ and can confirm that the calculation of achieved reliability was done correctly. The verification team confirmed from the sample size calculation spreadsheets/4/ that the required precision was kept <10% during sample size calculation for each type of stove for each vintage. The equations used for reliability and precision calculation are specified by CME under the "Sample Size Equations" sheet in the Sampling Survey excel files (ver 01, dated 02/12/2019). The same are also included under the Appendix 2 of the MR (ver 03, dated 20/07/2020).

The equation used for reliability check:

$$\frac{\frac{1}{2} \text{width of confidence interval}}{\text{proportion}} \times 100\%$$

Where sample equation used is based on proportional value, the width of the confidence interval has calculated using the formula:

$$p \pm 1.96 \times \sqrt{1 - \frac{n}{N}} \times \sqrt{\frac{p(1-p)}{n}}$$

This equation is applicable for the parameter N_y .

Whereas, when mean value (i.e. 'sample mean') and 'standard deviation' (SD) are used in sampling, the confidence interval has been calculated using the formula:

$$\text{Sample Mean} \pm t_{(n-1)} \times \sqrt{1 - \frac{n}{N}} \times \frac{SD}{\sqrt{n}}$$

This equation is applicable for the parameters μ_y and η_{new} .

In both the equations, the 'Standard Error' is referred by the section respectively as follows:

$$\sqrt{1 - \frac{n}{N}} \times \sqrt{\frac{p(1-p)}{n}} \quad \text{and} \quad \sqrt{1 - \frac{n}{N}} \times \frac{SD}{\sqrt{n}}$$

Where:

n = Sample size

p = sample proportion

N = Population size

1.96 = Represents 95% confidence required

SD = Standard Deviation

Here, $t_{(n-1)}$ represents the relevant value from the t-distribution with $(n-1)$ degrees of freedom that is associated with the confidence.

The results for calculations are reproduced, as an example, in the table for parameter $N_{y,i,j}$ as follows –

Table – Sample size calculation prior to survey

For sampling Frame 1 (i.e. for SaoRehitra ICS):

Parameter	Value	Source/ basis
Population Size	59936	ICS registration database (Number of stoves registered in database till 31/10/2019)
Sample Size	43	Calculated value by CME for sample size calculation.

For sampling Frame 2 (i.e. for Lamasinina fixed ICS):

Parameter	Value	Source/ basis
Population Size	5000	ICS registration database (Number of stoves registered in database till 31/10/2019)
Sample Size	43	Calculated value by CME for sample size calculation.

The following table represents precision achieved after the survey, as an example, for the same parameter of interest (i.e. $N_{y,i,j}$) discussed above.

For sampling Frame 1 (i.e. for SaoRehitra ICS):

Parameter	Value	Source/ basis
$N_{y,i,j}$	43	Actual sample size surveyed
Overall Proportion	1.00	Actual value
Confidence Level	1.96	95% confidence level

Precision achieved	0.0%	Calculated
Is required precision achieved?	Yes	< 10%

For sampling Frame 2 (i.e. for Lamasinina ICS):

Parameter	Value	Source/ basis
$N_{y,i,j}$	43	Actual sample size surveyed
Overall Proportion	1.00	Actual value
Confidence Level	1.96	95% confidence level
Precision achieved	0.0%	Calculated
Is required precision achieved?	Yes	< 10%

In the same manner, all parameters of interest are included in the Sample Size Calculation spreadsheets/4/. These were checked for the input values as well as formula applied and were found consistent. The reliability (demonstration of precision achieved after the survey results) is depicted in the Sample Size Calculation Spreadsheets/4/ corresponding to final Monitoring Report/2/, which were also found correct. The monitoring surveys conducted for the current monitoring period for the parameters $N_{y,i,j}$ and μ_y from 11/11/2019 to 15/11/2019 and also the parameter $\eta_{new,i,j}$ was conducted from 04/11/2019 to 08/11/2019 for the SaoRehitra ICS under sampling frame 1 and for Lamasinina WBT was conducted during 11/11/2019 to 15/11/2019 /6/.

Table – Actual Precision Achieved based on Survey results:

For sampling Frame 1 (i.e. for SaoRehitra ICS):

(Ref: "Sampling Survey_Sampling Frame I (CPA1-4 and 6)_final (Dec 2019)")

Monitoring Parameter	Precision Achieved	Is required Precision achieved? (< 10%)
$N_{y,i,j}$	0%	Yes
$\mu_{y,i,j}$	0%	Yes

For sampling Frame 2 (i.e. for Lamasinina ICS):

(Ref: "Sampling Survey_Sampling Frame II (CPA5)_final (Dec 2019)")

Monitoring Parameter	Precision Achieved	Is required Precision achieved? (< 10%)
$N_{y,i,j}$	0%	Yes
$\mu_{y,i,j}$	0%	Yes
$\eta_{new,i,j}$	1.34%	Yes

The sampling calculations, survey data, results and reliability check etc. are properly demonstrated under the sampling survey excel files/4/. Based on the verified results the verification team found that the required precision is met in line with the requirements in all the cases; and therefore the survey results/4/ were directly used in the calculation of ERs.

Also, the verification team has verified the sampling calculation, results and precision derived from the sampling etc. against the Sampling Standard and also referred to "Best Practice Example" in the sampling guidelines. The overall sampling practice, results and precisions etc. are found to be in line with the required specifications. Further, the verification team has cross checked the survey input values from the primary survey forms which were made available to DOE during the on-site audit. The input values from the survey for the respective monitoring parameters are found to be consistent, no discrepancy observed, the

	required confidence/precision has been met; and the selected samples were representative of the population in each sampling frame. This has also fulfilled the requirement of the para 24 of the sampling standard (version 7).
Findings	CAR#1 and CAR#7 have been raised in this context. Refer Appendix 4 of this report for detailed finding.
Conclusion	The sample size selected confirms the desired 95% level of confidence and with a 10% margin of error. CME has submitted the sampling calculation, survey results and detailed calculation sheet which has been verified by assessment team and found to be acceptable. Hence, the sampling survey carried out by CPA implementer is in accordance with §24 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07)/23/.

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

Means of verification	<p>The registered monitoring plan (of respective CPA-DD and PoA-DD/14/) does not state the calibration requirements for any of the parameter. However, as good practice, the verification team enquired information with regard to monitoring equipment viz., weighing scale and thermometer that were used to conduct the parameter “Efficiency of the project device of each type <i>i</i> and batch <i>j</i>”.</p> <p>As a result, following information was verified:</p> <p>For sampling Frame 1 (i.e. for SaoRehitra ICS): Not applicable.</p> <p>For sampling Frame 2 (i.e. for Lamasinina ICS):</p>	
	Instrument	Specifications
	Electronic Scale	<ul style="list-style-type: none"> ✓ Colour: Silver & White ✓ Dimension: 370 X 130 X 360 mm ✓ Weight : 97.81 oz/2773g ✓ Material : plastic & Iron sheet ✓ Model: ACS-30 ✓ Capacity: 30kg to 40 kg (max) ✓ Division: 5g ✓ Graduation: 5g ✓ Make Year: 2017 ✓ Last Calibration status: March 2019 ✓ Validity: Annual
	Thermometer	<ul style="list-style-type: none"> ✓ °C select ✓ Hold function ✓ With tubular case ✓ Display type : Digital display providing accurate and clear indication ✓ Material : Stainless steel & ABS ✓ Temperature measure range : -50°C – 300° C ✓ Temperature measurement accuracy : ±1degree ✓ Probe length : 14.8cm ✓ Make Year: 2017 ✓ Last Calibration: March 2019 ✓ Validity: Annual
	Thermo-Hygrometer (Temptec 4 In 1)	<ul style="list-style-type: none"> ✓ Measurable Temperature Range : -50c ~ +70c ; -58°F ~ +158°F (C/F selectable) ✓ Relative Humidity Measure Range : 20%~90% ✓ 3meter external outdoor sensor cord ✓ Clock Function ✓ Foldable Stand & Wallmountable

		✓ LCD size : 41mm x 60mm ✓ Make Year: 2019 ✓ Calibration: NA (new device)
	Pot (Ambatolampy)	✓ Depth : about 11cm ✓ Ø : about 24cm ✓ Thickness : about 0.7cm ✓ Weight : about 700gr to 750gr ✓ Material : ferrous allumino ✓ Calibration: NA
	Tape Measure	✓ the measuring range is 60 inches/ 150 cm (dual sided), ✓ Easy to read ✓ Good sewing tool: a flexible measuring tape ✓ Calibration: NA
All equipment's listed above were used between 04/11/2019 to 15/11/2019 i.e., which means after the calibration of the respective equipment (as applicable) and therefore it can be stated that these were in worthy state of use at the time of WBT. CME has submitted the certified copies/08/ of the list of equipment along with the calibration details confirming the method and protocols used for WBT for both the ICS types. The specifications of equipment establish that the results are reliable. Therefore, appropriate QA/QC procedures have been followed for the monitoring parameters under discussion.		
Findings	No finding has been raised.	
Conclusion	The verification team confirms that CME applied good practices (as per manufacturer recommendation) while using the monitoring equipment and these were under the state of calibration. There is no specific requirement prescribed in this regard in the registered monitoring plan of monitoring methodology. However, CME used calibrated instruments and use of such instruments and method of conducting WBT are properly documented and further certified by the CNRIT Lab. Therefore, the approach presented by CME was accepted.	

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

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

Means of verification	<p>The following equations were used to determine the baseline emissions as provided in the monitoring report /2/ and applied in the corresponding ER sheet /3/. The expressions used were found consistent with the registered PoA-DD/14/ and CPA-DDs/14/ and the applied methodology AMS-II.G., Version 09/18/:</p> $ER_y = \sum_i \sum_j ER_{y,t,j} - LE_y$ <p>Where: <i>i</i> = Indices for the situation where more than one type of project device is introduced to replace the pre-project devices. <i>j</i> = Indices for the situation where there is more than one batch of project device</p> <p>ER_y = Emission reductions during year <i>y</i> in t CO₂e ER_{y,i,j} = Emission reductions by project device of type <i>i</i> and batch <i>j</i> during year <i>y</i> in t CO₂e LE_y = Leakage emissions in the year <i>y</i></p> <p>In the existing CPAs, two different types of project stove are distributed as demonstrated under the sections above</p> $ER_{y,v} = B_{y,saving} \times N_{y,x} \times f_{NRB,yv} \times \mu_{yx} \times NCV_{biomass} \times EF_{projected_fossilfuel}$ <p>Where, parameters used in the formulae are already explained under the section E.1 & E.2.</p> <p>Determination of <i>B_{y,savings,i,j}</i></p>
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In line with para 18 of applied approved methodology AMS-II.G version 09.0, four options given to determine $B_{y,saving,i,j}$. Here CME has chosen option three i.e. Water Boiling Test (WBT) with corresponding formula given below:

$$B_{y,savings,i,j} = (B_{old,i}) * L_y * (1 - \eta_{old}/(\eta_{new,i,j})).$$

The above equation has been used for each CPA separately – one particular calculation is for ICS Type SaoRehitra based on the WBT value derived from the sampling frame one which is applicable for the CPA-0001, 0002, 0003, 0004, 0006 & 0007; whereas other calculation is based on the WBT value derived from the sampling frame two which is applicable for the CPA-0005.

The baseline saving shall be determined as:

$$B_{old,i,j} = B_{old,HH}/N_{d,HH}$$

$N_{d,HH}$ = Number of project devices per household (number), which is 1.

All the CPAs included under the PoA are based on wood fuel. Therefore, above equation is suitable. The detailed ER calculations are submitted in the ER sheet which has been verified by DOE and found to be in line with the registered PoA-DD and respective CPA-DDs.

It is confirmed that all the stoves distributed under the CPAs has been categorized under their respective vintages based on their age accounted from the date of distribution.

This is summarized in the table below;

For ICS type SaoRehitra (or SR ICS)

Date of the 1 st stove (SR ICS) included under this monitoring period:	09-Oct-18	Refer to the respective CPA Distribution sheets
Date of last stove (SR ICS) included under this monitoring period:	25-Oct-19	
Thus, the stoves included in current MP having their operational vintage 1:	55344	
Thus, the stoves included in current MP having their operational vintage 2:	4592	

For ICS type Lamasinina (or fixed ICS)

Date of the 1 st stove included under this monitoring period:	09-Oct-18	Refer to the CPA Distribution sheet
Date of last stove included under this monitoring period:	25-Oct-19	
Thus, the stoves included in current MP having their operational vintage 1:	5000	
Thus, the stoves included in current MP having their operational vintage 2:	0	

The information has been verified in the corresponding ER sheet/3/ and the final Monitoring Report/2/. Thus, DOE has concluded the ER calculation is accurate, reliable and conservative.

Findings	No finding has been raised.
Conclusion	<p>The verification team confirms that -</p> <ul style="list-style-type: none"> a) A complete set of data for the monitoring period was available and the verification of each monitoring parameter is elaborated under Section E.3.4.2 of this report. The complete monitoring data is also presented in the corresponding ER sheet /3/ of final Monitoring Report /2/; b) As indicated above, the description about cross-check of reported data is included under respective parameter (refer Section E.3.4.2 of this report); c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals were followed; 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 were correctly applied. This has also been elaborated under Section E.3.4.1 of this report; f) There is no pro-rate approach (§360(e) of CDM VVS for PoA V2/17/) was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.

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

Means of verification	The PoA-DD/14/, CPA-DD/14/ and applied monitoring methodology/18/ does not prescribe any project emissions to be considered. The onsite visit and project design also did not reveal any potential source to be considered in this regard.
Findings	No finding has been raised.
Conclusion	No additional project emissions calculation were required in accordance with the methodology AMS-II.G, Version 09/18/.

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	<p>In accordance with §29 of applied methodology/18/, the “<i>Leakage related to the non-renewable woody biomass saved by the project activity shall be assessed based on ex post surveys of users and the areas from which this woody biomass is sourced (using 90/30 precision for a selection of samples). The potential source of leakage due to the use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources shall be considered. If this leakage assessment quantifies an increase in the use of non-renewable woody biomass by the non-project households/users, that is attributable to the project activity, then $B_{old,i}$ is adjusted to account for the quantified leakage. Alternatively, $B_{y,savings,i,j}$ is multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.</i>”</p> <p>CME has multiplied $B_{y,savings,i,j}$ by a net to gross adjustment factor of 0.95 to account for leakages. Therefore,</p> <p>$ER_y = B_{y,saving} \times N_y \times f_{NRB,y} \times \mu_y \times NCV_{biomass} \times EF_{projected_fossilfuel}$</p> <p>Where,</p> <p>$B_{y,savings,i,j} = (B_{old,i}) * L_y * (1 - \eta_{old}/(\eta_{new,i,j}))$</p> <p>Here, $L_y = 0.95$.</p>
Findings	No finding has been raised.
Conclusion	<p>The verification team confirms that -</p> <ul style="list-style-type: none"> a) A complete set of data for the monitoring period was available and the verification of each monitoring parameter is elaborated under Section E.3.4.2 of this report. The complete monitoring data is also presented in the corresponding ER sheet /3/ of final Monitoring Report /2/; b) As indicated above, the description about cross-check of reported data is

	<p>included under respective parameter (refer Section E.3.4.2 of this report);</p> <p>c) Appropriate methods and formulae for calculating leakage GHG emissions were followed;</p> <p>d) All assumptions used in the emission calculations were found appropriate and therefore justified;</p> <p>e) Appropriate emission factors, IPCC default factors and other reference values were correctly applied. This has also been elaborated under Section E.3.4.1 of this report;</p> <p>f) There is no pro-rate approach (§360(e) of CDM VVS for PoA V2/17/) was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p>
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E.3.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	<p>As elaborated above, the emission reductions from the PoA were based on baseline emissions minus leakage emissions. The calculations presented in this regard in the final monitoring report /2/ and corresponding ER sheet /3/ were found appropriate and complying with the provisions prescribed in the registered monitoring plan of respective CPA-DDs/14/, PoA-DD/14/ and applied methodology/18/.</p> <p>The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.</p>
Findings	No finding has been raised.
Conclusion	<p>The verification team confirms that:</p> <p>a) The complete data was available and is duly reported;</p> <p>b) As indicated above, the description about cross-check of reported data is included under respective parameter (refer Section E.3.4.2 of this report);</p> <p>c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed;</p> <p>d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied;</p> <p>e) There is no pro-rate approach (§360(e) of CDM VVS for PoA V2/17/) was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p> <p>f) The total number of ERs achieved during the current monitoring period is 41,730 tCO₂e.</p>

CPA UNFCCC reference number	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)		
				Before 01/01/2013	From 01/01/2013	Total amount
CPA 10443-P1-0001-CP1 Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-001	15,495	0	0	0	15,495	15,495

CPA 10443-P1-0002-CP1 Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-002	11,921	0	0	0	11,921	11,921
CPA 10443-P1-0003-CP1 Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-003	10,883	0	0	0	10,883	10,883
CPA 10443-P1-0004-CP1 Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-004	1,978	0	0	0	1,978	1,978
CPA 10443-P1-0005-CP1 Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-005	1,177	0	0	0	1,177	1,177
CPA 10443-P1-0006-CP1 Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-006	276	0	0	0	276	276
CPA 10443-P1-0007-CP1 Madagascar Improved Cookstove Project by KCM-Wood#CPA-W-007	0	0	0	0	0	0
Total	41,730	0	0	0	41,730	41,730

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

Means of verification	The verification team has checked the method to compare actual and estimated ex-ante emission reduction. As verified and evident from the section F.5.1 of final Monitoring Report (version 02)/2/, the actual emission reductions achieved (41,730 tCO ₂ e) by the Seven CPAs that are included in the current monitoring period is found to be lesser than the ex-ante estimated quantity of ERs in the respective CPA-DDs/14/ for the comparable period(i.e. 153 days).
Findings	CAR#03 has been raised in this context. Refer Appendix 4 of this report for detailed finding.
Conclusion	The actual emission reductions achieved by the CPAs is lesser (2.01% for CPA 1, 25.06% for CPA 2, 31.59% for CPA 3, 68.81% for CPA 4, 81.44% for CPA 5, 84.39% for CPA 6, whereas for CPA 7 it's 100% as no ICS distributed during the current monitoring period) than the estimated quantity of ERs in the respective CPA-DDs/14/. The same was verified in the ER sheet and the reason of decrease in ERs has been reported by DOE under section 3.6.6 of this report.

CPA UNFCCC reference number	Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante for this monitoring period in the CPA-DD (t CO ₂ e)
CPA 10443-P1-0001-CP1	15,495	15,812
CPA 10443-P1-0002-CP1	11,921	15,908
CPA 10443-P1-0003-CP1	10,883	15,908
CPA 10443-P1-0004-CP1	1,978	6,342
CPA 10443-P1-0005-CP1	1,177	6,342
CPA 10443-P1-0006-CP1	276	1,768
CPA 10443-P1-0007-CP1	0	1,768
Total	41,730	63,848

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

Means of verification	There is no increase in actually achieved emission reductions as compared to estimated reduction for a comparable period, whereas actual active reductions are lesser than the estimated ex-ante value for equivalent period. The verification team has observed that this is mainly because of partial distribution of ICS under the CPA-0005 and CPA-0006; and also CPA-0007 is yet to be distributed; whereas, for CPA-0004 the total distribution of ICS was completed over the successive months after the start date of the monitoring period which leads to a lesser year fraction for ER estimation for the current monitoring period. The details of distribution can be referred from the ER sheet and respective distribution database for the CPAs.
Findings	No finding has been raised.
Conclusion	The actual emission reductions achieved by the 7CPAs is lesser (34.64% in cumulative to all the CPAs) than the estimated quantity of ERs in the respective CPA-DDs/14/. The calculation is provided under the ER sheet and the reasons for decrease are described in the MR/2/. Therefore, it is accepted by the verification team.

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

Means of verification	Not Applicable.
Findings	Not Applicable.
Conclusion	Not Applicable.

E.3.8. Global stakeholder consultation

Means of verification	No comments received during the global stakeholder consultation process.
Findings	No finding has been raised.
Conclusion	In accordance with §370 of CDM VVS for PoA V2/17/, verification team confirms that no comments received during the global stakeholder consultation process.

SECTION F. Internal quality control

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

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

SECTION G. Verification opinion

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Applus+ Certification, contracted by Korean Carbon Management Ltd. (the CME for the PoA), has performed the first independent verification of the emission reductions for the registered CDM PoA 10443 "Madagascar Improved Cookstove Project by KCM" in Madagascar for the monitoring period 01/06/2019 – 31/10/2019 (including both days) as reported in the Monitoring Report (public) Version 01 dated 15/11/2019/1/. The CME is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the PoA.

This verification report is for all the seven CPAs/14/ (i.e. UNFCCC Reference: CPA 10443-P1-0001-CP1, CPA 10443-P1-0002-CP1, CPA 10443-P1-0003-CP1, CPA 10443-P1-0004-CP1, CPA 10443-P1-0005-CP1, CPA 10443-P1-0006-CP1 and CPA 10443-P1-0007-CP1) which were included at the UNFCCC webpage within the end of the current monitoring period. A single monitoring report has been prepared by the CME for the same in which implementation of all these CPAs along with monitoring results are included.

Applus+ Certification 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 § 22 and 23 of CDM VVS for PoA, V2/17/.

The verification activities were conducted in accordance with Applus+ Certification's CDM Quality Manual System as per the steps indicated under Section A of this report. The verification process has resulted in conclusion that the included CPAs confirm to the PoA-DD/14/ and respective CPA-DDs/14/ as well as comply with applicable CDM rules and regulations and in accordance with applied monitoring methodology AMS II.G., Version 09/18/. All Correction Requests and Clarification Requests are satisfactorily addressed by CME and accordingly the CDM documents (MR version 03 and ER version 03) are revised and finalized.

As a result, it is confirmed that the emission reductions as 41,730 tCO₂e from the CDM PoA 10443 "Madagascar Improved Cookstove Project by KCM" are correctly reported in the Monitoring Report (final) Version 03, dated 20/07/2020 and corresponding ER spreadsheet (version 03, dated 20/07/2020) for the monitoring period 01/06/2019 – 31/10/2019 (including both days). Therefore, this will be submitted as part of request for issuance as per CDM PCP for PoA, V2/17/.

SECTION H. Certification statement

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Applus+ Certification'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. Applus+ Certification planned and performed the verification by obtaining evidence and other information and explanations that Applus+ Certification considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the PoA for the period 01/06/2019 – 31/10/2019 (including both days) are fairly stated in the Monitoring Report (final) Version 03, dated 20/07/2020.

Applus+ Certification, based on outcome of verification activities, certify in writing that, during the monitoring period 01/06/2019 – 31/10/2019 (including both days), the registered CDM PoA 10443 "Madagascar Improved Cookstove Project by KCM" and the seven included CPAs (i.e. UNFCCC Reference: CPA 10443-P1-0001-CP1, CPA 10443-P1-0002-CP1, CPA 10443-P1-0003-CP1, CPA 10443-P1-0004-CP1, CPA 10443-P1-0005-CP1, CPA 10443-P1-0006-CP1 and CPA 10443-P1-0007-CP1) in the registered CDM PoA achieved the verified amount of 41,730 tCO₂e reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CPA.

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

CPAs (included in this Issuance request)	Emission Reductions achieved in this monitoring period	
	Up to 31/12/2012 (1 st commitment period)	01/01/2013 onwards (2 nd commitment period)
CPA 10443-P1-0001-CP1	NIL	15,495
CPA 10443-P1-0002-CP1	NIL	11,921
CPA 10443-P1-0003-CP1	NIL	10,883
CPA 10443-P1-0004-CP1	NIL	1,978
CPA 10443-P1-0005-CP1	NIL	1,177
CPA 10443-P1-0006-CP1	NIL	276
CPA 10443-P1-0007-CP1	NIL	0
Total	NIL	41,730

Appendix 1. Abbreviations

Abbreviations	Full texts
AQL	Acceptable Quality Level
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CERs	Certified Emission Reductions
CL	Clarification Request
CME	Coordinating or Managing Entity
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO ₂ e	Carbon dioxide equivalent
COP	Conference of Parties
CEDII	<i>Centre d'échange, de documentation et d'information inter-institutionnelle</i>
CNRIT	National Center for Industrial and Technology Research, Madagascar
CPA	Component Project Activity
DD	Design Document
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
ERs	Emission Reductions
FAR	Forward Action Request
GHGs	Greenhouse Gas(es)
GPRS	General Packet Radio Service
GPS	Global Positioning System
GWh _{th}	Giga Watt Hour (Thermal, in this document)
ICS	Improved Cook Stove(s)
ISO	International Organization of Standardization
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
LE	Leakage Emissions
MR	Monitoring Report
MP	Monitoring Period
NA	Not Applicable
PE	Project Emissions
PoA	Programme of Activities
PRC	Post-registration change(s)
PS	Project Standard
PCP	Project Cycle Procedure
QA/QC	Quality Assurance/Quality Control
SMS	Short Message Service (Text Messages)
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Level
VVS	Validation & Verification Standard
WBT	Water Boiling Test

Appendix 2. Competence of team members and technical reviewers

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification. The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A).
- Technical Expert (TE) / Technical Expert in Training (TeiT).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Attendance to the On-Site Assessment
Vivek Kumar Ahirwar	Lead Auditor (LA) / Technical Expert (TE)	Yes (3)	Yes (3.1)	N/A	Yes
Miguel A. Cortés Díaz	Technical Reviewer (TR) / Technical Expert (TE)	Yes (3)	Yes (3.1)	N/A	N/A

The curricula vitae of the DOE's team members are provided below:

Name	SHORT CV. BACKGROUND INFORMATION
Vivek Kumar Ahirwar	He is a BEE-Certified Energy Auditor by Govt. of India with over seven years of relevant experience in energy efficiency, energy audit and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the India. He has done Master in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering college, Rewa, RGPV, India
Miguel A. Cortés Díaz	Mr. Miguel Cortés holds a Bachelor's Science Degree on Civil and Environmental Engineering, being specialized on Hydric Resources. He has worked as CDM/VCS/GS and environmental consultant for different industries of multidisciplinary sectors world widely. Mr. Miguel Cortés counts with several years of GHG assessment experience, working and being qualified as Lead Auditor and Technical Reviewer for different DOEs world widely, as well as has been part of Gold Standard expert's committees. Furthermore, he has performed his professional GHG assessment portfolio career worldwide and focusing in Latin America, developing assessments for projects in Argentina, Mexico, Panama, Colombia and Chile, among others.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Korea Carbon Management Ltd.	Monitoring Report (made publicly available)	Version 1 dated 15/11/2019	CME
2	Korea Carbon Management Ltd.	Monitoring Report Final, version 03 (Final)	Version 03 dated 20/07/2020	CME
2.1	Korea Carbon Management Ltd.	Monitoring Report version 02 (Intermediate Version)	Version 02 dated 10/02/2020	CME
3	Korea Carbon Management Ltd.	ER spread sheet corresponding to MR (final version 03) (Final)	Version 03 dated 20/07/2020	CME
3.1	Korea Carbon Management Ltd.	<ul style="list-style-type: none"> ER spread sheet corresponding to MR Version 01 ER spread sheet corresponding to MR version 02 (Intermediate Versions) 	Version 1.0 (dated 15/11/2019) Version 2.0 (dated 10/02/2020)	CME
4	Korea Carbon Management Ltd.	<ul style="list-style-type: none"> Sample Size Calculation Spreadsheet for both the sampling frames: <ul style="list-style-type: none"> (i) "Sampling Survey_Sampling Frame I (CPA1-4 and 6)_final (Dec 2019)" (ii) Sampling Survey_Sampling Frame II (CPA5)_final (Dec 2019)" 	Version 01, dated 02/12/2019	CME
5	Korea Carbon Management Ltd.	ICS registration database till end date of 2 nd MP (i.e. 31/10/2019)	-	CME
6	Korea Carbon Management Ltd.	Reports of sampling surveys conducted for Madagascar (Survey Data Spreadsheet) Certificate of WBT Tests for ICS along with Data Sheet for WBT for the two ICS types –SaoRehitra&Lamasinina.	-	CME
7	Korea Carbon Management Ltd.	Technical Specification of "Soa-Rehitra" from Manufacturer / supplier certified by CNRIT Lab (including photos of some installed ICSs) Technical Specification of "Lamasinina" from developer certified by CNRIT Lab (including photos of some installed ICSs)	-	CME
8	National Center Industrial and Technological Research	<ul style="list-style-type: none"> User Manual of the weighing scale used for WBT tests for both ICS types Certificate of Calibration of Weighting Scale issued by third party (i.e. National 	Dated 15/11/2019	CME

		Center Industrial and Technological Research) for both the ICS types		
9	Korea Carbon Management Ltd.	Water boiling test Forms (11 samples for Lamasinina)	-	CME
10	Korea Carbon Management Ltd.	Survey Forms for $N_{y,i,j}$ & $\mu_{y,i,j}$ (for both SR & Lamasinina ICS)	-	CME
11	Korea Carbon Management Ltd.	Sample copies of ICS End User Agreement signed by the ICS User at the time of Distribution of ICS	-	CME
12	Korea Carbon Management Ltd.	Sample copies of filled CME monitoring survey questionnaire	-	CME
13	Applus+ Certification	DOE Field Survey of Registered ICS Users	-	Others
14	CDM EB	<ul style="list-style-type: none"> Revised approved PoA-DD for "Madagascar Improved Cookstove Project by KCM" UNFCCC PoA 10443 Approved CPA-DDs for the respective CPAs <ul style="list-style-type: none"> CPA10443-0001, CPA 10443-0002, CPA 10443-0003, CPA 10443-0004, CPA 10443-0005, CPA 10443-0006, CPA 10443-0007 	Version 4.0 dated 15/10/2018 Version 02 dated 14/12/2018 Version 01 dated 04/03/2019 Version 01 dated 14/03/2019 Version 02 dated 30/08/2019 Version 02 dated 27/08/2019 Version 02.1 dated 11/10/2019 Version 02.1 dated 11/10/2019	Others
15	KBS Certification Services Pvt. Ltd.	PoA Validation report for "Madagascar Improved Cookstove Project by KCM" UNFCCC PoA 10443	Weblink	Others
16	KBS Certification Services Pvt. Ltd.	CPA 10443-0001 Validation report for "Madagascar Improved Cookstove Project by KCM" UNFCCC PoA 10443	Version 02 dated 20/12/2018 Weblink	Others
17	CDM EB	a) CDM Validation and Verification Standard for PoA b) CDM Project Standard for PoA c) CDM Project Cycle Procedure for PoA	Version 02	Others
18	CDM EB	Approved CDM consolidated baseline and monitoring methodology AMS-II.G. "Energy efficiency measures in thermal applications of non-renewable biomass" (Version 09)	Web link	Others
19	Websites	Websites referred: https://getlatlong.net/	-	Others

		http://www.ipcc-nggip.iges.or.jp/		
20	Korea Carbon Management Ltd.	CDM Monitoring and field Survey Staff training Records and Sessions on Capacity Building etc.	-	Others
21	CDM EB	Monitoring Report Form for CDM programme of activities along with Instruction for filling out monitoring report form	Version 03 dated 31/05/2019	Others
22	Global Alliance for Clean Cookstoves	The Water Boiling Test Protocol – WBT Spreadsheet -	Version 4.2.3 Version 4.2.4	Others
23	CDM EB	Standard: Sampling and surveys for CDM project activities and programme of activities	Version 07 as per registered sampling plan (Latest Version 08)	Others
24	CDM EB	Guideline: Sampling and surveys for CDM project activities and programme of activities	Version 04	Others
25	KBS Certification Services Pvt. Ltd.	CPA 10443-0002 Validation report for “Madagascar Improved Cookstove Project by KCM” UNFCCC PoA10443	Version 01 dated 28/03/2019 Weblink	Others
26	KBS Certification Services Pvt. Ltd.	CPA 10443-0003 Validation report for “Madagascar Improved Cookstove Project by KCM” UNFCCC PoA10443	Version 01 dated 28/03/2019 Weblink	Others
27	KBS Certification Services Pvt. Ltd.	Validation Report for CPA 10443-0004 & CPA 10443-0005 for “Madagascar Improved Cookstove Project by KCM” UNFCCC PoA10443	Version 02 dated 30/08/2019 Weblink	Others
28	KBS Certification Services Pvt. Ltd.	Validation Report for CPA 10443-0006 & CPA 10443-0007 for “Madagascar Improved Cookstove Project by KCM” UNFCCC PoA10443	Version 02 dated 11/10/2019 Weblink	Others
29	CDM EB	Tool 30 “Calculation of fraction of non-renewable biomass”	Version 01	Others
30	Korea Carbon Management Ltd.	f _{NRB} value calculation sheet	-	CME
31	CEDII	f _{NRB} survey conducted by a local Centre for Information & Research named “CEDII” validated and accepted by host country DNA in Madagascar	-	Others
32	CEDII	Baseline Fuel Consumption Survey Report (Madagascar)	-	Others
33	Korea Carbon Management Ltd.	“Monitoring Forms” as a part of the spot-check mechanism	-	CME

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

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

FAR ID	N/A	Section no.	N/A	Date :N/A
Description of FAR				
N/A				
Project participant response				Date :
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date:
N/A				

Table 2. CL from this verification

CL ID	01	Section no.	E.1.1	Date :01/02/2020
Description of CL				
CME is requested to submit the final version (proper formatted versions) of the ER sheet and sampling survey results sheets which were verified by DOE during the site visit,				
Project participant response				Date : 15/02/2020
The ER sheet version 02 is the final version of the ER calculation. The same is submitted to DOE. The sampling survey results for both the sampling frames are submitted to DOE in two different excel sheets, where one is for sampling frame comprised of 5 CPAs (i.e. CPA 1, 2, 3, 4, & 6 that distribute ICS type SaoRehitra) and other one is for sampling frame for the CPA 5 which distributes ICS type Lamasinina (fixed cookstove). These excel files were made available to DOE during the site visit along with the sampling survey report.				
Documentation provided by project participant				
1) ER sheet, version 02, dated 10/02/2020 2) Sampling Survey_Sampling Frame I (CPA1-4 and 6)_final (Dec 2019) 3) Sampling Survey_Sampling Frame II (CPA 5)_final (Dec 2019)				
DOE assessment				Date: 22/02/2020
CME has provided ER sheet version 02 is the final version of the ER calculation and sampling survey results for both the sampling frames. Same has been reviewed and found to be correct, hence CL#1 closed.				

CL ID	02	Section no.	E.1.1	Date :01/02/2020
Description of CL				
CME is requested submit the scanned copies of the following documents which were verified during the site visit and desk review (I) Survey Reports (ii) Certified WBT Reports (Iii) Calibration Reports				
Project participant response				Date : 15/02/2020
CME is submitting the scanned copies of the required documents which were made available to DOE during the on-site audit.				
Documentation provided by project participant				
1) Sampling Survey Report, Dec 2019 2) WBT Reports for SR ICS and Lamasinina ICS, certified by "The National Center of Industrial and Technological Research", in Madagascar. 3) Reports related to list of materials and their calibration details.				
DOE assessment				Date: 22/02/2020
CME has provided the requested documents . Same has been reviewed and found to be correct, hence CL#2 closed.				

Table 3. CAR from this verification

CAR ID	01	Section no.	E.3.4.3	Date	:01/02/2020
Description of CAR					
The PP is requested to clarify how 43 sample size has been calculated at PoA level whereas 2 different models of ICS fixed stove model 'Lamasinina' included under the CPA 0005 and single pot portable stove 'SaoRehitra' included in all 6 CPAs. PP requested to provide breakup of sample size based on 2 different technologies.					
Project participant response					Date: 15/02/2020
PP would like to clarify that two different sample frames have been prepared for sampling survey. One sampling frame is for "SaoRehitra" ICS which is pertaining to the CPA#1, 2, 3, 4, 6 & 7 and other sampling frame is for "Lamasinina" ICS which is pertaining to the CPA #5. The sample size for all the three monitoring parameters (i.e. N_y , μ_y and WBT) are calculated separately for both the frames using sampling equations in line with the sampling standard and as per the provision of the registered monitoring plan.					
Thus, the sampling survey results for both the sampling frames are submitted to DOE in two different excel sheets which clearly demonstrate separate sample size, sample selection, survey results etc. for each sample frame.					
CME would also like to inform that the CPA 7 is a part of the sampling frame for SaoRehitra ICS however, the ICS distribution under the CPA 7 has not been started during the current monitoring period hence sample selection under the frame is mainly based on CPA #1, 2, 3, 4 and 6.					
Documentation provided by project participant					
1) Sampling Survey_Sampling Frame I (CPA1-4 and 6)_final (Dec 2019)					
2) Sampling Survey_Sampling Frame II (CPA 5)_final (Dec 2019)					
DOE assessment					Date:22/02/2020
CME has provided the response to findings along with supporting documents. Same has been reviewed and found to be correct, hence CAR#1 closed.					

CAR ID	02	Section no.	E.3.4.2	Date	:01/02/2020
Description of CAR					
As 2 type of cookstove involved in project activity PP needs to define number of project devices $N_{y,i,j}$ in MR as per type of cookstove.					
Project participant response					Date : 15/02/2020
CME has revised the details given for the particular parameter $N_{y,i,j}$ under the section E.2 of the MR to incorporate details for the two types of ICS involved under the CPAs.					
Documentation provided by project participant					
Revised MR, version 02, dated 10/02/2020.					
ER sheet, version 02, dated 10/02/2020					
DOE assessment					Date:22/02/2020
CME has provided the response to findings along with modifications in MR and ER sheet documents. Same has been reviewed and found to be correct, hence CAR#2 closed.					

CAR ID	03	Section no.	E.3.6.5	Date	:01/02/2020
Description of CAR					
PP is requested to include Comparison of emission reductions or net anthropogenic removals achieved with estimates in the included CPA-DDs under section F.5 of Monitoring report instead of referring ER sheet.					
Project participant response					Date : 15/02/2020
The comparison of emission reductions achieved during the current monitoring period and the ex-ante estimated ERs as per CPA-DDs for the equivalent period has calculated in the ER sheet. However the results are now also included in the section F.5 of the monitoring period. The revised MR version is submitted to DOE.					
Documentation provided by project participant					
Revised MR, version 02, dated 10/02/2020.					
ER sheet, version 02, dated 10/02/2020.					
DOE assessment					Date:22/02/2020
CME has provided the response to findings along with modifications in MR and ER sheet documents. Same has been reviewed and found to be correct, hence CAR#3 closed.					

CAR ID	04	Section no.	E.3.4.1	Date	:01/02/2020
Description of CAR					

CME is requested to provide justification of fNRB value applicability for the CPA 4, 5 and 6. Also CME is requested to provide declaration related to zero ER value for the CPA7.	
Project participant response	Date : 15/02/2020
<p>CME would like to confirm that the fNRB value and its applicability are verified from the fNRB calculation sheet, which is based on a primary survey conducted by a local Centre for Information & Research named "CEDII", which was further validated and accepted by host country DNA in Madagascar. The Survey Report (June 2018), excel sheet calculation (June 2018), related source documents and the letter from DNA are submitted to DOE for further reference & verification. The calculation approach is in line with the para 39(a) of the applied methodology which prescribes that "conduct local studies to determine the local fNRB value (sub national values) as per the methodological tool "Calculation of fraction of non-renewable biomass". The prescribed equations eq1, 3, 5 & 6 of the methodological tool 30: "calculation of fraction of non-renewable biomass" Version 01 has been used in the calculation which can be further verified from the calculation sheet with input values. Thus, the calculated fNRB value, i.e. 96.6% is applicable in the regional and sub-national level across the administrative regions in the Province of Fianarantsoa including: Haute Matsiatra, AtsimoAtsinanana, VatovavyFitovinany and Amoron'i Mania. As can be checked from the respective CPAs and the distribution database, these seven CPAs included under the PoA are within these regions; hence fNRB value used for ER calculation is applicable.</p> <p>The information are now properly reported under the MR respective sections, also the DNA approved result has been presented under the Appendix 3 of the MR. The fNRB calculation sheet has been submitted where sources of input values and reference to the specific paragraph / equation of the Tool30 is specified. The source of input values specified under the fNRB excel sheet is also verified and approved by third party (CEDII) as well as by host country DNA in Madagascar, hence the fNRB value is reliable and applicable for the CPAs covered under the current monitoring period.</p> <p>W.r.t to the CPA7, CME would like to inform that ICS distribution had not been started under the CPA during the current monitoring period; hence ER claim for the CPA7 is zero. CME is submitting a declaration confirming the same.</p>	
Documentation provided by project participant	
<ol style="list-style-type: none"> 1. fNRBcalculation_final version 2. Revised MR, version 02, dated 10/02/2020 3. Declaration from CME on zero ER for CPA 7 	
DOE assessment	Date:22/02/2020
CME has provided the response to findings along with modifications in MR and ER sheet documents. Same has been reviewed and found to be correct, hence CAR#4 closed.	

CAR ID	05	Section no.	E.3.4.2	Date	:01/02/2020
Description of CAR					
Please provide sample beneficiary agreement copy from each of the CPAs included under the current verification.					
Project participant response					Date : 15/02/2020
<p>CME is submitting the sample copies of beneficiary agreements for all 6 CPAs except CPA 7. The ICS distribution under CPA 7 had not been started during the current monitoring period, hence beneficiary agreement copy is not available for CPA 7.</p>					
Documentation provided by project participant					
Sample copies of beneficiary agreements for CPA 1, 2, 3, 4, 5 & 6.					
DOE assessment					Date:22/02/2020
CME has provided the sample copies of beneficiary agreements. Same has been reviewed and found to be correct, hence CAR#5 closed.					

CAR ID	06	Section no.	E.3.3	Date	:01/02/2020
Description of CAR					
Please provide documents or any form of records of training sessions, capacity building exercises etc. conducted as a part of the management practice or plan. The information needs to be referred in the MR also.					
Project participant response					Date : 15/02/2020
<p>CME has submitted records of training sessions and capacity building activities conducted during the current monitoring period. The scanned copies of a few such events are submitted to DOE whereas original copies of the records were made available to DOE for verification during the on-site audit. The information are also referred in the MR, under the footnote #3.</p>					

Documentation provided by project participant	
Records of Capacity Building activities, training sessions etc. (PDF files with photographs). Revised MR, version 02, dated 10/02/2020.	
DOE assessment	Date:22/02/2020
CME has provided the response to findings along with modifications in MR and ER sheet documents. Same has been reviewed and found to be correct, hence CAR#6 closed.	

CAR ID	07	Section no.	E.3.4.3	Date	:01/02/2020
Description of CAR					
CME is requested to include the sample results for ex-post monitoring parameters in the MR and also provide relevant references. Also please provide the list of equations used in sampling and reliability check in the MR.					
Project participant response					Date : 15/02/2020
CME has included the results of all the ex-post parameters derived from the sampling survey and WBT tests under the section E.3 of the MR.					
For efficiency, the calculated WBT test results have been adjusted for loss in efficiency in line with the para 27(a) of the methodology that is prescribed in the registered monitoring plan. The detail calculations are provided under the sampling sheets and final values are used in the ER sheet. The comparison analysis for conservativeness related to ICS efficiency for vintage period 1 and 2 has been demonstrated under the spreadsheet "Conservativeness-CPA-1". It confirms that final adjusted values considered for efficiency are conservative.					
Additionally, all formulae used in the sampling calculation and reliability check in line with Sampling Standard (version 7), Sampling Guidelines (version 4) and registered sampling plan. The explanation of this relative fractional value, respective formulae etc. are already included in the "Sample Size Equations" sheet under the two sampling survey sheets. The list of equations are also included under the Appendix 2 of the MR.					
Documentation provided by project participant					
Revised MR, version 02, dated 10/02/2020. ER sheet, version 02, dated 10/02/2020.					
DOE assessment					Date:22/02/2020
CME has provided the response to findings along with modifications in MR and ER sheet documents. Same has been reviewed and found to be correct, hence CAR#7 closed.					

CAR ID	08	Section no.	E2.2 & E.3.4	Date	: 18/07/2020
Description of CAR					
CME requested to clarify the followings:					
<ol style="list-style-type: none"> As per the PoA-DD, a team will conduct the spot check to check if the registration details are accurate, if the ICS user is not having other similar device, if the ICS is in use or not, and if household is using ICS only or started using pre project device as well. The CME is requested to provide supporting documents to verify the implementation of such spot check, in particular to confirm that ICS user does not have other similar device. The CME chose to account for efficiency loss as per paragraph 27(a) of the applied methodology. As per paragraph 27(a), the decrease of efficiency is considered based on the efficiency at commissioning. The CPA-DDs of CPAs 1 to 4 and CPA 6 state that as per water boiling test conducted by National Agency i.e. National Industrial and Technical Research Center the Soarehitra stove is projected to have a lifespan of at least 5.5 years and thermal efficiency of 32.2%. Similarly, the CPA-DD of CPA 5 states that as per water boiling test conducted by National Agency i.e. National Industrial and Technical Research Center the Lamasinina stove is projected to have a lifespan of 15 years and thermal efficiency of 33%. The CME is requested to further clarified that explain how the application of paragraph 27(a) of the applied methodology as the CME conducted sampling to obtain parameter $n_{new,i,j}$, which is not required when paragraph 27(a) is chosen to account for efficiency loss. The CME is requested to clarify that the same value of parameter $B_{old,i,j}$ is applicable for all CPAs which are located in different areas. In doing so, the CME shall explain which areas/regions this value of $B_{old,i,j}$ covers in MR. 					

Project participant response	Date : 20/07/2020
<p>1. CME would like to confirm that there is a spot check mechanism implemented by CME through the local team. As a spot-check practice, local monitoring agents visit households to check existence of project ICS and its operational condition and also to ensure that there is no existence of the baseline device or any other device except the project ICS. During the spot check the agents fill out a monitoring form containing serial numbers of ICS after confirming/verifying its existence and then also take signature of the head of household. Such forms generally contain stamp of the local authority and information of chief of household, unique no. of ICS, date of visit, date of ICS distribution, view point/analysis about ICS and confirmation/remark on presence of other devices, etc. Such records are kept at site office and the same were made available to DOE during on-site verification. This information is now included under the footnote reference #5, under the section D of the revised MR. Additionally, a couple of samples of such spot-checking records also included under Appendix 04 of the MR.</p> <p>Additionally, there were spot checks done: (i) during the Sampling Survey performed during 04 Nov to 15 Nov 2019 across all CPAs, and (ii) during the DOE's on site verification in between 21 to 24 Jan 2020 when assessment team visited the different households from different CPAs.</p> <p>2. CME would like to clarify that the objection of conducting sampling WBT was to assess the operational efficiency of the ICS in their 'vintage 1' against the efficiency considered at the time of CPA inclusion. However, the application of para 27(a) of the methodology has been already considered for accounting loss in yearly efficiency.</p> <p>CME would like to intimate that for ICS type "SaoRehitra", the operational efficiency was tested during the first monitoring period on a batch of operational ICS (through a sampling WBT, conducted by a third party agency) to measure the η_{new} value for ICS operational in the year 1. This value was 31.5% which is conservative as compared to the value estimated at the time of validation and CPA inclusion (i.e. 32.2%). Therefore, the final value considered for ICS type "SaoRehitra" for the 1st vintage is 31.5%.</p> <p>During the current monitoring period, the value of η_{new} for subsequent vintages (i.e. for vintage 2) was calculated as per the provision of para 27(a) of the applied methodology. However, while doing so the base efficiency for vintage-1 was considered as 32.2% to calculate the loss of yearly efficiency which has resulted into the value of 21.98%.</p> <p>However, CME has now revised the same and loss in yearly efficiency has been calculated considering the base efficiency of vintage-1 as 31.5%. Thus, the value resulted for 'vintage 2' is 29.41% which is a conservative value and hence applied in the revised ER sheet.</p> <p>Similarly, the practice has been adopted for the ICS type "Lamasinina".</p> <p>This ICS model has been included under the CPA-5 and CPA-5 was included into the PoA during the current monitoring period. The ICS distribution also took place during the current monitoring period only. Therefore, a sampling WBT survey was conducted (by a third party agency) on a batch of operational ICS to measure the value of η_{new} for the ICS operational in the year 1. The resulted value is 31.71% which is found to be conservative as compared to the value estimated at the time of CPA inclusion (i.e. 33%). Therefore, the final value considered for ICS type "Lamasinina" for the 1st vintage is 31.71%. However, there is no ICS in the 2nd vintage during the current monitoring period, hence para 27(a) of the methodology is not applicable for Lamasinina.</p> <p>CME has revised the ER sheet in line with the details described above for the parameter η_{new}. The information related to WBT for SaoRehitra has been removed both from the MR & ER, whereas applicable values of efficiency have been directly referred from the previous monitoring period, followed by calculation as per para 27(a) of the methodology. Please refer to the spreadsheet "ICS-efficiency" under the ER sheet (version 03); it includes the detail calculation of ICS efficiencies for both the ICS models and calculation of yearly adjustment as per para 27(a) of</p>	

the methodology.

The required changes are included under the section E.2 & E.3 of the MR. Please refer to the revised MR, version 03.

3. CME would like to confirm that the value for B_{old} has been considered based on the "Survey report conducted by CEDII (Regional Center of Documentation and Information)". The survey was conducted at the time of validation by an independent third party covering various households across the administrative regions in the entire province of Fianarantsoa (which includes the main four regions viz. Haute Matsiatra, Atsimo Atsinanana, Vatovavy Fitovinany and Amoron'i Mania regions of the province). All the CPAs included under the PoA fall within the region of Haute Matsiatra; it can be verified from the CPA locations and distribution database of the CPAs. The third party survey report has been submitted to DOE; the location related information can be cross checked from the section 2.3 & 3.2 of the report and results are referred under the section 3.19 of the report which clearly specifies that value for B_{old} is representative of the entire regions that are applicable to all the CPAs. Hence the value of $B_{old,i,j}$ is applicable for all CPAs.

Additionally, CME would also like to refer to the section I.6.5 of the registered PoA which prescribes for the parameter $B_{old,i,j}$ that "assessments, information and results established in initial CPAs may be used in subsequent CPAs in lieu of conducting fresh assessments at each CPA level in absence of new data". Since all CPAs are implemented across different villages and districts but within the same region (i.e. Haute Matsiatra), hence the value remains applicable in all the CPAs. Thus, the value of the parameter has been included in the CPAs as an ex-ante fixed value and is applicable for all the existing CPAs.

A footnote reference (#6) has been included in the MR with reference to the applicability of B_{old} value across the CPAs. Please refer to the revised MR (version 03).

Documentation provided by project participant

- 1) Revised MR, version 03, dated 20/07/2020
- 2) Revised ER sheet, version 03, dated 20/07/2020
- 3) Supporting documents pertaining to Spot-check by local team
- 4) Baseline Survey Report by CEDII
- 5) Sampling Survey sheets (frame 1 & 2) with updated texts in the WBT section.

DOE assessment

Date: 23/07/2020

CME has provided the response to findings along with modifications in MR and ER sheet documents. Same has been reviewed and found to be correct, hence CAR#8 closed.

Table 4. FAR from this verification

FAR ID	N/A	Section No.	N/A	Date: N/A
Description of FAR				
N/A				
Project participant response				Date: N/A
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date: N/A
N/A				

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Document information

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