




Verification and certification report form for GS project activities

(Version 01.0)

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

VERIFICATION AND CERTIFICATION REPORT

Title of the project activity	Improved Cookstoves for Social Impact in Ugandan Communities
Reference number of the project activity	GS 447
Version number of the verification and certification report	Version 3.1
Completion date of the verification and certification report	13/07/2017
Monitoring period number and duration of this monitoring period	Monitoring period number: 02 (CP2) Duration: 01/07/2015 to 31/12/2016
Version number of monitoring report to which this report applies	Version 5.3
Crediting period of the project activity corresponding to this monitoring period	Crediting Period #02 01/04/2014-31/03/2021
Project participant(s)	Impact Carbon
Host Party	Uganda
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	3, energy demand, Technologies and Practices to Displace Decentralized Thermal Energy Consumption – 11/04/2011
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	617,562 tCO ₂
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	729,309 tCO ₂
Name of DOE	Earthood Services Private Limited
Name, position and signature of the approver of the verification and certification report	 Dr. Kaviraj Singh, Managing Director

SECTION A. Executive summary

The project activity is dissemination of improved cook stoves in Uganda. The project activity will lead to reduction in deforestation, greenhouse gas emission and indoor air pollution.

Under the project activity 479,051 cook stoves had been constructed and disseminated since the beginning of the project out of which 22,103 were disseminated in the current monitoring period by the project participant. However, 445,560 stoves sold between the period 2008 (August 2008 onwards) – 2016, have been considered under this monitoring period.

The project started in 2007 and the first crediting period of the project ended in 31/03/2014. However, it has been renewed again and the start date of the second crediting period is 01/04/2014. The project activity will reduce 729,309 tCO_{2e} in current monitoring period 01/07/2015–31/12/2016.

The basic details of the project activity are as follows:

Project title	Improved Cookstoves for Social Impact in Ugandan Communities
GS Reference number	447
ESPL reference number	GS.VER.16.23
Date of registration	26/03/2009
Sectoral scope	3, Energy Demand
Methodology/ies applied	Technologies and Practices to Displace Decentralized Thermal Energy Consumption, Version 1, 11/04/2011
Project participants	Impact Carbon
Location of Project Activity	Uganda
Geographical coordinates	Geo-coordinates of Uganda 1°00'N and 32°00'E

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

- (i) The registered GS PDD and Passport
- (ii) The approved methodology mention in the GS PDD and passport
- (iii) The registered monitoring plan
- (iv) UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
- (v) The latest Gold Standard (GS) tool kit version 2.2
- (vi) CDM Validation and Verification Standard (VVS)
- (vii) CDM Project Standard (PS) and Project Cycle Procedure (PCP)
- (viii) Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions

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

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

- a) Contract with Impact Carbon 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) Uploading Work plan on GS registry
- d) Desk review (refer Section C.1 of this report) of Monitoring Report and corresponding ER sheet by verification team and planning of onsite audit (including sampling approach (refer Section C.4 of this report) to be applied)
- e) On site audit (refer Section C.2 of this report) (physical implementation and interview with relevant stakeholders) by verification team
- f) Follow up activities e.g., interviews
- g) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section C.5 of this report)
- h) Independent technical review (refer Section D of this report) of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidences)

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

Based on the outcome of the verification process of the registered PA “Improved Cookstoves for Social Impact in Ugandan Communities” for the monitoring period 01/07/2015 to 31/12/2016 we confirm that the implementation of referenced registered PA is complying with applicable GS and CDM rules and regulations as stated in the Monitoring Report (final) Version 5.3 dated 13/07/2017. Earthood Services Private Limited is able to certify that the emission reductions from the registered GS PA (447) “Improved Cookstoves for Social Impact in Ugandan Communities” in ‘Uganda’ during the period 01/07/2015 to 31/12/2016 (including both days) amount to 729,309 tCO₂e. Therefore, this is being submitted for request for issuance, as per GS procedures as applicable.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team member

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	Mahala	Deepika	Central Office	Y	N	Y	Y
3.	Technical Expert	IR	Deka	Nayan Jyoti	Central Office	Y	Y	Y	Y
4.	Local Expert	EI	Khaukha	Julius Sam	Central Office	N	Y	Y	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	Mahawar	Abhishek	Central Office
2.	Technical Expert to TR	IR	Gautam	Ashok	Central Office
3.	Approver	IR	Singh	Kaviraj	Central Office

SECTION C. Means of verification

C.1. Desk review

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

- a) A review of the data and information presented to verify their completeness
- b) A review of the monitoring plan (as described in PDD and passport), the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying

particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures

- c) A review of calculations and assumptions made in determining the GHG data and emission reductions;
- d) An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions

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

C.2. On-site inspection

Duration of on-site inspection: 13/01/2017 to 14/01/2017				
No.	Activity performed on-site	Site location	Date	Team member
1.	Physical site visit: Households visited (implementation of PA)	Uganda	13/01/2017 to 14/01/2017	Nayan Jyoti Deka
2.	Review of information flows for generating, aggregating and reporting the monitoring parameters	Uganda	13/01/2017 to 14/01/2017	Nayan Jyoti Deka
3.	Cross check between information provided in the monitoring report and data from other sources such as project database, sales receipts etc;	Uganda	13/01/2017 to 14/01/2017	Nayan Jyoti Deka
4.	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the applicable requirements	Uganda	13/01/2017 to 14/01/2017	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	13/01/2017 to 14/01/2017	Nayan Jyoti Deka

C.3. Interviews with project participants

No.	Interviewee			Subject	Date	Team member
	Last name	First name	Affiliation			
1.	Melana	Sandeep	Impact Carbon	Monitoring report, Sampling calculations, ER calculations,	13/01/2017 to 14/01/2017	Nayan Jyoti Deka
2	Kaskia	Brain	Impact Carbon	Monitoring & record keeping, follow up calls with ICS users	13/01/2017 to 14/01/2017	Nayan Jyoti Deka
3	Turgoson	Mark	Impact Carbon	Description of overall PA	13/01/2017 to 14/01/2017	Nayan Jyoti Deka
4	Kumar	Ajay	Impact Carbon	Monitoring, survey, training	13/01/2017 to 14/01/2017	Nayan Jyoti Deka
5	Ismail	Wamala	Impact Carbon	PA implementation, sales database	13/01/2017 to 14/01/2017	Nayan Jyoti Deka

C.4. Interviews with local stakeholders

Local stakeholders were interviewed physically during the site visit. The stove owners were questioned about the experience of owning the improved cook stove, the difference they find between the traditional cook stove and ICS and about their fuel savings. The responses are distinguished between Positive (P), Negative (N), Concerned (C) and Neutral (Nu). Positive response is the one in which the user is very happy with the product and has no issues. Negative response is the one in which the user is not at all satisfied with the product. Concerned response is characterised by satisfied customer with few issues. Neutral responses are those where end-user is indifferent. The list of the stove owners visited are as follows:

No.	Date	Name of Stakeholder	Address/Mobile	Subject	Feedback (Positive/Negative/Concerns)
1.	13/01/2017	Mulong	0706745193	ICS usage, Smokes, livelihood, access to clean energy	Positive
2.	13/01/2017	Juliet Namirimu	0783714408	ICS usage, Smokes, livelihood, access to clean energy	Positive
3	13/01/2017	Ssebowa Hadija	0702160321	ICS usage, Smokes, livelihood, access to clean energy	Positive
4	13/01/2017	Hadija	0704994567	ICS usage, Smokes, livelihood, access to clean energy	Positive
5	13/01/2017	Maama Bashir	Ndeeba	ICS usage, Smokes, livelihood, access to clean energy	Positive
6	13/01/2017	Naomi	0701479001	ICS usage, Smokes, livelihood, access to clean energy	Positive
7	13/01/2017	Brend Malweyiso	07759736982	ICS usage, Smokes, livelihood, access to clean energy	Positive
8	13/01/2017	Hanifah Nabukenya	0757184113	ICS usage, Smokes, livelihood, access to clean energy	Positive
9	13/01/2017	Mayanja Musa	0703744970	ICS usage, Smokes, livelihood, access to clean energy	Positive
10	13/01/2017	Najingo Sarah	0758198784	ICS usage, Smokes, livelihood, access to clean energy	Positive
11	14/01/2017	Resty Nanyonga	0753379088	ICS usage, Smokes, livelihood, access to clean energy	Positive
12	14/01/2017	Louisa	0784844595	ICS usage, Smokes, livelihood,	Positive

		Kyomuhendo		access to clean energy	
13	14/01/2017	Aisha Nakintu	0703638419	ICS usage, Smokes, livelihood, access to clean energy	Positive
14	14/01/2017	Janat Namirimu	0759995417	ICS usage, Smokes, livelihood, access to clean energy	Positive
15	14/01/2017	Robinah Kafeero	0776810663	ICS usage, Smokes, livelihood, access to clean energy	Positive
16	14/01/2017	Christine Namutebi	0782342638	ICS usage, Smokes, livelihood, access to clean energy	Positive
17	14/01/2017	Jam namugga	0751698874	ICS usage, Smokes, livelihood, access to clean energy	Positive
18	14/01/2017	Phiona Nantumbwe	0758690556	ICS usage, Smokes, livelihood, access to clean energy	Positive
19	14/01/2017	Haawah Babirye	0753096289	ICS usage, Smokes, livelihood, access to clean energy	Positive
20	14/01/2017	Mamisha	0784040754	ICS usage, Smokes, livelihood, access to clean energy	Positive

C.5. Sampling approach

Impact carbon's sampling approach:

The project proponent has to apply simple random sampling to conduct the monitoring studies (MKS, KPT and usage surveys) as per validated registered PDD. 90/10 confidence precision was applied by PP in the sampling, which is appropriate for a large scale project activity as per the guidance of sampling and surveys for CDM project activities and program, given by UN/27/. Impact Carbon has followed a frequency of being annual for KPT and usage survey, and quarterly for MKS which meets a precision level of 90/10 in sampling which is inline to the KPT procedure stated in the applied methodology version 1.0, Annexure 4.0 and Annex 5.0/3/. This was accepted by assessment team since this was in accordance with the applied methodology and registered PDD. The sampling approach undertaken by PP is duly explained under Section D.3 of monitoring report.

DOE's sampling approach:

In order to meet the requirements of paragraph 23 of Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 5.0/26/, the verification team applied acceptance sampling in the verification (in accordance with para 26). The verification team selected random sample of PP's sampled records, checked the acceptability (or otherwise) of the data for each such record with PP's sample records, and then based on the number of records where there is agreement, determined if the PP'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 5.0:

- The proportion of discrepancies between the PP'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% was considered in this verification.
- The proportion of discrepancies between the PP'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 was required to verify 18 samples in total. During site visit and observed that the sampling survey results for all the ICSs checked were consistent with DOE's field survey results. In all the verification team visited 20 households.

C.6. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	-	-	-
Compliance of the project implementation with the registered PDD	-	-	1

Post-registration changes	-	-	-
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	-	1	-
Compliance of monitoring activities with the registered monitoring plan	-	1	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	-	1	-
Others (please specify)	-	-	-
Total	-	3	1
3 FARs were raised during the current verification			

SECTION D. Verification findings

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

Means of verification	Gold Standard does not have a template of its own. The monitoring report form used by the PP has been prepared using CDM-MR-FORM version 05.1 template. The form used was appropriate and latest available. All the details were filled as per the MR filling guidelines of the CDM-MR-FORM/30/.
Findings	No findings
Conclusion	The verification team confirms the compliance of the monitoring report with the valid version of the CDM-MR-FORM and the instructions therein for filling out the CDM-MR-FORM.

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

There was a FAR#01 raised in the last verification. The FAR#01 raised was “The PP shall revise the monitoring plan for Air Quality indicator to include questions to explore the effects of carbon monoxide exposure on the kitchen survey.” In response to the FAR, questions related to smoke levels, incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes as observed by the users, have been added to the questionnaire. A question related to occurrence of symptoms such as headache, weakness, vomiting, dizziness, difficulty in breathing and nausea has also been asked in the survey to identify the impact of carbon monoxide on the users. The monitoring kitchen survey has already been revised. Thus, the FAR#01 was duly take care and closed out.

D.3. Compliance of the project implementation with the registered project design document

Means of verification	<p>The registered PDD involves the promotion, distribution of improved cook stoves (ICS) in Uganda/01/. Impact Carbon and UpEnergy have implemented the project activity with aid of project partners. These partners are: Ugastove, SESSA, African Energy Stove (AES), Energy Uganda Foundation (EUF) and Friends of Wealthy Environment (FOWE). The responsibilities of implementation and operation are divided in the project partners listed above, which was also evident during the site visit. UpEnergy coordinates the project and provides necessary carbon finance for project development and stove subsidies. Impact carbon manages the carbon crediting process. This is consistent with registered PDD /01/.</p> <p>The implementation of project activity has been done within the geographical boundary of Uganda.</p> <p>The traditional three-stone wood fire cook stoves and traditional metal charcoal stoves have been replaced by the ICS listed below:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>SI No.</th> <th>Name of ICS</th> <th>Thermal Efficiency</th> <th>Means of Verification</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Ugastoves</td> <td>27.23%</td> <td>The value of efficiency has been verified from Registered</td> </tr> </tbody> </table>			SI No.	Name of ICS	Thermal Efficiency	Means of Verification	1.	Ugastoves	27.23%	The value of efficiency has been verified from Registered
SI No.	Name of ICS	Thermal Efficiency	Means of Verification								
1.	Ugastoves	27.23%	The value of efficiency has been verified from Registered								

			PDD/01/.
2.	Energy Uganda Foundation(EUF) stoves	26.89%	The value of efficiency has been verified from Registered PDD/01/.
3.	Save Energy Saving Stove For Africa Limited (SESSA) stoves	23.78%	The value of efficiency has been verified from Registered PDD/01/.
4.	Friends of Wealthy Environment(FOWE) stoves	27.56%	The value of efficiency has been verified from Registered PDD/01/.
5.	African Energy Stoves(AES)	25.33%	The value of efficiency has been verified from Registered PDD/01/.

The specifications of the cook stoves deployed have been checked from the manufacturer specifications/7/ and manual guide of the product /8/provided by the PP.

The numbers of Improved Cook stoves deployed under the project activity has been confirmed by the sales database /12/. 479,051 cook stoves have been constructed and disseminated till date out of which 22,103 were disseminated during the current monitoring period (from the total stoves, 445,560 sold between 2008 (August 2008 onwards)-2016 considered for this monitoring period only). The installation dates of the cook stoves have also been verified from the same sheet/12/. 273 institutional wood stoves were also built by the PP. However, PP has chosen not to consider those stoves for calculating the emission reductions.

Sale receipts/9,10/ and Carbon Transfer Agreement/13/ have been checked to confirm that the PP holds the sole rights to CERs.

PP has done thorough analysis of the projects across all the mechanisms and substantiated clearly that the project activity GS 447 disseminated cook stove of different technology and double counting of emission reductions has been avoided/28/.

It was observed by the Team Leader that all the households visited had their ICS in operational condition. It was also confirmed through interviews of owners/representatives (users of cook stoves) during the site visit.

The emission reduction achieved during the current monitoring period (01/07/2015 to 31/12/2016) is 729,309 tCO₂e.

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

The verification team considers the project description, methodology, tools, forms and guidance of the project contained in the registered PDD. The monitoring report was compared and verified against the description provided in the registered PDD and found to be correct.

Grievance mechanism:

The customers have been provided with the manufacturer's stove warranty card which has the contact details such as phone number, email id and address mentioned in it. The customers can reach the PP through these contact details and register their complaints. The warranty cards were checked for contact details on site/11/. Interview with the end users revealed that they were aware about the grievance mechanism. Impact carbon representative informed the DOE on site that

	on registration of complaints necessary actions are taken by replacing or repairing the product. It was verified from the comment book kept in main office, checked during site visit, that there were no comments received till the end of this monitoring period.
At Findings	CAR#02 was raised and resolved.
Conclusion	<p>Assessment concludes the following:</p> <ul style="list-style-type: none"> a. The implementation status of project activity was found to be in compliance with registered PDD b. DOE has conducted the on-site visit to confirm the implementation status of the project. c. The start date of the project activity was found to be accurately and consistently recorded. d. The actual operation of project activity was found to be in compliance with the flow diagram provided in registered PDD. e. There was no increase in emission reduction from estimates made in registered PDD, therefore no additional explanation was sought from PP regarding the same. <p>This is in compliance with para 385 of VVS Version 09..</p>

D.4. Post-registration changes

D.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

Not Applicable

D.4.2. Corrections

None

D.4.3. Changes to the start date of the crediting period

The start date of the crediting is 01/04/2014 for the second crediting period as per the registered PDD/01/.

D.4.4. Inclusion of a monitoring plan to a registered project activity

Not Applicable

D.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

Not Applicable

D.4.6. Changes to the project design of a registered project activity

Not Applicable

D.4.7. Types of changes specific to afforestation and reforestation project activities

Not Applicable

D.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	After reviewing the monitoring plan provided in the registered PDD/01/ and the applied methodology "Technologies and Practices to Displace Decentralized Thermal Energy Consumption"/03/, the verification team was able to establish that the monitoring plan provided in the MR is in compliance with the applied methodology/03/.
------------------------------	--

Findings	CAR#02 was raised and resolved
Conclusion	The monitoring plan is in compliance with the applied methodology/03/.

D.6. Compliance of monitoring activities with the registered monitoring plan

D.6.1. Data and parameters fixed ex ante or at renewal of crediting period

For the calculation of emission reduction, PP has used the default values of charcoal for emission factor and NCV in place of wood because all the household uses Charcoal as fuel.

All parameters listed in the registered PDD as ex-ante are for wood fuel. It was mentioned in the PDD that “A general trend of fuel mixture in the form of firewood and charcoal is observed across the country. Thus, the charcoal and wood fuels are quantified separately and subsequently combined into a unique fuel consumption value in the form of woody biomass using the charcoal conversion factor”.

Hereafter following values has been used for the calculation.

	Value used in the MP
NCV of Fuel that has been substituted	Charcoal = 29.5 TJ/Gg
CO ₂ Emission Factor (Fuel Consumption)	Charcoal = 112,000 kgCO ₂ / TJ
Non-CO ₂ Emission Factor	Charcoal = 9.88 tCO ₂ / TJ
Emission Factor from Fuel Production	Charcoal = 1.802 kgCO ₂ / kg of charcoal production

The PP has applied weighted average of fuel mix to evaluate the values of ex-ante parameters which gives a lower value of emission reductions. The approach was found to be conservative and acceptable. The applied values have also been checked from the IPCC guidelines/14/.

D.6.1.1. CO₂ emission factor arising from use of fuels (wood or wood equivalents) in baseline scenario, EF_{b,CO₂}, kg CO₂/TJ

Means of verification	The registered PDD/1/ gives the value of 112,000 kg CO ₂ /TJ for wood and charcoal being used as a fuel which is also found consistent with the IPCC Assessment Report 4 /14/. To account for emissions associated with charcoal production, PP has also included 61.08 tCO ₂ /TJ (calculated value) as the emission factor for charcoal production in the overall charcoal emission factor. The source values and the calculation for charcoal production emission factor are verified from the source documents /36/. The baseline survey performed in 2013 /35/ reported usage of charcoal in 74% households while usage of wood in remaining 26% households. Hence, a weighted average of the fuel mix has been taken for calculations which resulted in a value of 173,085 kgCO ₂ /TJ for this parameter. The value is the weighted average of fuel mix and weights of the fuels used were taken from “Baseline Kitchen Survey report for the country of Uganda-2013”/35/.
Findings	No findings.
Conclusion	The value in the monitoring report /05/ is consistent with the registered PDD/01/. However, the parameter has not been used for ER calculation as the project involves usage of charcoal not wood.

D.6.1.2. Non-CO₂ emission factor arising from use of fuels (wood and wood equivalents) in baseline scenario, EF_{b,nonCO₂}, kg CO₂e/TJ

Means of verification	The registered PDD/1/ gives the value of 33,952.5 kg CO ₂ e/TJ for wood being used as a fuel. However, PP has used a value of 9.88 kg CO ₂ e/TJ for this parameter, which is the weighted average of fuel mix and weights of the fuels used were taken from “Baseline Kitchen Survey report for the country of Uganda-2013”/35/ and non-CO ₂ emission factor of each fuel have been sourced from IPCC defaults/14/.
Findings	No findings.
Conclusion	The value in the monitoring report /05/ is consistent with the registered PDD/01/. However, the parameter has not been used for ER calculation as the project involves usage of charcoal not wood.

D.6.1.3. CO₂ emission factor arising from use of fuels (wood and wood equivalents) in project scenario, EF_{p,CO_2} , kg CO₂/TJ

Means of verification	The registered PDD/1/ gives the value of 112,000 kg CO ₂ /TJ for wood and charcoal being used as a fuel which is also found consistent with the IPCC Assessment Report 4 /14/. To account for emissions associated with charcoal production, PP has also included 61.08 tCO ₂ /TJ (calculated value) as the emission factor for charcoal production in the overall charcoal emission factor. The source values and the calculation for charcoal production emission factor are verified from the source documents /36/. The baseline survey performed in 2013 /35/ reported usage of charcoal in 74% households while usage of wood in remaining 26% households. Hence, a weighted average of the fuel mix has been taken for calculations which resulted in a value of 173,085 kgCO ₂ /TJ for this parameter. The value is the weighted average of fuel mix and weights of the fuels used were taken from “Baseline Kitchen Survey report for the country of Uganda-2013”/35/.
Findings	No findings.
Conclusion	The value in the monitoring report /05/ is consistent with the registered PDD/01/.

D.6.1.4. Non-CO₂ emission factor arising from use of fuels (wood and wood equivalents) in project scenario, $EF_{p,nonCO_2}$, kg CO₂e/TJ

Means of verification	The registered PDD/1/ gives the value of 33,952.5 kg CO ₂ e/TJ for wood being used as a fuel. However, PP has used a value of 9.88 kg CO ₂ e/TJ for this parameter, which is the weighted average of fuel mix and weights of the fuels used were taken from “Baseline Kitchen Survey report for the country of Uganda-2013”/35/ and non-CO ₂ emission factor of each fuel have been sourced from IPCC defaults/14/.
Findings	No findings.
Conclusion	The value in the monitoring report /05/ is consistent with the registered PDD/01/.

D.6.1.5. Net calorific value of the fuel (wood and wood equivalents) used in the baseline, NCV_b , TJ/Gg

Means of verification	The registered PDD/01/ gives the value of 15.6 TJ/Gg for wood being used as a fuel. However, PP has used a value of 29.5 TJ/Gg for this parameter as the value is the weighted average of fuel mix and weights of the fuels used were taken from “Baseline Kitchen Survey report for the country of Uganda-2013”/35/ and non-CO ₂ emission factor of each fuel have been sourced from IPCC defaults/14/.
Findings	No findings.
Conclusion	The value in the monitoring report /05/ is consistent with the registered PDD/01/.

D.6.1.6. Net calorific value of the fuel (wood and wood equivalents) used in the project, NCV_p , TJ/Gg

Means of verification	The registered PDD/01/ gives the value of 15.6 TJ/Gg for wood being used as a fuel. However, PP has used a value of 29.5 TJ/Gg for this parameter as the value is the weighted average of fuel mix and weights of the fuels used were taken from “Baseline Kitchen Survey report for the country of Uganda-2013”/35/ and non-CO ₂ emission factor of each fuel have been sourced from IPCC defaults/14/.
Findings	No findings.
Conclusion	The value in the monitoring report /05/ is consistent with the registered PDD/01/.

D.6.1.7. Non-renewability status of woody biomass fuel in scenario i during year y, $f_{nr,b,i,y}$, Fractional non-renewability

Means of verification	Methodology AMS II.G. version 2.0/01/ gives the value of 0.82 for this parameter. The value has been sourced from CDM default value (accepted by Ugandan DNA on 11 April 2012).
Findings	No findings.
Conclusion	The value in the monitoring report /05/ and corresponding emission reduction calculations spreadsheet /06/ are consistent with the registered PDD/01/. The applied value is correct and justified.

D.6.2. Data and parameters monitored (Carbon Verification)

D.6.2.1: Quantity of fuel (Charcoal) that is consumed in baseline scenario b during year y, P_{b,y}, Kg/person-meal

Means of verification	Criteria/Requirements	Assessment																				
	Measuring /Reading /Recording frequency	Measuring and Reading frequency for the parameter is Biennially.																				
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency of measuring and reporting is in accordance with the monitoring plan of PDD & applied methodology/1,3/.																					
Monitoring equipment	<p>Baseline KPT has been carried based on analysis the field survey data to measure the value of this parameter.</p> <p>The equipment used during KPT test are as follows:</p> <table border="1"> <thead> <tr> <th>Sl No.</th> <th>Equipment</th> <th>Type</th> <th>Model Number</th> <th>Serial Number</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Weighing scale</td> <td>ATKO Table top weighing scale</td> <td>AW 15K</td> <td>C1199M-1336</td> </tr> <tr> <td>2.</td> <td>Thermometer</td> <td>16" Accu-safe thermometer</td> <td>B2603CW3 BLS16</td> <td>-</td> </tr> <tr> <td>3.</td> <td>Moisture Meter</td> <td>Lutron moisture meter</td> <td>MS7000</td> <td>20424</td> </tr> </tbody> </table>	Sl No.	Equipment	Type	Model Number	Serial Number	1.	Weighing scale	ATKO Table top weighing scale	AW 15K	C1199M-1336	2.	Thermometer	16" Accu-safe thermometer	B2603CW3 BLS16	-	3.	Moisture Meter	Lutron moisture meter	MS7000	20424	
Sl No.	Equipment	Type	Model Number	Serial Number																		
1.	Weighing scale	ATKO Table top weighing scale	AW 15K	C1199M-1336																		
2.	Thermometer	16" Accu-safe thermometer	B2603CW3 BLS16	-																		
3.	Moisture Meter	Lutron moisture meter	MS7000	20424																		
Calibration frequency /interval:	Please refer section D.7. of this report.																					
How were the values in the monitoring report verified?	The value of the parameter is 0.204 kg/person-meal. The value has been determined by conducting baseline KPT analysis. The result has been verified from Baseline KPT sheet/15/. The tests were conducted between 15/01/2016-09/02/2016. Since the monitoring frequency is biennial, the results are valid for the current monitoring period.																					
If applicable, has the reported data been cross-checked with other available data?	Not Applicable.																					
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The tests have been conducted by trained staff. The training certificates/20/ of the team has checked by the verification team to assess their competence.																					
In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable																					
uFindings	CAR#03 was raised and resolved.																					
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan																					

(as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.

D.6.2.2: Quantity of fuel (Charcoal) that is consumed in project scenario b during year y, P_{p,y}, Kg/person-meal

Means of verification	Criteria/Requirements	Assessment				
	Measuring /Reading /Recording frequency	Measuring and Reading frequency for the parameter is Biennially.				
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the PDD/01/.				
	Monitoring equipment	Project KPT has been carried based on analysis the field survey data to measure the value of this parameter. The equipment used during KPT test are as follows:				
		Sl No.	Equipment	Type	Model Number	Serial Number
		1.	Weighing scale	ATKO Table top weighing scale	AW 15K	C1199M-1336
		2.	Thermometer	16" Accu-safe thermometer	B2603CW3BLS16	-
		3.	Moisture Meter	Lutron moisture meter	MS7000	20424
	Calibration frequency /interval:	Please refer section D.7. of this report.				
How were the values in the monitoring report verified?	The value of the parameter is 0.108 kg/person-meal. The value has been determined by conducting baseline KPT analysis. The result has been verified from KPT sheet/19/. The tests were conducted between 15/01/2016-02/12/2016. Since the monitoring frequency is biennial, the results are valid for the current monitoring period.					
If applicable, has the reported data been cross-checked with other available data?	Survey forms have been cross check the values inserted in the KPT sheet/21/.					
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The tests have been conducted by trained staff. The training certificates/20/ of the team has checked by the verification team to assess their competence.					
In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable					
Findings	CAR#03 was raised and resolved.					

Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.
-------------------	--

D.6.2.3: Usage rate in project scenario p during year y, $U_{p,y}$, Fraction

Means of verification	Criteria/Requirements	Assessment
		Measuring /Reading /Recording frequency
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the PDD/01/.
	Monitoring equipment	Not Applicable. The value of the parameter has been calculated by conducting usage survey.
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not Applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not Applicable
	Calibration frequency /interval:	Not Applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not Applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not Applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not Applicable
	How were the values in the monitoring report verified?	The value of the parameter is 80.39%. The value has been determined by conducting usage survey analysis. The result has been verified from usage survey sheet/23/. The tests were

		conducted between 15/01/2016-02/12/2016. Since the monitoring frequency is biennial, the results are valid for the current monitoring period.
	If applicable, has the reported data been cross-checked with other available data?	Usage survey forms/22/ have been cross check the values inserted in the usage survey sheet/23/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The tests have been conducted by trained staff. The training certificates/20/ of the team has checked by the verification to assess their competence.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	CAR#02 and CAR#03 were raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

D.6.2.4: Technologies in the project database for project scenario p through monitoring period, N_{p,y} , Project technologies credited (units)

Means of verification	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)		Yes, the frequency is in line to the PDD/01/.
Monitoring equipment		Not Applicable.
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?		Not Applicable
Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?		Not Applicable
Calibration frequency /interval:		Not Applicable

	<p>Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?</p>	<p>Not Applicable</p>
	<p>Is the calibration of measuring equipment carried out by an accredited person or institution?</p>	<p>Not Applicable</p>
	<p>Is(are) calibration(s) valid for the whole reporting period?</p>	<p>Not Applicable</p>
	<p>Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?</p>	<p>Not Applicable</p>
	<p>How were the values in the monitoring report verified?</p>	<p>479,051 cook stoves have been constructed and disseminated till date out of which 22,103 were disseminated during the current monitoring period. The values were verified from sales data base/12/. However, for ER calculation 22,103 stoves have been considered which is a value obtained after adjusting for users with more than 1 stove. The same value has been inserted in the ER sheet/06/ for calculation of achieved emission reductions.</p>
	<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>Not Applicable</p>
	<p>Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?</p>	<p>Trained team has performed the task of distribution. Training Certificate with the names of employees who attended the training have provided to the DoE/20/. Impact Carbon has hired CIRCODU to conduct Quarterly spot checks of Project Manufacturer's sales records and assess whether the electronic sales records and paper record systems. The summary report by CIRCODU/29/ reveals that the record keeping at FOWE was good for all the quarters assessed.</p>
	<p>In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?</p>	<p>Not Applicable</p>
<p>Findings</p>	<p>CAR#03 was raised and resolved</p>	
<p>Conclusion</p>	<p>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.</p>	

D.6.2.5: Leakage in project scenario p during year y, LE_{p,y}, t_CO_{2e} per year

<p>Means of verification</p>	
-------------------------------------	--

	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	Measuring and reading frequency for the parameter is done Biannually.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the PDD/01/.
	Monitoring equipment	Not Applicable.
	How were the values in the monitoring report verified?	The value for the parameter is 0, since no source of leakage emission has been identified.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter does not require monitoring as the value has been considered zero for the project activity.	

D.6.2.6: Average number of person meal in a single household in one day, Person-meals/HH-day, Person-meals/HH-day

Means of verification	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	It is a calculated parameter.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	This parameter was not listed in the monitoring parameters in the PDD but have been monitored for the transparency of the calculation.	
Monitoring equipment	Not Applicable. The Project KPT has been conducted to measure the value of this parameter.	
Calibration frequency /interval:	Not Applicable	
How were the values in the monitoring report verified?	The value of the parameter is 15.67 Person-meals/HH-day. The value obtained after merging the new data with old data yields this value. The final value has been verified from the Project KPT analysis/19/.	

	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter has been monitored appropriately. This parameter was not listed in the monitoring parameters in the PDD but have been monitored for the transparency of the calculation.	

D.6.2.7: Household who are using more than 1 project stoves (Multi- ICS Usage Adjustment), Fraction

Means of verification	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	Measuring and reading frequency for the parameter is annually.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	This parameter was not listed in the monitoring parameters in the PDD but have been monitored for the transparency of the calculation.
	Monitoring equipment	Not Applicable as the parameter has been determined using the usage survey analysis.
	How were the values in the monitoring report verified?	The value of the parameter is 41.18%. The value has been verified from the Usage survey sheet/23/.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable
Findings	No findings	
Conclusion	The parameter has been monitored appropriately. This parameter was not listed in the monitoring	

	parameters in the PDD but have been monitored for the transparency of the calculation
--	---

D.6.2.8. Proportion of project end users that are reached through the incentive mechanism or education campaign to discourage old stove disposal, Implementation of baseline stove disposal incentive or education campaign, Fraction

Means of verification	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	Measuring and reading frequency for the parameter is biennial.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, It is in line to the PDD.	
Monitoring equipment	Not Applicable as the parameter has been determined using the Project monitoring survey analysis.	
How were the values in the monitoring report verified?	The value of the parameter is 0.96. The value has been verified from the monitoring survey sheet/19/.	
If applicable, has the reported data been cross-checked with other available data?	Not Applicable	
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable	
In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	Not Applicable	
Findings	No findings	
Conclusion	The parameter has been monitored appropriately. This parameter was not listed in the monitoring parameters in the PDD but have been monitored for the transparency of the calculation	

D.6.3. Data and parameters monitored (Sustainability Verification)

D.6.3.1: Air Quality, Measurement of user perceptions for ICS - smoke levels, incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes

Means of verification	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is Biennial.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes	Yes, the frequency is in line to the GS Passport/24/.	

	/ No)	
	How were the values in the monitoring report verified?	Monitoring kitchen surveys records(Conducted Quarterly)/19/ and Kitchen Performance Test sheet (Conducted biennially)/19/ have revealed that the users have observed reduction in amount of smoke levels. The improved cook stoves have higher than efficiencies than the traditional cook stoves as verified from the registered PDD/01/. Therefore, the reduction in smoke, as perceived by end users, can be used to demonstrate the positive impact on air quality. A total of 98/107 respondents were in complete agreement, and 9/107 were in partial agreement for significant decrease in indoor smoke levels. No respondent said that their family member was in disagreement with decrease in breathing/smoke levels post installation of ICS.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were in place and the surveys have been conducted by trained staff.
Findings	FAR#01 was raised and resolved.	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan/01/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting or QA/QC procedures were found.	

D.6.3.2: Livelihood of the Poor, Money savings due to reduced fuel consumption

Means of verification	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is Biennial.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the GS Passport/24/.
	How were the values in the monitoring report verified?	Monitoring kitchen surveys records(Conducted Quarterly)/19/ and Kitchen Performance Test sheet (Conducted biennially)/19/ have revealed that the users spend less amount of money on fuel purchase.
	If applicable, has the reported data been cross-checked with other available data?	Survey forms/21/ have been cross check the values inserted in the KPT sheet/19/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were in place and the surveys have been conducted by trained staff.
Findings	No findings	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan/01/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting	

or QA/QC procedures was found.

D.6.3.3: Quantitative Employment and Income generation, Employment Records

Means of verification	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is Biennial.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the GS Passport/24/.	
How were the values in the monitoring report verified?	Employment records/18/ provided by the PP has been checked by the assessment team. The records reveal that more than 50 people have been employed for different roles such as manufacturer and artisans.	
If applicable, has the reported data been cross-checked with other available data?	Not Applicable.	
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable.	
Findings	No findings	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan/01/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting or QA/QC procedures was found.	

D.6.3.4: Access to affordable and clean energy services, Number of households and institutions reached with clean energy products through activity.

Means of verification	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is continous.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the GS Passport/24/.	
How were the values in the monitoring report verified?	Distribution database/12/ revealed that total 479,051 cookstoves have been installed till the end of the current monitoirng period. Based on this data it can be concluded that all the houses using improved cookstoves have access to affordable and clean energy services.	
If applicable, has the reported data been cross-checked with other available data?	Not Applicable.	
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary	Yes, QA/QC procedures were in place.	

	QA/QC processes in place?	
Findings	No findings	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan/01/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting or QA/QC procedures was found.	

D.6.3.5: Human and institutional capacity, The number of local jobs created directly and indirectly due to the program activity and skill level

Means of verification	Criteria/Requirements	Assessment
	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is Biennial.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the GS Passport/24/.
	How were the values in the monitoring report verified?	Employment records/18/ provided by the PP has been checked by the assessment team. The records reveal that more than 50 people have been employed for different roles such as manufacturer and artisans. The training records of the staff have been checked which clearly lists the topics which are as follows: <ul style="list-style-type: none"> • Sales Agent training • Warehouse staff training • Administrative Staff training • Data entry Training • Human Resource Training The training dates were 12/01/2015,13/01/2015 and 14/01/2015. The dates and the list of people who attended the training have been checked from the Training attendance sheet/20/. The verification team confirms that project activity has lead to generation of direct employment and the skill level of the employees is also maintained by the PP by conducting training at regular intervals.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, QA/QC procedures were in place.
Findings	No findings	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan/01/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting or QA/QC procedures was found.	

D.6.3.6: Technological self-reliance, Manufacturing Partners continue to innovate and improve stove technology in Uganda through research and development operations.

Means of verification	Criteria/Requirements	Assessment

	Measuring /Reading /Recording frequency	Measuring and recording frequency for the parameter is Biennial.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the frequency is in line to the GS Passport/24/.
	How were the values in the monitoring report verified?	Manufacturing Partners contracted by the PP are continuous working on the feedback received to improve the technology further. Ugastove design is the result of the researches carried to develop better technology. Stove builders are also trained to replicate the design of improved stove.
	If applicable, has the reported data been cross-checked with other available data?	Not Applicable.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable.
Findings	No findings	
Conclusion	Sustainability criteria was found to be fulfilled. The monitoring and reporting is as per the registered monitoring plan/01/. The representation of the monitored value was found to be accurate which was easily verifiable. No discrepancy in data monitoring, data management, transfer of data, ER reporting or QA/QC procedures was found.	

D.6.4. Implementation of sampling plan

Means of verification	<p>The verification team confirms that the parameters have been monitored through a Random Sample Group(RSG) and the requirement of 90/10 precision has been met. The PP has selected 7 zones randomly from the database and the trained Impact Carbon Staff has randomly surveyed the houses located in these zones.</p> <p>Monitoring Kitchen Survey: The frequency has been set as once in every three months i.e. quarterly in the registered PDD/01/. The Master analysis sheet for MKS/14/ confirms that the same has been followed by the PP. The minimum sample size requirement is 100 for a group size more than 1000. However, 107 households have been visited by PP to establish the conclusion.</p> <p>Kitchen Performance Test-Project Stove: A sample size of randomly selected households of 107 has been selected by the PP/19/. The selected households have been surveyed to derive the value of parameter The KPT results have been checked to confirm that the confidence interval is less than 10%. Therefore, the mean value used by PP for ER calculation is correct and justified.</p> <p>Kitchen Performance Test-Baseline Stove: A sample size of randomly selected households of 119 has been selected by the PP/19/. The selected households have been surveyed to derive the value of parameter The KPT results have been checked to confirm that the confidence interval is less than 10%. Therefore, the mean value used by PP for ER calculation is correct and justified</p> <p>Usage Survey: The survey for usage of cook stoves has been carried out with a minimum sample size of 30 for each age year. The households were selected randomly. The frequency is Biennial in the MR/05/ and is consistent with the registered PDD/01/. Usage Survey was conducted on 193 Households (respondents) with total of 213</p>
------------------------------	--

	<p>stoves (August 2008 onwards to December 2016) as some houses have more than 1 stove.</p> <p>The verification team able to confirm that the samples are representative of the total population. The verification team confirms that the Implementation of Sampling has been done in compliance to the registered PDD/01/.</p>
Findings	CAR#04 was raised and resolved.
Conclusion	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PDD /01/.

D.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	The values of the parameters have been derived by conducting monitoring kitchen survey, kitchen performance test and usage survey tests. It has been checked from the training records that trained staff has performed the tests/20/. The equipment used are weighing scale, thermometer and moisture meter. The calibration details of the equipment are as follows:						
	Sl No.	Equipment and type	Model Number	Serial Number	Date of Purchase	Calibration date	DoE assessment
	1.	Weighing scale- ATKO Table top weighing scale	AW-15K	C1199M-1336	11/09/2014	03/04/2015	The meter is calibrated as per the manufacturer's specifications/33/.
	2.	Thermometer- 16" Accu-safe thermometer	B2603C W3BLS16	-	20/04/2015	20/04/2015 (same as date of purchase)	The meter is auto calibrated as per the manufacturer's specifications/34/.
	3.	Moisture Meter- Lutron moisture meter	MS7000	20424	01/05/2015	01/05/2015 (same as date of purchase)	The meter is auto calibrated as per the manufacturer's specifications/32/.
	The DoE confirms that calibrated equipment were used to conduct kitchen performance tests. The values obtained after the tests are free from material errors.						
Findings	CAR#03 was raised and resolved.						
Conclusion	The calibration requirements have been met by the PP before the conducting of the tests.						

D.8. Assessment of data and calculation of emission reductions or net removals

D.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	<p>The verification team verified that</p> <ol style="list-style-type: none"> A complete set of data for the monitoring period was available for the monitoring period and the verification of each monitoring parameter is elaborated under Section I.4.2 of this report. The complete monitoring data is also presented in the corresponding ER calculations sheet /09/ of final Monitoring Report /07/. 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. The calculations of baseline emissions as presented in the corresponding ER calculations sheet /06/ of final Monitoring Report /05/ were checked and found to be consistent with the formulae and methods described in the registered monitoring plan of registered PDD and the applied methodology. All assumptions used in the emission calculations were found appropriate and therefore justified Appropriate emission factors, IPCC default factors and other reference values have been correctly applied. This has also been elaborated under Section I.4.1 of this report.
------------------------------	--

f) No standardized baseline was prescribed in the registered PDD and therefore it has not been applied.
 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.
 The equations listed below were used to determine the baseline emissions as provided in the monitoring report /5/ and applied in the corresponding ER calculations sheets /6/.

Total ER reductions achieved for PA is calculated by using the following equation:

$$ER_y = \sum_{b,p} (N_{p,y} * U_{p,y} * P_{p,b,i,y} * NCV_{b,fuel} * (f_{NRB,b,y} * EF_{fuel,CO2} + EF_{fuel,nonCO2})) - \sum LE_{p,y}$$

where,

ER _y	Emission reductions during year y in tCO ₂ e
Σ _{b,p}	The sum over all relevant (baseline b/project p) couples
N _{p,y}	Cumulative number of Project Technology Days
U _{p,y}	Cumulative Usage rate for technologies in the project scenario p in year y based on cumulative adoption rate and drop off rate
P _{p,b,i,y}	Specific fuel savings for an individual technology of the project against an individual technology in the baseline in tons/day
NCV _{b,fuel}	Net calorific value of the fuel that is substituted or reduced
f _{NRB,b,y}	Non-renewability status of woody biomass fuel in scenario i during year y.
EF _{fuel,CO2}	CO ₂ emission factor arising from use of fuels in baseline scenario
LE _{p,y}	Leakage for project scenario in year y
EF _{fuel,nonCO2}	Non-CO ₂ emission factor arising from use of fuels in baseline scenario

The values for all the parameters listed above have been assessed under section I.4.1 and I.4.2. of this report.

As the efficiency, may generally decrease over a period of time the age of ICS, therefore in order to discount that in the baseline emissions the total quantity of stoves as per relevant vintage is required. It has been verified that the corresponding ER calculations sheet /6/ to the final Monitoring Report /5/ has considered the number of stoves as per the vintage and accordingly the efficiency of such stoves in the ER calculation.

The expressions used were found consistent with the GS PD/1/ and the applied methodology/3/.

Findings	CAR#03 & CAR#04 are raised and resolved.
Conclusion	<p>The verification team confirms that</p> <ul style="list-style-type: none"> a) The complete data was available and is duly reported; b) As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section I.4.2 of this report); c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals were followed; d) Appropriate emission factors, IPCC default factors and other reference values were correctly applied. <p>There is no pro-rata 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</p>

	the end of first commitment period of Kyoto Protocol.
--	---

D.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	There is no prescribed method mentioned in the registered PDD/1/, and applied monitoring methodology/3/ for calculation of project emissions. The onsite visit and project design also did not reveal any potential source to be considered in this regard.
Findings	No finding was raised.
Conclusion	No project emissions were required to be calculated.

D.8.3. Calculation of leakage GHG emissions

Means of verification	Leakage emissions has been taken as zero as per the methodology. The onsite visit and project design also did not reveal any potential source to be considered in this regard.
Findings	No finding was raised.
Conclusion	No additional leakage emissions (other than leakage adjustment factor applied to baseline calculations) were required as per methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption /3/.

D.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	<p>The value of baseline emission obtained by applying the equations provided in the registered PDD is 729,309 tCO₂e. The project emissions and leakages for the project activity are considered as zero. Therefore, the final value of net GHG emission reductions obtained is 729,309 tCO₂e.</p> <p>The calculations presented in this regard in the final monitoring report /5/ and corresponding ER calculations sheet /6/ were found appropriate and complying with the provisions prescribed in the registered monitoring plan of GS PDD/01/ and applied methodology/03/.</p> <p>The verification team confirms that an audit trail contains the evidence and records to validated the stated figures were checked and found acceptable.</p>
Findings	No findings
Conclusion	<p>Calculation of GHG emissions was found to be satisfactory.</p> <p>The verification team confirms that</p> <ul style="list-style-type: none"> (a) The monitored data was available in accordance with the registered monitoring plan; (b) The data was cross-checked, as prescribed in the registered PDD, with the survey sheets/15,19/ and was found consistent; (c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals have been followed; (d) The assumptions, emission factors and default values that were applied in the calculations have been justified; (f) The first day in which CERs are being claimed has been correctly specified, where applicable.

D.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	After reviewing the ER calculations sheet /6/, it can be concluded that the actual emission reductions achieved by the PA are more than the estimated emission reductions in the revised GS PD for the comparable period. The number of the cook stoves disseminated is greater than the estimated number of cook stoves which has led to greater emission reduction. Since, it is a large-scale project activity, no threshold value to the maximum number of cook stoves that can be distributed has been set in the registered PDD/1/.
Findings	No finding was raised.
Conclusion	The actual emission reductions achieved in the current monitoring period for PA is more than the emission reductions stated in the GS PD, however the PP was able to justify the increased value.

D.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	After reviewing the ER calculations sheet /6/, it can be concluded that the actual emission reductions achieved by the PA are more than the estimated emission reductions in the revised GS PD for the comparable period. The number of the cook stoves disseminated is greater than the estimated number of cook stoves which has led to greater emission reduction. Since, it is a large-scale project activity, no threshold value to the maximum number of cook stoves that can be distributed has been set in the registered PDD/1/.
Findings	No finding was raised.
Conclusion	The actual emission reductions achieved in the current monitoring period for PA is more than the emission reductions stated in the GS PD, however the PP was able to justify the increased value.

D.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	<p>Earthood Services Private Limited is able to certify that the emission reduction from the GS 447 “Improved Cookstoves for Social Impact in Ugandan Communities” in Uganda during the period 01/07/2015 to 31/12/2016 (including both the days) amounts to 729,309 tCO_{2e}.</p> <p>Verified and certified emission reductions as per commitment period:</p> <table> <thead> <tr> <th>Commitment period</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>Upto 31/12/2012 (1st commitment period).</td> <td>0 tCO_{2e}</td> </tr> <tr> <td>From 01/01/2013</td> <td>729,309 tCO_{2e}</td> </tr> </tbody> </table>	Commitment period	Amount	Upto 31/12/2012 (1 st commitment period).	0 tCO _{2e}	From 01/01/2013	729,309 tCO _{2e}
Commitment period	Amount						
Upto 31/12/2012 (1 st commitment period).	0 tCO _{2e}						
From 01/01/2013	729,309 tCO _{2e}						
Findings	No findings						
Conclusion	Actual GHG emission reductions in the commitment period (01/01/2013 onwards) were found to be 729,309 tCO _{2e} .						

SECTION E. Internal quality control

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

SECTION F. Verification opinion

Earthood Services Private Limited (Earthood), contracted by Impact Carbon, has performed the independent verification of the emission reductions for the GS Project 447 “Improved Cookstoves for Social Impact in Ugandan Communities” in “Uganda” for the monitoring period 01/07/2015 to 31/12/2016 as reported in the Monitoring Report, Version 01 dated 20/01/2017. The ‘Impact Carbon’ is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity. Earthood commenced the verification against the baseline and monitoring methodology “Technologies and Practices to Displace Decentralized Thermal Energy Consumption”, Version 01 the monitoring plan contained in the PDD dated 03/03/2014, GS Passport and Monitoring Report Version 05.3 dated 13/07/2017.

ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. This verification report has been prepared using the latest available template specified by UNFCCC and complies with the instructions to follow as per para 406 and 407 of CDM VVS Version 9. The verification activities were conducted in accordance with ESPL’s CDM Quality Manual System as per the steps indicated under Section A of this report.

As a result, it is confirmed that the emission reductions from the GS PA (447) “Improved Cookstoves for Social Impact in Ugandan Communities” are correctly reported in the Monitoring Report (final) Version 05.3 dated 13/07/2017 and corresponding ER sheet for the monitoring period 01/07/2015 to 31/12/2016 (including both days) amounted as 729,309 tCO₂e. Therefore, this will be submitted as part of request for issuance as per CDM PCP Version 9 GS tool kit 2.1.

SECTION G. Certification statement

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

In our opinion the GHG emissions reductions reported for the project activity are fairly stated in the Monitoring Report (final) Version 05.3 dated 13/07/2017. ESPL, based on outcome of verification activities, certifies in writing that, during the monitoring period 01/07/2015 to 31/12/2016 (including both days), the registered GS PA “Improved Cookstoves for Social Impact in Ugandan Communities” in the registered GS PA achieved the verified amount of 729,309 tCO₂e reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the PA.

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

Year	Emission Reductions (Amount) in this monitoring period	
	Duration	Emission reduction
2015	01/07/2015 to 31/12/2015	243,909
2016	01/01/2016 to 31/12/2016	485,400
Total		729,309

Appendix 1. Abbreviations

Abbreviations	Full texts
AQL	Acceptable Quality Level
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	Clean Development Mechanism Validation and Verification Standard
CER	Certified Emission Reduction
CL	Clarification Request
CME	Coordinating or Managing Entity
CP	Crediting period
DOE	Designated Operational Entity
DNA	Designated National Authority
EB	Executive Board
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
ICS	Improved Cook Stove
IPCC	Intergovernmental Panel on Climate Change
PDD	Project Design Document
RMP	Registered monitoring plan
TA	Technical Area (with in Sectoral Scope)
TR	Technical Reviewer
VVS	Validation and Verification Standard
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Level
ICS	Improve Cook Stoves
IPCC	Intergovernmental Panel on Climate change
VVS	Validation and Verification Standard
UNFCCC	United Nation Framework convention on Climate change
KPT	Kitchen Performance Test
MKS	Monitoring Kitchen Survey
QA/QC	Quality Assurance and Quality control
GS	Gold Standard
AES	African Energy Environment Saving Stoves and Construction Ltd.
EUF	Energy Uganda Foundation
CIRCODU	Centre for Integrated Research and Community Development Uganda
SESSA	Save Energy Saving Stove for Africa Limited stoves
FOWE	Friends of Wealthy Environment stoves
NCV	Net Calorific Value

Appendix 2. Competence of team members and technical reviewers

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

Field	Climate Change & Energy Management		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-III.H., AMS-I.C., ACM0006, ACM0002, ACM0014, AMS-IIG, AMS-IE.		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert (1.1, 1.2, 3.1, 13.1)	YES		
Reviewed by	Abhishek Mahawar	Date	01/02/2017
Approved by	Ashok Kumar Gautam	Date	01/02/2017

Competence Statement			
Name	Deepika Mahala		
Country	India		
Education	M. Sc. (Environmental Mgmt), GGSIP University B.Sc. Honour (Chemistry), Sri Venkateshwar College, DU		
Experience	1.5 Year		
Field	Climate Change		
Approved Roles			
Team Leader	NO		
Validator	YES		
Verifier	YES		
Methodology Expert	NO		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Trainee (Team Leader)	YES		
Reviewed by	Abhishek Mahawar	Date	08/09/2016
Approved by	Ashok Kumar Gautam	Date	08/09/2016

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		
Methodology Expert	NO		
Local expert	YES (Uganda)		

Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Reviewed by	Abhishek Mahawar	Date	08/09/2016
Approved by	Ashok Kumar Gautam	Date	08/09/2016

Competence Statement			
Name	Abhishek Mahawar		
Country	India		
Education	B. Tech. (Chemical Engineering) MBA (Finance)		
Experience	7 Years +		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D and ACM0002		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert (1.2)	YES		
Reviewed by	Ashok Gautam	Date	07/09/2016
Approved by	Kaviraj Singh	Date	07/09/2016

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		
Methodology Expert	AMS-I.D., AMS-I.A., AMS-I.C. AMS-II.D., AMS-II.G., AMS-III.E., AMS-III.H., AMS-III.AV., ACM0002, ACM0004, ACM0006, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert (1.1)	YES		
TA Expert (1.2)	YES		
TA Expert (3.1)	YES		
TA Expert (13.1)	YES		
Reviewed by	Abhishek Mahawar	Date	08/09/2016

Approved by	Kaviraj Singh	Date	08/09/2016
-------------	---------------	------	------------

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Impact Carbon	Registered GS PDD	03/03/2014	PP
2	TUV Rheinland	Validation Report	Version 4.0, dated 24/03/2009	PP
3	Gold Standard	Applied Methodology: Technologies and Practices to Displace Decentralized Thermal Energy Consumption	Version 1.0, dated 11/04/2011	Other
4	Impact Carbon	Monitoring Report Version 1.0	Dated 10/01/2017	PP
5	Impact Carbon	Monitoring Report(Final)	Version 5.2, dated 30/05/2017	PP
6	Impact Carbon	ER sheet (Final)	Version 3.0, 30/05/2017	PP
7	Impact Carbon	ISS 2 (CP2) Annex 12 - Stove Manufacturer's Specifications	20/11/2013	PP
8	Impact Carbon	ISS 2 (CP2) Annex 12.1 - Stove Manual Guide	04/2014	PP
9	EUF	ISS 2 (CP2) Annex 14.1- EUF Sales Receipts (42 receipts)	01/12/2016-30/12/2016	PP
10	AES	ISS 2 (CP2) Annex 14.2 – Sales Receipt (2 receipts)	22/12/2016	PP
11	AES	ISS 2 (CP2) Annex 10 – Scanned copy of Warranty Card, Serial No. 401	Undated	PP
12	Impact Carbon	Sales Report Master Sheet	Up to 2016	PP
13	Impact Carbon and EUF	ISS 2 (CP2) Annex 08- Carbon Rights Transfer Agreement	10/06/2010-11/06/2010	PP
14	IPCC	http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf	Undated	Other
15	Impact Carbon	ISS 2 (CP2) Annex 07.2 – Baseline KPT	Undated	PP
16	Impact Carbon	ISS 2 (CP2) Annex 03 – ISS1 (CP2) MR	Version 3.0	PP
17	ESPL	ISS 2 (CP2) Annex 04 – ISS1 Verification report	Version 2.0, dated 01/04/2016	PP
18	Impact Carbon	ISS 2 (CP2) Annex 05- Partner Staff Lists	12/2014	PP
19	Impact Carbon	ISS 2 (CP2) Annex 06.1 – KPT and MKS analysis	Undated	PP
20	Impact Carbon	ISS 2 (CP2) Annex 09 – IC Training Document (Training Log as per IC- Training Manual v2)	16/01/2015 (training dates- 12/01/2015- 14/01/2015)	PP
21	Impact Carbon	Monitoring Kitchen Survey filled forms (Survey#16, Survey#53)	18/02/2016, 12/04/2016	PP
22	Impact Carbon	Usage Survey filled forms (Survey#23, Survey#112, Survey#135)	13/07/2016, 05/08/2016, 06/08/2016	PP
23	Impact Carbon	ISS 2 (CP2) Annex 07.1 – Usage Survey Excel Sheet v1.1	Undated	PP
24	Impact Carbon	GS Passport	Version 1.0, dated 01/10/2013	PP

25	Gold Standard	GS review(Final Round) for MP01/04/2014-30/06/2015	13/05/2016	PP
26	UNFCCC	Standard for Sampling and surveys for CDM project activities and programmes of activities	Version 5.0	Other
27	UNFCCC	Guidance of sampling and surveys for CDM project activities and program	Version 4.0	Other
28	Impact Carbon	Iss2 (CP2) Annex 13- Cook Stoves Project in Uganda other than GS447	28/03/2016	PP
29	CIRCODU	Iss2 (CP2) Annex 11-CIRCODU-Sales_ Audit Report Summary For Q1 and Q2 2016	2016	
30	UNFCCC	CDM-MR-FORM	Version 05.1	Others
31	Gold Standard	https://mer.markit.com/br-reg/public/project.jsp?project_id=103000000002469	-	Others
32	Lutron	Moisture meter specifications- http://www.digitalinstrumentsindia.com/lutron-instruments.html#wood-moisture-meter-lutron-ms-7000	-	PP
33	ATKO	Technical specifications Table Top Weighing Scale- http://atcoweighingscale.com/products.html#3	-	PP
34	Accu-Safe	Accu-Safe 16" Lab Thermometer (-10 to 260° C) specifications https://www.amazon.com/Calibrated-Accu-Safe-Lab-Thermometer-10/dp/B01D0M9XB6/ref=sr_1_2?s=industrial&ie=UTF8&qid=1489557896&sr=1-2&keywords=accu+safe+thermometer+calibrated#feature-bullets-btf	-	PP
35	Impact Carbon	Baseline Kitchen Survey report for the country of Uganda-2013	2013	PP
36	-	Table 6A of "Emissions of greenhouse gases and other airborne pollutants from charcoal making in Kenya and Brazil, David M. Pennise, Kirk R. Smith, Environmental Health Sciences, University of California, Berkeley, California. Journal of Geophysical Research Vol 106 October 27 2001"	27/10/2001	PP

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

FAR ID	01	Section no.	D.6.3.1	Date : 24/01/2017
Description of FAR				
The PP shall revise the monitoring plan for Air Quality indicator to include questions to explore the effects of carbon monoxide exposure on the kitchen survey.				

Project participant response		Date : 06/02/2017	
The same is looked upon in this Monitoring period, and suitable questions as indicator of Air Quality (in terms of Carbon Monoxide impacts) have been added.			
Documentation provided by project participant			
DOE assessment		Date: 07/02/2017	
<p>Questions related to smoke levels, incidence of coughing, incidence of respiratory illness, and incidence of itchy eyes as observed by the users, have been added to the questionnaire. A question related to occurrence of symptoms such as headache, weakness, vomiting, dizziness, difficulty in breathing and nausea has also been asked in the survey to identify the impact of carbon monoxide on the users.</p> <p>The monitoring kitchen survey has already been revised.</p> <p>Thus, the FAR stands closed.</p>			
CAR ID	02	Section no.	D.5., D.6.2.,
Description of CAR		Date : 24/01/2017	
<ol style="list-style-type: none"> 1. The Grievance Mechanism to address the end users' issue has not been described under Section B. 2. The frequency of Monitoring Kitchen Survey is Quarterly as per the registered PDD. However, the MR mentions it as annual. 3. PP has stated that 30 samples for project technologies of each age being credited for usage survey. However, the numbers of samples surveyed for 2006, 2007, 2008 and 2009 are not 30. 			
Project participant response		Date : 06/02/2017	
<ol style="list-style-type: none"> 1. This is now added to the prescribed section. 2. The frequency of Monitoring Kitchen Survey is Quarterly, as per the registered PDD. The same is implemented during Monitoring cycle. Since the methodological requirement is that MKS needs to be done on Annual basis, the MKS is documented as Annual Monitoring test. The survey is conducted on Quarterly basis though (as described in the registered PDD), to avoid any potential impacts due to seasonal variation in the cooking pattern. The "quarterly" MKS duration is made consistent throughout the document. 3. The technology owners/users who are still using it, are the only who are included into surveys. Rest of the users (apart from those interviewed) are conservatively taken as "not using the technology". Example: If for 2006, only 2 respondents were found for interview, and they respond in negation for usage, the total number of non-users will become 2 + 28. These 28 people are conservatively added to make a total of 30 for that year. 			
Documentation provided by project participant			
DOE assessment		Date: 20/02/2017	
<ol style="list-style-type: none"> 1. The grievance mechanism applied by the PP to address the public issues arising during the current monitoring period has been added to section B.1 of the Monitoring Report version 2.0. 2. The monitoring kitchen survey has been conducted on quarterly basis and the frequency has been consistently mentioned in the revised Monitoring Report. The frequency is also in line to the registered PDD. 3. PP has assumed the non-surveyed part of the total sample (30) as people holding negative response. The approach was found conservative and therefore, it has been accepted by the DOE. 4. The estimated Emission reduction is not provided in the ER sheet. 			
Project participant response		Date : 20/02/2017	
4. The estimated ERs have now been provided in the ER Sheet.			
Documentation provided by project participant			
DOE assessment		Date: 02/03/2017	

OK, PP has provided the ER Sheet. Closed.

CAR ID	03	Section no.	D.8.1, D.6.2	Date : 24/01/2017
Description of CAR				
The value of EF _{b,fuel,nonCO2} (Non-CO2 emission factor for Charcoal that is reduced) is inconsistent between the ER sheet and the MR.				
Project participant response				Date : 06/02/2017
The inconsistency is of the value 0.006 tCO ₂ /TJ (i.e. 9.886 & 9.88). In the ER Calculations step, the lower value is taken (9.88 instead of 9.886) which is conservative. Also, this has now been made consistent throughout.				
Documentation provided by project participant				
DOE assessment				Date: 07/02/2017
A conservative value of 9.88 has been chosen over 9.886 tCO ₂ /TJ for the parameter EF _{b,fuel,nonCO2} and the value has also been made consistent within the documents.				
Please provide your response on following findings:				
<ol style="list-style-type: none"> 1. The records of Baseline KPT, Project KPT, MKS, Usage surveys do not have unique identification number for each customer mentioned in it. How is the double counting of same household avoided? 2. Total number of cook stoves could not be verified. PP is requested to submit related evidence. 3. Monitoring kitchen survey are to be conducted quarterly as per the set frequency in monitoring plan. However, this could not be confirmed from the dates provided in the MKS data sheet. Please list the exact dates and define the quarters in which the tests have been conducted. 4. PP is requested to substantiate that the Kitchen Performance tests for baseline and project scenario have been conducted by trained staff. 5. PP is requested to provide an evidence to confirm that the PP holds sole rights to carbon credits generated from the project. 6. PP is requested to substantiate the source of value of the parameter "Quantity of fuel that is consumed in project scenario b during year y". 7. The specifications and calibration details of the equipment used to conduct KPT is required to be mentioned in the Monitoring Report. Also, provide the related evidences. 				
Project participant response				Date : 20/02/2017
The responses are as follows:				
<ol style="list-style-type: none"> 1. The same point has been raised previously during issuance review, and PP response has been provided as Supporting Document for the same. 2. The sales report is submitted against the same. 3. The quarterly dates have been mentioned clearly, indicating the dates for each quarter separately. 4. The Training Manual, alongwith the signatures of training participants (aforementioned as 'Trained Staff') has been provided as Supporting Document. 5. The Carbon Rights Transfer Document between Project Participant and Technology Supplier (Agreement); also between Project Participant and End User (Documentary Evidence in the Sales Receipt) have been provided as Supporting Document. 6. The source is KPT & MKS Excel Sheet-Summary Worksheet-Table 1.1. 7. The evidences have been provided. 				
Documentation provided by project participant				
DOE assessment glistered monitoring plan				Date: 02/03/2017

1. Justification provided by the PP was found appropriate.
2. Sales report with complete data has been provided to the DoE as an evidence to support the value of total number of cook stoves disseminated.
3. Dates of MKS have been clarified by the PP which affirms that the frequency of the survey has been kept in line to the registered monitoring plan.
4. Training Manual and attendance sheet have checked to confirm that the surveys have been conducted by trained staff.
5. Scanned copies of Carbon Transfer forms were checked by the DoE to confirm that the PP holds sole rights to carbon credits generated from the project activity.
6. The source was found to be correct and the value is consistently reported in the Monitoring Report version 3.0
7. Details have been provided by the PP.

Thus, the CAR stands closed.

CAR ID	04	Section no.	D.8.1	Date : 09/03/2017
Description of CAR				
<ol style="list-style-type: none"> 1. Ex ante parameters listed in the MR are inconsistent with the revised PDD version 140424. 2. Notation for parameter 'Cumulative Usage rate for technologies in project scenario p' is inconsistent with the revised PDD. 3. For the sampling plan of MKS described on page 27 of the MR, Outlier and used numbers do not add up to total. 4. PP needs to clarify why Project stove performance is not done for different age of stoves. The performance of project stove may deteriorate over the operational life. 5. PP needs to clarify why charcoal has been used as fuel for calculation of emission reduction when the PDD mentions wood as the main fuel. Also, is this in line to the methodology? 				
Project participant response				Date : 10/03/2017
<ol style="list-style-type: none"> 1. The inconsistency is due to the PRC made during first issuance of Second crediting period. Kindly refer to B.2.2 in the MR (V3). 2. The Notation has been corrected. This was due to typological error. 3. The numbers were wrongly mentioned. The two outliers belonged to Project KPT, and not to the MKS. It is now removed, and made consistent. 4. The selection based was purely on Random sampling selection. This would be taken care of from next KPT. 5. The PRC explains it better. Kindly refer to B.2.2 in the MR (V3). During project registration, the main source of kitchen fuel was wood, which has now been shifted to charcoal. Hence, the Ex-ante parameter values are changed. 				
Documentation provided by project participant				
Updated MR.				
DOE assessment				Date: 17/03/2017
<ol style="list-style-type: none"> 1. The reason for inconsistency is clearly stated in section B.2.2. of the monitoring report. 2. The notation has been corrected in the revised monitoring report version 4.0. 3. The number have been corrected and the calculation is consistent with the ER sheet. 4. The KPT has been conducted on random sampling basis for the current verification. Please refer to the FAR raised below. 5. But it is still not clear, how the PP can demonstrate that ERs for this verification has been claimed for Charcoal stoves that has replaced the baseline charcoal stoves and not the baseline wood stoves since the emission factor including the production / transportation of charcoal is higher than wood and any wrong consideration would lead to higher ERs. Issue is open <p>Thus CAR#04 is open.</p>				
Project participant response				Date : 17/03/2017

5. The PDD mentions that the EF value may include a fuel mix, against which wood and wood equivalent fuels can be used for calculation of parameter values. The “Baseline Kitchen Survey report for the country of Uganda – 2013” values suggest that 74% users use Charcoal as cooking fuel, while 26% users use Wood as cooking fuel. The values of EF_{b,CO_2} , $EF_{b,NonCO_2}$, and NCV_b are calculated on the basis of these weightage values, and has been found more representative as compared to using a single fuel type for calculations.

Documentation provided by project participant

Revised MR Version 5.0
Revised ER sheet

DOE assessment

Date: 21/03/2017

The PP has considered an average value for fuel mix (wood and charcoal) and the weights of the fuels were sourced from Baseline Kitchen Survey report for the country of Uganda-2013. The approach considers both the fuel stated in the PDD and Passport and impacts the emission reduction calculation by lowering down the total emission reductions achieved during the current monitoring period. Therefore, the approach was accepted by the DoE.

Thus, the CAR stands closed.

FARs raised during the current verification

FAR ID	01	Section no.	GS review
---------------	----	--------------------	-----------

Description of FAR

The PP shall ensure for future surveys/tests that the unique identification numbers are included in the survey/test spreadsheets
The PP shall ensure for the next KPTs that measurements are conducted in line with the KPT protocol and HHs are provided with enough fuel so that they can cook for at least the recommended minimum test period of 3 days. The other requirements of KPT protocol such as avoidance of unusual days i.e., weekends, holidays, festivals shall be followed

FAR ID	02	Section no.	GS review
---------------	----	--------------------	-----------

Description of FAR

The PP shall ensure for the next KPTs that measurements are conducted in line with the KPT protocol and HHs are provided with enough fuel so that they can cook for at least the recommended minimum test period of 3 days. The other requirements of KPT protocol such as avoidance of unusual days i.e., weekends, holidays, festivals shall be followed

FAR ID	03	Section no.	GS review
---------------	----	--------------------	-----------

Description of FAR

Prior to next issuance, the project stove sales record with information of end-users shall be maintained. In this regard, please refer to the methodology requirements. The required data includes;

- Date of sale,
- Geographic area of sale,
- Model/type of project technology sold
- Quantity of project technologies sold
- Name and telephone number (if available), and address:
 - Required for all bulk purchasers, i.e., retailers and industrial users

“All end users except in cases where this is justified as not feasible. In such cases the number of names/telephone numbers/addresses collected must be as many as commensurate with representative sampling, i.e. the number of end user names and addresses (and phone numbers where possible) within sales record shall be large enough so that surveys and tests can be based on representative, purely randomly selected samples. In all cases this should not be less than 10 times the survey and field test sample sizes (including usage surveys for each age of product), in order to ensure an adequate end user pool to which random sampling can be applied.” Note that it requires the information of end-users of all age-groups that are being considered for issuance

- - - - -

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		