



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

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

**VERIFICATION AND CERTIFICATION REPORT**

<b>Title of the programme of activities (PoA)</b>	Up Energy Improved Cookstove Programme, Uganda		
<b>UNFCCC reference number of the PoA</b>	9956		
<b>Version number(s) of the PoA-DD(s) applicable to this report</b>	04		
<b>Version number of the verification and certification report</b>	2.0		
<b>Completion date of the verification and certification report</b>	20/05/2016		
<b>Monitoring period number</b>	Monitoring Period #1		
<b>Duration of this monitoring period</b>	22/07/2014 – 10/12/2015		
<b>Number and version number of the monitoring report to which this report applies</b>	Number: 01 Version: 04		
<b>Coordinating/managing entity (CME)</b>	UpEnergy Group		
<b>Host Party(ies)</b>	Host Party(ies) of the PoA	Is this a host Party to a CPA covered in this report?(yes/no)	
	Uganda	Yes	
<b>Sectoral scope(s)</b>	Sectoral Scope 3: Energy Demand		
<b>Selected methodology(ies)</b>	AMS-II.G: "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass" (Version 05.0)		
<b>Selected standardized baseline(s)</b>	NA		
<b>Total estimated GHG emission reductions or net GHG removals for this monitoring period in the included CPA(s) covered in this report</b>	<b>Specific-case CPA reference number</b>	<b>Value estimated in ex ante calculation in the included CPA-DD(s)</b>	
	9956-0001	62,209	
	9956-0002	33,026	
	9956-0003	29,206	
	9956-0004	29,206	
	<b>Total</b>	<b>153,648</b>	
<b>Total certified GHG emission reductions or net GHG removals for this monitoring</b>	50,158 t CO <sub>2</sub> e		

<b>period for the included CPA(s) covered in this report</b>	
<b>Name of DOE</b>	Earthood Services Private Limited
<b>Name, position and signature of the approver of the verification and certification report</b>	 Dr. Kaviraj Singh Director

## SECTION A. Executive summary

The proposed PoA involves the distribution of highly efficient biomass fired Improved Cookstoves (ICS). The cook stoves disseminated through this programme replace the prevailing inefficient three-stone fired or equivalent with stoves which combust wood more efficiently, and improve thermal transfer to pots, hence saving fuel and lowering greenhouse gas emissions. Each CPA supports the project goals of reducing fuel consumption, improving health, and reducing deforestation in Uganda. The target areas are all regions of Uganda with traditional biomass stove users.

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

The CME keep track of the list of CEP installations concerning to the PoA in the electronic Credit Tracker Platform. The ICS users sign a title transfer with the CME while purchasing the product.

### Scope of verification:

The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. The verification includes the implementation and operation of the PoA as set out in the registered PoA-DD & CPA-DDs viz., 9956-0001, 9956-0002, 9956-0003 and 9956-0004 in the monitoring period. The verification tests the data and assertions set out in the monitoring report based on the following:

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

- (i) The approved methodology AMS II.G version 05 “Energy efficiency measures in thermal applications of non-renewable biomass”, applied in the POA-DD & CPA-DDs
- (ii) The registered and registered PoA-DD & CPA-DD and monitoring plan
- (iii) UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
- (iv) The CDM Validation and Verification Standard (VVS)
- (v) The CDM Project Standard (PS) and Project Cycle Procedure (PCP)
- (vi) Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity’s reported emission reductions

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

### Verification Process:

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

- a) Contract with CME and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
- b) Completeness check of Monitoring Report
- c) Publication of Monitoring Report at UNFCCC website
- d) Desk review (refer Section C.1 of this report) of Monitoring Report and corresponding ER sheet by verification team and planning of onsite audit (including sampling approach (refer Section C.4 of this report) to be applied)
- e) On site audit (refer Section C.2 of this report) (physical implementation and interview with relevant stakeholders) by verification team consistent of Team Leader and all Technical Experts, as a minimum
- f) Follow up activities e.g., interviews (refer Section C.3 of this report)
- g) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section C.5 of this report)
- h) Independent technical review (refer Section D of this report) of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidences)
- i) Reporting and closure of TR comments/findings (refer Section C.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section E and F of this report).
- j) Issuance of final verification report to contracted CME (or authorized representatives) and submission of request for issuance, as appropriate.

### Verification Conclusion:

Based on the outcome of the verification process of the registered PoA “Up Energy Improved Cookstove Programme, Uganda” and its 04 CPAs (9956-0001, 9956-0002, 9956-0003, and 9956-0004) for the monitoring period 22/07/2014 – 10/12/2015 (including both dates) we confirm that the implementation of referenced registered PoA and CPAs is complying with applicable CDM rules and regulations as stated in the Monitoring Report (final) Version 04 dated 05/05/2016. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodologies, AMS II.G Version 05 and the monitoring plan contained in the PoA-DD.

Earthood Services Private Limited is able to certify that the emission reductions from the registered CDM PoA UN#9956 “Up Energy Improved Cookstove Programme, Uganda” in India during the period 22/07/2014 – 10/12/2015 (including both days) amount to 50,158 tCO<sub>2</sub>e. Therefore, this is being submitted for request for issuance, as per UNFCCC procedures.

## **SECTION B. Verification team, technical reviewer and approver**

### **B.1. Verification team members**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	Deka	Nayan Jyoti	Central Office	Y	Y	Y	Y
2.	Verifier	IR	Deka	Nayan Jyoti	Central Office	Y	Y	Y	Y
3	Technical Expert (TA3.1)	IR	Deka	Nayan Jyoti	Central Office	Y	Y	Y	Y
4.	Local Expert	EI	Khaukha	Julius	Central Office	Y	N	N	N

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Gautam	Ashok Kumar	Central Office
2	Expert to TR (3.1)	IR	Gautam	Ashok Kumar	Central Office
3	Approver	IR	Singh	Kaviraj	Central Office

## **SECTION C. Means of verification**

### **C.1. Desk review**

The desk review involves;

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

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

**C.2. On-site inspection**

<b>Duration of on-site inspection: 16/01/2016 to 20/01/2016</b>				
<b>No.</b>	<b>Activity performed on-site</b>	<b>Site location</b>	<b>Date</b>	<b>Team member</b>
1.	Physical site visit : Households visited (implementation of PoA)	Uganda	16/01/2016 to 20/01/2016	Nayan Jyoti Deka
2	Review of information flows for generating, aggregating and reporting the monitoring parameters	Uganda	16/01/2016 to 20/01/2016	Nayan Jyoti Deka
3	Cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;	Uganda	16/01/2016 to 20/01/2016	Nayan Jyoti Deka
4	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the applicable requirements	Uganda	16/01/2016 to 20/01/2016	Nayan Jyoti Deka
5	identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters	Uganda	16/01/2016 to 20/01/2016	Nayan Jyoti Deka

## C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Mutaahi	Mark	UpEnergy	16/01/2016 to 20/01/2016	Implementation of CPAs, monitoring activities, record keeping	Nayan Jyoti Deka
2	Melana	Sandeep	Climate Connect	16/01/2016 to 20/01/2016	Sampling approach, results and ER calculations	Nayan Jyoti Deka
3	Amone	Mosses	UpEnergy	16/01/2016 to 20/01/2016	Sales database management, Monitoring survey	Nayan Jyoti Deka
4	Buyinza	David	UpEnergy	16/01/2016 to 20/01/2016	Database record keeping procedure	Nayan Jyoti Deka
5	Nuruh	Nabagala	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
6	Joshep	Sserwada	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
7	Merab	Mbonigaba	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
8	Gorret	Kayaga	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
9	Janet	Kidda	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
10	Nyirmaholo	Kalija	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
11	Asah	Nambi	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
12	Yowanina	Namatovu	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
13	George	Lubega	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
14	Kansime	Dorothy	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
15	Nalongo	Debra	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
16	Naiubwama	Edith	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
17	Catherin	Namatovu	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka

**CDM-PoA-VCR-FORM**

18	Wassa	Kizito	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
19	Annah	Nakanjako	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
20	Nabawanuka	Cecilia	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
21	Buyinza	Veronica	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
22	Lufatiye	Fatasito	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
23	Rosah	Mukumija	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
24	Shavers	John	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
25	Shavers	John	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
26	Aluu	Florence	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
27	Miriam	Namale	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
28	Kibuukam		Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
29	Alice	Namiggade	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
30		Grace	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
31		Nelson	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
32		Naziwa	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
33		Mr Mukasa	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
34		Batenda	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
35	Rose	Nabukenya	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
36		Mary	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
37	Lubowa	Nalongo	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
38	Richard	Walubingo	Household user	16/01/2016 to	DOE Field Survey	Nayan Jyoti Deka

				20/01/2016		
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**CDM-PoA-VCR-FORM**

39		Rabecca	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
40	Hadijah	Nakiyinf	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
41	Violah	Nakyanja	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
42	Hadijah	Nakiyinf	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
43	Sarah	Kalule	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
44	Kanayuwa	Cathy	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
45		Naziwa	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
46		Naziwa	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
47		Naziwa	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
48		Maria	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
49	T	Sentamu	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
50	Francisca	Birabwa	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
51	Olivia	Kasapuli	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
52	Mugalula	Bursar	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
53	Alice	Namiggade	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
54		Kibuukam	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
55	Emmanuel	Kakooza	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
56	Kasumba	Mukyala	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
57	Swaburah		Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
58	Christine	Ankunda	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
59	Faith	Nambi	Household user	16/01/2016 to	DOE Field Survey	Nayan Jyoti Deka

				20/01/2016		
60		Batenda	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
61	Rose	Nabukenya	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
62	Muhereza	Lovence	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
63	Kasule	Margret	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
64	Namubi	Dorcus	Household user	16/01/2016 to 20/01/2016	DOE Field Survey	Nayan Jyoti Deka
65	Sserwada	Annet	Village coordinator	16/01/2016 to 20/01/2016	Monitoring survey	Nayan Jyoti Deka
66	Pius	Kizito	Sales Coordinator	16/01/2016 to 20/01/2016	Sales database management	Nayan Jyoti Deka

#### C.4. Sampling approach

##### CME's sampling approach:

A single sampling plan was carried out across all specific case CPAs covered in this monitoring period. The CME has applied Simple Random Sampling across a group of CPAs for different monitoring parameters as per validated PoA DD and CPA DDs. 95/10 confidence precision was mainly applied by CME in the sampling, which is appropriate given the length of the monitoring period for CPAs, which is more than a year. The sampling approach undertaken by CME is duly explained under Section G.3 of monitoring report.

##### DOE's sampling approach:

In order to meet the requirements of paragraph 21 and 22 of Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 04.1, the verification team applied acceptance sampling in the verification (in accordance with para 24). The verification team selected random sample of CME's sampled records, checked the acceptability (or otherwise) of the data for each such record with CME's sample records, and then based on the number of records where there is agreement, determined if the CME's sample records meet the requirements.

The verification team determined the sample size for acceptance sampling by evaluating the following, using its own professional judgment and guidance in the Standard 'Sampling and surveys for CDM project activities and programme of activities' version 04.1:

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

Considering the above input values, a sample size of 18 was required as per Table 1 in the referred Standard. Accordingly, Acceptance number (c) thus determined for the sample size is 1. A sample size of 18 meets the criteria.

Accordingly, the verification team together has verified the 20 samples for each type of ICS (there were 3 types of ICS distributed) across the CPAs (taking two additional samples in order to meet minimum requirement of 18 samples) to verify the parameter Uy (Average usage rate of appliance type being deployed as a part of SSC CPA) during site visit and observed that the sampling survey results of the CME for all the ICSs checked were consistent with DOE's field survey results. In all the verification team, visited 60 households.

For other parameters viz.  $\eta_{\text{new}}$  ( results of stove efficiency test) &  $\mu_{\text{old}}$  (Quantity of woody biomass used in the project activity by traditional stoves ), the verification team has checked from the document/evidence submitted by the CME.

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
<b>General</b>			
Compliance of the monitoring report with the monitoring report form	1		
Remaining forward action requests from validation and/or previous verification			4
Specific-case CPA(s) considered for verification and covered in this report			
<b>Programme of activities</b>			
Compliance of the programme implementation with the registered PoA-DD			
Implementation and operation of the management system	1		
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline</li> </ul>			
<ul style="list-style-type: none"> <li>Corrections</li> </ul>			
<ul style="list-style-type: none"> <li>Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))</li> </ul>			
<ul style="list-style-type: none"> <li>Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline</li> </ul>			
<ul style="list-style-type: none"> <li>Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA</li> </ul>			
<ul style="list-style-type: none"> <li>Types of changes specific to afforestation and reforestation activities</li> </ul>			
<b>Component project activity(ies)</b>			
Compliance of the CPA implementation with the included CPA design document			
Post-registration changes			
<ul style="list-style-type: none"> <li>Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline</li> </ul>			
<ul style="list-style-type: none"> <li>Corrections</li> </ul>			
<ul style="list-style-type: none"> <li>Changes to the start date of the crediting period</li> </ul>			
<ul style="list-style-type: none"> <li>Inclusion of a monitoring plan to an included CPA-DD</li> </ul>			
<ul style="list-style-type: none"> <li>Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline</li> </ul>			
<ul style="list-style-type: none"> <li>Changes to the programme design of the included CPA-DD</li> </ul>			
<ul style="list-style-type: none"> <li>Types of changes specific to afforestation and reforestation component project activities</li> </ul>			
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline			
Compliance of monitoring activities with the registered monitoring plan			
<ul style="list-style-type: none"> <li>Data and parameters fixed ex ante or at renewal of crediting period</li> </ul>			

• Data and parameters monitored			
• Implementation of sampling plan		1	
Compliance with the calibration frequency requirements for measuring instruments			
Assessment of data and calculation of emission reductions or net removals		1	
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks		1	
• Calculation of project GHG emissions or actual net GHG removals by sinks			
• Calculation of leakage GHG emissions			
• Summary of calculation of GHG emission reductions or net GHG removals by sinks			
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case CPA			
• Remarks on difference from estimated value in registered PDD			
Others (please specify)			
<b>Total</b>	<b>2</b>	<b>3</b>	<b>4</b>

#### SECTION D. Internal quality control

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

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

#### SECTION E. Verification opinion

Earthood Services Private Limited (ESPL), contracted by UpEnergy Group (the CME for the PoA), has performed the first independent verification of the emission reductions for the registered CDM PoA 9956 "UpEnergy Improved Cookstove Programme, Uganda" in Uganda for the monitoring period 22/07/2014 – 10/12/2015 (both days included) as reported in the Monitoring Report (public) Version 01 dated 11/12/2015. The CME is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

This verification report is for the CPAs (9956-0001, 9956-0002, 9956-0003, and 9956-0004), which were included at the UNFCCC webpage at the end of the current monitoring period. A single monitoring report has been prepared by the CME for the same in which implementation of all referred CPAs along with monitoring results is included.

ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. This verification report has been prepared using the latest available template specified by UNFCCC and complies with the instructions to follow as per para 406 and 407 of CDM VVS Version 9.

The verification activities were conducted in accordance with ESPL's CDM Quality Manual System as per the steps indicated under Section A of this report. The verification process has resulted in conclusion that the included CPAs confirm to the registered PoA DD as well as comply with applicable CDM rules and regulations and in accordance with applied monitoring methodology, AMS II.G Version 05. There were 4 issues that were raised as FAR (4 FARs) during validation, which required further attention from the

verification team and all the four FARs are duly addressed by the PP and all the FARs are closed in this verification.

As a result, it is confirmed that the emission reductions from the CDM PoA 9956 "UpEnergy Improved Cookstove Programme, Uganda" are correctly reported in the Monitoring Report (final) Version 04 dated 05/05/2016 and corresponding ER sheet's for the monitoring period 22/07/2014 - 10/12/2015 (including both days) amount as 50,158 tCO<sub>2</sub>e. Therefore, this will be submitted as part of request for issuance as per CDM PCP Version 9.

## **SECTION F. Certification statement**

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

In our opinion the GHG emissions reductions reported for the project activity for the period 22/07/2014 - 10/12/2015 are fairly stated in the Monitoring Report (final) Version 04 dated 05/05/2016.

ESPL, based on outcome of verification activities, certify in writing that, during the monitoring period 22/07/2014 - 10/12/2015 (including both days), the registered CDM PoA "UpEnergy Improved Cookstove Programme, Uganda" and all of the included CDM CPAs (9956-0001, 9956-0002, 9956-0003, and 9956-0004) in the registered CDM PoA achieved the verified amount of 50,158 tCO<sub>2</sub>e reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CPAs. The verified amount of emission reductions is stated below as per each CPAs and as per commitment period;

CPAs (included in this request)	Emission Reductions (Amount) in this monitoring period (in tCO <sub>2</sub> e)	
	Up to 31/12/2012 (1st commitment period)	01/01/2013 onwards
9956-0001	0	20,729
9956-0002	0	18,311
9956-0003	0	10,497
9956-0004	0	621
Total	0	50,158

Kaviraj Singh

20/05/2016

Managing Director

Gurgaon, Haryana, India

for **Earthood Services Private Limited**

## **SECTION G. Verification findings - General**

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

<b>Means of verification</b>	The verification team has compared the monitoring report with the applicable monitoring report form.
<b>Findings</b>	CL#06 was raised requesting since the MR was not in compliance with the MR form particularly Section D.

<b>Conclusion</b>	Monitoring report is prepared using the correct template i.e. CDM-PoA-MR-FORM Version 01.0. The verification team confirms that the monitoring report has been appropriately prepared using the applicable monitoring report form, and that all sections are completed.
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## G.2. Remaining forward action requests from validation and/or previous verification

This is 1st verification of the project activity. From the validation there are four (4) FARs which are described below and how the DOE has taken due account of these FAR is explained below in brief as well as under Appendix 4.

FAR#01 was raised requesting the verifying DOE that “At the time of verification the DOE needs to verify that the improved cook stoves that are part of this CPA emission reduction calculation were only disseminated within the country of Uganda.”

DOE assessment of FAR#01 – DOE has verified the model & type of all the disseminated ICS in the current CPAs from the Sales Database/19/ and found that PP has disseminated only that type of improved cook stoves that are part of this CPAs. Also, DOE has verified the partner information/18/ for ICS distributed through partner organization/ and found to be satisfactory.

Conclusion – Based on the assessment of the documentary evidences viz. the ICS sales Database and partner information, the type of ICS disseminated are found to be in accordance with the type/ model mentioned in the CPA and thus FAR#01 is closed.

FAR#02 was raised requesting the verifying DOE that “The unique id will be imprinted on the ICS that is distributed as part of this PoA. The stoves be distributed after the CPA inclusion and hence the unique id and database will have to be verified at the time of CPA inclusion and verification”

DOE assessment of FAR#02 –

DOE has verified the unique id of ICS during the sample verification, and found that all the verified ICS samples are having unique identification number (serial number)/30/ imprinted on it. Since due to the large number of the ICS disseminated, it was not possible for the DOE to verify each & every ICS, and thus DOE has applied the sampling approach and based on the sampling. DOE confirmed that unique identification number are imprinted on the ICS.

Conclusion – Based on the sample verification, DOE has confirmed that ICS are imprinted with unique identification number and thus FAR#02 stands closed.

FAR#03 was raised requesting the verifying DOE that “The PP will cross-check the CPA with other CPAs in this PoA and with CPAs in any other PoA or in a CDM project activity operating in the country using the UNFCCC, the Gold Standard, and other relevant voluntary schemes to ensure that the CPA is not included in any other PoA, CDM project activity or voluntary project activity. All of this information will be summarized in a report and provided to the DOE upon verification.

To ensure that the CME and CPA implementer are not double counting the CERs across PoAs or CPAs, the DOE needs to verify that the CME has conducted a cross check with other PoAs or CPAs.”

DOE assessment of FAR#03 – PP has provided the list of the CDM & GS project in Uganda/38/ and the project database as available in the website/39,40,41/ has been checked for double counting and found that the none of the ICS disseminated in current PoA is not included in any other programme. The list of projects that are similar in nature and are deployed in Uganda are GS:103000000001886, GS:103000000002469, UNFCCC:7014-0001, UNFCCC:7359-0040 and UNFCCC:7359 – 055. Based on the assessment of these similar projects, DOE has found that none of the CME is not double counting the CERs across these similar projects.

Conclusion – Based on the assessment of the projects which are also implemented in the same host country, DOE has observed that ICS which are the part of this PoA are not included any of the other projects, and there is no double counting involved. Thus, FAR#03 stands closed.

FAR#04 was raised requesting the verifying DOE that “The start date of the CPA will need to be verified at the time of the CPA verification, since the stoves have not been disseminated as yet.

The start date of the CPA will be demonstrated using the sales receipt that will have the date of purchase, and the DOE can review the database to confirm the earliest date of a sale of a stove”

DOE assessment of FAR#04 – PP has provided the evidences i.e. sales receipts/20/ in support of the start date of each of the CPAs which has been checked by the DOE and found that the date of sale of the ICS is matching with the start date of each CPAs/3,4,5,6/. The start date of CPAs/3,4,5,6/ that has been checked from the sales receipts are as follows –

CPA 9956-0001 – Start date 02/01/2013

CPA 9956-0002 – Start date 09/05/2014

CPA 9956-0003 – Start date 02/04/2015

CPA 9956-0004 – Start date 03/04/2015

Conclusion – Based on the assessment of the sales receipts of the ICS for the start date evidence of the CPAs, DOE has confirmed that the start date as evident from the sale receipts are inline to the CPA start date as per the CPA DD. Thus, FAR#04 was closed.

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

Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Is the specific-case CPA considered for this verification? (yes/no)	Version number of the registered PoA-DD to which the specific-case CPA complies with	Confirmation that a request for issuance including the specific-case CPA has been published for the previous monitoring period (Y/N)
9956-0001	Yes	Version 4, dated 30/06/2014	NA as this is the first verification period
9956-0002	Yes	Version 4, dated 30/06/2014	NA as this is the first verification period
9956-0003	Yes	Version 4, dated 30/06/2014	NA as this is the first verification period
9956-0004	Yes	Version 4, dated 30/06/2014	NA as this is the first verification period

## SECTION H. Verification findings – Programme of activities

### H.1. Compliance of the programme implementation with the registered programme design document

<b>Means of verification</b>	<p>The registered PoA involves the promotion, distribution and sale of improved cook stoves (ICS) in Uganda. CME has implemented the CPAs through coordination with the monitoring team and further with local/channel sellers/distributors. The overall responsibility of implementation and operation is with CME (UpEnergy), which was also evident during the site visit. This is consistent with PoA DD /01/. This monitoring period includes the implementation and monitoring of 04 CPAs as part of registered PoA. There are total 04 CPAs (9956-0001 to 9956-0004) implemented at the end date of current monitoring period.</p> <p>The implementation of all CPAs, as referenced above, are within the geographical boundary of the PoA DD, which constitutes the physical boundary as well.</p> <p>The type CEP (Clean Energy Product) models deployed under each CPA is verified as following:</p> <p><b>CPA (9956 – 0001):</b></p> <table border="1"> <tr> <td>Cook stove deployed/ Model</td><td>Number</td></tr> <tr> <td>EZY Stove</td><td>9,104</td></tr> </table>	Cook stove deployed/ Model	Number	EZY Stove	9,104
Cook stove deployed/ Model	Number				
EZY Stove	9,104				

**CPA (9956 – 0002):**

Cook stove deployed/ Model	Number
SHS	10,479
AES Stove	6

**CPA (9956 – 0003):**

Cook stove deployed/ Model	Number
SHS	7420
AES Stove	3080

**CPA (9956 – 0004):**

Cook stove deployed/ Model	Number
SHS	2366
AES Stove	629

The verification team is able to confirm that the quantity, specification and target group of the ICSs is consistent with the PoA DD /01/ and respective CPA DDs. Further, based on the review of Sales data base /19/, physical observations and interview conducted during the site visit, the verification team found that:

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

The verification team has visited the households during site visit; It was observed that each ICS was assigned a unique identification number (serial number), and unique household mobile number. The unique serial number on each ICS, personal information of ICS owners and date of purchase of ICS was cross checked with the sales database available with the CME. The operation of the ICSs was confirmed through interviews of owners/representatives (of ICSs) during the site visit. The emission reductions being claimed during this monitoring period are lesser than the estimated emission reductions in the registered CPA-DDs, as given in the table below:

CPA	Value estimated in ex ante calculation in the included CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
9956-0001	62,209	20,729
9956-0002	33,026	18,311
9956-0003	29,206	10,497
9956-0004	29,206	621

The information (including data and variables) provided in the MR is found to be in line with the details provided in the registered PoA-DD/1/.



	The verification team considers the project description of the project contained in the registered PoA-DD is complete and accurate. The PoA-DD complies with the relevant methodology, tools, forms and guidance at the time of PoA submission for registration/01/. The monitoring report was compared and verified against the description provided in the registered PoA-DD and found to be correct.
<b>Findings</b>	CL#05 was raised and closed. Please refer Appendix 4 for further details.
<b>Conclusion</b>	<p>The verification team confirms that the physical features (technology/type of ICS) of the implementation were in accordance with the registered PoA DD.</p> <ul style="list-style-type: none"> <li>• The distribution of ICS is still ongoing as it has not yet reached the estimated quantity given in the respective specific case CPA DDs.</li> <li>• The actual operation is in line to respective CPA DD, which is further explained under Section I.1, J.1 and K.1 of this report.</li> <li>• The number of installations in any CPA for the type of CEP were either equal to or within the quantity estimated in the respective CPA DDs. The actual CERs for CPAs were slightly less for comparable monitoring period. Apart from this, no information with regard to data and variables was identified that may surpass the estimated quantity of ERs in the respective CPA DDs.</li> <li>• The emission reductions achieved for each specific case CPA DD were within the estimated quantity in the registered CPA DD.</li> </ul>

## **H.2. Implementation and operation of the management system**

<b>Means of verification</b>	The verification team during the site visit assessed the management systems in place to implement the monitoring of the PoA. This included the roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system. The roles and responsibilities data collection transfer and aggregation procedures, data storage and archiving for the monitoring system have been provided in the MR /14/.
<b>Findings</b>	No finding was raised.
<b>Conclusion</b>	The verification team confirms that the monitoring management system of the PoA is in place with the responsibilities properly identified and established.

## **H.3. Post-registration changes**

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

>> N/A

### **H.3.2. Corrections**

>> N/A

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

>> N/A

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

>> N/A

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

>> N/A

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

&gt;&gt; N/A

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

## I.1. Compliance of the CPA implementation with the included CPA design document

Means of verification	<p>The CPAs are grouped together in this section (i.e., Section I) for the purpose of verification and reporting as these are of similar in nature (technology and type). The CPAs involves the promotion and installation of ICS (portable) in Uganda for use by residential households in in rural areas.</p> <p>The current verification which includes verification of 4 numbers of CPAs viz. 9956-0001(CPA -01), 9956-0002 (CPA -02), 9956-0003 (CPA -03) &amp; 9956-0004 (CPA -04), the implementation status of the ICS has been verified by physically verifying the samples of ICS from the PP's sample. In the proposed PoA three types of model of ICS were installed viz. AES, EZY &amp; SHS type model.</p>																																											
	ICS installed Break-up CPA &Technology wise																																											
		CPA -01	CPA -02	CPA -03	CPA -04																																							
	EZY	9104	0	0	0																																							
	SHS	0	10479	7420	2366																																							
	AES	0	6	3080	629																																							
	Total	9104	10485	10500	2995																																							
	<p>UpEnergy is the CME for the implementation of the CPAs. The CME coordinates and manage in implementing each element of the monitoring plan.</p>																																											
<table><tr><td></td><td>CPA -01</td><td>CPA -02</td><td>CPA -03</td><td>CPA -04</td></tr><tr><td>CPA ref.#</td><td>9956-0001</td><td>9956-0002</td><td>9956-0003</td><td>9956-0004</td></tr><tr><td>Inclusion date</td><td>22/07/2014</td><td>17/03/2015</td><td>17/04/2015</td><td>17/04/2015</td></tr><tr><td>Location</td><td>Across Uganda</td><td>Across Uganda</td><td>Across Uganda</td><td>Across Uganda</td></tr><tr><td>ICS types</td><td>EZY</td><td>SHS, AES</td><td>SHS, AES</td><td>SHS, AES</td></tr><tr><td>ICS sales start date</td><td>02/01/2013</td><td>09/05/2014</td><td>02/04/2015</td><td>03/04/2015</td></tr><tr><td>Total ICS sold</td><td>9,104</td><td>10, 485</td><td>10,500</td><td>2, 995</td></tr><tr><td>Implementation period under this MR</td><td>22/07/2014 – 10/12/2015</td><td>17/03/2015 – 10/12/2015</td><td>17/04/2015 – 10/12/2015</td><td>17/04/2015 – 10/12/2015</td></tr></table>						CPA -01	CPA -02	CPA -03	CPA -04	CPA ref.#	9956-0001	9956-0002	9956-0003	9956-0004	Inclusion date	22/07/2014	17/03/2015	17/04/2015	17/04/2015	Location	Across Uganda	Across Uganda	Across Uganda	Across Uganda	ICS types	EZY	SHS, AES	SHS, AES	SHS, AES	ICS sales start date	02/01/2013	09/05/2014	02/04/2015	03/04/2015	Total ICS sold	9,104	10, 485	10,500	2, 995	Implementation period under this MR	22/07/2014 – 10/12/2015	17/03/2015 – 10/12/2015	17/04/2015 – 10/12/2015	17/04/2015 – 10/12/2015
	CPA -01	CPA -02	CPA -03	CPA -04																																								
CPA ref.#	9956-0001	9956-0002	9956-0003	9956-0004																																								
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Location	Across Uganda	Across Uganda	Across Uganda	Across Uganda																																								
ICS types	EZY	SHS, AES	SHS, AES	SHS, AES																																								
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Implementation period under this MR	22/07/2014 – 10/12/2015	17/03/2015 – 10/12/2015	17/04/2015 – 10/12/2015	17/04/2015 – 10/12/2015																																								
<p>The model/ types of ICS has been verified during the on-site inspection of sample verifications in order to assess that all physical features of the registered CPA DD are in place and the CME have operated the PoA &amp; CPA as per the registered PoA – DD/1/ and CPA – DDs/3,4,5,6/.</p>																																												
Findings	No finding was raised.																																											
Conclusion	<ul style="list-style-type: none"><li>• The verification team is of the opinion that physical features of the CPAs have been implemented in accordance with the registered CPA-DDs.</li><li>• No specific monitoring equipment had to be installed according to the monitoring plan.</li><li>• It is also confirmed, through the physical site visit and review of the supporting documentation that physical features of the component CPAs have been implemented in accordance with the CPA-DDs.</li><li>• The CPAs were also found to be completely operational in line with the CPA-DDs</li></ul>																																											

	<ul style="list-style-type: none"> <li>The information provided in the relevant sections of the monitoring report are appropriately describe the implementation and operational status of the PoA.</li> </ul>
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## **I.2. Post-registration changes**

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

>> N/A

### **I.2.2. Corrections**

>> N/A

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

>> N/A

### **I.2.4. Inclusion of a monitoring plan to an included CPA-DD**

>> N/A

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

>> N/A

### **I.2.6. Changes to the programme design of the included CPA-DD**

>> N/A

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

>> N/A

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

<b>Means of verification</b>	The monitoring plan as contained in respective CPA DDs were reviewed against the monitoring requirements of the applied methodology AMS-II.G version 05 /11/ as well as PoA DD with reference to the technology involved. Based on this review it was found the monitoring plan contained in the CPA DDs 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 and applied methodology AMS-II.G version 05/11/.
<b>Findings</b>	No finding was raised.
<b>Conclusion</b>	The monitoring plan is in accordance with the approved methodology, AMS-II.G version 05 /11/, hat is included in each respective CPA DDs/3,4,5,6/.

**I.4. Compliance of monitoring activities with the registered monitoring plan****I.4.1. Data and parameters fixed ex ante or at renewal of crediting period**

**Parameter: ( $B_{old}$ ) - Quantity of woody biomass used in the absence of the project activity in tonnes per household (ton wood/ HH-year)**

<b>Means of verification</b>	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	7.02 tons wood-eq/HH-yr (Urban population) 4.97 tons wood-eq/HH-yr(Rural population)	CPA DD of page 21
	CPA -02	7.02 tons wood-eq/HH-yr	CPA DD of page 21
	CPA -03	7.02 tons wood-eq/HH-yr	CPA DD of page 21
	CPA -04	7.02 tons wood-eq/HH-yr	CPA DD of page 21
<b>Findings</b>	No finding was raised.		
<b>Conclusion</b>	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD & CPA DDs/3,4,5,6/. The applied value is correct and justified.		

**Parameter: ( $\eta_{old}$ )- Efficiency of the system being replaced, measured using representative sampling methods or based on referenced literature values (percent)**

<b>Means of verification</b>	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	10%	CPA DD of page 22
	CPA -02	10%	CPA DD of page 21
	CPA -03	10%	CPA DD of page 21
	CPA -04	10%	CPA DD of page 21
<b>Findings</b>	No finding was raised.		
<b>Conclusion</b>	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD & CPA DDs/3,4,5,6/. The applied value is correct and justified.		

**Parameter: ( $L_y$ ) - Leakage Factor is multiplied by a net to gross adjustment factor to account for leakages**

<b>Means of verification</b>	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD and included CPA-DDs/3,4,5,6/.
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	CPA ref no.	Value applied	Consistency checked with
	CPA -01	0.95	CPA DD of page 22
	CPA -02	0.95	CPA DD of page 22
	CPA -03	0.95	CPA DD of page 22
	CPA -04	0.95	CPA DD of page 22
<b>Findings</b>	No finding was raised.		
<b>Conclusion</b>	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD/1/ & CPA DDs/3,4,5,6/. The applied value is correct and justified.		

**Parameter: (NCV<sub>biomass</sub>) - Net calorific value for biomass**

Means of verification	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD/1/ and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	0.015	CPA DD of page 23
	CPA -02	0.015	CPA DD of page 22
	CPA -03	0.015	CPA DD of page 22
	CPA -04	0.015	CPA DD of page 22
Findings	No finding was raised.		
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD/1/ & CPA DDs/3,4,5,6/. The applied value is correct and justified.		

**Parameter: (EF<sub>projected\_fossil\_fuel</sub>) - Emission factor for the substitution of non-renewable woody biomass by similar consumers.**

Means of verification	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD/1/ and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	81.6	CPA DD of page 23
	CPA -02	81.6	CPA DD of page 22
	CPA -03	81.6	CPA DD of page 22
	CPA -04	81.6	CPA DD of page 22
Findings	No finding was raised.		
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD/1/ & CPA DDs/3,4,5,6/. The applied value is correct and justified.		

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

Means of verification	The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD and included CPA-DDs/3,4,5,6/.		
	CPA ref no.	Value applied	Consistency checked with
	CPA -01	82%	CPA DD of page 24
	CPA -02	82%	CPA DD of page 23
	CPA -03	82%	CPA DD of page 23
	CPA -04	82%	CPA DD of page 23
Findings	No finding was raised.		
Conclusion	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD & CPA DDs/3,4,5,6/. The applied value is correct and justified.		

**Parameter: ( $\eta_{\text{specified}}$ ) - Efficiency of the system being deployed at the time of CPA inclusion**

<b>Means of verification</b>	<p>The value of this parameter is considered is mentioned below as per CPA DDs. This was checked with the regd. PoA-DD/1/ and included CPA-DDs/3,4,5,6/.</p> <table border="1"> <thead> <tr> <th>Stove type</th><th>Value applied</th></tr> </thead> <tbody> <tr> <td>EZY</td><td>27.1%</td></tr> <tr> <td>SHS</td><td>26.0%</td></tr> <tr> <td>AES</td><td>25.3%</td></tr> </tbody> </table>	Stove type	Value applied	EZY	27.1%	SHS	26.0%	AES	25.3%
Stove type	Value applied								
EZY	27.1%								
SHS	26.0%								
AES	25.3%								
<b>Findings</b>	No finding was raised.								
<b>Conclusion</b>	The value in the monitoring report and corresponding emission reduction calculations spreadsheet are consistent with the registered PoA-DD/1/ & CPA DDs/3,4,5,6/. The applied value is correct and justified.								

#### I.4.2. Data and parameters monitored

**Parameter: ( $\mu_{\text{old}}$ ) - Quantity of woody biomass used in the project activity by traditional stoves**

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Measured Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology.

	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	How were the values in the monitoring report verified?	<p>The CPAs measure changes in Bold displaced by the project activity through this independent parameter. A random sampling is applied in the survey or field test conducted to determine the amount of fuel-wood still used in the project activity by traditional stoves. Survey questionnaires administered to a sample of end users elicit visual inspections of the household and if necessary an interview to confirm whether they are still using a baseline stove and in that case to obtain self-reported estimates of the amount of non-renewable biomass used per day in traditional stoves in parallel to the improved stove during various seasons. The quantity of woody biomass still used by traditional stoves (<math>\mu_{old}</math>) is excluded from Bold. Alternatively, field testing measure fuel consumption by traditional stoves. A weighted average of stove sales for each vintage is applied.</p> <p>The value of the parameter for all the CPAs i.e. CPA1, CPA 2 , CPA 3 &amp; CPA 4 is 1.86 tonnes wood/ year (1861.58 kg).</p> <p>It is noteworthy that PP has done sampling across the CPA due to the similar nature of the technology employed in the PoA.</p> <p>The <math>\mu_{old}</math> was calculated by asking end user household how much fuel they burn in traditional stoves during field survey by a dedicated team</p>
	If applicable, has the reported data been cross-checked with other available data?	<p>The survey results, assumptions and sales records were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet of final Monitoring Report.</p> <p>The verification team randomly selected 20 samples for DOE's field survey and via on-site interview found out amount of woody biomass consumed per household per year, which was consistent with the CME's sample survey result.</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 CPA implementer and established during the onsite assessment	
In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as	No such issues.	

	stipulated by Appendix 1 to the CDM Project Standard?	
<b>Findings</b>	No finding was raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

**Parameter: ( $\eta_{\text{new}}$ ) - Efficiency of the system being deployed as part of the project activity (percentage), as determined using the Water Boiling Test (WBT) protocol]**

Means of verification	Criteria/Requirements	Assessment/Observations																												
	Measuring /Reading /Recording frequency	Measured Annually																												
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology.																												
	Monitoring equipment	The WBT tests/26/ were conducted by third party CIRCODU and undertaken following a simplified version of WBT protocol 4.2.2 /26/ by an experienced party. The PoA DD or CPA DDs do not prescribe any specific monitoring equipment but weighing scale and thermometer were required and used to conduct WBT.																												
	Calibration frequency /interval:	Not applicable																												
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable																												
	How were the values in the monitoring report verified?	<p>The Water boiling test conducted by third party has been checked. The value of the parameter for all the CPAs i.e. CPA1, CPA 2 , CPA 3 &amp; CPA 4 is 24.42 % .</p> <table><tr><th>Stove Type</th><th>Net Efficiency</th><th>Sales</th><th>Weightage Sales</th><th>Weightage Efficiency</th></tr><tr><td>EZY</td><td>22.61%</td><td>9,104</td><td>27.52%</td><td>6.22%</td></tr><tr><td>SHS</td><td>25.21%</td><td>20,265</td><td>61.25%</td><td>15.44%</td></tr><tr><td>AES</td><td>24.55%</td><td>3,715</td><td>11.23%</td><td>2.76%</td></tr><tr><td></td><td></td><td>33,084</td><td>1</td><td>24.42%</td></tr></table> <p>It is noteworthy that PP has done sampling across the CPA due to the similar nature of the technology employed in the PoA. However, for WBT test PP has considered the weighted average efficiency of the ICS which is found to be acceptable.</p>					Stove Type	Net Efficiency	Sales	Weightage Sales	Weightage Efficiency	EZY	22.61%	9,104	27.52%	6.22%	SHS	25.21%	20,265	61.25%	15.44%	AES	24.55%	3,715	11.23%	2.76%			33,084	1
Stove Type	Net Efficiency	Sales	Weightage Sales	Weightage Efficiency																										
EZY	22.61%	9,104	27.52%	6.22%																										
SHS	25.21%	20,265	61.25%	15.44%																										
AES	24.55%	3,715	11.23%	2.76%																										
		33,084	1	24.42%																										



	If applicable, has the reported data been cross-checked with other available data?	<p>The survey results, assumptions and sales records were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet of final Monitoring Report.</p> <p>The verification team has checked all the stove efficiency test (WBT) results and found out the efficiency of the ICS are consistent with the CME's and actual WBT results and sample survey result as reported in the final MR and corresponding ER spreadsheet.</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 CPA implementer and established during the onsite assessment
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	CAR#08 was raised and closed after PP has made necessary correction. For further details, please refer Appendix 4.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

**Parameter: (N<sub>y</sub>) - Number of appliances deployed during period as part of the SSC-CPA**

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Measured Annually
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology.
	Monitoring equipment	Not applicable
	Calibration frequency /interval:	Not applicable
	How were the values in the monitoring report	The values in the MR have been verified from the sales database.

	verified?	The value of the parameter for all the CPAs i.e. CPA1, CPA 2, CPA 3 & CPA 4 are 9956-0001= 9,104 9956-0002= 10,485 9956-0003= 10,500 9956-0004= 2,995
	If applicable, has the reported data been cross-checked with other available data?	The survey results, assumptions and sales records were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet of final Monitoring Report.  The verification team randomly selected 20 samples for DOE's field survey and via on-site interview found out that all the ICS which are picked up for sampling are installed at the household and are in working condition, which was consistent with the CME's sample survey result.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	No finding	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

**Parameter: ( $U_y$ ) - Average usage rate of appliance type being deployed during as part of the SSC-CPA.**

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Measured Annually .
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in line to registered CDM PoA DD/1/ and applied methodology.
	Monitoring equipment	Not applicable
	Calibration frequency	Not applicable

	/interval:	
	How were the values in the monitoring report verified?	The values have been verified from the Usage Survey conducted by third party CIRCODU. The value of the parameter for all the CPAs i.e. CPA1, CPA 2, CPA 3 & CPA 4 is 87.12% It is noteworthy that PP has done sampling across the CPA due to the similar nature of the technology employed in the PoA.
	If applicable, has the reported data been cross-checked with other available data?	The survey results, assumptions and sales records were checked by the verification team and were found acceptable. The results are reproducible in the corresponding ER sheet of final Monitoring Report.  The verification team randomly selected 20 samples for DOE's field survey and via on-site interview found out the usage of the installed ICS which was consistent with the CME's sample survey result.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CPA implementer and established during the onsite assessment
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	No finding was raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

#### I.4.3. Implementation of sampling plan

<b>Means of verification</b>	<p>The monitoring has been carried out in accordance with the monitoring plan contained in the revised approved PoA DD /01/ and respective CPA DDs /3,4,5,6/.</p> <p>A single sampling plan was carried out across all specific-case CPAs covered in this monitoring period.</p> <p>All the 4 CPAs 9956-0001, 9956-0002, 9956-0003 and 9956-0004 were covered in the single sampling plan.</p> <p><b>Sampling Design/Target Population/Sampling Frame/Reliability:</b></p> <p>A simple random sampling method has been used, which is in line with the monitoring plan of the revised approved PoA DD (Section B.7.2) as referred in the respective CPA-DDs. In this sampling design both the CPAs that are included under the current monitoring period were subject. The sampling frame considered confidence level and precision as 95/10 in line with the requirement of</p>
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Standard for sampling and surveys for CDM PAs and PoAs.

Due to the large number of ICS distributed as part of the CPAs to be included in the SSC-PoA, therefore, representative sampling has been undertaken as part of a SSC-PoA-wide Sampling Plan (by grouping and sampling across CPAs) that is designed in line with the requirements of the Guideline for "Sampling and Surveys for CDM Project Activities and Programme of Activities version 04.0"/36/. The Sampling Standard allows for sampling across a group of CPAs, provided the homogeneity of population can be demonstrated, or differences are taken into account in the sample size determination and 95/10 confidence/precision is applied.

The target population for the three parameters stated above are all ICS recorded in the project database.

One single sampling frame was used for two parameters i.e. Usage Rate ( $U_y$ ) and Quantity of woody biomass used in the project activity by traditional stoves ( $\mu_{old}$ ). Following the provision in the registered PoA-DD, the population is deemed homogeneous according to the following conditions;

- End users: all stoves are for domestic (household) usage as per their design.
- Geographical area of the project: all models are being distributed in the same geographical area, Uganda.

For the thermal efficiency of the stoves ( $\eta_{new}$ ), PP has considered three sampling frames, one for each stove model, as no field experience / data on thermal efficiencies were available to confirm that stove models are indeed similar on their thermal efficiency.

#### Sampling Method:

Simple Random Sampling is used and samples were randomly selected from the primary sampling unit i.e. sales records database, which includes all ICS which have been disseminated up to the end of the monitoring period. To ensure a random selection of ICS, random number generators was applied. Each ICS in the target population is uniquely identifiable by its unique ID number. Each ICS can thus be allocated a Sample Selection Number in each monitoring period, starting at 1 and increasing up to the total number of ICS in the Database for that pre-defined sampling frame. Applying the random number generators, the ICS can then be randomly chosen from the defined population up to the required sample size as calculated by the CME.

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

The sampling is applied to the following monitoring parameters:

1. Thermal Efficiency of operational ICS:  $\eta_{new,y,i}$
2. The fraction by which emission reductions are multiplied to adjust for drop-off of technologies in use per year:  $U_y$
3. Quantity of woody biomass used in the project activity by traditional stoves:  $\mu_{old}$

In order to calculate the sample size estimates, values for the proportions, mean values, and standard deviations are required. A pilot study was conducted to obtain the estimates for these values.

- The parameter  $U_y$  is a proportional value, therefore the sample size has been calculated according to the following equations<sup>1</sup>:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where:

$$V = \frac{p * (1-p)}{p^2}$$

- The parameter  $\mu_{old}$  and  $\eta_{new,y,i}$  is a mean value, therefore the sample size has been

<sup>1</sup> Refer Equation 1 & 2 of Annex 05 of registered PoA-DD (Page 61)

calculated according to the following equations<sup>2</sup>:

$$n \geq \frac{z^2 * N * V}{(N-1) * precision^2 + z^2 * V}$$

Where:

$$V = \left( \frac{SD}{mean} \right)^2$$

Based on the assumptions following calculation were done as included under sample size calculation (worksheet “Sheet 3”).

It is noteworthy that, as per para 12 of Sampling Standard Version 4.1/36/ “If the sample size calculation returns a value of less than 30 samples, a minimum sample size of 30 shall be chosen when the parameter of interest is a proportion. If the parameter of interest is a numeric mean value (i.e. not a proportion or percentage) the Student’s t-distribution shall be used if the resulting sample size is less than 30.” – The detailed calculation has been described in the sample size calculation sheet.

Data was collected and survey was done by a third party “Center for Integrated Research and Community Development Uganda (CIRCODU)”. The method of collecting data is field surveys. Surveyor visited premises, visual inspection and interview with ICS end-user. The data collected from the surveys were compiled into the Excel spreadsheet and has been shared with DoE. In order to achieve the 95/10 reliability level for cross-CPA sampling few additional stoves were sampled from the database than that required (as mentioned in the table above) to cover for non-responses, if any. As for the thermal efficiency of the stoves, water boiling tests were conducted using WBT protocol by PCIA as available on GACC website. In this regard, sample size calculation spreadsheet /16/ was checked and found correct as per registered monitoring plan.

Data obtained from the samples were used to estimate proportions and mean values for the parameters described above. The values were then be factored into the emissions reduction calculations.

Parameter	Result
U <sub>y</sub>	87.12%
μ <sub>old</sub>	1861.58 Kg
η <sub>new,y,l</sub> (EZY)	22.61%
η <sub>new,y,l</sub> (SHS)	25.21%
η <sub>new,y,l</sub> (AES)	24.55%

The following tables demonstrate the status of precision/confidence for each of the monitored parameters

η <sub>new,y,l</sub> – EZY	22.61%	%	Calculated
Total number of Stoves	9,104	Number	Sales records
Sample Size	57	Number	Sampling Records
Precision	8.3%	%	Calculated – Refer to WBT Sheet
Result	Acceptable	--	Calculated

η <sub>new,y,l</sub> – SHS	25.21%	%	Calculated
Total number of Stoves	20,265	Number	Sales records
Sample Size	37	Number	Sampling Records

<sup>2</sup> Refer Equation 1 & 3 of Annex 05 of registered PoA-DD (Page 61)

Precision	8.0%	%	Calculated – Refer to WBT Sheet
Result	Acceptable	--	Calculated

$\eta_{new,y,l} - \text{AES}$	<b>24.55%</b>	%	<b>Calculated</b>
Total number of Stoves	3,715	Number	Sales records
Sample Size	10	Number	Sampling Records
Precision	5.7%	%	Calculated – Refer to WBT Sheet
Result	Acceptable	--	Calculated

This monitoring report includes the 3 different type of technologies. Hence the mean thermal efficiency is the weighted average of all the stove types is used for the calculation.

Stove Type	Net Efficiency	Sales	Weightage Sales	Weightage Efficiency
EZY	22.61%	9,104	27.52%	6.22%
SHS	25.21%	20,265	61.25%	15.44%
AES	24.55%	3,715	11.23%	2.76%
		33,084	1	24.42%

The efficiency value used for calculation is 24.42%.

$U_y$	<b>87.12%</b>	%	<b>Calculated</b>
Total number of Stoves	33,084	Number	Sales records
Sample Size	132	Number	Sampling Records
Precision	6.58%	%	Calculated – Refer to Usage Survey Sheet
Result	Acceptable	--	Calculated

$\mu_{old}$	<b>1861.58</b>	<b>Kg/year</b>	<b>Calculated</b>
Total number of Stoves	33,084	Number	Sales records
Sample Size	106	Number	Sampling Records
Precision	28.91	%	Calculated – Refer to Usage Survey Sheet
Result	Use higher bound value	--	Calculated

As the desired precision for  $\mu_{old}$  was not met hence as per paragraph 96 of Guideline 'Sampling and surveys for CDM project activities and programmes of activities' Version 4.0, the higher bound value for  $\mu_{old}$  has been determined as a conservative measure.

Reliability check has been done as per the approach mentioned at para 200,201,202 and 203 at page 40, Annex 06, EB67. The detailed calculation with formula has been done in the excel sheet/26/.

The samples were randomly selected using Simple Random Sampling across the 3 technologies. The samples selected for Household survey, Usage survey and for WBT (to calculate efficiency) were all different. all the ICS. Under Simple Random Sampling, the entire target population has an equal chance of being selected, thus the samples selected were deemed to be representative of population.

In the same manner, all parameters of interest are included in the Sample Size Calculator spread sheet. 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 ER sheet /14/ corresponding to final Monitoring Report /14/, which were also found correct. Based on the verified results the verification team found that the required precision is met in all the cases and therefore the survey results /24, 25, 26/ were directly used in the calculation of ERs.

**Findings** CAR# 07 was raised, and closed since PP has addresses all the issues raised regarding the

	sampling approach. Please refer appendix 4 for further details.
<b>Conclusion</b>	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD /01/.

### 1.5. Compliance with the calibration frequency requirements for measuring instruments

<b>Means of verification</b>	No monitoring equipment required to monitor the parameters, as verified through the registered monitoring plan as outline in the CPA-DD and registered PoA-DD. The monitored data was collected and surveyed done by a third party "Center for Integrated Research and Community Development Uganda (CIRCODOU)". CIRCODOU is having a good experience in monitoring cookstove projects in Uganda. Since the data was provided by a third party and PP was not involved in survey test for WBT & Usage, thus no monitoring equipment was used by the PP and thus no need of calibration. However, DOE has checked the calibration certificates/22,28/ of the third party CIRCODOU and found that equipment used during the survey are duly calibrated.
<b>Findings</b>	No finding was raised.
<b>Conclusion</b>	The verification team confirm that CME applied good practice by contracting a reputed third party for data collection & sampling survey and the equipment's used by the third party for sample surveyed are duly calibrated.

### 1.6. Assessment of data and calculation of emission reductions or net removals

#### 1.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

<b>Means of verification</b>	<p>The verification team verified that</p> <p>a) A complete set of data for the monitoring period was available for the monitoring period and the verification of each monitoring parameter is elaborated under Section J.4.2 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheet /16/ of final Monitoring Report /14/.</p> <p>b) The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section I.4.2 of this report. .</p> <p>c) The calculations of baseline emissions as presented in the corresponding ER calculations sheet of final Monitoring Report were checked and found to be consistent with the formulae and methods described in the registered monitoring plan of each relevant CPA DD, PoA DD and the applied methodology.</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 have been correctly applied. This has also been elaborated under Section I.4.1 of this report.</p> <p>f) No standardized baseline was prescribed in the PoA DD and therefore it has not been applied.</p> <p>g) There is no pro-rate approach (para 402(g) of CDM VVS Version 09) was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p> <p>The following equations were used to determine the baseline emissions as provided in the monitoring report /14/ and applied in the corresponding ER calculations sheets /16/. The expressions used were found consistent with the registered PoA DD, CPA DDs and the applied methodology AMS-II.G, version 05:</p> <p>Total ER reductions achieved in the current monitoring period by all types of ICS distributed in the relevant CPA is calculated using the following expressions:</p> <p>Emission reductions are calculated as follows:</p> <p>As per the SSC-POA-DD, emission reductions for the SSC-CPA (Same for all 4 CPAs) has been calculated according to the following formula:</p> <p><b><math>ER_y = (B_{y,savings} * N_y * U_y) * (f_{NRB,y} * NCV_{biomass} * EF_{projected\_fossil\ fuel})</math> Equation (1)</b></p> <p>Where:</p> <p><math>ER_y</math> Emission reductions during the period y in tCO<sub>2</sub>e</p> <p><math>f_{NRB,y}</math> Fraction of woody biomass saved by the project activity in period y that can be established as non-renewable biomass</p> <p><math>NCV_{biomass}</math> Net calorific value of the non-renewable woody biomass that is substituted</p>
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$EF_{\text{projected\_fossil fuel}}$  (IPCC default for wood fuel, 0.0156 TJ/tonne)  
 Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO<sub>2</sub>/TJ  
 $N_y$  Number of appliances of the type being deployed during period y as part of the SSC-CPA  
 $U_y$  Average usage rate (as opposite to drop-off) of appliances of type being deployed during period y as part of the SSC-CPA  
 $B_{y,\text{savings}}$  Quantity of woody biomass that is saved in tonnes per appliance. This parameter is determined at the time of each CPA inclusion using one of the following options:

CPAs	9956-0001	9956-0002	9956-0003	9956-0004	Source
$ER_y$	20,720	18,311	10,497	621	Calculated
$f_{\text{NRB},y}$	82%	82%	82%	82%	Ex-Ante
$NCV_{\text{biomass}}$	0.015	0.015	0.015	0.015	Ex-Ante
$EF_{\text{projected\_fossil fuel}}$	81.60	81.60	81.60	81.60	Ex-Ante
$N_y$	9,104	10,485	10,500	2995	Sales Database
$U_y$	87.12%	87.12%	87.12%	87.12%	Third Party Survey Record
$B_{y,\text{savings}}$	2.39	2.89	2.89	2.89	Calculated

$B_{y,\text{savings},i}$  is estimated using option 2 of the methodology AMS II.G V5:

$$B_{y,\text{savings}} = [(B_{\text{old}} - \mu_{\text{old}}) * L] * (1 - \eta_{\text{old}}/\eta_{\text{new}})$$

Equation 2

$B_{\text{old}}$  Quantity of biomass used in the absence of the project activity in tonnes/ year  
 $\mu_{\text{old}}$  Quantity of woody biomass for the continued use of old stoves  
 $\eta_{\text{old}}$  Weighted average value is used since the replaced systems are unimproved and improved baseline technologies.  
 $\eta_{\text{new}}$  The result obtained from independent testing is used. Efficiency of the system being deployed as part of the project activity (fraction), as determined using the Water Boiling Test (WBT) protocol. Use weighted average values if more than one type of system is being introduced by the project activity.  
 $L$  Leakage adjustment factor (fraction)

	9956-0001	9956-0002	9956-0003	9956-0004	Source
$B_{\text{old}}$	6.10	7.02	7.02	7.02	Ex-Ante
$\mu_{\text{old}}$	1.86	1.86	1.86	1.86	Third Party Survey Record
$\eta_{\text{old}}$	10%	10%	10%	10%	Ex-Ante
$\eta_{\text{new}}$	24.42%	24.42%	24.42%	24.42%	Third Party Survey Record
$L$	95%	95%	95%	95%	Ex-Ante

**Findings** CAR#09 was raised and closed. For further details please refer Appendix 4.

**Conclusion** The verification team confirms that

- The complete data was available and is duly reported;
- As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section J.4.2 of this report);
- Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals were followed;
- Appropriate emission factors, IPCC default factors and other reference values were correctly applied.
- There is no pro-rate approach (para 403(e) of CDM VVS Version 09) 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.
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#### I.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

<b>Means of verification</b>	The PoA DD, CPA DD and applied monitoring methodology 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.
<b>Findings</b>	No finding was raised
<b>Conclusion</b>	No project emissions were required to be calculated.

#### I.6.3. Calculation of leakage GHG emissions

<b>Means of verification</b>	The PoA DD, CPA DD and applied monitoring methodology does not prescribe any leakage emissions to be considered. The onsite visit and project design also did not reveal any potential source to be considered in this regard. However, the leakage adjustment factor that is required to adjust the baseline emissions has been duly accounted in baseline calculations
<b>Findings</b>	No finding was raised.
<b>Conclusion</b>	No additional leakage emissions (other than what is already considered in baseline calculations) were required in accordance with the methodology AMS-II G, version 05 /11/.

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

<b>Means of verification</b>	<p>As elaborated above, the entire emission reductions from the PoA were based on baseline emissions. The calculations presented in this regard in the final monitoring report /14/ and corresponding ER calculations sheet /16/ were found appropriate and complying with the provisions prescribed in the registered monitoring plan of respective CPA- DD, PoA-DD and applied methodology.</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>
<b>Findings</b>	No finding was raised.
<b>Conclusion</b>	<p>The verification team confirms that</p> <ul style="list-style-type: none"> <li>a) The complete data was available and is duly reported;</li> <li>b) As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section J.4.2 of this report);</li> <li>c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed;</li> <li>d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied.</li> <li>e) There is no pro-rate approach (para 403(e) of CDM VVS Version 09) 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.</li> </ul> <p>The total number of ERs achieved during the current monitoring period is <b>50,158</b> tCO<sub>2</sub>e.</p>

Specific-case CPA reference number	Baseline emissions or baseline net GHG removals by sinks (tCO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (tCO <sub>2</sub> e)	Leakage (tCO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (tCO <sub>2</sub> e)		
				Results achieved in the period up to 31 December 2012	Results achieved in the period from 1 January 2013 onwards	Results achieved in the entire monitoring period
9956-0001	20,729	-	-	0	20,729	20,729
9956-0002	18,311	-	-	0	18,311	18,311
9956-0003	10,497	-	-	0	10,497	10,497
9956-0004	621	-	-	0	621	621
<b>Total</b>	<b>50,158</b>				<b>50,158</b>	<b>50,158</b>

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

<b>Means of verification</b>	As verified and evident from the final Monitoring Report /14/ and corresponding ER calculations sheet /16/, the actual emission reductions achieved by each CPA that is included in the current monitoring period were found less than the estimated quantity in the respective CPA DDs for the comparable period because of the reduced number of ICS in operation and shorter operational days of ICS due to the fact that not every ICS operate for the full length of monitoring period. In the ex-ante calculation, it is assumed that all ICS will be in operational for the whole monitoring period.
<b>Findings</b>	No finding was raised.
<b>Conclusion</b>	The actual emission reductions achieved in each specific CPA DD are not higher than the estimated quantity of ERs in the respective CPA DDs. Accordingly, it was accepted by the verification team.

Specific-case CPA reference number	Value estimated in ex ante calculation in the included specific-case CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
9956-0001	62,209	20,729
9956-0002	33,026	18,311
9956-0003	29,206	10,497
9956-0004	29,206	621
<b>Total</b>	<b>153,648</b>	<b>50,158</b>

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

<b>Means of verification</b>	As verified and evident from the final Monitoring Report /14/ and corresponding ER sheet /16/, the actual emission reductions achieved by ICS for CPA that is included in the current monitoring period were found less than the estimated quantity in the respective CPA DDs for the comparable period.
<b>Findings</b>	No findings
<b>Conclusion</b>	The actual emission reductions achieved for CEP covered under this Section for specific CPA DD are not higher than the estimated quantity of ERs in the respective CPA DD.

## Appendix 1. Abbreviations

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

## Appendix 2. Competence of team members and technical reviewers

Competence Statement	
<b>Name</b>	Nayan Jyoti Deka
<b>Country</b>	India
<b>Education</b>	M.Tech. (Energy Technology), Tezpur University
<b>Experience</b>	8 Years
<b>Field</b>	Climate Change & Energy Management
<b>Approved Roles</b>	
<b>Team Leader</b>	YES
<b>Validator</b>	YES

<b>Verifier</b>	YES		
<b>Financial Expert</b>	NO		
<b>Technical Reviewer</b>	YES		
<b>TA Expert (1.1, 1.2, 3.1, 13.1)</b>	YES		
<b>Reviewed by</b>	Abhishek Mahawar	<b>Date</b>	12/10/2015
<b>Approved by</b>	Ashok Kumar Gautam	<b>Date</b>	12/10/2015

Competence Statement			
Name	Ashok Gautam		
Country	India		
Education	M. Sc. (Environmental Sciences) M. Tech. (Energy & Environmental Management)		
Experience	14 Years		
Field	Energy, Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert (1.1)	YES		
TA Expert (3.1)	YES		
TA Expert (13.1)	YES		
Reviewed by	Abhishek Mahawar	Date	29/12/2014
Approved by	Kaviraj Singh	Date	29/12/2014

x

Competence Statement			
Name	Julius Sam Khaukha		
Country	Uganda		
Education	Bachelors in Social Administration		
Experience	More than 20 Years		
Field	Education and Social Work		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Local Expert	YES (Uganda)		
Reviewed by	Abhishek Mahawar	Date	06/04/2016
Approved by	Ashok Kumar Gautam	Date	06/04/2016

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	CME	PoA DD	Version- 04, dated – 30/06/2014	Others
2	UNFCCC	Validation report	Version- 03, dated – 07/07/2014	Others
3	CME	CPA DD – 1	Version- 04, dated – 30/06/2014	Others
4	CME	CPA DD – 2	Version-03 , dated - 09/03/2015	Others
5	CME	CPA DD – 3	Version- 02, dated – 06/04/2015	Others
6	CME	CPA DD – 4	Version- 02, dated – 06/04/2015	Others
7	UNFCCC	CPA #1 validation report	Version- 04, dated – 07/07/2014	Others
8	UNFCCC	CPA #2 validation report	Version- 0, dated – 16/03/2015	Others
9	UNFCCC	CPA #3 validation report	Version- 0, dated – 16/04/2015	Others
10	UNFCCC	CPA #4 validation report	Version- 0, dated – 16/04/2015	Others
11	UNFCCC	Methodology AMS II G, version 05		Others
12	CME	Monitoring report (Publication)	Version- 01, dated – 11/12/2015	CME
13	CME	Monitoring report (Intermediate version)	Version- , dated -	CME
14	CME	Monitoring report (Final version)	Version- 04, dated – 05/05/2016	CME
15	CME	ER calculation sheet (Initial)		CME
16	CME	ER calculation sheet (Final)		CME
17	CME	Sample size calculation sheet-		CME
18	CME	Annex 01 - Partner Information - PoA9956 - Iss 1		CME
19	CME	Annex 02 - Sales Database - PoA9956 - Iss 1		CME
20	CME	Annex 04 - First Sale Receipts		CME
21	CME	Annex 05 - UpEnergy AES Carbon Agreement - PoA9956 - Iss 1		CME
22	CME	Annex 06 - Calibration Certificate of Electronic weigh Balance - PoA9956 - Iss 1		CME
23	CME	Annex 07 - Stove Technical Specification - PoA9956 - Iss 1		CME
24	CME	Annex 08 - HH Survey - PoA9956 - Iss 1		CME
25	CME	Annex 09 - Usage Survey - PoA9956 - Iss 1		CME
26	CME	Annex 10- WBTs - PoA9956 - Iss 1		CME
27	CME	Annex 11 - Urban or Rural Disse		CME
28	CME	Annex 12 - Calibration Certificate of Thermometer - PoA 9956 Iss1		CME
29	GACC	The Water Boiling Test Protocol	Version 4.2.2	Other
30	ESPL	DOE Field Survey		ESPL
31	CME	Sample Photos of the ICS with Unique Serial Number		CME
32	IPCC	IPCC Defaults	2006	Other
33	UNFCCC	CDM VVS	Version 09	Other
34	UNFCCC	CDM PS	Version 09	Others
35	UNFCCC	CDM PCP	Version 09	Others
36	UNFCCC	Standard: Sampling and surveys for CDM project activities and programme of	4.1	Others

		activities		
37	UNFCCC	Guideline: Sampling and surveys for CDM project activities and programme of activities	3.0	Others
38	CME	List of Cookstoves projects in Uganda		CME
39	UNFCCC	<a href="https://cdm.unfccc.int/ProgrammeOfActivities/registered.html">https://cdm.unfccc.int/ProgrammeOfActivities / registered.html</a>		Others
40	GS	<a href="https://mer.markit.com/br-reg/public/index.jsp?entity=project&amp;sort=project_name&amp;dir=ASC&amp;start=0&amp;entity_domain=Markit,GoldStandar">https://mer.markit.com/br-reg/public/index.jsp?entity=project&amp;sort=project_name&amp;dir=ASC&amp;start=0&amp;entity_domain=Markit,GoldStandar</a>		Others
41	VCS	<a href="http://www.v-c-s.org/">http://www.v-c-s.org/</a>		Others

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

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

<b>FAR ID</b>	01	<b>Section no.</b>	G.2	<b>Date</b> : 21/01/2016
<b>Description of FAR</b>				
PP is requested to kindly address the FAR from the validation. At the time of verification, the DOE needs to verify that the improved cook stoves that are part of this CPA emission reduction calculation were only disseminated within the country of Uganda.				
<b>Project participant response</b>				<b>Date</b> : 25/01/2016
The cook stoves sold by the PP under this PoA contains an Unique ID. All the cookstoves sold are either through partner sales or through direct sales. PP has the contact numbers of all the partners which is around 1756 and has the contact number of all the end user sold through direct sales. The contact numbers are all belong to Uganda. Hence it is clear that all the improved cook stoves i.e SHS, AES and EYZ that are part of this CPA emission reductions calculation were only disseminated in the country of Uganda.				
<b>Documentation provided by project participant</b>				
1. <i>Annex 01 – Partner Information (Excel)</i> 2. <i>Annex 02 – Sales Database (Excel)</i>				
<b>DOE assessment</b>				<b>Date</b> : 26/02/2016
Ok, the response provided by the PP found to be satisfactory. Moreover, DOE has also verified that the ICS are part of the CPAs ER calculation which were disseminated with in Uganda. FAR#01 was closed.				

<b>FAR ID</b>	02	<b>Section no.</b>	G.2	<b>Date</b> : 21/01/2016
<b>Description of FAR</b>				
PP is requested to kindly address the FAR from the validation. The unique id will be imprinted on the ICS that is distributed as part of this PoA. The stoves be distributed after the CPA inclusion and hence the unique id and database will have to be verified at the time of CPA inclusion and verification.				
<b>Project participant response</b>				<b>Date</b> : 25/01/2016
The unique id for the stoves has been imprinted on the ICS that is distributed as part of this PoA. The unique id on the ICS has been verified by the DoE at the time of site visit.				
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date</b> : 26/02/2016
DOE has verified the unique id of ICS during the sample verification, and found that all the ICS are having unique identification number (serial number) imprinted on it. Thus FAR#02 was closed.				

<b>FAR ID</b>	03	<b>Section no.</b>	G.2	<b>Date</b> : 21/01/2016
<b>Description of FAR</b>				

PP is requested to kindly address the FAR from the validation.

The PP will cross-check the CPA with other CPAs in this PoA and with CPAs in any other PoA or in a CDM project activity operating in the country using the UNFCCC, the Gold Standard, and other relevant voluntary schemes to ensure that the CPA is not included in any other PoA, CDM project activity or voluntary project activity. All of this information will be summarized in a report and provided to the DOE upon verification. To ensure that the CME and CPA implementer are not double counting the CERs across PoAs or CPAs, the DOE needs to verify that the CME has conducted a cross check with other PoAs or CPAs.

**Project participant response****Date : 25/01/2016**

The PP has cross checked the CPA with other CPAs in this PoA and with CPA in any other PoA or in CDM project activity operating in the Uganda using UNFCCC, the Gold Standard, and other relevant voluntary schemes to ensure that the CPA is not included in any other project. All of this information has been summarized in the report and is being provided along with these responses. All the other projects are uniquely distinguishable and also the cookstoves distributed or proposed under these projects are distinguishable from UpEnergy implemented PoA 9956, either by stove types, models, area of distribution, unique identification of stoves or by kind of stoves.

**Documentation provided by project participant**

Annex 03 - Cook Stoves Project In Uganda other than PoA 9956

**DOE assessment****Date: 26/02/2016**

PP has provided the list of the CDM & GS project in Uganda and the project database as available in the website has been checked for double counting and found that the none of the ICS disseminated in current PoA in not included in any other programme. Thus, the issue related to double counting is mitigated. Thus, FAR#03 was closed.

<b>FAR ID</b>	04	<b>Section no.</b>	G.2	<b>Date : 21/01/2016</b>
<b>Description of FAR</b>				
PP is requested to kindly address the FAR from the validation.				
The start date of the CPA will need to be verified at the time of the CPA verification, since the stoves have not been disseminated as yet.				
The start date of the CPA will be demonstrated using the sales receipt that will have the date of purchase, and the DOE can review the database to confirm the earliest date of a sale of a stove				
<b>Project participant response</b>				<b>Date : 25/01/2016</b>
<ul style="list-style-type: none"> <li>The stove sold under the CPA 001 is EZY and start date of first sold EZY stove is 20/12/2012. Hence start date of CPA 001 is 20/12/2012; as it is same as the first date of EZY stove sold.</li> <li>The stoves sold under the CPA 002 are SHS &amp; AES. Start date of first sold SHS stove is 9/5/2014 and start date of first sold AES stove is 7/2/2015. Hence start date of CPA 002 is 9/5/2014; as it is same as the first date of SHS stove sold.</li> <li>The stoves sold under the CPA 003 are SHS &amp; AES. Start date of first sold SHS stove is 9/5/2014 and start date of first sold AES stove is 7/2/2015. The start date of CPA 003 is 9/2/2015; which is after both the start date.</li> <li>The stoves sold under the CPA 004 are SHS &amp; AES. Start date of first sold SHS stove is 9/5/2014 and start date of first sold AES stove is 7/2/2015. The start date of CPA 004 is 3/4/2015; which is after both the start date.</li> </ul>				
<b>Documentation provided by project participant</b>				
Annex 04 – First Sales Receipt				
<b>DOE assessment</b>				<b>Date: 26/02/2016</b>
The evidence provided by the PP for the start date of the CPA is not consistent with the start date of CPA mentioned in the CPA DDs. Please clarify. Thus FAR#04 is open.				
<b>CME response</b>				<b>Date: 02/03/2016</b>
The evidence as per the start date as mentioned in the CPA-DD has been provided along with these responses and accordingly the date has been revised in the MRv3 and ER Sheet.				
<b>Documentation provided by the CME</b>				
Annex 04 – First Sales Receipt				
<b>DOE assessment</b>				<b>Date: 08/03/2016</b>
PP has provided the evidences in support of the start date of the each CPAs which has been checked and found that the date of sale of the ICS is matching with the start date of each CPAs. Thus, FAR#04 was closed.				

**Table 2. CL from this verification**

<b>CL ID</b>	05	<b>Section no.</b>	H.1	<b>Date : 21/01/2016</b>
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<b>Description of CL</b>	
PP is requested to provide the following documents – <ol style="list-style-type: none"> <li>1. Sales receipt for CPA start date evidence along with carbon waiver.</li> <li>2. Contract document bet Upenergy &amp; AES for carbon waiver</li> <li>3. Technical specification of cook stoves</li> </ol>	
<b>Project participant response</b>	<b>Date : 25/01/2016</b>
<ol style="list-style-type: none"> <li>1. Sales receipt for CPA start date evidence along with carbon waiver is being submitted along with these responses.</li> <li>2. Contract document has been submitted along with these responses as Annex-05.</li> <li>3. Technical specification of cook stoves is being submitted along with these responses.</li> </ol>	
<b>Documentation provided by project participant</b>	
<ol style="list-style-type: none"> <li>1. Annex 04 - Sales receipt</li> <li>2. Annex 05 - UpEnergy AES Carbon Agreement</li> <li>3. Annex 06 - Calibration Certificate of Electronic Weigh Balance.</li> <li>4. Annex 07 - Stove Technical Specification</li> </ol>	
<b>DOE assessment</b>	<b>Date: 02/03/2016</b>
<ol style="list-style-type: none"> <li>1. Sales receipt for CPA start date evidence are not consistent with the CPA start date mentioned in the CPA DD. Open.</li> <li>2. Contract document between UpEnergy &amp; AES has been checked and found to be acceptable.</li> <li>3. PP need to provide the calibration certificate of weighing balance covering the current monitoring period. Open.</li> <li>4. The stove technical specification has been checked and found that the ICS employed are inconsistent with the ICS mentioned in the PoA DD/ CPA DDs. Closed.</li> </ol> <p>Thus CL#05 is open.</p>	
<b>CME response</b>	<b>Date: 07/03/2016</b>
<ol style="list-style-type: none"> <li>1. Sales receipt for CPA start date has been provided along with these responses is now consistent with the CPA start date mentioned in the CPA DD.</li> <li>2. Close</li> <li>3. The calibration certificate of the weighing balance provided by CME was issued on 22-Jan-2015. Surveys for the project was completed in August-2015 Hence the weigh balance was calibrated at the time of survey.</li> <li>4. Close</li> </ol>	
<b>Documentation provided by the CME</b>	
-	
<b>DOE assessment</b>	<b>Date: 08/03/2016</b>
<ol style="list-style-type: none"> <li>1. Sales receipt for CPA start date has been provided by the PP which has been checked and found to be correct. Closed.</li> <li>3. The calibration certificate has been checked and found to be satisfactory and covering the monitoring plan. Closed.</li> </ol> <p>Thus, CL#05 was closed.</p>	

<b>CL ID</b>	06	<b>Section no.</b>	G.1	<b>Date : 21/01/2016</b>
<b>Description of CL</b>				
PP is requested to follow the guidance for MR completion in particular to section D where the information as required in the MR i.e. "Total GHG emission reductions achieved in this monitoring period for the CPA, including information on how double counting is avoided " is missing.				
<b>Project participant response</b>				<b>Date : 25/01/2016</b>
The section D has been revised. "Each stove bears a unique identification punched on the stove. The same is recorded to trace the stove later and avoid double counting. Further, for each stove included under each CPA, information on the location of the stove has been collected by collecting addresses. Please refer the sales database in which the sales information i.e. Stove unit details and the end user / partner information for stove is mentioned. The system of recording the unique serial on each stove along with its location serves toward avoiding double counting of stoves amongst various CPAs." The same is included in MR version 02.				
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date: 26/02/2016</b>



The revised MR has been checked and found that PP has corrected the section D of the MR and has included the justification for avoiding the double counting. Thus CL#06 was closed.

**Table 3. CAR from this verification**

<b>CAR ID</b>	07	<b>Section no.</b>	I.4.3	<b>Date</b>	21/01/2016
<b>Description of CAR</b>					
a) The description of sampling plan is not comprehensive, PP need to elaborate the detailed sample calculations etc in the MR under section B.2.  b) Under the heading "Demonstration of whether the required confidence/precision has been met", the detailed for the third parameter Quantity of woody biomass used in the project activity by traditional stoves: $\mu$ old" is missing. c) Please correct the version of the Guidelines on Sampling and Surveys for CDM Project Activities and Programme of Activities.					
<b>Project participant response</b>					<b>Date</b>
a) The description of sampling plan is revised. Whole section of B.2 is now elaborated. The revised version of the MR is 2. b) Information for $\mu$ old is included in the MR Version 2. c) The version of the Guidelines Guidelines on Sampling and Surveys for CDM Project Activities and Programme of Activities.					10/02/2016
<b>Documentation provided by project participant</b>					
<i>Revised MR</i>					
<b>DOE assessment</b>					<b>Date:</b>
a) PP has revised the MR and has included a comprehensive sampling plan in the report. b) PP has included the details of the third parameter "Quantity of woody biomass used in the project activity by traditional stoves: $\mu$ old". c) The version of the the Guidelines on Sampling and Surveys for CDM Project Activities and Programme of Activities has been corrected in the MR.					26/02/2016
TR comments – Dated – 27/04/2016  1. As per para 12 of Sampling Standard V4.1, If the parameter of interest is a numeric mean value (i.e. not a proportion or percentage) the Student's t-distribution shall be used if the resulting sample size is less than 30. Please explain how the requirement has been met? Refer page 9 of MR. 2. What does 1-7 signify in the Usage Survey? Refer page 9 of MR. 3. Please explain the reliability approach, in particular formula applied for precision achieved? Can you please explain the formula applied so that one can easily understand the assumption. Please also review the approach as per standard which prescribes Student T test when values were lower than 30 for parameter of interest is mean? Refer page 10 of MR. 4. Only CPA 1 uses value given for Rural Locations as well as per population distribution. However, other CPAs use values given for Urban areas, was there no ICS distributed even a single CPA to rural areas for CPA 2, 3,4? Refer page 21 of MR. 5. Please explain the procedure in the same manner as done for other parameters based on statistical approach applied. Refer page 23 of MR					
Thus CAR#07 is open.					
<b>Project participant response</b>					<b>Date</b>
					27/04/2016

<ol style="list-style-type: none"> <li>1. The sample size calculation has been revised now and the Student's t-distribution has been used for the samples whose resulting sample size was less than 30. The revised sample sheets has been submitted along with these responses.</li> <li>2. The usage survey has been revised and significance of 1-7 has been explained in the usage sheet. The revised sheet has been submitted along with these responses.</li> <li>3. The reliability approach has been mentioned in the excel sheet. The revised sheet has been submitted along with these responses.</li> <li>4. At the time of registration, it was mentioned in the CPA-1 that Rural and Urban HH will be included. After that as per PP's experience and analyzing sales; only Urban HH were included in the CPA-2,3 and 4 as sales in rural was very less compare to urban areas. The project and sales has been managed in such a manner that Rural HHs are included in CPA-1 and rest into other CPAs. So there are no stoves in rural areas in CPA 2,3 and 4.</li> <li>5. The <math>\mu_{old}</math> was calculated by asking end user household how much fuel they burn in traditional stoves during field survey by a dedicated team. All data will be kept for 2 years following the crediting period or the last issuance of the CERs of the project activity.</li> </ol>
<b>Documentation provided by project participant</b>
<ol style="list-style-type: none"> <li>1. Revised Sample calculation sheet</li> <li>2. Revised Usage Survey</li> <li>3. Revised WBT Sheet</li> <li>4. Revised MRv4</li> </ol>
<b>DOE assessment</b>
<p>PP has made the necessary corrections with respect to the sampling size calculations using the Student's t-distribution for the samples whose resulting sample size was less than 30. Also, the usage survey has been revised and significance of 1-7 has been explained in the usage sheet, the reliability approach has been included in the ER sheet. Thus CAR#07 was closed.</p>

<b>CAR ID</b>	08	<b>Section no.</b>	1.4.2	<b>Date :</b> 21/01/2016
<b>Description of CAR</b>				
<p>For the parameter "ηnew",</p> <ol style="list-style-type: none"> <li>a) The efficiency value in the MR is inconsistent with the ER sheet.</li> <li>b) Since weigh scale &amp; other monitoring equipment's are used to measure this parameter, PP is requested to kindly include a complete details of the measuring equipment's including Make, serial numbers, date of calibration, accuracy etc.</li> <li>c) It is not clear how the procedure to determine this parameter as outlined in registered CPA DDs is followed during current monitoring period i.e., sufficient information is not provided in MR in line with registered CPA DD.</li> </ol>				
<b>Project participant response</b>				<b>Date :</b> 10/02/2016
<p>For the parameter "ηnew",</p> <ol style="list-style-type: none"> <li>a) The efficiency value in the MR is revised and is consistent with the ER sheet.</li> <li>b) The details of measuring instruments have been included.</li> <li>c) Sufficient information regarding the procedure to determine this parameter as outlined in registered CPA DDs is included during current monitoring report in section G.2.</li> </ol>				
<b>Documentation provided by project participant</b>				
<i>Revised MR</i>				
<b>DOE assessment</b>				<b>Date:</b> 26/02/2016
<ol style="list-style-type: none"> <li>a) The values of efficiency has been corrected in the MR. Closed.</li> <li>b) PP still need to include the complete details of the calibration in the MR. Open.</li> <li>c) PP has revised the MR and has included sufficient information on how the procedure to determine this parameter as outlined in registered CPA DDs is followed during current monitoring period. Closed.</li> </ol> <p>Thus CAR#08 is open.</p>				
<b>CME response</b>				<b>Date:</b> 07/03/2016

b) Complete details of the calibration has been provided in the MR. It includes calibration of Weighing Balance and Thermometer.

**Documentation provided by the CME**

Calibration certificate of Thermometer

**DOE assessment**

**Date:** 08/03/2016

PP has revised the MR and includes the calibration details which is found to be satisfactory. Thus, CAR#08 was closed.

<b>CAR ID</b>	09	<b>Section no.</b>	I.6.1	<b>Date:</b> 21/01/2016
<b>Description of CAR</b>				
In the Section H.1, the reported values for Ny & Uy are inconsistent w.r.t ER sheet. Also, PP is requested to round down the value for conservativeness. PP is requested to kindly include the Emission calculation equations in the ER sheet inline to the applied methodology.				
<b>CME response</b>				<b>Date:</b> 26/02/2016
The values for Ny & Uy are updated and are consistent with ER sheet. All the values are round down for conservativeness. Emission calculation equations as per the applied methodology are included in the ER sheet.				
<b>Documentation provided by the CME</b>				
<i>Revised ER</i>				
<b>DOE assessment</b>				<b>Date:</b> 08/03/2016
The values are conservatively included in the ER sheet. Thus CAR#09 was closed.				

**Table 4. FAR from this verification**

There is no FAR from this verification.

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory		
Document Type: Form		
Business Function: Issuance		
Keywords: programme of activities, verifying and certifying		