



**Monitoring report form for CDM programme of activities
(Version 03.0)**

Complete this form in accordance with the instructions attached at the end of this form.

MONITORING REPORT

Title of the PoA	Improved Cook Stoves for East Africa (ICSEA)	
UNFCCC reference number of the PoA	7014	
Version numbers of the PoA-DD applicable to this monitoring report	PoA-DD version 16, dated 27/05/2016	
Version number of this monitoring report	Version 04	
Completion date of this monitoring report	03/12/2019	
Monitoring period number	2 nd Monitoring Period	
Duration of this monitoring period	15/03/2013 to 16/05/2019 (including the first and last day of the monitoring period)	
Monitoring report number for this monitoring period	1	
Coordinating/managing entity	Improved Cook Stoves for East Africa (ICSEA) Limited	
Host Parties	Host Party of the PoA	Is this the host Party of a CPA covered in this monitoring report? (yes/no)
	Uganda	Yes
	Kenya	Yes
	Burundi	No
	Rwanda	Yes
	South Africa	No
	Lesotho	No
Applied methodologies and standardized baselines	AMS-II.G. Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass (version 03) AMS-I.E. Switch from non-renewable biomass for thermal applications by the user (version 06.0)	
Sectoral scopes	1 & 3	
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by all CPAs covered in this monitoring report in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	0	18,168 tonnes of CO ₂ e
Amount of GHG emission reductions or net anthropogenic GHG removals	34,514 tonnes of CO ₂ e	

estimated ex ante for this monitoring period in the CPA-DDs for the CPAs covered in this monitoring report	
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PART I Monitoring of programme of activities (PoA)

SECTION A. Description of PoA



A.1. General description of PoA

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(a) Purpose of the project activity and the measures taken for GHG emission reductions or net anthropogenic GHG removals by sinks

The purpose of this small-scale Programme of Activities (PoA) is to stimulate the dissemination of improved cook stoves (ICS) by the provision of access to carbon finance from the creation and sale of Certified Emission Reductions (CERs). The Supplier Organisations (SOs) are the CPA implementers who have been active in the purchase/production, marketing, distribution, sales and maintenance of their respective stove models.

(b) Brief description of the installed technology and equipment

	CPA	Stove Model	Picture
1.	RDIS Rwanda CPA 1 (RDISRw01)	RDIS Rural Wood Stove	
2.	James Finlay Kenya CPA 1 (JFKKe01)	Ecozoom Dura Wood Stove	

3.	Aid Africa Uganda CPA 1 (AAUg01)	Aid Africa 6-Brick Wood Stove	
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These three ICS models are built-in domestic firewood stoves that are more efficient in transferring heat to the cooking pots than traditional stoves, thus they require less firewood to prepare the same meal. These three stove models are produced in one standard medium size solely for domestic cooking. The efficiency is translated into fuel savings when compared to the traditional stoves used in Rwanda, Kenya or Uganda, respectively. By reducing fuel consumption, these SOs reduce greenhouse gas emissions from the use of firewood. The reduction in fuel consumption is measured, and corresponding CO₂ emission reductions are calculated from these savings.

(c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.);

CDM Project Activity	RDIS Rwanda CPA 1	James Finlay Kenya CPA 1	Aid Africa Uganda CPA 1
Starting date of the project activity	14/06/2017	01/11/ 2016	01/02/2017
Inclusion date	31/10/2016	31/10/2016	24/01/2018
Start date of the crediting period	01/11/2016	01/11/2016	01/02/2018
Start date of the monitoring period	15/03/2013		
End date of the monitoring period	16/05/2019		

(d) Total GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period

The total GHG emission reductions achieved in this monitoring period is 18,168 tonnes of CO₂e

A.1.1. Corresponding generic component project activities (CPAs)

Title and reference number of the corresponding generic CPA	Version of the PoA-DD	Sectoral scopes	Applied methodologies and standardized baselines
Generic CPA – Type I	Ver. 16	3	AMS-II.G. Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass (version 03)

CDM-PoA-MR-FORM

Title and reference number of the corresponding generic CPA	Version of the PoA-DD	Sectoral scopes	Applied methodologies and standardized baselines
Generic CPA – Type II	Ver. 16	1 & 3	<p>AMS-II.G. Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass (version 03)</p> <p>AMS-I.E. Switch from non-renewable biomass for thermal applications by the user (version 06.0)</p> <p>Methodological Tool: Project and leakage emissions from biomass (version 02.0)¹.</p> <p>Methodological Tool: Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion (version 02)².</p> <p>Methodological Tool: Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01)³.</p> <p>General guidance on leakage in biomass project activities (version 03)⁴</p> <p>Guidelines for the consideration of interactive effects for the application of multiple CDM methodologies for a Programme of Activities (version 01)⁵</p>

A.1.2. CPAs included in the PoA

Title and UNFCCC reference number of the CPA	Version of the PoA-DD	Title and reference number of the corresponding generic CPA	Crediting period type and duration	Covered in this monitoring report? (yes/no)
7014-P1-0009-CP1 Aid Africa Uganda CPA 1 (AAUg01)	Ver. 16	Generic CPA – Type II	Renewable 01/02/2018 – 31/01/2025	Yes
7014-P1-0008-CP1 James Finlay Kenya CPA 1 (JFKKe01)	Ver. 16	Generic CPA – Type II	Renewable 01/11/2016 – 31/10/2023	Yes
7014-P1-0007-CP1 RDIS Rwanda CPA 1 (RDISRw01)	Ver. 16	Generic CPA – Type II	Renewable 01/11/2016 – 31/10/2023	Yes
7014-P1-0006-CP1 UGASTOVE Uganda CPA 1 (UGSUg01)	Ver. 16	Generic CPA – Type II	Renewable 01/11/2016 – 31/10/2023	No
7014-P1-0005-CP1 Solar Sister Uganda	Ver. 16	Generic CPA – Type II	Renewable 01/10/2016 –	No

¹ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-16-v1.pdf/history_view

² http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf/history_view

³ http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v1.pdf/history_view

⁴ https://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid04.pdf

⁵ https://cdm.unfccc.int/Reference/Guidclarif/meth/meth_guid49.pdf

CPA 1 (SSUg01)			30/09/2023	
7014-P1-0004-CP1 GCCE Uganda CPA 1 (GCCEUg01)	Ver. 16	Generic CPA – Type II	Renewable 01/10/2016 – 30/09/2023	No
7014-P1-0003-CP1 ECOTRUST Uganda CPA 1 (ECTUg01)	Ver. 16	Generic CPA – Type II	Renewable 01/10/2016 – 30/09/2023	No
7014-P1-0002-CP1 COFFEE A CUP Uganda CPA 1 (CACUg01)	Ver. 16	Generic CPA – Type II	Renewable 01/10/2016 – 30/09/2023	No
7014-P1-0001-CP1 International Lifeline Fund Uganda CPA 1 (ILFUg01)	Ver. 6	Generic CPA – Type I	Renewable 15/09/2012 – 14/09/2019	No

A.2. Coordinating/managing entity

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CDM PoA 7014: Improved Cook Stoves for East Africa (ICSEA) Limited

SECTION B. Implementation of PoA

B.1. Description of implemented PoA

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The SO (which is the CPA implementer) and its supply chain are responsible for the sale and after-sales service of these ICS and any arrangements for the distribution of carbon revenues. The ICS user carries out the operation of the ICS, while the SO provides training or instructions on how to operate and care for the ICS.

The SO follows Improved Cook Stoves for East Africa (ICSEA) Limited's monitoring plan and procedures for identifying ICS sold during the course of the project and those that are still in use, so the appropriate number of emission reductions can be claimed. To facilitate this process, the SO keeps traceable information used by Improved Cook Stoves for East Africa (ICSEA) Limited to monitor back to each individual ICS purchased/produced and distributed.

The SO follows the Improved Cook Stoves for East Africa (ICSEA) Limited's Free, Prior and Informed Consent (FPIC) and Fair Trade ethos which stipulates that by signing the Sales Agreement/Logbook, the ICS buyer agrees to transfer all ownership of their stream of CERs to the SO, in exchange for a selection of benefits that include as a minimum, but are not limited to:

1. an initial reduced price,
2. free annual ICS maintenance, and
3. the annual use of the net carbon revenue (after the recovery of all carbon operating expenses) for activities chosen freely by the community, e.g. fixing the community borehole/water point, providing support to a community health centre's, tree planting, etc.

During stove distribution, and to ensure transparency in every transaction, the transfer of carbon credit ownership is clearly described by the SO, with the reciprocal benefits provided by the SO to the stove users in return for their carbon credits. Proof that end users are aware of and are willing to give up their rights to the emission reductions is also provided with the clear language in the Sales Agreement/Logbooks.

To correctly assess the number of CERs corresponding to the CPA, the commissioning date and stove model allows the CERs to be calculated in the current monitoring period.

While all three models are built-in domestic firewood ICS, both the Aid Africa 6-Brick Wood Stove model and the RDIS Rural Wood Stove model are 100% locally manufactured in Uganda and Rwanda, respectively, while the Ecozoom Dura Wood Stove used by JFK is imported from China.

Compared to the traditional stove, the efficiency improvement for all three ICS models comes from the better insulation and increase in heat intensity. The ICS were tested and initially rated at an Improved Cook Stoves

for East Africa (ICSEA) Limited-accredited laboratory using the Improved Cook Stoves for East Africa (ICSEA) Limited Initial Rating Test protocol, and they all proved to have thermal efficiency ratings above 20%, as required by the CDM methodology.

A single monitoring report is prepared for this monitoring period, and the same sampling approach (simple random sampling) was applied for monitoring each CPA covered in this monitoring report as elaborated in Section E.3 below.

B.2. Post-registration changes to PoA

B.2.1. Corrections

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No corrections to the PoA-DD have been approved during the monitoring period or submitted with this monitoring report.

B.2.2. Inclusion of monitoring plan

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No inclusions to the PoA-DD monitoring plan have been approved during the monitoring period or submitted with this monitoring report.

B.2.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

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No permanent changes to the registered monitoring plan, or permanent deviations of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents have been approved during the monitoring period or submitted with this monitoring report.

B.2.4. Changes to programme design

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No changes to the programme design have been approved during this monitoring period or submitted with this monitoring report.

B.2.5. Changes specific to afforestation or reforestation activities

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Not Applicable.

PART II Monitoring of CPAs


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SECTION C. Implementation of CPAs

C.1. Description of implemented CPAs

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7014-P1-0007-CP1 RDIS Rwanda CPA 1 (RDISRw01)

CPA	Stove Model	Picture
7014-P1-0007-CP1 RDIS Rwanda CPA 1 (RDISRw01)	RDIS Rural Wood Stove	

In this monitoring period and submitted in this monitoring report, RDIS has been active in the purchase, marketing, distribution and sales of fixed, domestic, firewood improved cook stoves not exceeding the small scale energy limit of 180 GWh_{th} for AMS-II.G..

This CPA covers the distribution of ICS that may use different fuels during a monitoring period. For this monitoring period and submitted in this monitoring report, this CPA has fuelled ICS with traditional non-renewable biomass and has been assessed during the household usage surveys.

The use of renewable biomass in combination with the ICS may happen:

- For the entire operation period of the ICS or only intermittently;
- For a part of any monitoring period, when the fuel switch occurs during the period
- At some, all or none of the ICS distributed by the SO for a specific CPA.

Improved Cook Stoves for East Africa (ICSEA) Limited only allows AMS-I.E to be used in specific geographical or organisational settings where 100% of the delineated stoves users have switched (or are already using) renewable biomass fuels, based on contractual undertakings given by the SO to Improved Cook Stoves for East Africa (ICSEA) Limited. Accordingly, the monitoring of the parameters that are only required for the AMS-I.E. component will be confined to such areas in any one monitoring period. Improved Cook Stoves for East Africa (ICSEA) Limited ensures that a conservative approach is used in such situations, and ensures that all SO's are aware that the Standard Operating Procedure (SOP), which is part of the PoA's Management Rules, must be complied with.


RDIS's improved cook stoves are distributed in a single size and a single model and for these stoves that used AMS-II.G, the emission reductions are based upon an improvement in their thermal efficiency in the field test results.

The following table lists the number of RDIS Rural Wood ICSs distributed in the Rwanda districts of Muhanga, Nyamagabe, Rusizi and Gisagara since the starting date of the project activity and as recorded in the RDIS Excel database records at the end of the monitoring period:

Month	ICS Distributed	Month	ICS Distributed
June 2017	466	June 2018	343
July 2017	205	July 2018	146

August 2017	136	August 2018	723
September 2017	81	September 2018	200
October 2017	332	October 2018	204
November 2017	314	November 2018	12
December 2017	135	December 2018	17
January 2018	104	January 2019	34
February 2018	198	February 2019	13
March 2018	398	March 2019	15
April 2018	307	April 2019	25
May 2018	191	TOTAL	4599

7014-P1-0008-CP1 James Finlay Kenya CPA 1 (JFKKe01)

CPA	Stove Model	Picture
7014-P1-0008-CP1 James Finlay Kenya CPA 1 (JFKKe01)	Ecozoom Dura Wood Stove	

In this monitoring period and submitted in this monitoring report, JFK has been active in the installation of fixed, domestic, firewood improved cook stoves not exceeding the small scale energy limit of 180 GWh_{th} for AMS-II.G..

This CPA covers the distribution of ICS that may use different fuels during a monitoring period. For this monitoring period and submitted in this monitoring report, the users have fuelled their ICS with wood fuel and this has been assessed during the household usage surveys.

The use of renewable biomass in combination with the ICS may happen:

For the entire operation period of the ICS or only intermittently;

For a part of any monitoring period, when the fuel switch occurs during the period

At some, all or none of the ICS distributed by the SO for a specific CPA.

Improved Cook Stoves for East Africa (ICSEA) Limited only allows AMS-I.E to be used in specific geographical or organisational settings where 100% of the delineated stoves users have switched (or are already using) renewable biomass fuels, based on contractual undertakings given by the SO to Improved Cook Stoves for East Africa (ICSEA) Limited. Accordingly, the monitoring of the parameters that are only required for the AMS-I.E. component will be confined to such areas in any one monitoring period. Improved Cook Stoves for East Africa (ICSEA) Limited ensures that a conservative approach is used in such situations, and ensures that all SO's are aware that the Standard Operating Procedure (SOP), which is part of the PoA's Management Rules, must be complied with.


JFK's improved cook stoves are distributed in a single size and a single model and for these stoves that used AMS-II.G and AMS-I.E, the emission reduction is based upon an improvement in their thermal efficiency in the field test results and their use of renewable biomass fuel in the form of wood provided to all JFK staff houses.

The following table lists the number of Ecozoom Dura Wood ICSs distributed in the JFK estates located in the counties of Kericho and Bomet in Kenya since the starting date of the project activity and as recorded in the JFK Excel database records at the end of the monitoring period:

Month	ICS Distributed	Month	ICS Distributed
January 2018	8	July 2018	199
February 2018	93	August 2018	23

March 2018	361	September 2018	12
April 2018	553	October 2018	85
May 2018	166	November 2018	292
June 2018	77	December 2018	72
		TOTAL	1941

7014-P1-0009-CP1 Aid Africa Uganda CPA 1 (AAUg01)

CPA	Stove Model	Picture
7014-P1-0009-CP1 Aid Africa Uganda CPA 1 (AAUg01)	Aid Africa 6-Brick Wood Stove	

In this monitoring period and submitted in this monitoring report, Aid Africa has been active in the production, marketing, distribution and sales of fixed, domestic, firewood improved cook stoves not exceeding the small scale energy limit of 180 GWh_{th} for AMS-II.G..

This CPA covers the distribution of ICS that may use different fuels during a monitoring period. For this monitoring period and submitted in this monitoring report, this CPA has fuelled ICS with non-renewable wood biomass and has been assessed during the household usage surveys.

The use of renewable biomass in combination with the ICS may happen:

For the entire operation period of the ICS or only intermittently;

For a part of any monitoring period, when the fuel switch occurs during the period

At some, all or none of the ICS distributed by the SO for a specific CPA.

Improved Cook Stoves for East Africa (ICSEA) Limited only allows AMS-I.E. to be used in specific geographical or organisational settings where 100% of the delineated stoves users have switched (or are already using) renewable biomass fuels, based on contractual undertakings given by the SO to Improved Cook Stoves for East Africa (ICSEA) Limited. Accordingly, the monitoring of the parameters that are only required for the AMS-I.E. component will be confined to such areas in any one monitoring period. Improved Cook Stoves for East Africa (ICSEA) Limited ensures that a conservative approach is used in such situations, and ensures that all SO's are aware that the Standard Operating Procedure (SOP), which is part of the PoA's Management Rules, must be complied with.

Aid Africa's improved cook stoves are distributed in a single size and a single model, and for these stoves that used AMS-II.G., the emission reductions are based upon an improvement in their thermal efficiency in the field test results.

The following table lists the number of Aid Africa 6-Brick Wood ICSs distributed in the Northern Uganda districts of Gulu, Omoro, Amuru and Nwoya since the starting date of the project activity and as recorded in the Aid Africa Excel database records at the end of the monitoring period:

Month	ICS Distributed	Month	ICS Distributed
February 2017	837	August 2018	406
April 2017	66	September 2018	596
June 2017	101	October 2018	428
July 2017	23	November 2018	193

August 2017	43	December 2018	69
February 2018	64	February 2019	58
March 2018	203	March 2019	232
April 2018	281	April 2019	254
June 2018	327	May 2019	46
July 2018	383	TOTAL	4610

C.2. Location of CPAs

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7014-P1-0007-CP1 RDIS Rwanda CPA 1 (RDISRw01)

a) Host Party: Rwanda

b) Region/State/Province, etc.: Southern Province

c) City/Town/Community, etc.: Muhanga District, Cyeza Sector, Makera Cell

d) Physical/Geographical Location:

Rwanda's geographical coordinates are:

1°56'25" S – 29°52'26" E

Muhanga District's geographical coordinates are:

2°4'28" S - 29°45'24" E

7014-P1-0008-CP1 James Finlay Kenya CPA 1 (JFKKe01)

a) Host Party: Kenya

b) Region/State/Province, etc.: Rift Valley Province

c) City/Town/Community, etc.: Kericho County

d) Physical/Geographical Location:

Kenya's geographical coordinates are:

0°1'24.8" S – 37°54'22.3" E

Kericho County's geographical coordinates are:

0°22'3.9" S - 35°16'59.3" E

7014-P1-0009-CP1 Aid Africa Uganda CPA 1 (AAUg01)

a) Host Party: Uganda

b) Region/State/Province, etc.: Northern Uganda

c) City/Town/Community, etc.: Gulu District, Gulu Municipality

d) Physical/Geographical Location:

Uganda's geographical coordinates are:

Latitude: 4°12'N – 1°29'S

Longitude: 29°34'E – 35°0'E

Gulu District's geographical coordinates are:

Latitude: 2°46'28.45" N

Longitude: 32°17'56.36" E

C.3. Post-registration changes to CPAs**C.3.1. Temporary deviations from the monitoring plans in the included CPA-DDs, applied methodologies, standardized baselines or other methodological regulatory documents**

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No temporary deviations from the monitoring plan in the included CPA-DD, applied methodologies, standardized baselines, or other methodological regulatory documents have been approved during the monitoring period or submitted with this monitoring report.

C.3.2. Corrections

>>

No corrections to the CPA-DD have been approved during the monitoring period or submitted with this monitoring report.

C.3.3. Changes to the start date of the crediting period

>>

No changes to the start date of the crediting period have been approved during the monitoring period or submitted with this monitoring report.

C.3.4. Inclusion of monitoring plan

>>

No inclusions to the CPA-DD monitoring plan have been approved during the monitoring period or submitted with this monitoring report.

C.3.5. Permanent changes to the included monitoring plans, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

>>

No permanent changes to the included monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents have been approved during the monitoring period or submitted with this monitoring report.

C.3.6. Changes to project design

>>

No changes to the project design have been approved during this monitoring period or submitted with this monitoring report.

C.3.7. Changes specific to afforestation or reforestation CPA

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Not applicable.

SECTION D. Description of monitoring system of CPAs

The monitoring consisted of four stages:

1. Continuous sales data collection and tracking by the SO
2. Continuous data monitoring by Improved Cook Stoves for East Africa (ICSEA) Limited
3. Sample surveys and efficiency testing at the end of the monitoring period and prior to verification
4. Data compilation and analysis, quality control and writing of the Monitoring Report

The flow chart below shows stage 1 of the monitoring system:

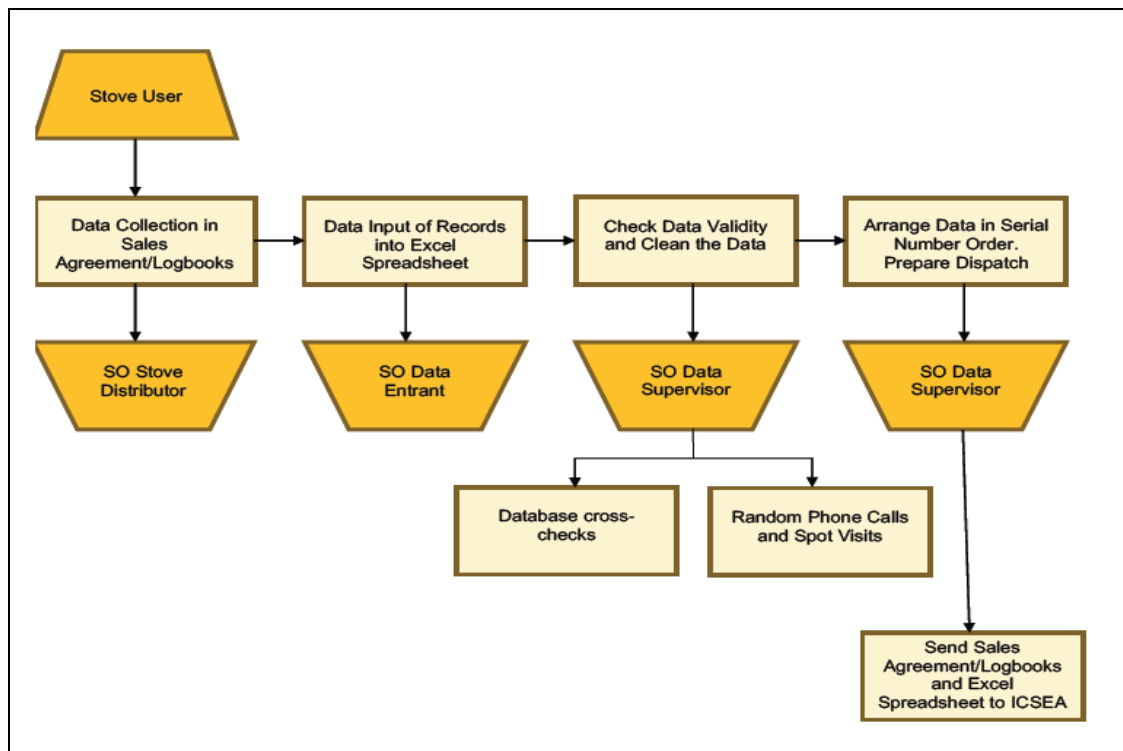


Diagram 1: SO Data Tracking Flow Chart

The flow chart below shows stage 2 of the monitoring system:

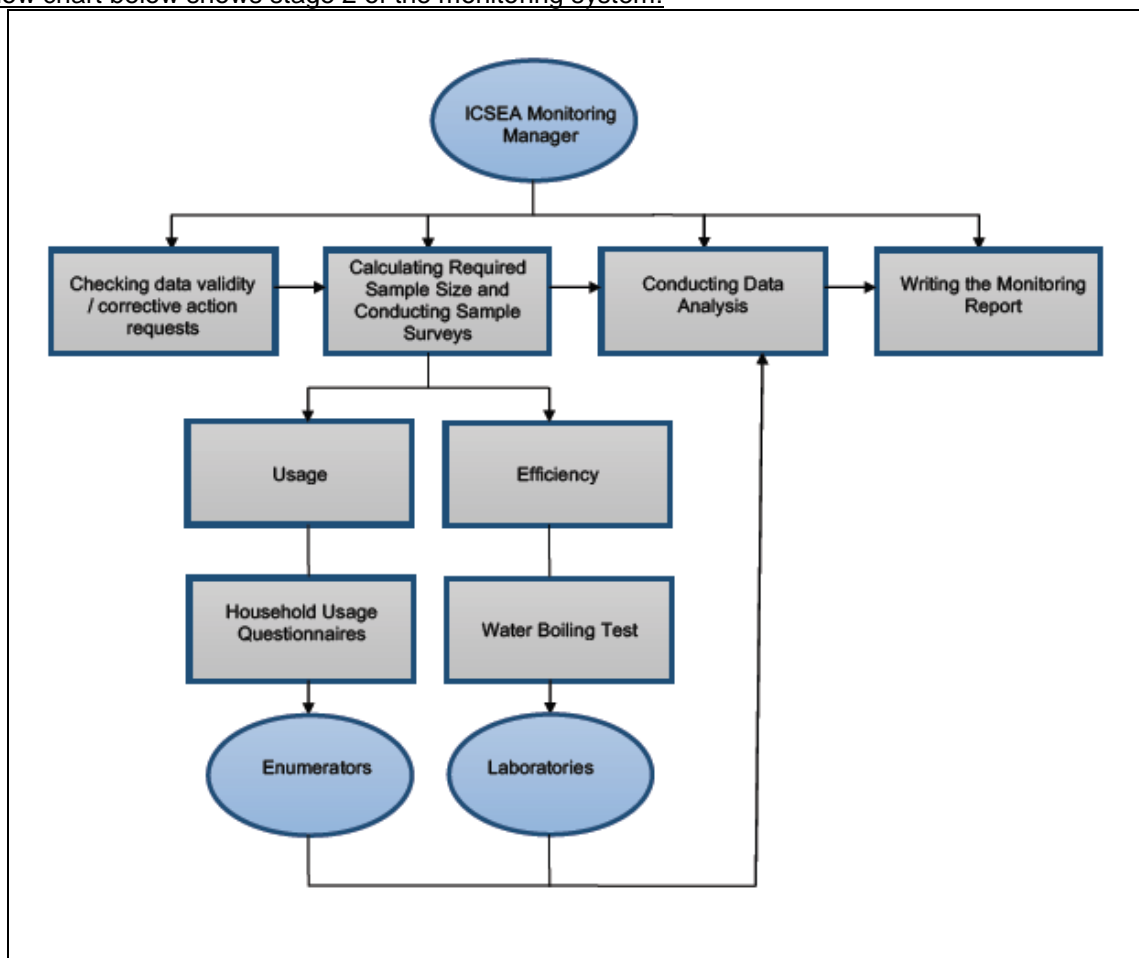


Diagram 2: CME Data Monitoring Flow Chart

7014-P1-0007-CP1 RDIS Rwanda CPA 1 (RDISRw01)**1. Sales data collection and tracking by the CPA:**

The SO was responsible for the marketing and distribution of the RDIS Rural Wood Stove by its Improved Cook Stoves for East Africa (ICSEA) Limited-trained staff. These staff entered the ICS information and Stove Users' contact details into the physical Sales Agreement/Logbook sheets in accordance with the training provided by Improved Cook Stoves for East Africa (ICSEA) Limited. For each household, an original copy (Stove User Copy), with triplicate sheets (ICSEA Copy; and RDIS Copy) was completed, and each Stove User signed acknowledging receipt of the ICS as well as agreeing to handover her rights of ownership of the carbon credits to the SO. Without the Stove User's signature, Improved Cook Stoves for East Africa (ICSEA) Limited did not allow any carbon credits to be claimed from that stove. After the Stove User signed, the Stove User Copy remained with the Stove User for her own record. The RDIS Copy was kept by the SO for data entry into the Excel spreadsheet; and the ICSEA Copy was sent to Improved Cook Stoves for East Africa (ICSEA) Limited for a data quality check.

The following information was collected by the SO:

- i) Unique Stove Serial Number (and GPS coordinates)
- ii) Sales Agreement Number
- iii) Sales Date
- iv) Stove User's telephone contacts
- v) Stove User's location – Country, District, Sector, Cell, Village
- vi) Stove model
- vii) Stove User's Signature
- viii) Stove Price (if applicable)
- ix) Stove distributor's (SO staff member) Name

2. Data monitoring by the CME:

Monitoring activities were performed by Improved Cook Stoves for East Africa (ICSEA) Limited and have served to determine the total number of ICS deployed in period y ($N_{i,j}$). The number of appliances ($N_{i,j}$) was determined as the fraction of days in a year in use for each ICS of the same model and cohort ($t_{\text{fraction},y,i,j}$), by the fraction of these ICS still in use per cohort and model of ICS. See the Excel spreadsheet Appendix 1c (RDIS CER Calculation). Improved Cook Stoves for East Africa (ICSEA) Limited randomly screened the records through spot-visits, crosschecks on RDIS's reports and records to confirm that the sales records were authentic and that no double counting occurred. Audit corrections as necessary were visibly made to the records in green ink.

3. Sample Surveys

In accordance with Appendix 5 (Monitoring Information) of the included CPA-DD for the Sampling Plan Drop Off/Usage Check, there are two different Approaches (Census or Sampling) that are described. Under the Sampling Approach there are 4 Options:

- Option 1: Annual Inspection per CPA
- Option 2: Annual Inspection of a Random Sample of CPAs from each Supplier Organisation (SO)
- Option 3: Biennial Inspection per CPA
- Option 4: Annual Inspection of a Random Sample of CPAs from CPAs using the same ICS Model

Option 1 has been chosen.

At the end of the monitoring period, and prior to verification, sample surveys were conducted by Improved Cook Stoves for East Africa (ICSEA) Limited in order to determine the:

- 1. Statistically adjusted drop off of ICS in use from the total population of Rural Wood Stoves in period y ($U_{i,j}$)
- 2. Adjustment factor for the continued use of baseline appliances by Rural Wood Stove users in period y
- 3. Average efficiency of the Rural Wood Stove being deployed ($\eta_{\text{new},i,j}$)

Simple Random Sampling (SRS) Procedure for the Usage Survey

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager drew a random sample from the internally verified Excel spreadsheet records of 4,599 ICS. This was done by using a computerised random number generator from <http://stattrek.com/statistics/random-number-generator.aspx>

By filling in 150 random numbers, the minimum value (1) and maximum value (4,599) and clicking on the calculate button, the 150 random numbers were automatically generated. See Appendix 1a of this Monitoring Report. The numbers generated correspond to the entry numbers in the database. These numbers were then matched with the corresponding stove serial number in the database by using the VLOOKUP tool. This tool uses the column that has the random numbers generated to match the entry number and the corresponding stove serial number. Based on the generated stove details and a sample size of 18 (with oversampling for reliability of data), the usage questionnaires were submitted to Improved Cook Stoves for East Africa (ICSEA) Limited's team of enumerators. The team with Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager conducted the household usage survey at the household locations. The purpose of the survey was to account for the continued use of baseline appliances and to determine the drop off rate as described in the CPA-DD page 43. The survey also generated information about how the replaced low efficiency appliances were disposed of and were no longer in use within the boundary or within the region. 99.99% of replaced stoves were no longer in use and were not found at the households. 99.99% were disposed of. The remaining 0.01% were still in households in occasional use (see sheet "Baseline Stove Use" in the Excel spreadsheet "RDIS ER Calculation").

Simple Random Sampling (SRS) Procedure for Efficiency Check

Since the SO carried out maintenance of all stoves that had been in use for over 12 months, the stoves were brought into a single age cohort of stoves.

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager drew a random sample from the internally verified Excel spreadsheet records of 4,599 ICS. This was done by using a computerised random number generator from <http://stattrek.com/statistics/random-number-generator.aspx>

By filling in 150 random numbers, the minimum value (1) and maximum value (4,599) and clicking on the calculate button, the 150 random numbers were automatically generated. See Appendix 1b of this Monitoring Report. The numbers generated correspond to the entry numbers on the database. These numbers were then matched with the corresponding stove serial number in the database by using the VLOOKUP tool. This tool uses the column that has the random numbers generated to match the entry number and the corresponding stove serial number. Based on the generated stove details and a sample size of 11 (with oversampling for reliability of data), the ICSEA-authorized stove testing laboratory team received the 11 stoves for laboratory testing. Prior to the testing of these stoves, each household was provided with a brand new ICS to use while their stove was being tested.

The sample size for both the drop off/usage survey and the efficiency testing was determined using a sample size calculator (see sheets "Usage sample calc" and "Efficiency sample calc – single cohort" in Appendix 1c (RDIS CER Calculation)).

Data recording

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager and the team of enumerators recorded the information from the household surveys on pre-printed questionnaires.

The ICSEA* Project Manager collected all the stove testing results from the authorised laboratory, and analysed and cross-checked all the data.

Data aggregation and reporting

In the field Improved Cook Stoves for East Africa (ICSEA) Limited staff checked all the collected information from the household usage questionnaires for inconsistencies and instructed the team of enumerators to take corrective action where necessary. Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager aggregated the results of the survey, conducted the analyses and reported on the monitored

* Improved Cook Stoves for East Africa (ICSEA) Limited

parameters as written in the CPA-DD pages 43 and 44. For the detailed information on the sampling plan used, please refer to Appendix 5 of the CPA-DD.

4. Data compilation

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager finally transferred the values of the monitored parameters to the RDIS CER Calculation Excel spreadsheet that contains the equations for calculating the emission reductions for this monitoring period. See the Excel spreadsheet “RDIS CER Calculation” in Appendix 2c for the achieved values reported in this Monitoring Report.

Roles and responsibilities of personnel

Person	Role
RDIS Stove Distributor	Responsible for ensuring that all fields with stove records and stove user information was correctly filled into the Sales Agreement/Logbook sheets.
RDIS Data Entrant	Responsible for entering, updating and maintaining all data from the Sales Agreement/Logbook sheets into the Excel database.
RDIS Tracking Manager	Responsible for supervising all work done by the RDIS Stove Distributor and the RDIS Data Entrant during stove installation and during maintenance visits and delivering the updated database records to ICSEA.
ICSEA* Monitoring Manager	Responsible for training and organising enumerators' activities, supervising RDIS, updating the drop off analysis and values of other parameters, and generating the RDIS CER Calculation Excel spreadsheet (see Appendix 1c).
ICSEA* Enumerators	Responsible for conducting household interviews for drop off check and other parameters and reporting results to the ICSEA* Monitoring Manager.
ICSEA* Project Manager	Responsible for organising testing activities for efficiency checks, supervising authorised laboratories and coordinating the reports of the ICSEA* Monitoring Manager.

Security procedures for the monitoring system

Improved Cook Stoves for East Africa (ICSEA) Limited and the SO implemented a system of cross-checks to ensure data quality. There was a separation of roles for every step of the data generation, aggregation and recording, calculation and reporting between those who were responsible and those who were supervising the respective steps, at both the SO and at the CME level.

The RDIS team was trained and supervised by the ICSEA* Monitoring Manager on how to effectively handle all data entry and subsequent updates, both in the field and in the RDIS office. The RDIS Data Entrant was responsible for sorting out Sales Agreement/Logbook sheets, filtering those with incomplete or incorrect data, entering the data of those correctly completed into the Excel database, flagging any duplicates, following up on those with inconsistencies, and updating the Excel database as households were contacted/phoned/visited throughout the year.

The RDIS Tracking Manager checked the correctness and consistency between the information on the Sales Agreement/Logbook sheets and the corresponding records in the Excel database. Where inconsistencies were detected, the ICSEA* Monitoring Manager instructed the RDIS team to search for the error source. If the error source was found, the information was corrected accordingly; if the error source could not be found, the Excel database record was quarantined in a separate file. In addition to checking done by the RDIS

* Improved Cook Stoves for East Africa (ICSEA) Limited

Tracking Manager, the ICSEA⁺ Monitoring Manager checked the correctness and consistency of all sampling data collected and processed this Monitoring Period.

7014-P1-0008-CP1 James Finlay Kenya CPA 1 (JFKKe01)

1. Sales data collection and tracking by the CPA:

The SO was responsible for the distribution of the Ecozoom Dura Wood Stove by its CME-trained staff. These staff entered the ICS information and Stove Users' contact details into the physical Sales Agreement/Logbook sheets in accordance with the training provided by Improved Cook Stoves for East Africa (ICSEA) Limited. For each household, an original copy (Stove User Copy); with triplicate sheets (ICSEA Copy; and JFK Copy) was completed and each Stove User signed acknowledging receipt of the ICS as well as agreeing to handover her rights of ownership of the carbon credits to the SO. Without the Stove User's signature, Improved Cook Stoves for East Africa (ICSEA) Limited did not allow any carbon credits to be claimed from that stove. After the Stove User signed, the Stove User Copy remained with the Stove User for her own record. The JFK Copy was kept by the SO for data entry into the Excel spreadsheet; and the ICSEA Copy was sent to Improved Cook Stoves for East Africa (ICSEA) Limited for a data quality check.

The following information was collected by the SO:

- i) Unique Stove Serial Number (and GPS coordinates)
- ii) Sales Agreement Number
- iii) Sales Date
- iv) Stove User's telephone contacts
- v) Stove User's location – Country, County, Sub-County, Estate/Factory/Department, Village
- vi) Stove model
- vii) Stove User's Signature
- viii) Stove Price (if applicable)
- ix) Stove distributor's (SO staff member) Name

2. Data monitoring by the CME:

Monitoring activities were performed by Improved Cook Stoves for East Africa (ICSEA) Limited and have served to determine the total number of ICS deployed in period y ($N_{i,j}$). The number of appliances ($N_{i,j}$) was determined as the fraction of days in a year in use for each ICS of the same model and cohort ($t_{fraction,y,i,j}$), by the fraction of these ICS still in use per cohort and model of ICS. See the Excel spreadsheet "JFK CER Calculation" in Appendix 2c in this Monitoring Report. Improved Cook Stoves for East Africa (ICSEA) Limited randomly screened the records through spot-visits, crosschecks on JFK's reports and records to confirm that the sales records were authentic and that no double counting occurred. Audit corrections as necessary were visibly made to the records in green ink.

3. Sample Surveys

In accordance with Appendix 5 (Monitoring Information) of the included CPA-DD for the Sampling Plan Drop Off/Usage Check, there are two different Approaches (Census or Sampling) that are described. Under the Sampling Approach there are 4 Options:

- Option 1: Annual Inspection per CPA
- Option 2: Annual Inspection of a Random Sample of CPAs from each Supplier Organisation (SO)
- Option 3: Biennial Inspection per CPA
- Option 4: Annual Inspection of a Random Sample of CPAs from CPAs using the same ICS Model

Option 1 has been chosen.

At the end of the monitoring period, and prior to verification, sample surveys were conducted by Improved Cook Stoves for East Africa (ICSEA) Limited in order to determine the:

1. Statistically adjusted drop off of ICS in use from the total population of Ecozoom Dura Wood Stoves in period y ($U_{i,j}$)
2. Adjustment factor for the continued use of baseline appliances by Ecozoom Dura Wood Stove users in period y
3. Average efficiency of the Ecozoom Dura Wood Stove being deployed ($\eta_{new,i,j}$)

Simple Random Sampling (SRS) Procedure for the Usage Survey

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager drew a random sample from the internally verified Excel spreadsheet records of 1,941 ICS. This was done by using a computerised random number generator from <http://stattrek.com/statistics/random-number-generator.aspx>

By filling in 150 random numbers, the minimum value (1) and maximum value (1,941) and clicking on the calculate button, the 150 random numbers were automatically generated. See Appendix 2a of this Monitoring Report. The numbers generated correspond to the entry numbers in the database. These numbers were then matched with the corresponding stove serial number in the database by using the VLOOKUP tool. This tool uses the column that has the random numbers generated to match the entry number and the corresponding stove serial number. Based on the generated stove details and a sample size of 18 (with oversampling for reliability of data), the usage questionnaires were submitted to Improved Cook Stoves for East Africa (ICSEA) Limited's team of enumerators. The team with Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager conducted the household usage survey at the household locations. The purpose of the survey was to account for the continued use of baseline appliances and to determine the drop off rate as described in the CPA-DD pages 44 and 45 respectively. The survey also generated information about how the replaced low efficiency appliances were disposed of and were no longer in use within the boundary or within the region. 100% of replaced stoves were no longer in use and were not found at the households. 100% were disposed of.

Simple Random Sampling (SRS) Procedure for Efficiency Check

Since the SO carried out maintenance of all stoves that had been in use for over 12 months, the stoves were brought into a single age cohort of stoves.

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager drew a random sample from the internally verified Excel spreadsheet records of 1,941 ICS. This was done by using a computerised random number generator from <http://stattrek.com/statistics/random-number-generator.aspx>

By filling in 150 random numbers, the minimum value (1) and maximum value (1,941) and clicking on the calculate button, the 150 random numbers were automatically generated. See Appendix 2b of this Monitoring Report. The numbers generated correspond to the entry numbers on the database. These numbers were then matched with the corresponding stove serial number in the database by using the VLOOKUP tool. This tool uses the column that has the random numbers generated to match the entry number and the corresponding stove serial number. Based on the generated stove details and a sample size of 11 (with oversampling for reliability of data), the ICSEA-authorized stove testing laboratory team went to each household for efficiency testing *in-situ*.

The sample size for both the drop off/usage survey and the efficiency testing was determined using a sample size calculator (see sheets "Usage sample calc" and "Efficiency sample calc – single cohort" in Appendix 2c of this Monitoring Report).

Data recording

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager and the team of enumerators recorded the information from the household surveys on pre-printed questionnaires.

The ICSEA* Project Manager collected all testing results from the authorised laboratories, and analysed and cross-checked all the data.

Data aggregation and reporting

In the field Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager checked all the collected information from the household usage questionnaires for inconsistencies and instructed the team of enumerators to take corrective action where necessary. Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager aggregated the results of the survey, conducted the analyses and reported on the monitored parameters as written in the CPA-DD pages 37 to 40. For the detailed information on the sampling plan used, please refer to Appendix 5 of the CPA-DD.

4. Data compilation

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager finally transferred the values of the monitored parameters to the JFK CER Calculation Excel spreadsheet that contains the equations for calculating the emission reductions for this monitoring period. See the Excel spreadsheet “JFK CER Calculation” in Appendix 2c for the achieved values reported in this Monitoring Report.

Roles and responsibilities of personnel

Person	Role
JFK Stove Distributor	Responsible for ensuring that all fields with stove records and stove user information was correctly filled into the Sales Agreement/Logbook sheets.
JFK Data Entrant	Responsible for entering, updating and maintaining all data from the Sales Agreement/Logbook sheets into the Excel database.
JFK Tracking Manager	Responsible for supervising all work done by the JFK Stove Distributor and the JFK Data Entrant during stove installation and during maintenance visits and delivering the updated database records to ICSEA.
ICSEA* Monitoring Manager	Responsible for training and organising enumerators' activities, supervising JFK, updating the drop off analysis and values of other parameters, and generating the JFK CER Calculation Excel spreadsheet. (see Appendix 2c)
ICSEA* Enumerators	Responsible for conducting household interviews for drop off check and other parameters and reporting results to the ICSEA* Monitoring Manager.
ICSEA* Project Manager	Responsible for organising testing activities for efficiency checks, supervising authorised laboratories and coordinating the reports of the ICSEA* Monitoring Manager.

Security procedures for the monitoring system

Improved Cook Stoves for East Africa (ICSEA) Limited and the SO implemented a system of cross-checks to ensure data quality. There was a separation of roles for every step of the data generation, aggregation and recording, calculation and reporting between those who were responsible and those who were supervising the respective steps, at both the SO and at the CME level.

The JFK team was trained and supervised by the ICSEA* Monitoring Manager on how to effectively handle all data entry and subsequent updates, both in the field and in the JFK offices. The JFK Data Entrant was responsible for sorting out Sales Agreement/Logbook sheets, filtering those with incomplete or incorrect data, entering the data of those correctly completed into the Excel database, flagging any duplicates, following up on those with inconsistencies, and updating the Excel database as households were contacted/phoned/visited throughout the year.

The JFK Tracking Manager checked the correctness and consistency between the information on the Sales Agreement/Logbook sheets and the corresponding records in the Excel database. Where inconsistencies were detected, the ICSEA* Monitoring Manager instructed the JFK team to search for the error source. If the error source was found, the information was corrected accordingly; if the error source could not be found, the Excel database record was quarantined in a separate file. In addition to checking done by the JFK Tracking Manager, the ICSEA* Monitoring Manager checked the correctness and consistency of all sampling data collected and processed this Monitoring Period.

7014-P1-0009-CP1 Aid Africa Uganda CPA 1 (AAUg01)

1. Sales data collection and tracking by the CPA:

* Improved Cook Stoves for East Africa (ICSEA) Limited

The SO was responsible for the marketing and distribution of the Aid Africa 6-Brick Wood Stove through its CME-trained staff. These staff entered the ICS information and Stove Users' contact details into the physical Sales Agreement/Logbook sheets in accordance with the training provided by Improved Cook Stoves for East Africa (ICSEA) Limited. For each household, an original copy (Stove User Copy); with triplicate sheets (ICSEA Copy; and Aid Africa Copy) was completed and each Stove User signed acknowledging receipt of the ICS as well as agreeing to handover her rights of ownership of the carbon credits to the SO. Without the Stove User's signature, Improved Cook Stoves for East Africa (ICSEA) Limited did not allow any carbon credits to be claimed from that stove. After the Stove User signed, the Stove User Copy remained with the Stove User for her own record. The Aid Africa Copy was kept by the SO for data entry into the Excel spreadsheet; and the ICSEA Copy was sent to Improved Cook Stoves for East Africa (ICSEA) Limited for a data quality check.

The following information was collected by the SO:

- i) Unique Stove Serial Number (and GPS coordinates)
- ii) Sales Agreement Number
- iii) Sales Date
- iv) Stove User's telephone contacts
- v) Stove User's location – Country, District, Sub-County, Parish, Village
- vi) Stove model
- vii) Stove User's Signature
- viii) Stove Price (if applicable)
- ix) Stove distributor's (SO staff member) Name

2. Data monitoring by the CME:

Monitoring activities were performed by Improved Cook Stoves for East Africa (ICSEA) Limited and have served to determine the total number of ICS deployed in period y ($N_{i,j}$). The number of appliances ($N_{i,j}$) was determined as the fraction of days in a year in use for each ICS of the same model and cohort ($t_{fraction,y,i,j}$), by the fraction of these ICS still in use per cohort and model of ICS. See the Excel spreadsheet "Aid Africa CER Calculation" (Appendix 3c of this Monitoring Report). Improved Cook Stoves for East Africa (ICSEA) Limited randomly screened the records through spot-visits, crosschecks on Aid Africa's reports and records to confirm that the sales records were authentic and that no double counting occurred. Audit corrections as necessary were visibly made to the records in green ink by authorised staff.

3. Sample Surveys

In accordance with Section B.5.3 (Other elements of the monitoring plan) of the included CPA-DD for the Sampling Plan Drop Off/Usage Check, there are two different Approaches (Census or Sampling) that are described. Under the Sampling Approach there are 4 Options:

- Option 1: Annual Inspection per CPA
- Option 2: Annual Inspection of a Random Sample of CPAs from each Supplier Organisation (SO)
- Option 3: Biennial Inspection per CPA
- Option 4: Annual Inspection of a Random Sample of CPAs from CPAs using the same ICS Model

Option 1 has been chosen.

At the end of the monitoring period, and prior to verification, sample surveys were conducted by Improved Cook Stoves for East Africa (ICSEA) Limited in order to determine the:

1. Statistically adjusted drop off of ICS in use from the total population of 6-Brick Wood Stoves in period y ($U_{i,j}$)
2. Adjustment factor for the continued use of baseline appliances by 6-Brick Wood Stove users in period y
3. Average efficiency of the 6-Brick Wood Stove being deployed ($\eta_{new,i,j}$)

Simple Random Sampling (SRS) Procedure for the Usage Survey

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager drew a random sample from the internally verified Excel spreadsheet records of 4,610 ICS. This was done by using a computerised random number generator from <http://stattrek.com/statistics/random-number-generator.aspx>

By filling in 150 random numbers, the minimum value (1) and maximum value (4,610) and clicking on the calculate button, the 150 random numbers were automatically generated. See Appendix 3a of this Monitoring Report. The numbers generated correspond to the entry numbers in the database. These numbers were then matched with the corresponding stove serial number in the database by using the VLOOKUP tool. This tool uses the column that has the random numbers generated to match the entry number and the corresponding stove serial number. Based on the generated stove details and a sample size of 18 (with oversampling for reliability of data), the usage questionnaires were completed by Improved Cook Stoves for East Africa (ICSEA) Limited's team of enumerators. The team with Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager conducted the household usage survey at the household locations. The purpose of the survey was to account for the continued use of baseline appliances and to determine the drop off rate as described in the CPA-DD pages 51 and 52 respectively. The survey also generated information about how the replaced low efficiency appliances were disposed of and were no longer in use within the boundary or within the region. 98% of replaced stoves were no longer in use and were not found at the households. 100% were disposed of. The remaining 2% were still in households in occasional use (see sheet "Baseline Stove Use" in Appendix 3c of this Monitoring Report).

Simple Random Sampling (SRS) Procedure for Efficiency Check

Since the SO carried out maintenance of all stoves that had been in use for over 12 months, the stoves were brought into a single age cohort of stoves.

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager drew a random sample from the internally verified Excel spreadsheet records of 4,610 ICS. This was done by using a computerised random number generator from <http://stattrek.com/statistics/random-number-genrator.aspx>

By filling in 150 random numbers, the minimum value (1) and maximum value (4,610) and clicking on the calculate button, the 150 random numbers were automatically generated. See Appendix 3b of this Monitoring Report. The numbers generated correspond to the entry numbers on the database. These numbers were then matched with the corresponding stove serial number in the database by using the VLOOKUP tool. This tool uses the column that has the random numbers generated to match the entry number and the corresponding stove serial number. Based on the generated stove details and a sample size of 11 (with oversampling for reliability of data), the ICSEA-authorized stove testing laboratory team went to each household for efficiency testing *in-situ*. Prior to the testing of these stoves, each household was provided with a brand new ICS to use while their stove was being tested.

The sample size for both the drop off/usage survey and the efficiency testing was determined using a sample size calculator (see sheets "Usage sample calc" and "Efficiency sample calc – single cohort" in Appendix 3c of this Monitoring Report).

Data recording

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager and the team of enumerators recorded the information from the household surveys on pre-printed questionnaires.

The Improved Cook Stoves for East Africa (ICSEA) Limited Project Manager collected all test results from the authorised laboratories, and analysed and cross-checked all the data.

Data aggregation and reporting

In the field Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager checked all the collected information from the household usage questionnaires for inconsistencies and instructed the team of enumerators to take corrective action where necessary. Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager aggregated the results of the survey, conducted the analyses and reported on the monitored parameters as written in the CPA-DD pages 23, 26-27. For the detailed information on the sampling plan used, please refer to Section B.5.2 of the CPA-DD.

4. Data compilation

Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager finally transferred the values of the monitored parameters to the Aid Africa CER Calculation Excel spreadsheet that contains the equations for calculating the emission reductions for this monitoring period. See the Excel spreadsheet "Aid Africa CER Calculation" in Appendix 3c for the achieved values reported in this Monitoring Report.

Roles and responsibilities of personnel

Person	Role
Aid Africa Stove Distributor	Responsible for ensuring that all fields with stove records and stove user information was correctly filled into the Sales Agreement/Logbook sheets.
Aid Africa Data Entrant	Responsible for entering, updating and maintaining all data from the Sales Agreement/Logbook sheets into the Excel database.
Aid Africa Tracking Manager	Responsible for supervising all work done by the Aid Africa Stove Distributor and the Aid Africa Data Entrant during stove installation and during maintenance visits and delivering the updated database records to ICSEA.
ICSEA* Monitoring Manager	Responsible for training and organising enumerators' activities, supervising Aid Africa, updating the drop off analysis and values of other parameters, and generating the Aid Africa CER Calculation Excel spreadsheet (Appendix 3c).
ICSEA* Enumerators	Responsible for conducting household interviews for drop off check and other parameters and reporting results to the ICSEA* Monitoring Manager.
ICSEA* Project Manager	Responsible for organising testing activities for efficiency checks, supervising authorised laboratories and coordinating the reports of the ICSEA* Monitoring Manager.

Security procedures for the monitoring system

Improved Cook Stoves for East Africa (ICSEA) Limited and the SO implemented a system of cross-checks to ensure data quality. There was a separation of roles for every step of the data generation, aggregation and recording, calculation and reporting between those who were responsible and those who were supervising the respective steps, at both the SO and at the CME level.

The Aid Africa team was trained by the Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager on how to effectively handle all data entry and subsequent updates, both in the field and in the Aid Africa offices. The Aid Africa Data Entrant was responsible for sorting out Sales Agreement/Logbook sheets, filtering those with incomplete or incorrect data, entering the data of those correctly completed into the Excel database, flagging any duplicates, following up on those with inconsistencies, and updating the Excel database as households were contacted/phoned/visited throughout the year.

The Aid Africa Tracking Manager checked the correctness and consistency between the information on the Sales Agreement/Logbook sheets and the corresponding records in the Excel database. Where inconsistencies were detected, the Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager instructed the Aid Africa team to search for the error source. If the error source was found, the information was corrected accordingly; if the error source could not be found, the Excel database record was quarantined in a separate file. In addition to the checking done by the Aid Africa Tracking Manager, the Improved Cook Stoves for East Africa (ICSEA) Limited Monitoring Manager checked the correctness and consistency of all sampling data collected and processed in this Monitoring Period.

* Improved Cook Stoves for East Africa (ICSEA) Limited

SECTION E. Data and parameters

E.1. Data and parameters fixed ex ante

(Copy this table for each data or parameter.)

Data/Parameter	NCV_{biomass}
Unit	TJ/tonne
Description	Net calorific value of the non-renewable woody biomass that is substituted.
Source of data	IPCC default for wood fuel
Value(s) applied	0.015
Choice of data or measurement methods and procedures	Default value that is provided in accordance with paragraph 5 of AMS-II.G (version 03)
Purpose of data/parameter	Calculation of Baseline emission
Additional comments	As per AMS-II.G. version 03

Data/Parameter	$EF_{\text{projected-fossilfuel}}$
Unit	tCO ₂ /TJ
Description	Emission factor for the substitution of non-renewable woody biomass by similar consumers
Source of data	IPCC
Value(s) applied	81.6
Choice of data or measurement methods and procedures	Default value that is provided in accordance with paragraph 5 of AMS-II.G (version 03)
Purpose of data/parameter	Calculation of Baseline emission
Additional comments	As per AMS-II.G. version 03

Data/Parameter	$\eta_{\text{old},i}$
Unit	Fraction
Description	Efficiency of the baseline appliance being replaced
Source of data	Water Boiling Test default value according to the methodology AMS II.G (version 03).
Value(s) applied	10%
Choice of data or measurement methods and procedures	Water Boiling Test default value according to the methodology AMS II.G (version 03).
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	Data to be reported if option 2 of AMS-II.G (version 03) is chosen.

Data/Parameter	$L_{(l,j)}$
Unit	Fraction
Description	The fraction by which emission reductions are multiplied to obtain an assessment adjusted for leakage risks.
Source of data	Default value in accordance with paragraph 13 (a) of AMS II.G (version 03) and paragraph 19 (a) of AMS-I.E (version 06.0)

Value(s) applied	95%
Choice of data or measurement methods and procedures	N/A
Purpose of data/parameter	Calculation of baseline emissions.
Additional comments	In case this leakage adjustment factor is applied, it is not required to survey the use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources

Data/Parameter	$C_{y,fueltype,region,old}$ - <u>7014-P1-0007-CP1 RDIS Rwanda CPA 1 (RDISRw01)</u>
Unit	tonnes/year
Description	Quantity of woody biomass used in the absence of the project activity in tonnes per type of ICS
Source of data	Global Alliance for Clean Cooking (GACC) – CASE PROJECT baseline study report for Rwanda ⁶
Value(s) applied	2.275
Choice of data or measurement methods and procedures	Estimate of average annual consumption of woody biomass per appliance (tonnes/year) derived historical data for wood-burning stoves calculated from 187 kg/stove/month, as follows: (187kg x 365 days) / (30 days x 1000).
Purpose of data/parameter	Calculation of baseline emissions.
Additional comments	Only applicable for calculations of ER as per AMS-II.G (version 03).

Data/Parameter	$C_{y,fueltype,region,old}$ - <u>7014-P1-0008-CP1 James Finlay Kenya CPA 1 (JFKKe01)</u>
Unit	tonnes/year
Description	Quantity of woody biomass used in the absence of the project activity in tonnes per type of ICS
Source of data	Kenya Renewable Energy Association (KEREa), Biomass Situation in Kenya ⁷
Value(s) applied	3.65
Choice of data or measurement methods and procedures	Estimate of average annual consumption of woody biomass per appliance (tonnes/year) derived historical data for wood-burning stoves calculated from 10kg/stove/day, as follows: (10 kg x 365 days)/(1 day x 1000)
Purpose of data/parameter	Calculation of baseline emissions.
Additional comments	Only applicable for calculations of ER as per AMS-II.G (version 03).

Data/Parameter	$C_{y,fueltype,region,old}$ - <u>7014-P1-0009-CP1 Aid Africa Uganda CPA 1 (AAUg01)</u>
Unit	tonnes/year
Description	Quantity of woody biomass used in the absence of the project activity in tonnes per type of ICS

⁶ http://cleancookstoves.org/resources_files/baseline-study.pdf

⁷ <http://kerea.org/renewable-sources/biomass-2/>

Source of data	Final Report on Baseline Fuel Consumption in Households in Uganda, by the Center for Integrated Research and Community Development Uganda (CIRCODU). ⁸
Value(s) applied	3.50
Choice of data or measurement methods and procedures	Survey of local usage of woody biomass per household per year for wood-burning stoves in Uganda calculated from 9.6 kg/stove/day, as follows: (9.6 kg x 365) / (1 day x 1000)
Purpose of data/parameter	Calculation of baseline emissions.
Additional comments	Only applicable for calculations of ER as per AMS-II.G (version 03).

E.2. Data and parameters monitored

(Copy this table for each data or parameter.)

7014-P1-0007-CP1 RDIS Rwanda CPA 1 (RDISRw01)

Data/Parameter	$\eta_{\text{new},(i,j)}$
Unit	Fraction
Description	Efficiency of the ICS being deployed and maintained as part of the project activity.
Measured/calculated/default	Calculated from sampled ICS
Source of data	Water Boiling Test (WBT) by CREEC laboratory (See sheet "Efficiency sample calc – single age cohort" in Appendix 1c of this Monitoring Report).
Value(s) of monitored parameter	28.6%

⁸ [https://www.dropbox.com/home/01-verification/1-Baseline?preview=UCB_KPT_Final_Report_v05_reduced.pdf+\(CIRCODU\).pdf](https://www.dropbox.com/home/01-verification/1-Baseline?preview=UCB_KPT_Final_Report_v05_reduced.pdf+(CIRCODU).pdf)

Monitoring equipment	<p>Centre for Research in Energy & Energy Conservation (CREEC) <u>Weighing Balance</u>: Model: Class III. ID: CRC/BL/012. Capacity: 30 kg by 0.001 kg. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of ± 0.001 kg.</p> <p><u>Weighing Balance</u>: Model: Class III. ID: CRC/BL/050. Capacity: 30 kg by 0.001 kg. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of ± 0.001 kg.</p> <p><u>Weighing Micro Balance</u>: Model: Citizen CX 265. ID: CRC/BL/065. Capacity: 220 g by 0.001 g. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of ± 0.003 g.</p> <p><u>Infrared Thermometer</u>: Model: TESTO 835-T2. Serial Number: IRT H01. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of $\pm 2.0^{\circ}\text{C}$.</p> <p><u>Digital Thermometer</u>: Model: TME 2030. Serial Number: THERM01. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of $\pm 2.0^{\circ}\text{C}$.</p> <p><u>Moisture Meter</u>: Model: TESTO 606-2. Serial Number: CRCMB002. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of $\pm 0.5\%$.</p>
Measuring/reading/recording frequency	Every two years
Calculation method (if applicable)	See sheet "Efficiency sample calc – single age cohort" in Appendix 1c of this Monitoring Report.
QA/QC procedures	
Purpose of data/parameter	Emission reduction calculation
Additional comments	

Data/Parameter	$f_{NRB,y}$
Unit	Fraction
Description	Fraction of woody biomass saved by the project activity in the year y that can be established as non-renewable biomass.
Measured/calculated/default	Default value in the latest standardised baseline.
Source of data	ASB0041-2018 Standardized baseline - Fuel switch, technology switch and methane destruction in the charcoal sector of Rwanda Version 01.0 ⁹
Value(s) of monitored parameter	77%
Monitoring equipment	N/A
Measuring/reading/recording frequency	Yearly

⁹ https://cdm.unfccc.int/filestorage/e/x/t/extfile-20181221113304559-ASB0041-2018_PSB0045.pdf/ASB0041-2018_PSB0045.pdf?t=S1R8cTE5YWU3fDCgMec9iw9uhk-lA40hlfaj

Calculation method (if applicable)	N/A
QA/QC procedures	N/A
Purpose of data/parameter	Baseline emission calculation
Additional comments	

Data/Parameter	$t_{fraction,(i,j)}$
Unit	Fraction of 365
Description	Fraction of the days in use in year y of a single ICS deployed
Measured/calculated/default	Calculated. See sheet "RDIS CER Calculation" in Appendix 1c of this Monitoring Report.
Source of data	Derived from stove records
Value(s) of monitored parameter	Variable, dependent on day ICS was first put into use (commissioning date) with respect to the monitoring period.
Monitoring equipment	Sales Agreement/Logbook sheets, Excel Database, and Household Usage Survey
Measuring/reading/recording frequency	Continuous monitoring and recording of each ICS distributed. Sample surveys.
Calculation method (if applicable)	The SO keeps a paper and electronic record of the ICS data, and the ICS is considered to be in use from the commissioning date, which is the date on which the stove was put into use for the first time. The fraction of the number of days in use is calculated daily through the electronic database.
QA/QC procedures	<p>Sales records were scrutinised by the SO to avoid double counting and Improved Cook Stoves for East Africa (ICSEA) Limited also conducted spot-checks to verify the legitimacy of such records. On a monthly basis, the SO verified the ICSs that had been put into use based on the ICS sales during the month through telephone surveys and/or physical inspection and Improved Cook Stoves for East Africa (ICSEA) Limited monitoring events.</p> <p>Sales records and survey results provided the commissioning date, which is the date on which the stove is put into use for the first time. That date is used as the start date for the computation of certified emission reductions for single ICS. Based on the analysis of the sales records and survey results a commissioning date 9 days after the sales date has been conservatively calculated and used for emission reduction calculation purposes.</p> <p>On a monthly basis, the SO has been sending the Sales Agreement/ Logbook sheets (ICSEA Copies) to Improved Cook Stoves for East Africa (ICSEA) Limited for verification of the data entered in the RDIS Excel database.</p> <p>Telephone checks and spot checks were used by Improved Cook Stoves for East Africa (ICSEA) Limited to review and authenticate the data in the Excel database.</p>
Purpose of data/parameter	Emission reduction calculation
Additional comments	N/A

Data/Parameter	$U_{(i,j)}$
Unit	Fraction
Description	The fraction by which emission reductions are multiplied to obtain an assessment adjusted for drop off of ICS in use per cohort year. A cohort is defined as the ICS model distributed or gone through maintenance in the same year.
Measured/calculated/default	Measured. See sheet "Stove Usage" in Appendix 1c of this Monitoring Report.

Source of data	Survey of ICS users for the total population using simple random sampling method.
Value(s) of monitored parameter	100%
Monitoring equipment	Household Usage Questionnaire
Measuring/reading/recording frequency	The survey of ICS users was done once this monitoring period in accordance with Approach 2, Option 1 of the Sampling Plan in the included CPA-DD.
Calculation method (if applicable)	<p>Monitoring the statistically adjusted drop off involves two steps:</p> <p>Step 1: Sample survey amongst Rural Wood Stove ICS deployed</p> <p>Step 2: Calculation of the adjusted drop off rate at 90% confidence level and 10% precision (annual inspections) using an estimated 95% from ICSEA's 2013 Monitoring Period. See sheet "Stove Usage sample size calc" in Appendix 1c of this Monitoring Report.</p> <p>The drop off fraction was determined through interviews during the household usage survey performed by the dedicated monitoring team and enumerators. All questionnaires and information gathered during the sampling were analysed and entered into the electronic drop off analysis database by Improved Cook Stoves for East Africa (ICSEA) Limited monitoring team.</p>
QA/QC procedures	Usage monitoring was performed by Improved Cook Stoves for East Africa (ICSEA) Limited following the sampling plan (see Section D)
Purpose of data/parameter	Emission reduction calculation
Additional comments	N/A

Data/Parameter	Adjustment factor for the continued use of traditional stoves
Unit	Fraction
Description	This accounts for the exclusion of the fuel wood consumption of baseline stoves from the ER calculation in accordance with Section B.6.1. of the included CPA-DD requiring a conservative approach to be taken regarding the replacement of traditional stoves (AMS-II.G. Version 03, clause 15).
Measured/calculated/default	Calculated. See the sheet "Baseline Stove Use" in Appendix 1c of this Monitoring Report.
Source of data	Usage survey
Value(s) of monitored parameter	99.99%
Monitoring equipment	N/A
Measuring/reading/recording frequency	Yearly
Calculation method (if applicable)	See the sheet "Baseline Stove Use" in Appendix 1c of this Monitoring Report.
QA/QC procedures	N/A
Purpose of data/parameter	Emission reduction calculation
Additional comments	N/A

7014-P1-0008-CP1 James Finlay Kenya CPA 1 (JFKKe01)

Data/Parameter	$\eta_{new,(i,j)}$
Unit	Fraction
Description	Efficiency of the ICS being deployed and maintained as part of the project activity.

Measured/calculated/default	Calculated from sampled ICS. See sheet "Efficiency sample calc – single age cohort" in Appendix 2c of this Monitoring Report
Source of data	Water Boiling Test (WBT) by Dr. Jacob Kithinji's laboratory at the University of Nairobi
Value(s) of monitored parameter	21.7%
Monitoring equipment	<p>Dr. Jacob Kithinji's Laboratory (located at the University of Nairobi)</p> <p><u>Weighing Balance</u>: Model: Top Loading Electronic Balance. Seiral Number: TLEB/D431. Calibrated every 12 months. Last calibration was in September 2019 valid through September 2020. This was done at a level of confidence of approximately 97% with an expanded uncertainty in accordance with EA-4/02 publication.</p> <p><u>Digital Thermometer</u>: Model: HANNA H1935005N. Serial Number: F0084883. Calibrated every 12 months. Last calibration was in September 2019 valid through September 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of $\pm 1.111^{\circ}\text{C}$.</p> <p><u>Moisture Meter</u>: Model: EXTECH M0210. Serial Number: D388-M020. Calibrated every 12 months. Last calibration was in September 2019 valid through September 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of $\pm 0.12\%$.</p>
Measuring/reading/recording frequency	Every two years
Calculation method (if applicable)	See sheet "Efficiency sample calc – single age cohort" in Appendix 2c of this Monitoring Report.
QA/QC procedures	N/A
Purpose of data/parameter	Baseline emission calculation
Additional comments	N/A

Data/Parameter	$f_{\text{NRB},y}$
Unit	Fraction
Description	Fraction of woody biomass saved by the project activity in the year y that can be established as non-renewable biomass.
Measured/calculated/default	Derived from historical data.
Source of data	Improving Efficiency in Forestry Operations and Forest Product Processing in Kenya: A Viable Redd+ Policy and Measure. ¹⁰
Value(s) of monitored parameter	92%
Monitoring equipment	N/A
Measuring/reading/recording frequency	Yearly
Calculation method (if applicable)	N/A
QA/QC procedures	N/A
Purpose of data/parameter	Baseline emission calculation
Additional comments	N/A

¹⁰ https://wedocs.unep.org/bitstream/handle/20.500.11822/23022/efficiency_forestry_kenya.pdf?sequence=1&isAllowed=y

Data/Parameter	$T_{\text{fraction},(i,j)}$
Unit	Fraction of 365
Description	Fraction of the days in use in year y of a single ICS deployed
Measured/calculated/default	Calculated. See sheet "JFK CER Calculation" in Appendix 2c of this Monitoring Report.
Source of data	Derived from stove records
Value(s) of monitored parameter	Variable, dependent on day ICS was first put into use (commissioning date) with respect to the monitoring period.
Monitoring equipment	Sales Agreement/Logbook sheets, Excel Database, and Household Usage Survey
Measuring/reading/recording frequency	Continuous monitoring and recording of each ICS sold. Sample surveys.
Calculation method (if applicable)	The SO keeps a paper and electronic record of the ICS data, and the ICS is considered to be in use from the commissioning date, which is the date on which the stove is put into use for the first time. The fraction of the number of days in use is calculated daily through the electronic database.
QA/QC procedures	<p>Sales records were scrutinised by the SO to avoid double counting and Improved Cook Stoves for East Africa (ICSEA) Limited also conducted spot-checks to verify the legitimacy of such records. On a monthly basis, the SO verified the ICSs that had been put into use based on the ICS sales during the month through telephone surveys and/or physical inspection and CME monitoring events.</p> <p>Sales records and survey results provided the commissioning date, which is the date on which the stove is put into use for the first time. That date is used as the start date for the computation of certified emission reductions for single ICS. Based on the analysis of the sales records and survey results a commissioning date 9 days after the sales date has been conservatively calculated and used for emission reduction calculation purposes.</p> <p>On a monthly basis, the SO has been sending triplicate copies of Sales Agreement/ Logbook sheets (ICSEA Copy) to Improved Cook Stoves for East Africa (ICSEA) Limited for verification of the data entered in the JFK Excel database.</p> <p>Telephone check and spot checks were used by Improved Cook Stoves for East Africa (ICSEA) Limited to review and authenticate the data in the Excel database.</p>
Purpose of data/parameter	Emission reduction calculation
Additional comments	N/A

Data/Parameter	$U_{(i,j)}$
Unit	Fraction
Description	The fraction by which emission reductions are multiplied to obtain an assessment adjusted for drop off of ICS in use per cohort year. A cohort is defined as the ICS model distributed or gone through maintenance in the same year.
Measured/calculated/default	Measured. See sheet "Stove Usage" in Appendix 2c of this Monitoring Report.
Source of data	Survey of ICS users for the total population using simple random sampling method.
Value(s) of monitored parameter	100%
Monitoring equipment	Household Usage Questionnaire

Measuring/reading/recording frequency	The survey of ICS users was done once in the first monitoring period in accordance with Approach 2, Option 1 of the Sampling Plan in the included CPA-DD.
Calculation method (if applicable)	<p>Monitoring the statistically adjusted drop off involves two steps:</p> <p>Step 1: Sample survey amongst Ecozoom Dura Wood ICS deployed</p> <p>Step 2: Calculation of the adjusted drop off rate at 90% confidence level and 10% precision (annual inspections) using an estimated 95% from ICSEA's 2013 Monitoring Period. See sheet "Stove Usage sample size calc" in Appendix 2c of this Monitoring Report.</p> <p>The drop off fraction was determined through interviews during the household usage survey performed by the dedicated monitoring team and enumerators. All questionnaires and information gathered during the sampling were analysed and entered into the electronic drop off analysis database by Improved Cook Stoves for East Africa (ICSEA) Limited monitoring team.</p>
QA/QC procedures	Usage monitoring was performed by Improved Cook Stoves for East Africa (ICSEA) Limited following the sampling plan (see Section D)
Purpose of data/parameter	Emission reduction calculation
Additional comments	N/A

Data/Parameter	Adjustment factor for the continued use of traditional stoves
Unit	Fraction
Description	This accounts for the exclusion of the fuel wood consumption of baseline stoves from the ER calculation in accordance with Section B.6.1. of the included CPA-DD requiring a conservative approach to be taken regarding the replacement of traditional stoves (AMS-II.G. Version 03, clause 15).
Measured/calculated/default	Calculated. See the sheet "Baseline Stove Use" in Appendix 2c of this Monitoring Report.
Source of data	Usage survey
Value(s) of monitored parameter	100%
Monitoring equipment	N/A
Measuring/reading/recording frequency	Yearly
Calculation method (if applicable)	See the sheet "Baseline Stove Use" in Appendix 2c of this Monitoring Report.
QA/QC procedures	N/A
Purpose of data/parameter	Emission reduction calculation
Additional comments	N/A

7014-P1-0009-CP1 Aid Africa Uganda CPA 1 (AAUg01)

Data/Parameter	$\eta_{\text{new},(i,j)}$
Unit	Fraction
Description	Efficiency of the ICS being deployed and maintained as part of the project activity.
Measured/calculated/default	Calculated from sampled ICS. See sheet "Efficiency sample calc – single age cohort" in Appendix 3c of this Monitoring Report
Source of data	Water Boiling Test (WBT) by CREEC laboratory
Value(s) of monitored parameter	30.4%

Monitoring equipment	<p>Centre for Research in Energy & Energy Conservation (CREEC) <u>Weighing Balance</u>: Model: Class III. ID: CRC/BL/012. Capacity: 30 kg by 0.001 kg. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of ± 0.001 kg.</p> <p><u>Weighing Balance</u>: Model: Class III. ID: CRC/BL/050. Capacity: 30 kg by 0.001 kg. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of ± 0.001 kg.</p> <p><u>Weighing Micro Balance</u>: Model: Citizen CX 265. ID: CRC/BL/065. Capacity: 220 g by 0.001 g. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of ± 0.003 g.</p> <p><u>Infrared Thermometer</u>: Model: TESTO 835-T2. Serial Number: IRT H01. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of $\pm 2.0^{\circ}\text{C}$.</p> <p><u>Digital Thermometer</u>: Model: TME 2030. Serial Number: THERM01. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of $\pm 2.0^{\circ}\text{C}$.</p> <p><u>Moisture Meter</u>: Model: TESTO 606-2. Serial Number: CRCMB002. Calibrated every 12 months. Last calibration was in February 2019 valid through February 2020. This was done at a level of confidence of approximately 95% with an expanded uncertainty of $\pm 0.5\%$.</p>
Measuring/reading/recording frequency	Biennial
Calculation method (if applicable)	See sheet "Efficiency sample calc – single age cohort" in Appendix 3c of this Monitoring Report.
QA/QC procedures	NA
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	N/A

Data/Parameter	f_{NRB,y}
Unit	Fraction
Description	Fraction of woody biomass saved by the project activity in the year y that can be established as non-renewable biomass.
Measured/calculated/default	Derived from the latest approved standardized baseline
Source of data	ASB0002-2017 Standardized baseline Fuel switch, technology switch and/or methane destruction in the charcoal sector of Uganda Version 01.0 ¹¹
Value(s) of monitored parameter	88%
Monitoring equipment	N/A
Measuring/reading/recording frequency	Annual

¹¹ https://cdm.unfccc.int/filestorage/e/x/t/extfile-20171103152130273-EB97_repan02_AS0002_2017_Charcoal_Uganda.pdf/EB97_repan02_AS0002_2017_Charcoal_Uganda.pdf?t=enh8cTE5YTkWfDDII DntNnFH06hzS0lWh0CB

Calculation method (if applicable)	N/A
QA/QC procedures	N/A
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	As per the approved standardized baseline.

Data/Parameter	$t_{\text{fraction},(i,j)}$
Unit	Fraction of 365
Description	Fraction of the days in use in year y of a single ICS deployed
Measured/calculated/default	Calculated. See sheet "Aid Africa CER Calculation" in Appendix 3c of this Monitoring Report.
Source of data	Derived from stove records
Value(s) of monitored parameter	Variable, dependent on day ICS was first put into use (commissioning date) with respect to the monitoring period.
Monitoring equipment	Sales Agreement/Logbook sheets, Excel Database, and Household Usage Survey
Measuring/reading/recording frequency	Continuous monitoring and recording of each ICS distributed. Sample surveys.
Calculation method (if applicable)	The SO keeps a paper and electronic record of the ICS data, and the ICS is considered to be in use from the commissioning date, which is the date on which the stove is put into use for the first time. The fraction of the number of days in use is calculated daily through the electronic database.
QA/QC procedures	<p>Sales records were scrutinised by the SO to avoid double counting and Improved Cook Stoves for East Africa (ICSEA) Limited also conducted spot-checks to verify the legitimacy of such records. On a monthly basis, the SO verified the ICSs that had been put into use based on the ICS sales during the month through telephone surveys and/or physical inspection and CME monitoring events.</p> <p>Sales records and survey results provided the commissioning date, which is the date on which the stove is put into use for the first time. That date is used as the start date for the computation of certified emission reductions for single ICS. Based on the analysis of the sales records and survey results a commissioning date 9 days after the sales date has been conservatively calculated and used for emission reduction calculation purposes.</p> <p>On a monthly basis, the SO has been sending a copy of the Sales Agreement/ Logbook sheet (ICSEA Copy) to Improved Cook Stoves for East Africa (ICSEA) Limited for verification of the data entered in the Aid Africa Excel database.</p> <p>Telephone checks and spot checks were used by Improved Cook Stoves for East Africa (ICSEA) Limited to review and authenticate the data in the Excel database.</p>
Purpose of data/parameter	Emission reduction calculation
Additional comments	N/A

Data/Parameter	$U_{(i,j)}$
Unit	Fraction
Description	The fraction by which emission reductions are multiplied to obtain an assessment adjusted for drop off of ICS in use per cohort year. A cohort is defined as the ICS model distributed or gone through maintenance in the same year.

Measured/calculated/default	Measured. See sheet "Stove Usage" in Appendix 3c of this Monitoring Report.
Source of data	Survey of ICS users for the total population using simple random sampling method.
Value(s) of monitored parameter	100%
Monitoring equipment	Household Usage Questionnaire
Measuring/reading/recording frequency	The survey of ICS users was done once in the first monitoring period in accordance with Approach 2, Option 1 of the Sampling Plan in the included CPA-DD.
Calculation method (if applicable)	<p>Monitoring the statistically adjusted drop off involves two steps:</p> <p>Step 1: Sample survey amongst Aid Africa 6-Brick Wood ICS deployed</p> <p>Step 2: Calculation of the adjusted drop off rate at 90% confidence level and 10% precision (annual inspections) using an estimated 95% from ICSEA's 2013 Monitoring Period. See sheet "Stove Usage sample size calc" in Appendix 3c of this Monitoring Report.</p> <p>The drop off fraction was determined through interviews during the household usage survey performed by the dedicated monitoring team and enumerators. All questionnaires and information gathered during the sampling were analysed and entered into the electronic drop off analysis database by Improved Cook Stoves for East Africa (ICSEA) Limited monitoring team.</p>
QA/QC procedures	Usage monitoring was performed by Improved Cook Stoves for East Africa (ICSEA) Limited following the sampling plan (see Section D.5.2)
Purpose of data/parameter	Calculation of leakage emissions
Additional comments	N/A

Data/Parameter	Adjustment factor for the continued use of traditional stoves
Unit	Fraction
Description	This accounts for the exclusion of the fuel wood consumption of baseline stoves from the ER calculation in accordance with Section B.6.1. of the included CPA-DD requiring a conservative approach to be taken regarding the replacement of traditional stoves (AMS-II.G. Version 03, clause 15).
Measured/calculated/default	Calculated. See the sheet "Baseline Stove Use" in Appendix 3c of this Monitoring Report.
Source of data	Usage survey
Value(s) of monitored parameter	98.17%
Monitoring equipment	N/A
Measuring/reading/recording frequency	Yearly
Calculation method (if applicable)	See the sheet "Baseline Stove Use" in Appendix 3c of this Monitoring Report.
QA/QC procedures	N/A
Purpose of data/parameter	Calculation of leakage emissions
Additional comments	N/A

E.3. Implementation of sampling plan

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7014-P1-0007-CP1 RDIS Rwanda CPA 1 (RDISRw01)

(a) Description of implemented sampling design

Improved Cook Stoves for East Africa (ICSEA) Limited chose in advance a sampling approach for its drop off check and efficiency check.(see Section C.3 (Sample Surveys) in which Option 1 was chosen by Improved Cook Stoves for East Africa (ICSEA) Limited). This was based on the estimated monitoring costs and the CPA's existing monitoring/tracking system in Rwanda. This was in compliance with the plans contained in the PoA-DD and CPA DD by using simple random sampling based on 90/10 confidence/precision, and in conformity with the sampling plan. The minimum sample sizes for the different scenarios required to meet the confidence and precision requirements were calculated in a sample size computation spreadsheet using the usage figure of 95% from ICSEA's 2013 Monitoring Period.

The overall objective was to estimate the emission reductions during a 24-month period in tCO₂ during the crediting period, and with 90/10 confidence/precision, and to estimate the mean thermal efficiency of the Rural Wood ICS with 90/10 confidence/precision.

Simple random sampling was used. The target population was the 4,599 Rural Wood ICS distributed by the SO in Muhanga, Nyamagabe, Rusizi and Gisagara districts of Rwanda, from its project start date on 14/06/2017 until the end of this Monitoring Period on 16/05/2019.

The required sample size for the stove usage survey was determined using the equation in the PoA-DD for estimating the sample size:

$$n \geq \frac{1.645^2 NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

where $V = \frac{p(1-p)}{p^2}$ and p is the expected proportion

n	Sample size
N	Population total
p	Our expected proportion
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

The values used (see "Stove Usage Sample Calc" in Appendix 1c of this Monitoring Report) were:

n	17.4 (an adjusted sample size of 18 was used according to expected response rate)
N	4,599
p	95% (derived from the ICSEA 2013 Monitoring Period Usage figure)
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

A total of 150 stove serial numbers were generated for the stove usage survey using simple random sampling with the aid of a computerised randomiser.

The monitoring team made telephone calls to the registered owners of the randomly selected stoves in the order generated by the randomiser. A total of 18 owners were telephoned after three attempts, and all 18 were contacted (an adjusted over-sample size of 18 was used according to the expected response rate – see above).

A questionnaire with 31 questions was administered to the 18 stove users where the Rural Wood ICS were located. The purpose of the survey was to support the monitoring of parameters in accordance with the registered PoA-DD and GS PDD, namely:

1. Improved stove usage – location, serial number confirmation, current usage
2. Usage of original (baseline) stove(s) – frequency and extent of use and purpose
3. Household family size
4. Adjustment for continued use of baseline stoves
5. Instructions regarding, and practice of, disposal of original stove(s)
6. Household fuel usage and expenditure changes
7. Changes in distance for collection of firewood
8. Perception of air quality changes

The selection of questions for the questionnaire was undertaken having in mind the purpose of the survey. In all cases stoves were found in use in domestic households, and no commercial uses of the stove were found.

The sheet “Usage Sample Size Calc” in Appendix 1c of this Monitoring Report was used.

The required sample size for the stove **efficiency check survey** was determined using the equation in the PoA-DD for estimating the sample size in a single age cohort since all stoves that were in use for over 12 months had been maintained by the SO. Estimating the sample size was in accordance with standard statistical practice in conformity with EB 74-A06 version 4 para 12(b) – “using the project planner’s knowledge and experience”, whereby an initial estimate of the Standard Deviation based upon Improved Cook Stoves for East Africa (ICSEA) Limited’s prior knowledge from the testing of 1 and 2-year old Okelo Kuc charcoal stoves in the ICSEA 2013 Monitoring Period. Based on 4 stoves per cohort taking into account the uniform quality of the stoves manufactured in the ILF factory conforming to set design specifications confirmed in the tight thermal efficiency results in the initial Okelo Kuc Rating Test (as opposed to variable quality stoves made by artisans), and used in a single District where cooking practices are uniform.

The stoves were chosen at random by Improved Cook Stoves for East Africa (ICSEA) Limited in accordance with normal statistical best practice from stoves tested at accredited laboratories, see the respective estimates and references in sheets “Efficiency sample calc – single age cohort” in Appendix 1c of this Monitoring Report.

$$n \geq \frac{1.645^2 NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

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

n	Sample size
N	Total number of ICS in use
Mean	Our expected efficiency mean
SD	Our expected standard deviation
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

The values used (see sheet “Efficiency sample calc – single age cohort” in Appendix 1c of this Monitoring Report) were:

n 1 (an adjusted sample size of 11 was used)
 N 4,599
 Mean 28.6%
 SD 1.51
 1.645 Represents the 90% confidence require
 0.1 Represents the 10% relative precision

A total of 150 stove serial numbers were generated for the whole population of stoves since all stoves that had been in use for over 12 months each received maintenance to bring them to as good as new condition. These 150 stove serial numbers that were randomly generated were to carry out the stove efficiency check, using simple random sampling with the aid of a computerised randomiser. An over-sampling approach was used to help maximise the response rate for any possible outliers. The sample size was determined using a sample size model and data from the first 11 stoves that were randomly selected. The sheets “Efficiency Sample Calc – 1 age cohort” in Appendix 1c of this Monitoring Report shows how.

For the sampling of the ICS for efficiency check survey, the monitoring team made telephone calls to the registered owners of the randomly selected stoves in the order generated by the randomiser. A total of 11 owners were telephoned and contacted after three attempts. The 11 ICS (a deliberate over sample of 10 to provide for any contingency), all of which were in daily use, were tested by CREEC in the laboratory, and new stoves were provided for the households to use while testing was taking place.

In all cases stoves were found in use in domestic households, and no commercial uses of the stove were found.

(b) Collected data (electronic spreadsheets may be attached and referenced)

The primary means of monitoring the CPA’s activities is by means of stove user information collected through Sales Agreements/Logbook sheets and the unique numbering of each Rural Wood ICS. The sales data was stored in the CPA’s Excel database.

(c) Analysis of the collected data

Parameter	n*	Value**	Standard Deviation***	Confidence	Precision	Lower bound applicable?
η_{new}	11	28.6%	1.51	90%	10%	Yes
U	18	99.99%	N/A	90%	10%	No

* valid responses

** from laboratory tests and usage survey. Refer to sheets “Efficiency tests – 1 age cohort” and “Stove Usage” in the spreadsheet “RDIS CER Calculation” (Appendix 1c).

*** from laboratory tests. Refer to sheet “Efficiency test – 1 age cohort” in the spreadsheet “RDIS CER Calculation” (Appendix 1c).

(d) Demonstration on whether the required confidence/precision has been met

In the stove usage survey and the stove efficiency testing, the minimum sample sizes required to achieve the 90/10 confidence/precision requirement were met.

The required confidence/precision for both the efficiency and the drop off checks were met.

7014-P1-0008-CP1 James Finlay Kenya CPA 1 (JFKKe01)

(a) Description of implemented sampling design

Improved Cook Stoves for East Africa (ICSEA) Limited chose in advance a sampling approach for its drop off check and efficiency check.(see Section C.3 (Sample Surveys) in which Option 1 was chosen by Improved Cook Stoves for East Africa (ICSEA) Limited). This was based on the estimated monitoring costs and the CPA’s existing monitoring/tracking system on the JFK Estates in Kenya. This was in compliance with the plans contained in the PoA-DD and CPA DD by using simple random sampling based on 90/10

confidence/precision, and in conformity with the sampling plan. The minimum sample sizes for the different scenarios required to meet the confidence and precision requirements were calculated in a sample size computation spreadsheet using the usage figure of 95% from ICSEA's 2013 Monitoring Period.

The overall objective was to estimate the emission reductions during a 24-month period in tCO₂ during the crediting period, and with 90/10 confidence/precision, and to estimate the mean thermal efficiency of the Ecozoom Dura Wood ICS with 90/10 confidence/precision.

Simple random sampling was used. The target population was the 1,941 Ecozoom Dura Wood ICS distributed by the SO in Kericho and Bomet counties of Kenya, from its project start date on 01/11/2016 until the end of this Monitoring Period on 16/05/2019.

The required sample size for the stove usage survey was determined using the equation in the PoA DD for estimating the sample size:

$$n \geq \frac{1.645^2 NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

where $V = \frac{p(1-p)}{p^2}$ and p is the expected proportion

n	Sample size
N	Population total
p	Our expected proportion
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

The values used (see "Stove Usage Sample Calc" in Appendix 2c of this Monitoring Report) were:

n	17.4 (an adjusted sample size of 18 was used according to expected response rate)
N	1,941
p	95% (derived from the ICSEA 2013 Monitoring Period Usage figure)
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

A total of 150 stove serial numbers were generated for the stove usage survey using simple random sampling with the aid of a computerised randomiser.

The monitoring team made telephone calls to the registered owners of the randomly selected stoves in the order generated by the randomiser. A total of 18 owners were telephoned after three attempts on separate days and all 18 were contacted (an adjusted over-sample size of 18 was used according to the expected response rate – see above).

A questionnaire with 31 questions was administered to the 18 stove users where the Ecozoom Dura Wood ICS were located. The purpose of the survey was to support the monitoring of parameters in accordance with the registered PoA-DD and GS PDD, namely:

1. Improved stove usage – location, serial number confirmation, current usage
2. Usage of original (baseline) stove(s) – frequency and extent of use and purpose
3. Household family size
4. Adjustment for continued use of baseline stoves
5. Instructions regarding, and practice of, disposal of original stove(s)

6. Household fuel usage and expenditure changes
7. Changes in distance for collection of firewood
8. Perception of air quality changes

The selection of questions for the questionnaire was undertaken having in mind the purpose of the survey. In all cases stoves were found in use in domestic households, and no commercial uses of the stove were found.

The sheet “Usage Sample Size Calc” in Appendix 2c of this Monitoring Report was used.

The required sample size for the stove **efficiency check survey** was determined using the equation in the PoA-DD for estimating the sample size in a single age cohort since all stoves that were in use for over 12 months had been maintained by the SO. Estimating the sample size was in accordance with standard statistical practice in conformity with EB 74-A06 version 4 para 12(b) – “using the project planner’s knowledge and experience”, whereby an initial estimate of the Standard Deviation based upon Improved Cook Stoves for East Africa (ICSEA) Limited’s prior knowledge from the testing of 1 and 2-year old Okelo Kuc charcoal stoves in the ICSEA 2013 Monitoring Period. Based on 4 stoves per cohort taking into account the uniform quality of the stoves manufactured in the ILF factory conforming to set design specifications confirmed in the tight thermal efficiency results in the initial Okelo Kuc Rating Test (as opposed to variable quality stoves made by artisans), and used in a single District where cooking practices are uniform.

The stoves were chosen at random by Improved Cook Stoves for East Africa (ICSEA) Limited in accordance with normal statistical best practice from stoves tested at accredited laboratories, see the respective estimates and references in sheets “Efficiency sample calc – single age cohort” in Appendix 2c of this Monitoring Report.

$$n \approx \frac{1.645^2 NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

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

n	Sample size
N	Total number of ICS in use
Mean	Our expected efficiency mean
SD	Our expected standard deviation
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

The values used (see sheet “Efficiency sample calc – single age cohort” in Appendix 2c of this Monitoring Report) were:

n	2 (an adjusted sample size of 11 was used)
N	1,941
Mean	21.7%
SD	1.60
1.645	Represents the 90% confidence require
0.1	Represents the 10% relative precision

A total of 150 stove serial numbers were generated for the whole population of stoves since all stoves that had been in use for over 12 months each received maintenance to bring them to as good as new condition. These 150 stove serial numbers that were randomly generated were to carry out the stove efficiency check, using simple random sampling with the aid of a computerised randomiser. An over-sampling approach was

used to help maximise the response rate for any possible outliers. The sample size was determined using a sample size model and data from the first 11 stoves that were randomly selected. The sheets “Efficiency Sample Calc – 1 age cohort” in Appendix 2c of this Monitoring Report shows how.

For the sampling of the ICS for efficiency check survey, the monitoring team made telephone calls to the registered owners of the randomly selected stoves in the order generated by the randomiser. A total of 11 owners were telephoned and contacted after three attempts on separate days. The 11 ICS (a deliberate over sample of 9 to provide for any contingency), all of which were in daily use, were tested *in-situ* by Dr. Jacob Kithinji’s Laboratory at the University of Nairobi, at the individual households.

In all cases stoves were found in use in domestic households, and no commercial uses of the stove were found.

(b) Collected data (electronic spreadsheets may be attached and referenced)

The primary means of monitoring the CPA’s activities is by means of stove user information collected through Sales Agreements/Logbook sheets and the unique numbering of each Ecozoom Dura Wood ICS. The sales data was stored in the CPA’s Excel database.

(c) Analysis of the collected data

Parameter	n*	Value**	Standard Deviation***	Confidence	Precision	Lower bound applicable?
η_{new}	11	21.7%	1.60	90%	10%	Yes
U	18	100%	N/A	90%	10%	No

* valid responses

** from laboratory tests and usage survey. Refer to sheets “Efficiency tests – 1 age cohort” and “Stove Usage” in the spreadsheet “JFK CER Calculation”.

*** from laboratory tests. Refer to sheet “Efficiency test – 1 age cohort” in the spreadsheet “JFK CER Calculation”.

(d) Demonstration on whether the required confidence/precision has been met

In the stove usage survey and the stove efficiency testing, the minimum sample sizes required to achieve the 90/10 confidence/precision requirement were met.

The required confidence/precision for both the efficiency and the drop off checks were met.

7014-P1-0009-CP1 Aid Africa Uganda CPA 1 (AAUg01)

(a) Description of implemented sampling design

Improved Cook Stoves for East Africa (ICSEA) Limited chose in advance a sampling approach for its drop off check and efficiency check. (see Section C.3 (Sample Surveys) in which Option 1 was chosen by Improved Cook Stoves for East Africa (ICSEA) Limited). This was based on the estimated monitoring costs and the CPA’s existing monitoring/tracking system in Northern Uganda. This was in compliance with the plans contained in the PoA-DD and CPA-DD by using simple random sampling based on 90/10 confidence/precision, and in conformity with the sampling plan. The minimum sample sizes for the different scenarios required to meet the confidence and precision requirements were calculated in a sample size computation spreadsheet using the usage figure of 95% from ICSEA’s 2013 Monitoring Period.

The overall objective was to estimate the emission reductions during a 24-month period in tCO₂ during the crediting period, and with 90/10 confidence/precision, and to estimate the mean thermal efficiency of the Aid Africa 6-Brick Wood ICS with 90/10 confidence/precision.

Simple random sampling was used. The target population was the 4,610 Aid Africa 6-Brick Wood ICS distributed by the SO in Gulu, Omoro, Amuru and Nwoya districts of Northern Uganda, from its project start date on 01/02/2017 until the end of this Monitoring Period on 16/05/2019.

The required sample size for the stove usage survey was determined using the equation in the PoA-DD for estimating the sample size:

$$n \geq \frac{1.645^2 NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

where $V = \frac{p(1-p)}{p^2}$ and p is the expected proportion

n	Sample size
N	Population total
p	Our expected proportion
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

The values used (see “Stove Usage Sample Calc” in Appendix 3c of this Monitoring Report) were:

n	17.4 (an adjusted sample size of 18 was used according to expected response rate)
N	4,610
p	95% (derived from the ICSEA 2013 Monitoring Period Usage figure)
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

A total of 150 stove serial numbers were generated for the stove usage survey using simple random sampling with the aid of a computerised randomiser.

The monitoring team made telephone calls to the registered owners of the randomly selected stoves in the order generated by the randomiser. A total of 18 owners were telephoned, and after three attempts all 18 were contacted (an adjusted over-sample size of 18 was used according to the expected response rate – see above).

A questionnaire with 31 questions was administered to the 18 stove users where the Aid Africa 6-Brick Wood ICS were located. The purpose of the survey was to support the monitoring of parameters in accordance with the registered PoA-DD and GS PDD, namely:

1. Improved stove usage – location, serial number confirmation, current usage
2. Usage of original (baseline) stove(s) – frequency and extent of use and purpose
3. Household family size
4. Adjustment for continued use of baseline stoves
5. Instructions regarding, and practice of, disposal of original stove(s)
6. Household fuel usage and expenditure changes
7. Changes in distance for collection of firewood
8. Perception of air quality changes

The selection of questions for the questionnaire was undertaken having in mind the purpose of the survey. In all cases stoves were found in use in domestic households, and no commercial uses of the stove were found.

The sheet “Usage Sample Size Calc” in Appendix 3c of this Monitoring Report was used.

The required sample size for the stove **efficiency check survey** was determined using the equation in the PoA-DD for estimating the sample size in a single age cohort since all stoves that were in use for over 12 months had been maintained by the SO. Estimating the sample size was in accordance with standard statistical practice in conformity with EB 74-A06 version 4 para 12(b) – “using the project planner’s knowledge and experience”, whereby an initial estimate of the Standard Deviation based upon Improved Cook Stoves for East Africa (ICSEA) Limited’s prior knowledge from the testing of 1 and 2-year old Okelo Kuc charcoal stoves in the ICSEA 2013 Monitoring Period. Based on 4 stoves per cohort taking into account the uniform quality of the stoves manufactured in the ILF factory conforming to set design specifications confirmed in the tight thermal efficiency results in the initial Okelo Kuc Rating Test (as opposed to variable quality stoves made by artisans), and used in a single District where cooking practices are uniform.

The stoves were chosen at random by Improved Cook Stoves for East Africa (ICSEA) Limited in accordance with normal statistical best practice from stoves tested at accredited laboratories, see the respective estimates and references in sheets “Efficiency sample calc – single age cohort” in Appendix 3c of this Monitoring Report.

$$n \approx \frac{1.645^2 NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

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

n	Sample size
N	Total number of ICS in use
Mean	Our expected efficiency mean
SD	Our expected standard deviation
1.645	Represents the 90% confidence required
0.1	Represents the 10% relative precision

The values used (see sheet “Efficiency sample calc – single age cohort” in Appendix 3c of this Monitoring Report) were:

n	1 (an adjusted sample size of 11 was used)
N	4,610
Mean	30.4%
SD	2.96
1.645	Represents the 90% confidence require
0.1	Represents the 10% relative precision

A total of 150 stove serial numbers were generated for the whole population of stoves since all stoves that had been in use for over 12 months each received maintenance to bring them to as good as new condition. These 150 stove serial numbers that were randomly generated were to carry out the stove efficiency check, using simple random sampling with the aid of a computerised randomiser.

An over-sampling approach was used to help maximise the response rate for any possible outliers. The sample size was determined using a sample size model and data from the first 11 stoves that were randomly selected. The sheets “Efficiency Sample Calc – 1 age cohort” in Appendix 3c of this Monitoring Report shows how.

For the sampling of the ICS for efficiency check survey, the monitoring team made telephone calls to the registered owners of the randomly selected stoves in the order generated by the randomiser. A total of 11 owners were telephoned and were successfully contacted after three attempts. The 11 ICS (a deliberate over sample of 10 to provide for any contingency), all of which were in daily use, were tested *in-situ* by CREEC at the individual households, and new stoves of a different model were provided for the households to use while testing was taking place.

In all cases stoves were found in use in domestic households, and no commercial uses of the stove were found.

(b) Collected data (electronic spreadsheets may be attached and referenced)

The primary means of monitoring the CPA's activities is by means of stove user information collected through Sales Agreements/Logbook sheets and the unique numbering of each Aid Africa 6-Brick Wood ICS. The sales data was stored in the CPA's Excel database.

(c) Analysis of the collected data

Parameter	n*	Value**	Standard Deviation***	Confidence	Precision	Lower bound applicable?
η_{new}	11	30.4%	2.96	90%	10%	Yes
U	18	99%	N/A	90%	10%	No

* valid responses

** from laboratory tests and usage survey. Refer to sheets "Efficiency tests – 1 age cohort" and "Stove Usage" in the spreadsheet "Aid Africa CER Calculation".

*** from laboratory tests. Refer to sheet "Efficiency test – 1 age cohort" in the spreadsheet "Aid Africa CER Calculation".

(d) Demonstration on whether the required confidence/precision has been met

In the stove usage survey and the stove efficiency testing, the minimum sample sizes required to achieve the 90/10 confidence/precision requirement were met.

The required confidence/precision for both the efficiency and the drop off checks were met.

SECTION F. Calculation of emission reductions or net anthropogenic removals

F.1. Calculation of baseline emissions or baseline net removals

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Equations used for the calculation of emission reductions, in line with AMS-II.G Version 03:

Equation 1) ER_y is calculated as follows:

$$ER_y = B_{y,savings} * f_{NRB,y} * NCV_{biomass} * EF_{\text{projected-fossilfuel}}$$

Where:

$ER_{\text{monitoring period}}$ Emission reductions during the monitoring period in tCO₂e

$B_{y,savings}$ Quantity of woody biomass that is saved in tonnes

$f_{NRB,y}$ Fraction of non-renewable biomass

$NCV_{biomass}$ Net calorific value of the non-renewable woody biomass that is substituted. The IPCC default for wood fuel, 0.015 TJ/tonne is applied

$EF_{\text{projected-fossilfuel}}$ Emission factor for the substitution of non-renewable woody biomass by similar consumers. As per methodology, a value of 81.6 tCO₂/TJ is employed.

Equation 2) $B_{y,savings,(i,j)}$ compares the efficiency of the baseline stove against the efficiency of the ICS deployed and is calculated per model and cohort of ICS as the savings directly depend on the efficiencies of each model and cohort of ICS, as follows:

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

Where:

i	Model of ICS
j	Cohort for each model of ICS. A cohort is defined as the ICS model sold or gone through maintenance in the same monitoring period
$B_{y,savings}$	Quantity of woody biomass that is saved in tonnes per model and cohort of ICS
$B_{old,(i,j)}$	Quantity of woody biomass used in the absence of the project activity in tonnes per model and cohort of ICS

$\eta_{old,(i,j)}$ Efficiency of the baseline systems being replaced, measured using representative sampling methods or based on referenced literature values (fraction), use weighted average values if more than one type of system is being replaced. A default value of 10% was used because the replaced systems were three stone fires, or conventional systems with no improved combustion air supply or flue gas ventilation systems (i.e without a grate as well as a chimney; for other types of systems).

$\eta_{new,(i,j)}$ Efficiency of the systems being deployed as determined using the Water Boiling Test (WBT) protocol. Measured using weighted average values if more than one type of system is being introduced by the project activity.

Equation 3) $B_{old,(i,j)}$ is calculated as the product of the number of systems multiplied by the estimated average annual consumption of woody biomass per appliance (tonnes/year), as follows:

$$B_{old} = N * C_{y,fueltype,region,old} * L$$

Where:

$N_{(i,j)}$	Number of systems per cohort and ICS model
$C_{y,fueltype,region,old}$	Estimate of average annual consumption of woody biomass per appliance (tonnes/year) derived from a survey of local usage
$L_{(i,j)}$	Leakage, the fraction by which emission reductions are multiplied to obtain an assessment adjusted for leakage risks

Equation 4) $N_{(i,j)}$ is determined as the fraction of days in a year in use for each ICS of the same model and cohort, by the fraction of these ICS to be still in use per cohort and ICS model, as follows:

$$N = U * t_{fraction}$$

Where:

$U_{(i,j)}$	Usage, the fraction to adjust for drop off of ICS per cohort and ICS model
$t_{fraction,y,(i,j)}$	Fraction of the days in use in monitoring period of a single ICS deployed per cohort and ICS model

Equation 5) The total number of emission reductions achieved in each CPA is calculated as the sum of the emission reductions achieved by all ICS of a single cohort and model, multiplied by the applied weighted factor for continued use of the baseline, as follows:

$$ER_{total} = ER_{all\ ICS} * U_{Adjustment\ for\ continued\ use\ of\ baseline\ stoves}$$

Where:

$ER_{y,(i,j)}$	Sum of the emission reductions achieved by all ICS of a single cohort (all stoves that were in use for over 12 months were maintained to as good as new condition) and single model
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$U_{Adjustment\ for\ continued\ use\ of\ baseline\ stoves}$ Applied weighted factor for continued use of the baseline, calculated from responses of a sample of 18 households who participated in the household usage survey.

<p>RDIS Rwanda CPA 1 $ER_{4,599\text{ ICS}} = 5,676 * 99.99\% = 5,675\text{ tCO}_2\text{e}$</p>
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<p>James Finlay Kenya CPA 1 $ER_{1,941\text{ ICS, (AMS-II.G)}} = 3,690\text{ tCO}_2\text{e}$</p>

<p>Aid Africa Uganda CPA 1 $ER_{4,610\text{ ICS}} = 9,692 * 98.17\% = 9,515\text{ tCO}_2\text{e}$</p>
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Equations used for the calculation of emission reductions, in line with AMS-I.E Version 06:

Equation 1) $ER_{y, (AMS-I.E)}$ is calculated as follows:

$$ER_{y, (AMS-I.E)} = B_y * f_{NRB, y} * NCV_{biomass} * EF_{projected-fossilfuel} * L * PE$$

Where:

$ER_{monitoring\ period}$ Emission reductions during the monitoring period in tCO₂e

B_y Quantity of woody biomass that is substituted or displaced in tonnes

$f_{NRB, y}$ Fraction of non-renewable biomass used in the absence of the project activity in the monitoring period that can be established as non-renewable biomass using survey methods or government data or approved default country-specific values on the CDM website.

$NCV_{biomass}$ Net calorific value of the non-renewable woody biomass that is substituted. The IPCC default for wood fuel, 0.015 TJ/tonne is applied

$EF_{projected-fossilfuel}$ Emission factor for the substitution of non-renewable woody biomass by similar consumers. As per methodology, a value of 81.6 tCO₂/TJ is employed

$L_{(i,j)}$ Leakage, the fraction by which emission reductions are multiplied to obtain an assessment adjusted for leakage risks

$PE_{BC, y}$ Project emissions due to cultivation of biomass

Equation 2) $B_{y, (i,j)}$ is calculated as the product of the number of appliances multiplied by the estimate of average annual consumption of woody biomass per appliance (tonnes/year). This was derived from historical data, as follows:

$$B_{y, (i,j)} = N_{AMS-I.E} * (B_{old} - B_{y, savings})$$

Where:

i Model of ICS

j Cohort for each model of ICS. A cohort is defined as the ICS model sold or gone through maintenance in the same monitoring period

B_y Quantity of woody biomass that is substituted or displaced in tonnes

$N_{AMS-I.E}$ Number of appliances using renewable biomass

B_{old} Quantity of woody biomass used in the absence of the project activity in tonnes

$B_{y, savings}$ Quantity of woody biomass that is saved in tonnes

Equation 3) $N_{AMS-I.E}$ is calculated as the fraction of ICS to be still using renewable biomass, multiplied by the fraction of days in a year that each ICS used renewable biomass fuel, as follows:

$$N_{AMS-I.E.} = U_{(i,j),AMS-I.E.} * t_{fraction,(i,j),AMS-I.E.}$$

Where:

$N_{AMS-I.E.}$ Number of systems per cohort and ICS model using renewable biomass fuel

$U_{(i,j),AMS-I.E.}$ Usage, the fraction to adjust for drop off of ICS per cohort and ICS model using renewable biomass fuel

$t_{fraction,(i,j),AMS-I.E.}$ Fraction of the days in use in the monitoring period of a single ICS deployed per cohort and ICS model that used renewable biomass fuel

James Finlay Kenya CPA 1 $ER_{1,941 \text{ ICS},(AMS-I.E)} = 2,927 \text{ tCO}_2\text{e}$

Equation 4) The total number of emission reductions achieved in the James Finlay Kenya CPA 1 (JFKKe01) is calculated as the sum of the emission reductions achieved by all 1,941 ICS of a single cohort and model, plus the sum of the emission reductions achieved by all the 1,941 ICS of a single cohort and model using renewable biomass fuel, multiplied by the applied weighted factor for continued use of the baseline (1.000), as follows:

$$ER_{total} = (ER_{AMS-II.G} + ER_{AMS-II.G})_{1,941 \text{ stoves}} * U_{\text{Adjustment for continued use of baseline stoves}}$$

Where:

$ER_{(i,j),AMS-II.G}$ Sum of the emission reductions achieved by all 1,941 ICS of a single cohort (all stoves that were in use for over 12 months were maintained to as good as new condition) and single model (Ecozoom Dura Wood Stove)

$ER_{(i,j),AMS-I.E.}$ Sum of the emission reductions achieved by all 1,941 ICS of a single cohort (all stoves that were in use for over 12 months were maintained to as good as new condition) and single model (Ecozoom Dura Wood Stove), using renewable biomass fuel

$U_{\text{Adjustment for continued use of baseline stoves}}$ Applied weighted factor for continued use of the baseline (100%), calculated from responses of a sample of 18 households who participated in the household usage survey.

James Finlay Kenya CPA 1 $ER_{1,941 \text{ ICS}} = (3,690 \text{ tCO}_2\text{e} + 2,927 \text{ tCO}_2\text{e}) * 100\% = 6,617 \text{ tCO}_2\text{e}$

James Finlay Kenya CPA 1 $ER_{1,941 \text{ ICS, discounted}} = 6,617 \text{ tCO}_2\text{e} * 45\%$ (discounted for only 5 out of 11 ICS found to be still "improved") $= 2,978 \text{ tCO}_2\text{e}$

F.2. Calculation of project emissions or actual net removals

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Not applicable, as methodology AMS-II.G. Version 03 does not consider project emissions or actual net removals.

F.3. Calculation of leakage emissions

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Leakage Adjustment Factor $L_{(i,j)}$ as per the methodology is applied to the project activity to calculate the Emission Reductions for this Monitoring Period.

In accordance with AMS-II.G Version 03 clause 23, a default value of 95% has been used. See the Values table in Section F.4.

F.4. Calculation of emission reductions or net anthropogenic removals

CPA UNFCCC reference number	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)		
				Before 01/01/2013	From 01/01/2013	Total amount
7014-P1-0009-CP1	9,515 tCO ₂ e	0	Not applicable	0	9,515 tCO ₂ e	9,515 tCO ₂ e
7014-P1-0008-CP1	2,978 tCO ₂ e	0	Not applicable	0	2,978 tCO ₂ e	2,978 tCO ₂ e
7014-P1-0007-CP1	5,675 tCO ₂ e	0	Not applicable	0	5,675 tCO ₂ e	5,675 tCO ₂ e
Total	18,168 tCO₂e	0	Not applicable	0	18,168 tCO₂e	18,168 tCO₂e

F.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the included CPA-DDs

CPA UNFCCC reference number	Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante for this monitoring period in the CPA-DD (t CO ₂ e)
7014-P1-0009-CP1	9,515 tCO ₂ e	11,482 tCO ₂ e
7014-P1-0008-CP1	2,978 tCO ₂ e	17,825 tCO ₂ e
7014-P1-0007-CP1	5,675 tCO ₂ e	5,207 tCO ₂ e
7014-P1-0006-CP1	0	0
7014-P1-0005-CP1	0	0
7014-P1-0004-CP1	0	0
7014-P1-0003-CP1	0	0
7014-P1-0002-CP1	0	0
7014-P1-0001-CP1	0	0
Total	18,168 tCO₂e	34,514 tCO₂e

F.5.1. Explanation of calculation of “amount estimated ex ante for this monitoring period in the CPA-DD”

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CPA	Explanation of calculation of “amount estimated ex ante for this monitoring period in the CPA-DD” was based on:	Explanation of calculation of “actual amount of emission reductions achieved this monitoring period” is based on:
Aid Africa Uganda CPA 1	<ul style="list-style-type: none"> - Average estimated CERs/stove: 2.443 tCO₂e - Planned distribution of stoves in MP2: 4,700 ICS - Calculated fNRB for Uganda: 92% 	<ul style="list-style-type: none"> - Decrease in average CERs/stove: 2.064 tCO₂e - Decrease in ICS distribution in MP2: 4,610 ICS - Decrease in Uganda fNRB default value: 88%

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James Finlay Kenya CPA 1	<ul style="list-style-type: none"> - Average estimated CERs/stove: 3.565 tCO₂e - Planned distribution of stoves in MP2: 5,000 ICS - Kenya fNRB default value: 92% 	<ul style="list-style-type: none"> - Decrease in average CERs/stove: 1.534 tCO₂e - Decrease in ICS distribution in MP2: 1,941 ICS - Same expired Kenya fNRB default value: 92%
RDIS Rwanda CPA 1	<ul style="list-style-type: none"> - Average estimated CERs/stove: 1.615 tCO₂e - Planned distribution of stoves in MP2: 3,224 ICS - Rwanda fNRB default value: 98% 	<ul style="list-style-type: none"> - Decrease in average CERs/stove: 1.235 tCO₂e - Increase in ICS distribution in MP2: 4,599 ICS - Decrease in Rwanda fNRB default value: 77%

F.6. Remarks on increase in achieved emission reductions

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See Section F.5.1 above.

F.7. Remarks on scale of small-scale CPAs

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Not applicable

APPENDIX 1a RDIS 18 Randomly Selected Numbers for Usage Survey

See attached file (PDF format)

APPENDIX 1b – RDIS 11 Randomly Selected Numbers for Efficiency Testing

See attached file (PDF format)

APPENDIX 1c – RDIS CER Calculation Spreadsheet

See attached file (XLS format)

APPENDIX 2a – JFK 18 Randomly Selected Numbers for Usage Survey

See attached file (PDF format)

APPENDIX 2b – JFK 11 Randomly Selected Numbers for Efficiency Testing

See attached file (PDF format)

APPENDIX 2c – JFK CER Calculation Spreadsheet

See attached file (XLS format)

APPENDIX 3a – Aid Africa 18 Randomly Selected Numbers for Usage Survey

See attached file (PDF format)

APPENDIX 3b – Aid Africa 11 Randomly Selected Numbers for Efficiency Testing

See attached file (PDF format)

APPENDIX 3c – Aid Africa CER Calculation Spreadsheet

See attached file (XLS format)

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN); • Add a section on remarks on the observance of the scale limit of small-scale CPAs during the crediting periods; • Add "changes specific to afforestation or reforestation activities/CPA" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R PoAs between two commitment periods; • Make structural and editorial improvements.
02.0	7 June 2017	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 01.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN); • Make editorial improvements.
01.0	1 April 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report, programme of activities		