
 <p style="text-align: center;">Verification and certification report form for CDM programme of activities (Version 03.0)</p>		
Complete this form in accordance with the instructions attached at the end of this form.		
BASIC INFORMATION		
Title and UNFCCC reference number of the programme of activities (PoA)	Improved Cooking Stove Programme in Burundi supported by Republic of Korea (10474) ¹	
Version number(s) of the PoA-DD(s) to which this report applies	Version 1.2, 26/02/2019	
Version number of the verification and certification report	1	
Completion date of the verification and certification report	09/10/2020	
Monitoring period number and duration of this monitoring period	2 nd Monitoring period (16/09/2019 - 30/04/2020)	
Number and version number of the monitoring report to which this report applies	1.2	
Coordinating/managing entity (CME)	ECOYEY CO., LTD	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	Burundi	Yes
Applied methodologies and standardized baselines	AMS-II.G. : "Energy efficiency measures in thermal applications of non-renewable biomass" (Version 10.0)	
Mandatory sectoral scopes	Sectoral Scope 03: Energy Demand	
Conditional sectoral scopes, if applicable	NA	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	269,290 tCO ₂ e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	81,469 tCO ₂ e	
Name and UNFCCC reference number of the DOE	LGAI Technological Center, S.A. (Applus+ Certification) UNFCCC Ref. No.: E-0032	

¹ https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/U2ZYTf1EWXPBHK0069GCLNSDRIQ78A/view

Name, position and signature of the approver of the verification and certification report	<p>Mr. Juan Sendín Caballero</p> <p><i>Applus+ Certification Business Unit Managing Director</i></p> <p>Signature: </p>
--	---

SECTION A. Executive summary

>>

LGAI Technological Center, S.A. accredited DOE E-0032 (hereinafter referred to as *Applus+ Certification* or just the *DOE*) has been contracted by PoA CME *ECOEYE CO., LTD* to undertake the independent verification of the registered CDM PoA titled “Improved Cooking Stove Programme in Burundi supported by Republic of Korea” (PoA ID: 10474) covering CPA 001 titled “*Improved Cooking Stoves Programme in Burundi supported by Republic of Korea – CPA1*”. The objectives of this verification are to verify and certify emission reductions reported for the specific Component Project Activity (CPA) for the monitoring period from 16/09/2019 - 30/04/2020 (first and last day included); and to verify that the data reported are complete and transparent.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting

The scope of the verification process is defined as a third-party independent and objective review and ex post determination of the monitored reductions in GHG emissions by the Component Project Activity, limited to and against the criteria stated in Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology AMS-II.G. : “Energy efficiency measures in thermal applications of non-renewable biomass” (Version 10.0)/5/, the latest version of the CDM Validation and Verification Standard for Programmes of Activities (VVS for PoAs version 02.0)/1/, the latest version of the CDM Project Standard for Programmes of Activities (PS for PoAs version 02.0)/2/ and the latest version of the CDM Project Cycle Procedure for Programmes of Activities (PCP for PoAs version 02.0)/3/, as well as any other related methodological tools, guidelines and other regulatory documents adopted by the CMP or the Board

The verification process takes as a basis the validated Programme Design Document (PoA-DD), version 1.2, dated 26/02/2019 and registered Component Project Activity Design Document (CPA-DD), version 1.3, dated 08/08/2019 (hereinafter referred to as PoA-DD/11/ and CPA-DD/12/, corresponding Validation Reports/13/ and CPA Monitoring Report/15/ (hereinafter also referred to as the final MR).

The verification team has, based on the requirements set up in the CDM Validation and Verification Standard for Programmes of Activities (VVS for PoAs version 02.0)/1/, evaluated the provided information focusing on the identification of significant risks and reliability of project monitoring and generation of CERs.

The verification is not meant to provide any consulting towards the CME or authorized participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the programme design.

The purpose of the CPA is to combat climate change and contribute to sustainable development of Burundi, by reducing non-renewable wood fuel consumption and greenhouse gas (GHG) emissions of household users in rural and/or peri-urban areas of Burundi by selling affordable Improved Cooking Stoves (ICSs) in replacement of traditional wood stoves.

In the baseline scenario, households continue to using non-renewable biomass in traditional cooking stoves. An ICS combusts wood fuel more efficiently, i.e. requires less firewood than a traditional stove. This reduces CO₂ emissions.

CPA001 thus aims to reduce non-renewable wood fuel consumption and greenhouse gas (GHG) emissions of households (hereafter also “end-users”) in the rural and peri-urban regions of Burundi.

The ICS distributed under CPA001 is the so called Jiko Matawi stove, a Tanzanian-design moulded from fermented clay which is dried through high temperatures in a kiln to reinforce its

properties including high thermo efficiency and durability. It is a multi-purpose stove capable of using both firewood and charcoal depending on the preference of the user at the time of cooking. The stove is available in entry cost levels via a stand-alone ceramic model (that can also be installed in a fixed hearth within the kitchen of their home; and as a metal clad version. Ecoeye Co., Ltd., and other Korean Companies have fully financed all improved cooking stoves distributed to the households; the total project cost per stove is 3 Euro including the stove manufacturing cost. This is being verified by the assessment team via Korean grant/24/ received from ECOEYE by AERA for OBEN under the joint development agreement of CDM programme dated 15/11/2018.

The verification team determines the conformity of the actual Component Project Activity and its operation with the CPA-DD/12/ and MR/15/. Applus+ Certification has, by means of a desk review and an on-site visit, assessed that all physical features of the proposed CDM programme of activities proposed in the PoA-DD/11/ are in place, and that the CME and authorized participants have operated the Component Project Activity as per the PoA-DD/11/, Generic CPA-DD/11/ and Specific CPA-DD/12/. Thus the verification team has concluded that the Component Project Activity was implemented and operated as per the aforementioned references, and that all physical features of the project are in place. The verification team, based on the site visit and document review, is able to conclude that the project has been commissioned and implemented as per the above mentioned references. The start date of this monitoring report is 16/09/2019.

The monitoring report for this monitoring period is in compliance with the monitoring plan of the PoA-DD. The Component Project Activity was registered by applying the small scale methodology "Energy efficiency measures in thermal applications of non-renewable biomass" (Version 10.0)/5/ and the verification was carried out in accordance with the applied methodology. It was confirmed during the site visit that the Component Project Activity during the current verification is in accordance with the applicability criteria of the methodology. It is the responsibility of Applus+ Certification to express an independent GHG verification opinion on the GHG emission reductions and on the calculation of GHG emission reductions for the CPA for this monitoring period based on the reported emission reductions in the Monitoring Report/15/.

Applus+ Certification's verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakech Accords, as well as those defined by the CDM Executive board. Applus+ Certification's approach was risk-based drawing on an understanding of the risks associated with reported GHG emissions data and the controls in place to mitigate these. The examination includes assessment of evidence relevant to the amounts and disclosures in relation to the project's GHG emission reductions for this monitoring period.

The verification team has planned and performed the work to obtain the information and explanations that are considered necessary to provide sufficient evidence for it to give reasonable assurance that the amount of calculated GHG emission reductions for this monitoring period were fairly stated.

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor / Technical Expert	OR	GESTO	JOSE ANTONIO	Outsourced Entity LIKEN CARBON HUB	X	N	X	X
2.	Auditor (Verifier)	OR	ROBLES	LUIS FERNANDO	Outsourced Entity LIKEN CARBON HUB	X	N	X	X

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer Technical Expert (3.1)	EI	CORTES	MIGUEL ANGEL	Applus+ Certification
2	Approver	IR +	SENDÍN	JUAN	Applus+ Certification

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	<p>Errors in manual transfer of hard-copy records to ER spreadsheet for the monitoring parameters and sampling survey results.</p> <p>The errors may come from human error during the information transfer from the sources of the sampled data to the digital forms used for monitored parameters.</p>	<i>Medium</i>	<p>The database of selling agreements/19/ contained in the ERs calculation spreadsheet/20/ has been manually transferred from the hand-written surveillance records to the spreadsheet.</p> <p>The Monitoring survey /17/ results have been manually transferred to the spread sheet.</p>	<p>The risk was mitigated by the training to the personnel involved in data capture, calculation and by following the monitoring responsibilities. The training records were reviewed which was also confirmed during interviews. Verification team, based on the above, confirms that the risk is appropriately mitigated.</p> <p>Since relevant monitoring parameters were monitored through an ex-post monitoring survey conducted by the CME, the DOE's Verification Team checked:</p> <ul style="list-style-type: none"> • Selling agreements/19/ • ERs calculation spreadsheet/20/ • The monitoring survey /17/ <p>The ex post monitoring included 9 of all the 70 household sampled users (using acceptance sampling approach), which are legally binding and considered credible.</p>
2.	<p>Information System:</p> <p>Use of spreadsheets without adequate controls related to data changes/updates, version tracking, traceability, security.</p>	<i>Medium</i>	<p>The data is recorded in the spreadsheets based on the raw data collected during the field visits. The access to the spreadsheets for calculation of ERs, monitoring and sales database and Stove efficiency testing records.</p>	<p>The identified risk was mitigated by managing access to the records. It was confirmed through interviews that the raw data is collected by the field personnel and then transmitted and stored in hard copy to the CME's office. The data quality control is maintained by the</p>

				CME.
3.	Accuracy of the measuring equipment.	Low	Check the calibration records for the measurement equipment used for efficiency test.	The risk due to accuracy of the measuring equipment was ensured by planning to check calibration certificates of the measuring equipment used for WBT.

C.2. Consideration of materiality in conducting the verification

>>

The threshold of materiality was evaluated based on “Guideline: Application of materiality in verifications” Version 02.0/8/ Paragraph 11 (b) focusing on hard copy data manually transferred to the database to minimize risks on conducting the verification, placing emphasis on that, and CDM VVS for PoAs, version 02.0/1/ Paragraph 307. It was concluded that the materiality threshold applicable to the project activity based on actual emission reductions achieved is 10% of 81,469 tCO₂e which is equal to 8,146.9 tCO₂e.

In planning the verification, verification team took cognizance of “Guideline: Application of materiality in verifications” Version 02.0/8/ Paragraph 11 and Paragraph 12. A materiality threshold of 8,146.9 tCO₂e is determined in line with CDM VVS for PoAs, version 02.0/1/ Paragraph 308 (e), as the CPA qualifies as microscale as confirmed by checking the PoA-DD Validation Report/13/ and CPA-DD Validation Report/13/.

Based on the above, risks were assessed in the following activities:

- Monitoring system including the data input procedure (including relevant personnel and applicable template forms used);
- Copy of the agreements between households and CME/CPA Implementer(s) (origin of data);
- Stove unique ID system;
- ER sheets (application of data);
- Data flow;
- Data control procedures;
- Monitoring survey and WBT records;
- Selling agreements;
- ERs calculation spread sheet.

In conducting the verification, DOE took cognizance of “Guideline: Application of materiality in verifications” Version 02.0/8/ Paragraphs 13 to 17 and based its process on the input of data from different sources checked through sampling of records during off-site assessment. Data flow was checked through comparison of data in handwritten forms/22/ and ER sheet/20/. The competence of the personnel involved in conducting the Water boiling test (WBT)/18/, recording of data and calculation of the emission reductions data, have been checked by the verification team by means of remote interviews.

The risks identified can be mitigated through cross check with all sets of documents. The verification team performed the following checks in order to mitigate the effects of the above identified sources of error:

- Mitigation of Human error risks: the verification team mitigated the risk by checking the training records of the personnel and asking them about the process for data management during the interviews. Further, data was crosschecked with the ER calculation spreadsheet/20/ and the raw data collected through the review of the sales agreements and data reported in the monitoring survey.
- Mitigation due to error in information system: the verification team by conducting interviews with the personnel responsible for such activities mitigated the risk due to error in information system. It was confirmed through interviews that the raw data is collected by the field personnel and then transmitted and stored at the spread sheet at CME's office. The data quality control is maintained by the CME.
- Accuracy of the measuring equipment: The risk due to inaccuracy in measurements was mitigated by reviewing calibration certificates/23/ of all the project equipment.

As no material errors, omissions or misstatements have been found during the implementation of these measures to mitigate the risks derived from the implementation status and considering materiality, a reasonable level of assurance is achieved.

SECTION D. Means of verification

D.1. Desk/document review

>>

The verification was performed primarily based on the review of the monitoring report and the supporting documentation. This process included review of data and information presented to verify their completeness and review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, and the QA/QC procedures, and an evaluation of data management and the QA/QC system in the context of their influence on the generation and reporting of emission reduction.

Thereof, Applus+ Certification has performed a Document Review (Desk Review) taking in consideration:

- A review of presented data and information to verify its completeness.
- A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline and any other regulatory document, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.
- Cross-checks between the presented data and information provided in the PoA-DD, CPA-DD, CPAMR, GHG data and emission reductions and information from other sources, including, but not limited to, the publicly available information in the UNFCCC.
- The sectoral and local expertise of the DOE at the time of reviewing the provided data and information.

The initial Monitoring Report/15/ version 1.1, dated on 09/06/2020 submitted by the CME and additional background documents related to the emission reductions are reviewed as an initial step of the verification process. The subsequent step has involved the identification of corrective action requests and clarification requests (CARs and CLs) and Forward Actions Requests (FARs) which are presented in the Appendix 4 of this report.

As a result of these findings, the initial MR is revised to final MR version 1.2/15/, dated on 28/09/2020.

The references of the reviewed documentation can be observed under the Appendix 3 of this report

D.2. On-site inspection

In line with the para 321 of the Standard CDM validation and verification standard for programmes of activities Version 02.0, being compliant with the stated conditions as the DOE has made previous verification with onsite assessment less than 3 years ago and the CPA has not achieved more than 300,000 tCO₂e since the last verification, the DOE has opted not to make the on site assessment, using remote interviews, videos and forms as alternative means of verification. Information provided throughout these means is consistent, since the alternative option is deemed sufficient for the purpose of the verification.

Duration of on-site inspection: <i>n/a</i>				
No.	Activity performed on-site	Site location	Date	Team member
	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

D.3. Interviews

The verification team conducted interviews with the personnel involved in the CPA implementation to confirm the information and to resolve issues identified in the document review.

Interview was conducted as a part of verification activity and has involved:

- An assessment of the implementation and operation of the CDM Programme of Activities based on registered Monitoring Plan and physical features as per the approved PoA-DD/CPA-DD.
- A review of information flows for generating, aggregating, and reporting of the monitoring parameters.
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the Monitoring Plan, as well as to confirm the competency of the operating/monitoring personnel and any calibration agency involved.
- A cross-check between information provided in the MR, the physical implementation of the CPA and data from other sources.
- A check of the monitoring equipment including calibration performance, and observations of monitoring practices against the requirements of the approved
- PoA-DD/CPA-DD, the applied methodology and any other regulatory document.
- A review of calculations and assumptions made in determining the GHG data and ERs.
- An identification of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters.
- Assessment of the implementation status of the Programme of Activities as per the approved PoA-DD / CPA-DD.
- Actions undertaken to assess the implementation of the Monitoring Plan: Interview with ICS users and stakeholders; Verification of baseline; Operation and maintenance; Procedures; and Technical details

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	MAYR	Sebastian	AERA group	14/09/2020	CPA background and implementation, ICS types and distribution, monitoring activities and record keeping Coordinator for communications, corrections in the MR / ER sheet and overall coordination for findings resolution during the assessment process	Jose Antonio Gesto
2	DIZEYE	Claver	Legal representative OBEN		Ex-post monitoring surveys (WBT and Usage Survey)	Luis Robles Olmos
3	RWEMERA	Pascal	Managing Partner OBEN		Programme Design, Baseline fuel usage, Sampling approach, results and ER calculations	

D.4. Sampling approach

>>

The total number of stoves distributed at the end of the monitoring period in the CPA is 82,615. The verification team used acceptance sampling approach for checking the operational status of the improved cook stoves. A sample size of 9 was required, based on an AQL of 0.5% and UQL of 20%, the producer risk used is 5% and consumer risk used was 15 %.

As assessed in above sections, emission reductions from this CPA001, are being claimed for this monitoring period and the total population of the stoves under this CPA is 82,615.

The monitoring parameters required to be monitored through the sampling plan are:

- Proportion of distributed ICS still operating or replaced by an equivalent in service appliance under similar conditions under the project activity in year y
- Proportion of residual use of woody biomass from non-renewable sources under the project activity in year y
- Efficiency of the device being deployed as part of the project activity in year y

Simple random sampling was applied by the CME for selection of the monitoring samples with 90/10 (annual) applied confidence/precision (90/10 (annual) applied for WBT) for cross-CPA sampling for all the parameters which is deemed acceptable as per the registered PoA DD/11 / / CPA DD/1 /.

As per the Standard for “Sampling and surveys for CDM project activities and programmes of activities” version 08.0/6/, Paragraph 25, the verification team has to verify whether the project participants or the coordinating/managing entity have implemented the sampling and surveys according to the sampling plan in the registered monitoring plan. The verification includes determining:

- Whether the required confidence/precision has been met;
- Whether the selected sample was representative of the population.

The CME has applied sampling approach, the verification team has chosen acceptance sampling in accordance with the Standard for “Sampling and surveys for CDM project activities and programmes of activities” version 08.0/6/, Paragraph 28.

DOE used sampling during verification for checking the operational status and to check if the WBT tests have been done in the households and it was confirmed that WBT tests were conducted during the sampling process.

Considering that Burundi is a Least Developed Country², applying paragraph 39 (c) of the Standard for “Sampling and surveys for CDM project activities and programmes of activities” version 08.0/6/, a sample size of 9 households was chosen (with no discrepant records). A sample size of 9 was required, based on an AQL of 0.5 % and UQL of 20 %, producer risk 5 % and consumer risk 15 %. Acceptance number (c) thus determined for the sample is 0.

This verification was carried out using alternative means to the on-site visit for the control, check and verification of the parameters monitored by the CPA.

The DOE team reviewed 9 samples through recorded videos and it was observed that out of the 9 samples, 9 stoves were found to be operational and this matched with the CME's records and hence no discrepant records were observed with the published MR/15/ and ER sheet/20/ and thus c=0. Thus, CME's set of records has been accepted in line with the Standard for “Sampling and surveys for CDM project activities and programmes of activities” version 08.0/6/, Paragraph 38. Verification team has cross verified these sampling documents during the desk review and remote interviews.

The sampling plan implemented by the CME is in accordance with the PoA-DD/11/ / CPA-DD/12/ as well as the CME has appropriately performed Simple Random Sampling procedure in line with the applied approved monitoring methodology/5/. As the registered PoA-DD/11/ mentions the option for Simple Random Sampling procedure based on software, like the used randomizer on Excel program, it is acceptable to the verification team.

The necessary confidence / precision of 90/10 for each of the parameters are met. This has been cross verified by the verification team from the supporting documents submitted/17/

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

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
General			
Compliance of the monitoring report with the monitoring report form			
Remaining forward action requests from validation and/or previous verifications			
CPAs considered for verification and covered in this report			
Programme of activities			
Compliance of the programme implementation with the registered PoA-DD			
Implementation and operation of the management system	CL#1		
Post-registration changes			
• Corrections			
• Inclusion of a monitoring plan			
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized			

² BURUNDI is considered as a Least Developed Country, and the same has been checked by the DOE in this [LINK](#)

baselines, or other methodological regulatory documents ³			
• Changes to the programme design			
• Addition of CPA inclusion template			
• Change of coordinating/managing entity			
• Changes specific to afforestation and reforestation activities			
Component project activities			
Compliance of the CPA implementation with the included CPA design document			
Post-registration changes			
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents			
• Corrections			
• Changes to the start date-of the crediting period			
• Inclusion of a monitoring plan			
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents			
• Changes to the project design			
• Changes specific to afforestation and reforestation activities			
Compliance of the registered monitoring plan with applied methodologies and standardized baselines			
Compliance of monitoring activities with the registered monitoring plan			
• Data and parameters fixed ex ante or at renewal of crediting period			
• Data and parameters monitored	CL#2		
• Implementation of sampling plan			
Compliance with the calibration frequency requirements for measuring instruments			
Assessment of data and calculation of emission reductions or net removals			
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks		CAR#1 CAR#2	
• Calculation of project GHG emissions or actual net GHG removals by sinks			
• Calculation of leakage GHG emissions			
• Summary of calculation of GHG emission reductions or net GHG removals by sinks			
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA			
• Remarks on difference from estimated value in included CPA			
Assessment of reported sustainable development co-benefits			
Global stakeholder consultation			
Others (please specify)			
Total	2	2	

³ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

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

Means of verification	The verification team determined whether the monitoring report was completed using the valid version of the applicable monitoring report form. The verification team has checked whether all the sections of the monitoring report follows the guidelines provided in the template itself.
Findings	No CAR/CL raised for this section
Conclusion	The verification team concludes that the monitoring report provides all the information in accordance with the valid version of the CDM-PoA-MR-FORM (version 03.0)/9/ and the instructions therein for filling it. The monitoring report has been prepared in line with VVS-PoA, version 02.0/1/.

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

>>

During previous verification of the first monitoring period, The DOE raised a forward Action Request (FAR) regarding the ID stoves since the serial numbers was not clearly observed. For the present verification assessment team could check that the serial number was clearly described, and the CME has proved that the serial numbers are now durable and visible.

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

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
Improved Cooking Stoves Programme in Burundi supported by Republic of Korea – CPA1 Ref.: 10474-P10001-CP1	Yes	10/09/2019	Version 1.2, 26/02/2019	Yes. This is the 2nd Monitoring period of the CPA1 Ref.: 10474-P1-0001CP1

E.2. Programme of activities**E.2.1. Compliance of the programme implementation with the registered programme design document**

Means of verification	The verification team determined the conformity of the actual component project activity and its operation with the registered programme design document. Applus+ Certification has, by means of a desk review and interviews, assessed that all physical features of the component project activity in the registered PoA-DD/11/ are in place, and that the Coordinating/Managing Entity has operated the CPA as per the registered PoA-DD/11/and CPA-DD/12/.
Findings	No CAR/CL raised
Conclusion	The verification team by alternative means to an on-site inspection (remote interviews) and document review concludes that the component project activity was implemented and operated as per the registered PoA-DD/11/ and validated CPA-DD/12/ and that all physical features of the project are in place.

	<p>The number of stoves-equivalent full use over monitoring period is 58,451 Jiko Matawi stove. $N_{y,i,j}$ is determined by multiplying all devices sold (N, 58,451) with the weighted-average proportion of cooking stoves found to be operating in a representative sample, i.e. pop_stoves_y (= 92.76%) as a result, 54,217 cook stoves were operational. In addition to operating status, if baseline stove is not included under baseline defined under the specific CPA, the new device is counted as not operating, i.e. No emission reductions are claimed. The number of stoves, which were using some charcoal in the project activity (in combination with firewood, which remained the principal fuel), was 4/70 or 5.7%. Leakage due to fuel switch to charcoal has been considered for these stoves.</p> <p>The cook stoves can be easily tracked using cook stove IDs punched on them. Thus the verification team states that the implementation of the CPA matches with that mentioned in the registered PoA-DD/11/ and CPA-DD/12/.</p>
--	--

E.2.2. Implementation and operation of the management system

Means of verification	The verification team determined the roles and responsibilities, training arrangements and capacity development, procedure for technical review of inclusion of CPA's, data management responsibilities, detailed record-keeping system for the CPA under the PoA, and how the process performance documentation and relevant evidences are explained in the CPA-DD/12/.
Findings	CL 1 was raised in this section and closed accordingly
Conclusion	<p>Verification team evaluated the management systems in place to implement the monitoring of the project activity.</p> <p>This included the management structure, records and document control process, procedures for training, continuous improvement of the PoA management system, record keeping system, procedures for double counting.</p> <p>The PoA management system including the record-keeping system and the management structure has been explained in section C of the registered PoADD/11/.</p> <p>During the course of verification, verification team based on review of section B.1 of the monitoring report, supporting documents and interview/observation has assessed this management system.</p> <p>The verification team confirms that the monitoring management systems and processes of the CDM PoA are in place; with the responsibilities properly identified; recording processes in place; a procedure for review of inclusion of CPAs established; a procedure to avoid double counting; and measures for continuous improvements; as described in the PoA-DD/11/.</p>

E.2.3. Post-registration changes

E.2.3.1. Corrections

>>
N/A

E.2.3.2. Inclusion of a monitoring plan

>>

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

>>
N/A

E.2.3.4. Changes to the programme design

>>
N/A

E.2.3.5. Addition of CPA inclusion template

>>
N/A

E.2.3.6. Change of coordination/managing entity

>>
N/A

E.2.3.7. Changes specific to afforestation and reforestation activities

>>
N/A

E.3. Component project activities**E.3.1. Compliance of the CPA implementation with the included CPA design document**

Means of verification	The verification team determined how the generic CPA is part of a PoA-DD and checked how each technology/measure, methodology and combination thereof, or that technologies/measures have been combined in one generic CPA-DD in accordance with the relevant requirements in the "CDM project standard for programmes of activities, version 02.0"/2/.
Findings	No findings were raised for this requirement.
Conclusion	The verification team concludes that the CPA description of the project contained in the registered CPA-DD to be complete and accurate. The CPA-DD complies with the relevant methodology, tools, forms and guidance at the time of CPA-DD submission for registration/inclusion. A total of 82,615 Jiko Matawi stove were distributed during in this CPA-001; out of which only 54,217 ⁴ cook stoves were operational (in the monitoring period). The cook stoves can be easily tracked using cook stove IDs punched on them. Thus the verification team states that the implementation of the project matches with that mentioned in the registered PoA-DD/11/ and CPA-DD/12/. A FAR was raised during the last verification which has been checked during this verification to confirm that the ID numbers are now engraved in the cookstoves

E.3.2. Post-registration changes**E.3.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents**

>>
N/A

E.3.2.2. Corrections

>>
N/A

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

>>
N/A

⁴ Considering operational days of the period monitored.

E.3.2.4. Inclusion of a monitoring plan

>>
N/A

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

>>
N/A

E.3.2.6. Changes to the project design

>>
N/A

E.3.2.7. Changes specific to afforestation and reforestation activities

>>
N/A

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

Means of verification	The verification team determined whether the registered monitoring plan is in accordance with the applied methodology/5/ including applicable tools and any other related regulatory document.
Findings	No CAR/CL raised.
Conclusion	The verification team is able to confirm that the monitoring plan contained in the registered CPA-DD is in accordance with the approved methodology applied i.e. AMS-II.G (version 10) /5/. The monitoring plan contained in the PoA-DD/11/ /CPADD/12/ is in accordance with the approved methodology applied by the component project activity and its applicable tools and any other related regulatory documents.

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

Means of verification	The verification team has determined whether all ex-ante parameters used for emission reduction calculation stated in the registered monitoring plan are used appropriately as per the registered CPA-DD.
Findings	No findings were raised for this requirement.
Conclusion	Verification team confirms that the data and parameters fixed ex-ante are in compliance with the registered CPA-DD/12/ and monitoring plan. Please refer to the Appendix 5 in this report for further details.

E.3.4.2. Data and parameters monitored

Means of verification	The verification team has determined whether the registered monitoring plan has been properly implemented and followed by the CME and that the monitoring has been carried out in accordance with the registered monitoring plan.
Findings	CL2 was raised in this section and closed accordingly.
Conclusion	<p>The verification team has assessed the data and parameters monitored during the monitoring period and it confirms that ex-post parameters are monitored in accordance with the approved monitoring plan and applied methodology. Please refer to the Appendix 5 in this report for further details.</p> <p>In the Monitoring Survey/17/ (conducted at least Annual as stated in the Monitoring Plan), last one conducted on 2020, a sample size of 70 households for this</p>

	<p>monitoring period was set by CME as calculated in the separate Excel spreadsheet/17/, in line with the applied methodology, is at least 90/10 (a 90% confidence interval and a 10% margin of error).</p> <p>During the monitoring period 98.57% of stoves have been found operating. The fraction of stoves with a baseline not included under this CPA has been counted as 4/70 or 5.7%, as per monitoring survey.</p> <p>For Water boiling test (WBT)/18/, (conducted annually as per the Monitoring Plan), conducted annually for this monitoring period, sample size of 10 households for WBT 2020/18/ was set by CME as calculated in the separate Excel spreadsheet/17/, in line with the applied methodology. The required precision of at least 90/10 (a 90% confidence interval and a 10% margin of error) is applied in line with the applied methodology and the required confidence/precision level was met and reached. In line with para 14 of the Standard for Sampling and Surveys since the parameter of interest is a numeric mean value (i.e. not a proportion or percentage) the Student's t distribution has been applied in the sampling precision calculation.</p> <p>Please refer to the Appendix 5 in this report for further details.</p>
--	--

E.3.4.3. Implementation of sampling plan

Means of verification	The verification assessed whether there has been compliance of the sampling efforts and surveys with the registered sampling plan in accordance with the UNFCCC CDM Guideline for "Sampling and surveys for CDM project activities and programmes of activities" version 04.0/6/ and if CME has applied a sampling approach to determine data and parameters monitored.
Findings	No findings were raised for this .
Conclusion	<p>The verification team was able to confirm that "Simple random sampling" approach was followed by CME as a sampling approach for monitoring. The monitoring plan contains a detailed description in accordance with the UNFCCC CDM Guideline for "Sampling and surveys for CDM project activities and programmes of activities" version 04.0/6/.</p> <p>For Water boiling test (WBT)/18/, (conducted annually as per the Monitoring Plan), conducted annually for this monitoring period, sample size of 10 households for WBT 2020/18/ was set by CME as calculated in the separate Excel spreadsheet/17/, in line with the applied methodology. The required precision of at least 90/10 (a 90% confidence interval and a 10% margin of error) is applied in line with the applied methodology and the required confidence/precision level was met and reached. In line with para 14 of the Standard for Sampling and Surveys since the parameter of interest is a numeric mean value (i.e. not a proportion or percentage) the Student's t distribution has been applied in the sampling precision calculation</p> <p>Please refer to the Appendix 5 in this report for further details</p>

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

Means of verification	The verification team determined whether the calibration of the measuring equipment that has an impact on the claimed emission reductions is conducted by the CME at a frequency specified in the registered monitoring plan.			
Findings	No findings were raised for this requirement			
Conclusion	The key monitoring equipment used for conducting the stove efficiencies is weighing scale and thermometer. The appropriate QA/QC procedures have been followed for the monitoring parameters. The verification team reviewed the calibration reports and observed the following: The scale and thermometer used are auto-calibrated before put into use. The validity is until next use from the calibration date. No other water boiling tests have been carried between date of calibration and test dates.			
	Equipment	WBT dates	Calibration date	Calibration agency
	Thermometer	11/05/2020 -15/05/2020	10/05/2020	CRUEA

	Scale	11/05/2020 -15/05/2020	10/05/2020	CRUEA
The approach of making the calibration prior to field measurements is also in line with the requirements of the international standard ISO 9011 (par 7.6).The calibration is acceptable to the assessment team.				

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

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

Means of verification	The verification team assessed whether the data and calculations of baseline emissions resulting from the registered CPA-DD are correct. The verification team has checked whether calculations of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
Findings	CAR1 and CAR2 were raised in this section and closed accordingly.
Conclusion	<p>The equations for baseline emissions, as provided in the Monitoring Report^{15/} and confirmed with the registered CPA-DD and the methodology AMS-IL.G, version 10 are:</p> $ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y$ <p>Where:</p> <p>i = Indices for the situation where more than one type of project device is introduced to replace the pre-project devices⁵</p> <p>j = Indices for the situation where there is more than one batch of project device</p> <p>ER_y = Emission reductions during year y in t CO₂e</p> <p>$ER_{y,i,j}$ = Emission reductions by project device of type i and batch j during year y in t CO₂e</p> <p>LE_y = Leakage emissions in the year y</p> $ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossil\ fuel}$ <p>Where:</p> <p>$B_{y,savings,i,j}$ Quantity of woody biomass that is saved in tonnes per cook stove of type i and batch j during year y</p> <p>$f_{NRB,y}$ Fraction of woody biomass saved by the project activity in year y (established as non-renewable biomass using survey methods)</p> <p>$NCV_{biomass}$ Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne, based on the gross weight of the wood that is 'air-dried')</p> <p>$EF_{projected_fossil\ fuel}$ Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers. Use a value of 63.70 tCO₂/TJ</p> <p>$N_{y,i,j}$ Number of project devices of type i and batch j operating during year y</p> <p>μ_y Adjustment to account for any continued use of pre-project devices during the year y applying equation 6 .</p> $B_{y,savings,i,j} = B_{old,i,j} \times \left(1 - \frac{\eta_{old,i,j}}{\eta_{new,i,j}}\right)$ <p>Where:</p> <p>$\eta_{old,i,j}$ Efficiency of the old devices being replaced by project devices of type i and batch j.</p>

⁵ For example, in some instances, full replacement of the pre-project device would require the implementation of more than one project device (e.g. one stove suitable for cooking and the other stove suitable for cooking/boiling water).

$\eta_{new,i,j}$ Efficiency of the project device i and batch j

$B_{old,i,j}$ is determined as follows:

$$B_{old,i,j} = B_{old,HH} \div N_{d,HH} \quad \text{Equation 1}$$

Where:

$B_{old,HH}$ = Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices (tonnes/household/year)

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

$B_{old,i,j}$ is multiplied by a net to gross adjustment factor of 0.95 to account for leakages, in which case surveys are not required.

Jiko Matawi stove: for the present project

Substituting for values for Jiko Matawi stoves in use for 100% of the time over the monitoring period, the calculation results in the below.

	Value	Unit	Source/reference
N	82,615	n/a	The value total number of Stove distributed for the monitoring period. The Same is checked from the Sale agreements
$N_{y,i,j}$	54,217	n/a	Section E.2 $N_{y,i,j} = N * \text{pop_stoves}_y$ The value is checked by the assessment team from the ER sheet and found correct
μ_y	0.9430	fraction	Section E.2 The fraction is correct and acceptable to the assessment team
$f_{NRB,y}$	0.8183	fraction	Section E.1 The value is correct and acceptable to the assessment team.
NCV_{biomass}	0.0156	TJ/tonne	Section E.2 The value is correct and acceptable to the assessment team
$EF_{\text{projected_fossilfuel}}$	63.7	tCO_2/TJ	Section F.1 The value is correct and acceptable to the assessment team
$B_{y,savings,i,j}$	3.14	tonnes/year	ER calculations $B_{y,savings,i,j} = B_{old,i,j} * (1 - \eta_{old,i,j} / \eta_{new,i,j}) * 0.95$ The value is checked by the assessment team from the ER sheet and found correct.
$B_{old,i,j}$	5.03	tonnes/year	Section E.1 The value is correct and acceptable to the assessment team
$B_{old,HH}$	5.03	tonnes/HH/year	Section E.1 The value is correct and acceptable to the assessment team
$N_{d,HH}$	1.0	Personnes/HH	Section E.2 The value is correct and acceptable to the assessment team
$\eta_{old,i,j}$	10	%	Section E.1 The value is correct and acceptable to the assessment team
$\eta_{new,i,j}$	29.20	%	Section E.2 The value is correct and acceptable to the assessment team
Baseline	81,469	$tCO_2/year$	Section F.1, ER calculations

	Emissions			$ER_{y,i,j} = B_{y,savings,i,j} \times N_{y,i,j} \times \mu_y \times f_{NRB_y} \times NCV_{biomass} \times EF_{projected\ fossil\ fuel}$ The value is checked by the assessment team from the ER sheet and found correct
	Project emissions (PE _y)	0	tCO ₂ /year	Section F.2, ER calculations The value is checked by the assessment team from the ER sheet and found correct
	Leakage emissions (LE _y)	120	tCO ₂ /year	Section E.1, section F.3 Adjustment factor (0.95) already applied at B _{y,savings,i,j} level Further leakage emissions occur due to switching from baseline device using firewood to efficient project device using charcoal. These emissions are calculated by using a default value of 0.030 t CH ₄ /t charcoal in accordance with "AMS-III.BG.: Emission reduction through sustainable charcoal production and consumption". The value is checked by the assessment team from the ER sheet and found correct.
	Emission reductions	81,469	tCO ₂ /year	ER calculations $ER_y = \sum_i \sum_j ER_{y,i,j} - LE_y$ The value is checked by the assessment team from the ER sheet and found correct

After taking account of the effective usage days of each individual stove after the date of sale effective emissions reductions are as follows:

	ER _y (tCO ₂ e)
16/09/2019-30/04/2020	81,469
TOTAL	81,469

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

Means of verification	There are no project emissions identified in the monitoring methodology.
Findings	No findings were raised for this requirement.
Conclusion	There are no project emissions identified in the monitoring methodology.

E.3.6.3. Calculation of leakage GHG emissions

Means of verification	The verification team assessed whether the data and calculations of leakage emissions resulting from the registered PoA-DD are correct. The verification team has checked whether calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
Findings	No findings were raised for this requirement.
Conclusion	A default (0.95) Net to gross adjustment factor to account for leakages (Bold) has been considered by the CPA and thus it is in line with the requirement of monitoring methodology and the CPA-DD. Leakage due to switch from firewood to charcoal has been accounted for. Total leakages for the current monitoring period are 120 tCO ₂ e

E.3.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved are in line with the resulting from the registered CDM PoA Component Project Activity. The verification team has checked whether calculations of GHG emission reductions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
------------------------------	--

Findings	No finding raised.
Conclusion	Verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the predefined formulae from registered CPA-DD/12/.

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
Improved Cooking Stoves Programme in Burundi supported by Republic of Korea – CPA1 Ref.: 10474-P10001-CP1	81,469	0	0	0	81,469	81,469
Total	81,469	0	0	0	81,469	81,469

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

Means of verification	The verification team has compared the CERs achieved during this monitoring period with the estimated value and reason for increase if any.
Findings	No findings were raised for this requirement.
Conclusion	The total number of ERs achieved during the monitoring period is 81,469 tCO ₂ e. In summary, verification team confirms that actual emission reductions are lower than the estimated ones of the currently approved CPA-DD ^{12/} for this monitoring period

Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period	Value estimated in ex ante calculation in the included CPA-DD(s)
“Improved Cooking Stoves Programme in Burundi supported by Republic of Korea – CPA1 Ref.: 10474-P1-0001-CP1	81,469	The amount of ex-ante emission reductions for this monitoring period is 269,290
Total	81,469	269,290

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

Means of verification	The verification team compared the actual values achieved by the CPA during this monitoring period with the values estimated in ex-ante calculations in the included CPA-DD.
Findings	No findings were raised
Conclusion	In summary, verification team confirms that actual emission reductions are lower than the estimate of the currently approved CPA-DD/12/ for this monitoring period. The difference between the estimated and actual, realized emission reductions is mainly due to lower monitored parameter values as compared to ex-ante values after application of a discount to the function rate of project stoves .

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

Means of verification	NA
Findings	NA
Conclusion	NA

E.3.8. Global stakeholder consultation

Means of verification	The project MR/15/ was webhosted on UNFCCC website
Findings	No findings were raised for this requirement.
Conclusion	The project MR/15/ was webhosted on UNFCCC website. No comments were received during the public availability period.

SECTION F. Internal quality control

>>

As a final step for Verification, the final documentation, including the verification report, has to undergo an internal quality control by independent and qualified Technical Reviewer(s) to be approved.

Details of the Technical Reviewer(s) are provided within the verification report in Section B.2 and Appendix 2 for further references of knowledge and capability to conduct the quality checking.

After the Technical Review process, and once the Technical Review comments (if any) are incorporated to the Final Verification Report and this is approved by the Technical Review Team, the final documentation has to undergo a final quality checking process called Administrative Review, done by the Applus+ Certification's Project Activity Manager and/or Technical Support.

For final approval, the final set of documents are prepared by the DOE's Technical Manager or its deputy and signed by the authorized signatory of the DOE.

In case any of the persons performing this final internal quality control approval process has acted as a part of the Assessment Team or Technical Review team, the approval can only be given by DOE's personnel who have not been part of those teams.

If the final set of documents has been satisfactorily approved, the Request for Issuance is submitted to the UNFCCC CDM EB along with the relevant documents

SECTION G. Verification opinion

>>

LGA Technological Center, S.A. (Applus+ Certification) DOE E-0032 has been contracted by PoA's CME ECOEYE CO., LTD to undertake the independent verification of the registered CDM PoA titled "Improved Cooking Stove Programme in Burundi supported by Republic of Korea" (PoA ID: 10474) covering CPA 001 titled "Improved Cooking Stoves Programme in Burundi supported by Republic of Korea – CPA1". The objectives of this verification are to verify and certify emission reductions reported for the specific Component Project Activity (CPA) for the monitoring period from 16/09/2019 to 30/04/2020 (first and last day included); and to verify that the data reported are complete and transparent.

The Verification Team has, by means of a desk review and physical/online interviews, that all physical features of the proposed PoA and CPA in the approved versions of the PoA-DD/11/, version 1.2 dated on 26/02/2019 and the CPA-DD/12/, version 1.3, dated on 08/08/2019, respectively, are in place and that the Coordinating/Managing Entity (CME) and CPA Implementer(s) have operated the Component Project Activity as per the aforementioned references.

The review of the registered Monitoring plan of the CPA-DD, the necessary supporting documentation, the publicly available information including the approved versions of the PoA-DD/11/, version 1.2 dated on 26/02/2019 and the CPA-DD/12/, version 1.3, dated on 08/08/2019, as well as any other external source used for cross-checking requirements and subsequent follow-up actions (including Skype calls and interviews), have provided Applus+ Certification with sufficient evidences to determine the compliance with the applicable requirements and regulatory documents for the monitoring period starting on 16/09/2019 to 30/04/2020.

The final Monitoring Report/15/, version 1.2 dated on 28/09/2020 complies with all the applicable requirements set out in VVS for PoA version 02.0, PS for PoA version 02.0 and PCP for PoA version 02.0 and correctly applies the selected baseline and monitoring methodology set out in the methodology AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass (Version 10), as well as all the applicable requirements set out in any other applicable regulatory document.

The management of the Coordinating/Managing Entity (CME) and CPA Implementer(s) is responsible for the preparation and reporting of GHG Emission Reductions data, and the reported GHG Emission Reductions on the basis set out within the PoA and CPA monitoring plan. The development and maintenance of records and data transferring/reporting procedures in accordance with the monitoring plan, including the calculation and determination of GHG Emission Reductions claimed by the CPA is a responsibility of the management of the Coordinating/Managing Entity (CME) and CPA Implementer(s).

It is the responsibility of Applus+ Certification to express an independent GHG Verification opinion on the GHG Emissions Reductions and on the calculation of GHG Emission Reductions claimed by the PoA CPA for this monitoring period based on the reported information in the in the Monitoring Report/15/, version 1.2 dated on 28/09/2020.

Applus+ Certification's Verification process is defined as a third-party independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Component Project Activity, limited to and against the criteria stated in Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass (Version 10.0)/5/, the latest version of the CDM Validation and Verification Standard for Programmes of Activities (VVS for PoAs version 02.0)/1/, the latest version of the CDM Project Standard for Programmes of Activities (PS for PoAs version 02.0)/2/ and the latest version of the CDM Project Cycle Procedure for Programmes of Activities (PCP for PoAs version 02.0)/3/, as well

as any other related methodological tools, guidelines and other regulatory documents adopted by the CMP or the Board.

Applus+ Certification approach was risk-based, drawing on an understanding of the risks associated with reported data and information and the controls in place to mitigate such risks. The examination includes assessment of evidences relevant to the amounts and disclosures in relation to the claimed GHG Emission Reductions for this monitoring period. The verification team has planned and performed the work to obtain the information and explanations that are considered necessary to provide sufficient evidence for the DOE to give reasonable assurance that the amount of claimed GHG Emission Reductions for this monitoring period were fairly stated.

In DOE's opinion, the Monitoring Report for the CPA meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria.

SECTION H. Certification statement

>>

LGAI Technological Center, S.A. (Applus+ Certification) DOE E-0032 has carried out the independent verification of the registered CDM PoA “Improved Cooking Stove Programme in Burundi supported by Republic of Korea” (PoA ID: 10474) covering CPA 001 titled “Improved Cooking Stoves Programme in Burundi supported by Republic of Korea – CPA1” for the monitoring period from 16/09/2019 to 30/04/2020 (first and last day included).

As per the given above DOE's opinion, the Monitoring Report for the CPA meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria, thereof confirms the following:

PoA title:	Improved Cooking Stove Programme in Burundi supported by Republic of Korea
CDM PoA ID:	10474
CPA Title:	Improved Cooking Stoves Programme in Burundi supported by Republic of Korea – CPA1
Crediting period of the verified CPA:	10/09/2019 to 09/09/2026
Approved PoA-DD:	Version 1.2, 26/02/2019
Final Version of the Monitoring Report:	Version 1.2, 28/09/2020
Applied Methodology:	AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass” (Version 10)
Applicable monitoring period:	16/09/2019 to 30/04/2020 (first and last day included) 2 nd Monitoring Period
Claimed and certified Emission Reductions:	81,469 tCO ₂ e

The Monitoring Report for the CPA, hence, is recommended by Applus+ Certification for issuance of the claimed and certified Emission Reductions for the given monitoring period within the UNFCCC CDM.

Appendix 1. Abbreviations

Abbreviations	Full texts
Applus+ Certification	LGAI Technological Center, S.A. (Applus+ Certification) DOE E-0032
AS	Accreditation Standard
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification request
CME	Coordinating/Managing Entity
CMP	The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide equivalent
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EI	External Individual
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
HQ	Headquarters (Applus+ Certification)
IPCC	Intergovernmental Panel on Climate Change
IR	Internal Resource
MoC	Modalities of communication
MP	Monitoring Plan
MR	Monitoring Report
OE	Outsourced Entity
PCP for PoA	Project Cycle Procedure for Programmes of Activities
PoA-DD	Programme of Activities Design Document
PS for PoA	Project Standard for Programmes of Activities
UNFCCC	United Nations Framework Convention on Climate Change
VVS for PoA	Validation and Verification Standard for Programmes of Activities
WBT	Water Boiling test

Appendix 2. Competence of team members and technical reviewers

According to the applicable sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed an assessment team in compliance with the Contract Review and Assessment Team appointment rules in the internal Quality Management System of Applus+ Certification as well as in compliance with the applicable requirements in the Accreditation Standard.

The composition of the Assessment Team has been approved by Applus+ Certification during the Contract Review process ensuring that the required skills and capabilities are covered.

The qualification levels for Assessment Team members that are assigned by aforementioned appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A).
- Technical Expert (TE).
- Technical Reviewer (TR).
- Any of the above mentioned roles in training (iT, e.g. AiT for auditor in training).

The Sectoral Scope / Technical Area required knowledge linked to the applied methodology(ies) is covered by the Assessment Team as shown below:

Name	Role	SS/TA Knowledge	Financial Expertise	Attendance to on-site visit ⁶
Mr. Jose Antonio Gesto	LA / TE	YES (3.1)	n/a	NO
Mr Luis Roble	A	YES (3.1)	n/a	NO
Mr. Miguel A. Cortés	TR /TE	YES (3.1)	n/a	n/a

A brief Curriculum Vitae (CV) of the Assessment Team members is provided below

Mr. Jose Antonio Gesto Mr. Jose Antonio Gesto, has done M. SC in (Energy and Environmental economics) from Alcalá de Henares University AND PHD Candidate.. He is a certified lead auditor for ISO 14001 EMS LA, 14064 LA and EU ETS led auditor . He has more than (11) years of working experience at AENOR/APPLUS certifications under various categories of projects stating from Renewable Energy to waste to Industrial Process. He was JI/ CDM Lead Assessor in AENOR and was involved in more than 150 CDM validation and verifications activities in Gold Standard, VCS, CDM projects as a team leader/technical reviewer / validator / verifier covering among others the sectoral scope 1,3,13,15 technical areas 1.2/1.1/13.1, 3.1. Currently he is associated with LIKEN CARBON HUB and is empaneled with APPLUS certification to carry out GHG audit.

Mr. Luis Robles Olmos Luis ROBLES OLMOS, MsC. in Agronomic Engineering (Universidad Politécnica, Madrid), has been awarded with a Diploma in Advanced Studies by Universidad Rey Juan Carlos, Madrid (URJC). Between 2007 and 2017 he has managed the Climate Change Unit of AENOR, a CDM DOE and JI AIE, working in UNFCCC, ISO, VCS, GS, WCD, IHA and other certification (validation and verification) schemes

⁶ Interviews

Actually, Luis works as an international consultant providing support and expertise to multilateral and governmental agencies in Paris Agreement implementation, MRV systems, NAMAs, implementation of mitigation projects and in the creation of national carbon policies and new initiatives to scale carbon programs. Furthermore he is an active verifier of EUETS annual reports, Spanish CLIMA projects, ISO 14064 -1 corporate inventories & ISO 14064-2 emission reduction projects. Currently he is associated with LIKEN CARBON HUB and is empaneled with APPLUS certification to carry out GHG audit.

Mr. Miguel A. Cortés Mr. Miguel A. Cortés holds a Bachelor's Science Degree on Civil and Environmental Engineering, being specialized on Hydric Resources.

He has worked as CDM/VCS/GS and environmental consultant for different industries of multidisciplinary sectors world widely.

Mr. Miguel Cortés counts with several years of GHG assessment experience, working and being qualified as Lead Auditor and Technical Reviewer for different DOEs world widely, as well as has been part of Gold Standard expert's committees.

Furthermore, he has performed his professional GHG assessment portfolio career worldwide and focusing in Latin America, developing assessments for projects in Argentina, Mexico, Panama, Colombia and Chile, among others

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	UNFCCC	CDM Validation and Verification Standard for Programmes of Activities version 02.0	29/11/2018	Other
2	UNFCCC	CDM Project Standard for Programmes of Activities version 02.0	29/11/2018	Other
3	UNFCCC	CDM Project Cycle Procedure for Programmes of Activities version 02.0)	29/11/2018	Other
4	UNFCCC	CDM Accreditation Standard version 07.0	01/03/2018	Other
5	UNFCCC	AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass (Version 10.0)	31/08/2018	Other
6	UNFCCC	Standard: Sampling and surveys for CDM project activities and programme of activities (version 08.0)	28/11/2019	Other
7	UNFCCC	Guidelines for sampling and surveys for CDM project activities and programme of activities (version 04.0)	16/10/2015	Other
8	UNFCCC	Guideline on the application of materiality in verifications (version 02.0)	20/02/2015	Other
9	UNFCCC	CDM-PoA-MR-FORM Monitoring report form for CDM programme of activities (version 03.0)	31/05/2019	Other
10	UNFCCC	UNFCCC's list of LDCs	https://unfccc.int/topics/resilience/workstreams/national-adaptationprogrammes-ofaction/ldc-countryinformation	Other
11	CME	Registered PoA-DD version 1.2	26/02/2019	Other
12	CME	Registered CPA-DD version 1.3	08/08/2019	Other

13	Validating DOEs	Validation Reports of PoA-DD and CPA-DD	<u>Val Report CPA</u> <u>Val Report POA</u>	Other
15	CME	Monitoring Report version 01 Monitoring report version 1.2	09/06/2020 28/09/2020	CME
17	CME	Monitoring Survey- 2020	-	CME
18	CME	WBT test reports dated 2020	-	CME
19	CME	Sales Agreements	-	CME
20	CME	ER Calculations _ver02	28/09/2020	CME
22	CME	Survey forms filled	-	CME
23	CME	Calibration Certificates	The scale are auto-calibrated before put in use. The calibration date is 10/05/2020	CME
24	CME	Korean grant received from ECOEYE by AERA for OBEN under the joint development agreement of CDM program dated 15/11/2018	15/11/2018- Agreement date	CME

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

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

FAR ID	NIL	Section no.	Date: DD/MM/YYYY
Description of FAR			
During first monitoring period verification, during onsite visit it was observed that in majority of the household the serial number of the Stoves are not visible clearly. The numbers are curved in the stove and due to usage of the same; the serial numbers are not clearly observed. For the present verification assessment team managed to obtain the serial number however in most probability for the next verification the issue will be critical. The arrangement to make the serial number clearly visible needs to be checked in the next verification.			
The CME is kindly requested to clarify the actions undertaken to make the serial number clearly visible			
CME response			Date: 28/09/2020
Right after the 1 verification, CME started to engrave the serial numbers into the cook stoves for better visibility. Pictures of engraved ICS are submitted to the DOE			
Documentation provided by the CME			
Pictures OBEN stoves with serial numbers engraved (2019).zip			
DOE assessment			Date: 30/09/2020
Evidence have been provided (pictures of the engraved ICS) therefore the DOE deems that the FAR has been correctly implemented			

Table 2. CLs from this verification

CL ID	01	Section no.	E.2.2	Date: 20/09/2020
Description of CL				
Following observation are made by the DOE: .1. In section B.1 of the MR under Para “Records of arrangements for training and capacity development for personnel are maintained. However, the records are not submitted.				
CME response				Date: 28/09/2020
During this monitoring period, only one training of personnel (24 workers) has taken place in the commune of NGOZI, namely from 11 to 14 February 2020. The objective has been to train them in ICS production. The record is submitted.				

Documentation provided by the CME	
FORMATION OBEN NGOZI.pdf	
DOE assessment	Date: 30/09/2020
Evidence has been provided, assessed and deemed correct. CL is closed	

CL ID	02	Section no.	E.2	Date: 20/09/2020
Description of CL				
<p>Following observation are made by the DOE:</p> <ol style="list-style-type: none"> 1. As per the MR <i>"For this monitoring session, the previously monitored value of pop_stoves,y (100%) has been used for ex-ante purposes such as sample size calculation."</i> The estimated value in the previous MR (dated on 31/10/2019) (table 7) for pop_stoves,y=66.67%. In line with the previous MR <i>"For the subsequent monitoring sessions of the same CPA, the previously monitored value of pop_stoves,y shall be used for ex-ante purposes such as sample size calculation"</i> Please clarify. 				
CME response				Date: 28/09/2020
<p>In the previous monitoring period, all stoves have been operational. However, the value of pop_stoves, y has been discounted to take full account of the stipulations in the CPA-DD, namely "In addition to operating status, if baseline stove is not included under baseline defined under the specific CPA, the new device is counted as not operating, i.e. no emission reductions are claimed."</p> <p>As for sample size calculation, the effective rate of operational stoves (100%) was found more relevant than the discounted value.</p>				
Documentation provided by the CME				
Information has been crosschecked with the documents uploaded to UNFCCC, and justification has been correct and in line with the monitoring survey results described for the previous MR verified. Thus the CAR is closed.				
DOE assessment				Date: 30/09/2020
After reviewing the verified of the previous version, it has been confirmed that the consistency of the justification is in line with the monitoring survey results, and in line with the previously monitored value. Therefore the CL is closed				

Table 3. CARs from this verification

CAR ID	01	Section no.	E.3	Date: 20/09/2020
Description of CL				
<p>Following observation are made by the DOE:</p> <ol style="list-style-type: none"> 1. Apparent inconsistencies have been detected regarding the efficiency results for the tested stoves. Average efficiency declared in the spreadsheet 200615 - ER Ex-post Calc - OBEN CDMCPA1 - MR2 , sheet "stove efficiency" are not in line with the figures stated in the Water Boiling Tets Report (Rapport des test d' ebullition de l' eau pour les foyers matawi a bois et charbonde bois realises dans les provinces de Rumonge, Makamba, Bubanza, Ngozi, Kayanza et Rutana du 11 au 15 mai 2020". <p>The CME is kindly requested to clarify and explain the difference between both figures.</p>				
CME response				Date: 28/09/2020

The results presented in the spreadsheet 200615 - ER Ex-post Calc - OBEN CDMCPA1 - MR2 were based on a preliminary efficiency test report by CRUEA, which were revised/finalized in a second stage. The finalized version of the report has been submitted to the DOE and taken account of in a revised MR and ER calculations.	
Documentation provided by the CME	
Revised ER calculations Revised MR	
DOE assessment	Date: 30/09/2020
New version of the documentation and calculation is in line with the evidence provided, therefore the inconsistency has been solved. CAR is closed.	

CAR ID	02	Section no.	F	Date: 20/09/2020
Description of CL				
<p>Following observation are made by the DOE:</p> <p>1. As per the MR "By,savings,i,j= 3.17, as per the spreadsheet 200615 - ER Ex-post Calc - OBEN CDMCPA1 - MR2 , By,savings,i,j= 3.03. The CME is kindly requested to clarify and explain the difference between both figures.</p>				
CME response				Date: 28/09/2020
<p>With the revised value of energy efficiency (see CAR 01) the value of By,savings becomes 3.14. The value has been integrated in the revised MR.</p> <p>The value in version 1.1 of the MR seems to have been a transmission error from the excel sheet.</p>				
Documentation provided by the CME				
Revised MR Revised ER calculations				
DOE assessment				Date: 30/09/2020
New version of the documentation and calculation is in line with the evidence provided, therefore the inconsistency has been solved. CAR is closed.				

Table 4. FARs from this verification

FAR ID	xx	Section No.		Date: DD/MM/YYYY
Description of FAR				
CME response				Date: DD/MM/YYYY
Documentation provided by the CME				
DOE assessment				Date: DD/MM/YYYY

Appendix 5. Data and parameters fixed ex-ante and monitored

Ex-ante Parameter

Parameter	Explanation
<i>Bold,p</i> - Annual quantity of woody biomass that would have been used per person in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices	PP has applied value of 1.07 tonnes/person/year. The value is Country-specific, conservative literature as detailed in PoA-DD section I.6.1. Since the Value is as per the registered PoADD, the same is acceptable to the assessment team. The value is used for baseline emission calculation.
<i>Np,HH</i> : Average number of persons served per household prior to project implementation	PP considered the value 4.7 which is considered from USAID 2008: Burundi Population Survey: Status and Structure of Population (p.34)6. Since the Value is as per the registered PoA-DD, the same is acceptable to the assessment team. The value is used for baseline emission calculation.
<i>Bold,HH</i> : Annual quantity of woody biomass that would have been used in the household in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project devices	PP considered the value as 5.03 tonnes/household/year. The value is used for baseline emission calculation. Since the Value is as per the registered PoA-DD, the same is acceptable to the assessment team
<i>Bold,i,j</i> : Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type <i>i</i> and batch <i>j</i>	PP considered the value as 5.03 tonnes/year. The value is used for baseline emission calculation. Since the Value is as per the registered PoA-DD, the same is acceptable to the assessment team.
<i>ηold,i,j</i> : Efficiency of the device being replaced	PP used the value as 0.1. The value is Determined ex ante at CPA-level, based on AMS-II.G. for default values and/or baseline survey literature, statistics etc. Since the project device, which is a three stone fire using firewood (not charcoal), or a conventional device with no improved combustion air supply or flue gas ventilation, that is without a grate or a chimney the value is considered correct. The value is used for baseline emission calculation.
Leakage Net to gross adjustment factor to account for leakages	<i>Bold</i> is multiplied by a net to gross adjustment factor of 0.95 to account for leakages according to AMSII. G. The same is as per the requirement of the meth. Used for the Calculation of baseline emission.
<i>fNRB,y</i> Fraction of woody biomass saved by the project activity in year <i>y</i> that can be established as non-renewable biomass.	The source of data is National or local statistics or other sources of information (following TOOL30: Calculation of the fraction of non-renewable biomass). Value applied is 81.83%

Monitored

Net calorific value of the nonrenewable woody biomass that is substituted(<i>NCVbiomass</i> ,TJ/t)	PP has selected IPCC default value i.e., 0.015 TJ/t. It is used for calculation of project emissions or actual net GHG removals by sinks, fixed at PoA level and for entire crediting period of the CPA. The verification team confirms that IPCC default value for
---	---

	wood fuel is 0.0156 TJ/tonne can be used for net calorific value of the nonrenewable woody biomass that is substituted (NCVbiomass) which is in line with the applied methodology(AMS-II.G, paragraph 11)																																																
Number of project devices of type i operating in year y (Ny,i, Number)	<p>Ny,i,j is determined by multiplying all devices sold (N) with the weighted-average proportion of cooking stoves found to be operating in a representative sample, i.e. pop_stoves,y (= 92.76%).</p> <ul style="list-style-type: none">Batch 1 covers stoves sold between 02/11/2018 and 01/11/2019.Batch 2 covers stoves sold between 02/11/2019 and 01/12/2020. <p>However, since the cut-off date of this monitoring period has been 30/04/2020, batch 2 represents stoves sold between 02/11/2019 and 24/04/2020 only.</p> <table><tr><td rowspan="10">Batch 1</td><td>Batch average</td><td>97,14%</td></tr><tr><td>Sample size</td><td>35</td></tr><tr><td>Total population size</td><td>42290</td></tr><tr><td>Required precision</td><td>90%</td></tr><tr><td>z-value at 90% confidence</td><td>1,64</td></tr><tr><td>Confidence interval (+/-)</td><td>5%</td></tr><tr><td>Lower bound of the interval (1-p)</td><td>92,51%</td></tr><tr><td>Higher bound of the interval (1-p)</td><td>101,77%</td></tr><tr><td>Maximum error (precision)</td><td>10%</td></tr><tr><td>Sample monitoring precision</td><td>5%</td></tr><tr><td colspan="2">Conclusion Precision OK</td></tr></table> <table><tr><td rowspan="10">Batch 2</td><td>Batch average</td><td>100,00%</td></tr><tr><td>Sample size</td><td>35</td></tr><tr><td>Total population size</td><td>40325</td></tr><tr><td>Required precision</td><td>90%</td></tr><tr><td>z-value at 90% confidence</td><td>1,64</td></tr><tr><td>Confidence interval (+/-)</td><td>0%</td></tr><tr><td>Lower bound of the interval (1-p)</td><td>100,00%</td></tr><tr><td>Higher bound of the interval (1-p)</td><td>100,00%</td></tr><tr><td>Maximum error (precision)</td><td>10%</td></tr><tr><td>Sample monitoring precision</td><td>0%</td></tr><tr><td colspan="2">Conclusion Precision OK</td></tr></table>	Batch 1	Batch average	97,14%	Sample size	35	Total population size	42290	Required precision	90%	z-value at 90% confidence	1,64	Confidence interval (+/-)	5%	Lower bound of the interval (1-p)	92,51%	Higher bound of the interval (1-p)	101,77%	Maximum error (precision)	10%	Sample monitoring precision	5%	Conclusion Precision OK		Batch 2	Batch average	100,00%	Sample size	35	Total population size	40325	Required precision	90%	z-value at 90% confidence	1,64	Confidence interval (+/-)	0%	Lower bound of the interval (1-p)	100,00%	Higher bound of the interval (1-p)	100,00%	Maximum error (precision)	10%	Sample monitoring precision	0%	Conclusion Precision OK			
Batch 1	Batch average		97,14%																																														
	Sample size		35																																														
	Total population size		42290																																														
	Required precision		90%																																														
	z-value at 90% confidence		1,64																																														
	Confidence interval (+/-)		5%																																														
	Lower bound of the interval (1-p)		92,51%																																														
	Higher bound of the interval (1-p)		101,77%																																														
	Maximum error (precision)		10%																																														
	Sample monitoring precision	5%																																															
Conclusion Precision OK																																																	
Batch 2	Batch average	100,00%																																															
	Sample size	35																																															
	Total population size	40325																																															
	Required precision	90%																																															
	z-value at 90% confidence	1,64																																															
	Confidence interval (+/-)	0%																																															
	Lower bound of the interval (1-p)	100,00%																																															
	Higher bound of the interval (1-p)	100,00%																																															
	Maximum error (precision)	10%																																															
	Sample monitoring precision	0%																																															
Conclusion Precision OK																																																	
μ y : Adjustment to account for any continued use of pre-project devices during year y	<p>During the annual monitoring campaign, CME-mandated field agents inquire if the baseline stove that was supposed to be replaced by the ICS is still used. Field agents estimate the usage rate of the pre-project stove(s) by formulating questions to determine the frequency of usage of both the project devices and baseline devices. The same is checked and found correct in the Monitoring survey sheet provided. The proportion of continued use of pre-project stoves is calculated as 1 - μ y</p> <table><tr><td colspan="2">Batch 1 average</td><td colspan="2">Batch 2 average</td></tr><tr><td>Batch 1 average</td><td>6,30%</td><td>Batch 2 average</td><td>5,06%</td></tr><tr><td>Sample size</td><td>35</td><td>Sample size</td><td>35</td></tr><tr><td>Total population size</td><td>42290</td><td>Total population size</td><td>40325</td></tr><tr><td>Required precision</td><td>90%</td><td>Required precision</td><td>90%</td></tr><tr><td>z-value at 90% confidence</td><td>1,64</td><td>z-value at 90% confidence</td><td>1,64</td></tr><tr><td>Confidence interval (+/-)</td><td>7%</td><td>Confidence interval (+/-)</td><td>6%</td></tr><tr><td>Lower bound of the interval (1-p)</td><td>-0,45%</td><td>Lower bound of the interval (1-p)</td><td>-1,03%</td></tr><tr><td>Higher bound of the interval (1-p)</td><td>13,06%</td><td>Higher bound of the interval (1-p)</td><td>11,15%</td></tr><tr><td>Maximum error (precision)</td><td>10%</td><td>Maximum error (precision)</td><td>10%</td></tr><tr><td>Sample monitoring precision</td><td>7%</td><td>Sample monitoring precision</td><td>6%</td></tr><tr><td colspan="2">Conclusion Precision OK</td><td colspan="2">Conclusion Precision OK</td></tr></table> <p>Batch-weighted value:5,70% The calculation is found correct</p>	Batch 1 average		Batch 2 average		Batch 1 average	6,30%	Batch 2 average	5,06%	Sample size	35	Sample size	35	Total population size	42290	Total population size	40325	Required precision	90%	Required precision	90%	z-value at 90% confidence	1,64	z-value at 90% confidence	1,64	Confidence interval (+/-)	7%	Confidence interval (+/-)	6%	Lower bound of the interval (1-p)	-0,45%	Lower bound of the interval (1-p)	-1,03%	Higher bound of the interval (1-p)	13,06%	Higher bound of the interval (1-p)	11,15%	Maximum error (precision)	10%	Maximum error (precision)	10%	Sample monitoring precision	7%	Sample monitoring precision	6%	Conclusion Precision OK		Conclusion Precision OK	
Batch 1 average		Batch 2 average																																															
Batch 1 average	6,30%	Batch 2 average	5,06%																																														
Sample size	35	Sample size	35																																														
Total population size	42290	Total population size	40325																																														
Required precision	90%	Required precision	90%																																														
z-value at 90% confidence	1,64	z-value at 90% confidence	1,64																																														
Confidence interval (+/-)	7%	Confidence interval (+/-)	6%																																														
Lower bound of the interval (1-p)	-0,45%	Lower bound of the interval (1-p)	-1,03%																																														
Higher bound of the interval (1-p)	13,06%	Higher bound of the interval (1-p)	11,15%																																														
Maximum error (precision)	10%	Maximum error (precision)	10%																																														
Sample monitoring precision	7%	Sample monitoring precision	6%																																														
Conclusion Precision OK		Conclusion Precision OK																																															
ηnew,i,j Efficiency of the device of each type i and batch j implemented as part of the project activity	<p>Water boiling Tests is done for the parameter to determine which is as per the requirement of Meth AMS.II.G version 10. Annual monitoring as default option c) is chosen to adjust for the loss in efficiency as per paragraph 25 of AMS II.G. Mean of three tests for each of the five cook stoves carried out between 11/05/2020 and 15/05/2020</p>																																																

	<table><tr><td rowspan="12">Batch 1</td><td>Average efficiency</td><td>29.43%</td></tr><tr><td>Standard deviation</td><td>0.0088</td></tr><tr><td>Sample size</td><td>5</td></tr><tr><td>Total population size</td><td>42,290</td></tr><tr><td>Required precision</td><td>0.90</td></tr><tr><td>t-value at 90% confidence</td><td>213%</td></tr><tr><td>Confidence interval (+/-)</td><td>0.84%</td></tr><tr><td>Lower bound of the interval</td><td>28.59%</td></tr><tr><td>Higher bound of the interval</td><td>30%</td></tr><tr><td>Maximum error (precision)</td><td>10%</td></tr><tr><td>Sample precision</td><td>3%</td></tr><tr><td>Conclusion</td><td>Precision OK</td></tr></table> <table><tr><td rowspan="12">Batch 2</td><td>Average efficiency</td><td>28.97%</td></tr><tr><td>Standard deviation</td><td>0.0052</td></tr><tr><td>Sample size</td><td>5</td></tr><tr><td>Total population size</td><td>40,325</td></tr><tr><td>Required precision</td><td>0.90</td></tr><tr><td>t-value at 90% confidence</td><td>213%</td></tr><tr><td>Confidence interval (+/-)</td><td>0.50%</td></tr><tr><td>Lower bound of the interval</td><td>28.47%</td></tr><tr><td>Higher bound of the interval</td><td>29%</td></tr><tr><td>Maximum error (precision)</td><td>10%</td></tr><tr><td>Sample precision</td><td>2%</td></tr><tr><td>Conclusion</td><td>Precision OK</td></tr></table> <p>Stove numbers of stoves tested from</p> <ul style="list-style-type: none">batch 1 are O5KAY035606, O6NGO032060, 08MAK034211, 09RUM036800, 07RUT032650 andbatch 2 are 05KAY75701, 08MAK044498, O2BUBO064177, 08MAK054632, O8MAK67533. <p>Tests were performed by third party “Centre de Recherche Universitaire sur les Energies Alternatives (CRUEA)” (University of Burundi) with calibrated equipment. Sampling test have been conducted following a 90/10 precision in accordance with the “Standard for sampling and surveys for CDM project activities and programme of activities”, and 90/10 precision was met (see above).</p>	Batch 1	Average efficiency	29.43%	Standard deviation	0.0088	Sample size	5	Total population size	42,290	Required precision	0.90	t-value at 90% confidence	213%	Confidence interval (+/-)	0.84%	Lower bound of the interval	28.59%	Higher bound of the interval	30%	Maximum error (precision)	10%	Sample precision	3%	Conclusion	Precision OK	Batch 2	Average efficiency	28.97%	Standard deviation	0.0052	Sample size	5	Total population size	40,325	Required precision	0.90	t-value at 90% confidence	213%	Confidence interval (+/-)	0.50%	Lower bound of the interval	28.47%	Higher bound of the interval	29%	Maximum error (precision)	10%	Sample precision	2%	Conclusion	Precision OK
Batch 1	Average efficiency		29.43%																																																
	Standard deviation		0.0088																																																
	Sample size		5																																																
	Total population size		42,290																																																
	Required precision		0.90																																																
	t-value at 90% confidence		213%																																																
	Confidence interval (+/-)		0.84%																																																
	Lower bound of the interval		28.59%																																																
	Higher bound of the interval		30%																																																
	Maximum error (precision)		10%																																																
	Sample precision		3%																																																
	Conclusion	Precision OK																																																	
Batch 2	Average efficiency	28.97%																																																	
	Standard deviation	0.0052																																																	
	Sample size	5																																																	
	Total population size	40,325																																																	
	Required precision	0.90																																																	
	t-value at 90% confidence	213%																																																	
	Confidence interval (+/-)	0.50%																																																	
	Lower bound of the interval	28.47%																																																	
	Higher bound of the interval	29%																																																	
	Maximum error (precision)	10%																																																	
	Sample precision	2%																																																	
	Conclusion	Precision OK																																																	
<i>Date of commissioning of project device i</i> Actual date of commissioning of the project device	Every time an ICS is sold a sales agreement is filled. The information is entered in the ER database afterwards. Based on the database, the date of commissioning is determined, assuming conservative lead times between sale, construction/installation and commissioning. The Database is checked for the monitoring period and found correct by the assessment team																																																		
Number of project devices distributed	Every time an ICS is sold a sale agreement is filled and an ER database is filled. Based on the information collected into this database, the number of ICSs distributed is determined. The Database is checked and found correct																																																		
Number of project devices distributed per household	Only one cooking stove per household is registered in the ER database and has the Sales agreement. If a household purchases more than one cooking stoves, monitoring surveys of sampled kitchens’ stoves in use will account for any additional project device and be reflected in adjustment factor Nd,HH. The same is acceptable by the DOE																																																		

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 validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN); • Make structural and editorial improvements.
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying		