



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

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	BQS improved cookstoves for Burundi's schools (UNFCCC Ref. No. 9791 ¹)
Scale of the project activity	<input type="checkbox"/> Large-scale <input checked="" type="checkbox"/> Small-scale
Version number of the verification and certification report	02.1
Completion date of the verification and certification report	23/09/2020
Monitoring period number and duration of this monitoring period	Monitoring period number: 01 Monitoring period: 25/01/2016 - 31/12/2018 (Inclusive of both days)
Version number of the monitoring report to which this report applies	2.1
Crediting period of the project activity corresponding to this monitoring period	25/01/2016 to 24/01/2023 (Renewable)
Project participants	Burundi Quality Stoves S.A. Shell Trading International Limited
Host Party	Burundi
Applied methodologies and standardized baselines	Methodology: - AMS-I.E – “Switch from non-renewable biomass for thermal applications by the user” – version 05.0 Standardized Baseline: Not Applicable
Mandatory sectoral scopes	1: Energy industries (renewable - / non-renewable sources)
Conditional sectoral scopes, if applicable	NA
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	534,711 tCO ₂ e
Certified amount of GHG emission reductions or GHG removals for this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012: 0 tCO ₂ e GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards: 306,622 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/Projects/DB/TUEV-RHEIN1385004301.04/view>

**Name, position and signature of the approver
of the verification and certification report**

Mr. Juan Sendín Caballero

Applus+ Certification Business Unit Managing Director

Signature:



SECTION A. Executive summary

Burundi Quality Stoves (BQS) has developed an improved cookstoves project for schools of Burundi. The small scale CDM project activity aims at:

1. Distributing institutional improved cookstoves (IICS) in schools of Burundi to replace currently used old masonry stoves and open fire three-stone system (and traditional stoves); and
2. Switching from non-renewably logged trees to a sustainable energy supply: briquettes made of renewable biomass waste.

Compared to the commonly used three-stone fires or traditional stoves, the advanced closed technology of the fixed IICS installed allows quicker heating-up, longer cooking and heat retaining with less fuel wood as well as lower combustion fumes. It results in saving wood-fuel and associated expenses. Along with the diffusion of such a stove to replace currently inefficient cooking systems, a renewable biomass supply-chain has been set up, by sourcing unutilized biomass residues to produce renewable biomass briquettes and market it to the participating schools in replacement of their non-renewable wood fuel.

As section B.1 shows, the initially considered IICS designed by the Turkish company SOBAH (indicative choice only), has finally not been selected for design and price reasons. Also, no masonry stoves have been refurbished. Both decisions have no impact on the already established baseline. Furthermore, as described below and due to an incompleteness notification, the PP has go through PRC in Issuance Track in order to reflect these actual project circumstances in the PDD. On the other hand, less stoves of only one size and of fixed type as well as more schools have been involved in the project activity.

The implementation of 940 stoves (instead of up to 1,300) in 284 schools (instead of 99), supplied with 12,631 tonnes of renewable biomass briquettes, and the associated awareness and training campaigns in schools has helped halving these communities' fuel use and turning it 100% renewable. Over this first monitoring period, the project has saved 306,622 tCO_{2e} greenhouse gas emissions by reducing the use of non-renewable biomass within the country, thus slowing down deforestation.

1. Verification Scope: The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. The verification is based on the submitted monitoring report, the validated and registered PDD as well as its validation report, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance. Based on the requirements in the "CDM validation and verification standard for project activities, Version 02", Applus+ Certification has applied a rule-based approach for the verification of the project. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion. The verification considers both quantitative and qualitative information on emission reductions. The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

2. Methodology:

LGA Technological Center, S.A. (Applus+ Certification) – Hereinafter referred as Applus+ Certification - approach to the verification is a two-stage process.

In the 1st stage, Applus+ Certification completed a strategic review and risk assessment of the project activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report

Applus+ Certification used a Periodical Verification Checklist that, based on the risk-based assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

3. Desk Review

In the 1st stage, using the Verification Checklist, Applus+ Certification verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the Monitoring Report. This Verification Report describes the findings of this assessment.

The Monitoring Report version 01 submitted by the PP was made publicly available on the UNFCCC website before the verification activities started. The published MR was assessed based on all the relevant documents. The aim of the assessment in the desk review was to:

- Verify the completeness of the data and the information presented in the MR;
- Check the compliance of the MR with respect to the monitoring plan depicted in the registered PDD and verify that the applied methodology were carried out. Particular attention to the frequency of measurements and the quality assurance and quality control procedures was paid;
- Evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

4. Assessment team

According to the sectoral scope / technical area and experience in the sectoral or national business environment, LGAI Technological Center, S.A. (Applus+ Certification) has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of LGAI Technological Center, S.A. (Applus+ Certification).

The LGAI Technological Center, S.A. (Applus+ Certification) ensuring that the required skills are covered by the team shall approve the composition of audit team

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

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

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

Name	Role	SS Coverage	TA Coverage	Financial aspect
Mr. Sukanta Das	LA/TE	YES	YES	NA
Mr. Denny Xue	TR	YES	YES	NA

The curriculum vitae of the DOE's Verification team members are provided in Appendix 2 of this report.

4. Review of Documentation:

The Monitoring Report version 01 submitted by the PP was made publicly available on the UNFCCC website before the verification activities started. The published MR was assessed based on all the relevant documents. A cross-check between information provided and information from other sources has been done. A complete list of documents reviewed is available in Appendix 3 of this report.

5. On-site Assessment and follow-up Interviews:

As a part of the verification, the assessment team has performed the on-site inspection.

The objective of the on-site assessment is to:

- Confirm the implementation and operation of the project;
- Review the data flow for generating, aggregating and reporting the monitoring parameters;
- Confirm the correct implementation of procedures for operations and data collection;
- Cross-check the information provided in the MR documentation with other sources;
- Review the calculations and assumptions used to obtain the GHG data and ER;
- Identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

The details are mentioned in section D.2 of this report.

6. Quality of Evidences

Sufficient evidence covering the full verification period in the required frequency is available to verify the figures stated in the final MR. The source of the evidences will be discussed in Appendix 3 of this report. Specific cross-checks have been done in cases that further sources were available. The assessment team against the raw data checked the monitoring report's figures. The data collection system meets the requirements of the monitoring plan as per the methodology.

7. Reporting of Findings

As an outcome of the verification process, the assessment team can raise different types of findings.

Where a non-conformance arises the assessment team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- a) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- b) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- c) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

The assessment team shall raise a Clarification Request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.

Forward Action Requests (FARs) may be raised during verification for actions where the monitoring and reporting require attention and/or adjustment for the next verification period. All the CARs/CLs/FARs are being discussed in Appendix 4 of this report

8. Internal Quality Control

As a final step of verification, the final documentation including the verification report has to undergo an internal quality control by the Technical Reviewer. Each report has to be finally approved by either the DOE's Technical Manager or the Deputy. In case one of these two persons is part of the assessment team, the person who is not a part of the assessment team can only give the approval. If the documents have been satisfactorily approved, the request of issuance is submitted to CDM EB along with the requisite documents.

Note: Incompleteness

On 21/07/2020 an incompleteness notification has been received by UNFCCC's end. In this sense, the PP has provided the necessary evidences and documentation in order to solve the raised comments. In the same sense, the DOE has amended this Final Verification Report and provided UNFCCC with a separate document explaining the taken actions to address UNFCCC's comments.

Furthermore, and resulting from the raised comments, the PP has decided to go through Post Registration Changes in Issuance Track and the assessment has been done by the DOE accordingly. The DOE provides the revised PDD, its supporting documentation and PRC assessment along with this revised Verification Report.

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Verification findings
1.	Lead Auditor/ Technical Expert	OR	Das	Sukanta	True Quality Certifications private Limited- Outsourced entity	Yes	Yes	Yes	Yes

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	EI	Xue	Denny	Applus+ Certification
2.	Approver	IR	Sendin Caballero	Juan	Applus+ Certification

SECTION C. Application of materiality

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.</p> <p>The errors may come from human error during the information transfer from the sources of the data to the digital forms used for monitored parameters.</p>	MEDIUM	Human error is likely to occur if the monitoring personnel are not trained well or inexperienced in data recording procedures and monitoring processes.	<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 on site visit 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 has physically visited 14 households as a sample however checked the complete records like:</p> <ol style="list-style-type: none"> 1. BQS delivery note 2. Education ministry report 3. Order and delivery records for the complete monitoring period.
2	Human error: Quantification of emission reduction	LOW	Use of spread-sheets without adequate data control, changes/updates, version tracking, traceability and security	All the BQS delivery notes, Education ministry records, Order and delivery records for the complete monitoring period are checked and thus the assessment team confirms that the ER value is conservative and correct.

C.2. Consideration of materiality in conducting the verification

In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread-sheet. There are no material errors, overestimation of ER, omission or misstatement.

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.

The initial MR Version 01 submitted by the project participant and additional background documents related to the emission reductions are reviewed as an initial step of the verification process. The subsequent step involved the identification of corrective action requests, clarification requests and Forward action request (CAR, CL and FAR) which are presented in Appendix 4 of this report. As a result of these findings and a notification of incompleteness, the MR is revised to MR Version 02.1. A complete list of all documents and records reviewed is as attached in Appendix 03 of this report.

D.2. On-site inspection

Duration of on-site inspection: 25/11/2019 to 27/11/2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	<p>The verification team conducted visit to the project site to confirm the information and to resolve issues identified in the document review. An on-site assessment was conducted as a part of verification activity and involved:</p> <p>1) an assessment of the implementation and operation of the CDM project activity as per the registered PDD</p> <p>2) a review of information flows for generating, aggregating and reporting of the monitoring parameters</p> <p>3) interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the Monitoring Plan</p> <p>4) a cross-check between information provided in the MR and data from other sources</p> <p>5) a check and observations of monitoring practices against the requirements of the PDD and the applied methodology</p> <p>6) a review of calculations and assumptions made in determining the GHG data and ERs, and</p> <p>7) an identification of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters</p>	<p>The project location are described below:</p> <p><u>Host Party:</u> The Republic of Burundi is the host country.</p> <p><u>Region/State/Province:</u> All provinces, starting by Bujumbura province.</p> <p><u>City/Town/Community etc.:</u> All schools communities' locations, starting by Bujumbura.</p>	25/11/2019 to 27/11/2019	Mr. Sukanta Das

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Mayr	Sebastian	AERA group	25/11/2019 to 27/11/2019	As mentioned above in section D.2 of this report	Mr. Sukanta Das
2.	NDIZEYE	Claver	OBEN	25/11/2019 to 27/11/2019	As mentioned above in section D.2 of this report	Mr. Sukanta Das
4.	14 interviews to independent schools representatives in the Districts: Bujumbura Bubanza (See the list below)	Schools	-	25/11/2019 to 27/11/2019	DOE site inspection and survey of IICS users (Usage Survey, Distribution system of IICS, Baseline fuel usage, Type of IICS used)	Mr. Sukanta Das

5.	ECOFORU KARAMU II	Schools	-	25/11/2019	Project implementation and operation, Sales / Distribution records	Mr. Sukanta Das
6.	ECOFORU KARAMU I					
7.	ECOFBW IZA BWA					
8.	ECOFONY ESHANGF					
9.	ECOFOM WGERER O					
10.	ECOFOMA HORO			26/11/2019		
11.	ECOPUGI HUWGWE					
12.	ECOFOMU YANGE					
13.	ECOFOMA RAMVYA III					
14.	ECOFOMU TIUBUZI					
15.	ECOFBU HOMBA			27/11/2019		
16.	ECOFORU HENBEI					
17.	ECOFORU HEMBE II					
18.	ECOFBU GANDAI					

D.4. Sampling approach

Assessment team during the onsite visit observed and confirmed that since January 2016, the project activity has implemented 940 institutional improved cooking stoves in 284 schools spread over 16 communes in 4 provinces (Bubanza, Bujumbura, Cibitoke, and Gitega) supplied with 12,631 tonnes of renewable briquettes during the first monitoring period. PP however adopted no sampling plan since all participating school sites are exhaustively monitored in the Project.

During the onsite visit it was found that provinces Cibitoke, and Gitega could not be visited because the security issues and conflictive zone. At the time of site visit, as well many places in the provinces of Bujumbura and Bubanza are also restricted for the visit in the later part of 2019 (in and around the site visit date). Assessment team undergone different web-link and newspaper reports and confirm the same. The links are provided below:

<https://www.osac.gov/Country/Burundi/Content/Detail/Report/b2893cfc-a67f-445e-a229-15f4aed057bf>

Several incidents in the second half of 2019 confirm the existing issue:

- a) <http://burundi-agnews.org/afrique/des-elements-armees-venus-du-rwanda-ont-attaque-le-burundi/>
- b) <https://www.jeuneafrique.com/846420/politique/burundi-des-affrontements-entre-forces-de-securite-et-rebelles-font-plusieurs-morts/>
- c) <https://www.africanews.com/2019/12/31/burundian-journalists-face-15-year-jail-term-for-breaching-state-security/>

To have a conservative estimation of CER, assessment team undergone the visit to the schools on sampling basis as per the "Sampling and surveys for CDM project activities and programmes of activities" version 08.0

and since Burundi is a Least Developed Country², applying paragraph 39 (c) of the Standard (also paragraph 39 (b) is applicable due to the security circumstances given above). A sample size of 14 Schools was chosen (with no discrepant records). A sample size of 14 was required, based on an AQL of 1 % and UQL of 20 %, producer risk 5 % and consumer risk 20 %. Acceptance number (c) thus determined for the sample is 1. DOE visited 14 samples. It was observed that out of the 14 samples, 14 stoves in the schools were found to be operational and this matched with the PP's records and hence no discrepant records were observed with the published MR and ER sheet and thus c=0. Thus, PP'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, Paragraph 33.

The sampling approach is only adopted for the visit to the schools (as per the restriction and conflicting situation inside the country) however all the supporting documents for the monitoring parameters related to emission reduction calculation were checked by the assessment team for the present monitoring period and found correct. No sampling approach adopted for the supporting document verification related to the monitoring parameter and emission reduction calculation. Moreover, the wood-fuel supply refund will be centralised at the ministry level so all wood-fuel ordered by schools for cooking activities thus is easily tracked and recorded. The ministry records were checked and the values are found correct and conservative. Assessment team therefore confirms that the actual emission reduction calculation is correct and conservative for the present monitoring period.

D.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	00	00	00
Compliance of the project implementation and operation with the registered PDD	00	03	00
Post-registration changes	00	00	00
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	00	00	00
Compliance of monitoring activities with the registered monitoring plan	00	02	00
Compliance with the calibration frequency requirements for measuring instruments	00	00	00
Assessment of data and calculation of emission reductions or net removals	00	02	00
Assessment of reported sustainable development co-benefits	00	00	00
Global stakeholder consultation	00	00	00
Others (please specify) –	00	00	00
Total	00	07	00

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

SECTION E. Verification findings

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

Means of verification	The verification team has 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.
Findings	No CAR/CL raised for the section
Conclusion	The MR was web hosted in version 07.0 of the MR form, which was the current and active version in the UN platform. PP used the latest version of the MR template available on UN web site i.e. version 07 for correction of the CAR/CL raised and submitted the same to DOE for further assessment. The monitoring report has been prepared as per the instructions provided in the template. DOE has made the version 01 of the monitoring report covering the monitoring period from 01/06/2014 to 31/12/2018 (inclusive of both days) publicly available through its dedicated interface on the UNFCCC CDM website before undertaking the site visit for the verification on 25/11/2019 to 27/11/2019. The verification team has concluded that the monitoring report was completed using the valid version of the applicable monitoring report form and is followed the guidelines contained in the template.

E.2. Remaining forward action requests from validation and/or previous verifications

This is 1st periodic verification of the project activity. No FAR was raised during the validation of the project activity.

E.3. Compliance of the project implementation and operation with the registered project design document

Means of verification	The verification team determined the conformity of the actual implemented project activity and its operation with the registered project design document. DOE has, by means of a desk review and an on-site visit, assessed whether all physical features of the proposed CDM project activity proposed in the registered PDD are in place, and that the project participants have operated the CDM project activity as per the registered PDD.
Findings	CAR 01, CAR 02 and CAR 03 were raised during the verification process that was closed successfully. Please refer Appendix 4 of this report for the detailed closure of the CAR
Conclusion	<p>The verification team has reviewed the Order and delivery records/Sales agreement to conclude the total number of IICS large (distributed) or replaced by an equivalent appliance for the present monitoring period. The number of stoves distributed is therefore calculated as per the requirement of the registered PDD and hence acceptable to the assessment team.</p> <p>As section B.1 shows, the initially considered IICS designed by the Turkish company SOBAH (indicative choice), has finally not been selected for design and price reasons. The decision has no impact on the already established baseline. On the other hand, less stoves of only one size and of fixed type as well as more schools have been involved in the project activity.</p> <p>Assessment team during the onsite visit and relevant document verification related to the monitoring parameter confirmed that since January 2016, the project activity has implemented 940 institutional improved cooking stoves in 284 schools spread over 16 communes in 4 provinces (Bubanza, Bujumbura, Cibitoke, and Gitega) supplied with 12,631 tonnes of renewable briquettes during the first monitoring period.</p> <p>The project is small-scale project type (Type I) remained under the limit of that type every year given that the conservative amount of improved cooking devices installed (940 IICS) at 32.78kW_{th}/stove (As per CRUEA Water Boiling tests performed on April 14th, 2019) totals 30.81 MW_{th} which is below the small-scale threshold of 45 MW_{th}. This is with regard to the requirement of the registered PDD and the project therefore remains under the limit of small-scale threshold.</p> <p>The project aims to switch the fuel consumption of the schools of Burundi from non-renewable biomass consumption for thermal applications into renewable sources, thanks to innovative production of briquettes made of renewable biomass wastes in Bujumbura with</p>

	<p>briquetting machines Jumbo 90.</p> <p>The DOE has verified the origin of the biomass is a renewable source by following means: by evidencing the sales receipts for the monitoring period for the acquired renewable biomass in which is shown the nature of the product, being e.g. coffee, <i>inter alia</i> of renewable biomass. The DOE has also cross-checked the contract between the entity BQS and the Central Coffee Office of Burundi, in which it is evidenced that the parties recognize the utility of use the agriculture wastes along with the importance of ecosystem protection and conservation. In the latter document, it is stated in its Art. 1 that the biomass residues would have been burnt in the absence of the project activity.</p> <p>Hence, the DOE is able to confirm based on the documentary review performed plus the onsite inspection and visual inspection of the briquettes, that the biomass used in the project activity is coming from biomass residues from agricultural activities in the area that are recovered and valorized in the project activity.</p> <p>Compared to the formerly used traditional stoves, the advanced design of the institutional improved cook stoves (IICS) employed in the project allows quicker heating-up, longer cooking and heat retaining with less wood fuel as well as lower combustion fumes. The same is checked by the assessment team during the onsite visit and found correct.</p> <p><u>Physical/ Geographical location:</u> The project is to take place in schools in Burundi, starting with Bujumbura province. As a reference, Bujumbura city centre's geo-coordinates are 3°22'34" S and 29°21'36" E.</p> <p>The country-wide geographical area corresponds to the area where renewable biomass is distributed and used in replacement of the former non-renewable woodfuel in IICS.</p> <p>Based on the documentary evidence of commissioning certificates and physical verification DOE concludes that the project was implemented as per the registered PDD.</p>
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E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents³

There are no temporary deviations observed for this monitoring period.

E.4.2. Corrections

The following summarized corrections have been submitted in PRC Issuance Track along with this verification:

Small corrections to the project information, *inter alia* such as specification of the term "Improved Cook Stove (ICS)" by Institutional Improved Cook Stove (IICS)" (multiple sections), revision of the section on Sustainable Development, or update of location and number of briquetting machines.

Corrections that are being submitted with this monitoring report as part of the request for issuance (post-registration change – issuance track) are applicable from this monitoring period.

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

Assessment team confirms that the crediting period start date has been postponed from previously expected 01/06/2014 to a final start date on 25/01/2016, in compliance with §278 "Changes to the start date of the crediting period" of the CDM Project Standard for Project Activities version 02.0. Since the project falls in

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.

LDC country, therefore the intimation to UNFCCC is considered sufficient to shift the start date of the crediting period. Assessment team checked UN home page as well and confirmed the new crediting period duration for the project activity is 25 Jan 16 - 24 Jan 23 (Renewable).
<https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1385004301.04/view>.

E.4.4. Inclusion of a monitoring plan

Not applicable for present Monitoring period

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

The following summarized permanent changes have been submitted in PRC Issuance Track along with this verification:

Monitoring change (update) of the school years duration and stoves operational status: School year calendar duration is estimated ex-ante at 226 days (three-year average from 2016/17 to 2018/19) instead of 241 days and to be monitored ex-post at actual.

O_{p_kitchen i,y}: the parameter has a value of 1 if kitchen *i* still operates all of the installed IICS, or a prorate of the IICS found in order of operation out of the total number of IICS initially installed, or a value of 0 if none of the IICS operate.

The operating kitchen status is further discounted by the weighted duration of eventual renewable briquettes shortages (in this case they temporarily have to revert to using firewood instead). In this context, it can be assumed that schools have classes and cook the meals every single day of the school year calendar (except in case of Force Majeure closure). Student attendance is incentivized by the provision of the meals.

Streamline of parameter table in section 7.1 to have a biennial monitoring frequency in both places where it is mentioned in the table (as there was an error in the registered PDD and the monitoring frequency was biennial). This is consistent with the monitoring performed by the PP. The PP also removed the words "statistical average" in "source of data" of the parameter's table.

These changes are permanent changes to the registered monitoring plan and are submitted with this monitoring report as part of the request for issuance (post-registration change - issuance track) are applicable from this monitoring period.

E.4.6. Changes to the project design

The following summarized changes to project design have been submitted in PRC Issuance Track along with this verification:

Replacement of ex-ante indicative Turkish-manufactured cook stove by "Institutional Improved Cook Stove (IICS)" and focus on installation of new IICS (as opposed to refurbishment of masonry stoves for briquettes consumption, option that has been deleted from the PA).

Furthermore, update to the types of schools and baseline woodfuel consumption: While initially envisaged in boarding schools only at project inception and initial PDD registration request, the Government's schools canteen program has been extended to further schools including primary and secondary "non-boarding" schools (day schools), due to the lenders' growing interest in supporting food programmes for children and their families through the educative institutions and local agricultural production at the same time.

The changes that are being submitted with this monitoring report as part of the request for issuance (post-registration changes - issuance track) are applicable from this monitoring period

E.4.7. Changes specific to afforestation and reforestation project activities

Not applicable for the project activity

E.5. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	The verification team determined whether the registered monitoring plan is in accordance with the applied methodology AMS-I.E version 05 including applicable tools.
Findings	No finding was raised regarding Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline.
Conclusion	The verification team was able to confirm that the monitoring plan contained in the registered PDD is in accordance with the approved methodology applied by the project activity, i.e. AMS-I.E version 05 and its applicable tools.

E.6. Compliance of monitoring activities with the registered monitoring plan**E.6.1. Data and parameters fixed ex ante or at renewal of crediting period**

Means of verification	The assessment team checked the registered PDD to confirm the ex-ante fixed parameter mentioned in the current monitoring report. Assessment team also interviewed the personal onsite to check further regarding the ex-ante values used for emission reduction calculation.
Findings	No finding were raised on the Data and parameters fixed ex ante.
Conclusion	<p>The assessment of ex ante Parameters are as below:</p> <ol style="list-style-type: none"> 1. P_j : Useful thermal output capacity of the IICS: Thermal capacity of the 940 large size IICS at 32.78kWth/stove amount to 30.81 MWth. The Berkeley's WBT (Water Boiling Test) protocol was used for testing performance. The useful thermal output of a cook stove can be determined as the mean effective thermal power, i.e. the quotient of effective energy delivered for the cooking process divided by heating time. In other words, this corresponds to the average rate of energy released from fuel combustion that is transferred to the pot over the duration of a certified water-boiling test. The WBT test report is checked and found correct. 2. f_{NRB,y} : Fraction of biomass used in the absence of the CDM project in year y that can be established as non-renewable biomass. The value 0.77 is fixed ex-ante and the same is used for emission reduction calculation. The value is checked from the registered PDD. As per the registered PDD The value has been approved by the DNA of Burundi the 6th September 2012⁴. 3. NCV_{biomass} : Net calorific value of the non-renewable woody biomass that is substituted. The value of 0.015 TJ/tonne is fixed ex-ante and the same is used for emission reduction calculation. The value is checked from the registered PDD. According to methodology AMS-I.E, the Net Calorific Value of the non-renewable woody biomass that is substituted has to be taken as IPCC default for wood fuel. 2006 IPCC Guidelines for National Greenhouse Gas Inventories is considered and the same is acceptable to the assessment team. 4. EF_{projected_fossilfuel} : Emission factor for the substitution of non-renewable woody biomass by similar consumers. The value of 81.6 tCO₂/TJ is fixed ex-ante and the same is used for emission reduction calculation. The value is checked from the registered PDD and found correct. The same value is used for emission reduction calculation and therefore the same is acceptable to the assessment team. 5. M_{woody_biomass_hist_pp,i} : Historical consumption of woody biomass per person dependent on the kitchen i (tonnes per person). The value is Derived from

⁴ <http://cdm.unfccc.int/DNA/fNRB/index.html>

	<p>historical data and for the present verification the value (1.13 tonnes/ capita at the site <i>i</i>) as per the PDD is considered for emission reduction calculation.</p> <ol style="list-style-type: none"> Leakage_{adj} : Net to gross adjustment factor to account for leakages. The value is considered as 0.95 which is as per the requirement of the registered PDD. EF_{EL,j,y} : Emission factor for electricity generation for source <i>j</i> in year <i>y</i>. The value of 1.3 tCO₂/MWh is considered as per Option A2: Use a conservative default value of 1.3 tCO₂/MWh of meth AMS.I.E version 05 and registered PDD. TDL_{j,y} : Average technical transmission and distribution losses for providing electricity to the briquetting machine. The value applied is Use as default values of 20% for option:(a) project or leakage electricity consumption sources. The value is as per the registered PDD and acceptable to the assessment team. SEC_{briq} : Default value for the specific quantity of electricity consumed per tonne of briquettes produced. The value of 0.038 MWh/tonne is used and same is acceptable to the assessment team. <p>Given the above, the DOE considers that the ex-ante parameters are in compliance with applicable rules and requirements.</p>
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E.6.2. Data and parameters monitored

Means of verification	The assessment team checked the PDD to confirm the ex-post parameters mentioned in the current monitoring report. Assessment team also interviewed the personal onsite to check further regarding the ex-post parameter monitoring and confirms that the same is in line with the PDD. AMS-I.E version 05 which was the applied methodology during the registration of the project is also checked to ensure that monitoring parameter as mentioned in the PDD and current MR are in compliance with the methodology.
Findings	CAR 04 and CAR 05 were raised during the verification process and closed successfully. Please refer appendix 4 of this report for the detail closure of the CARs.
Conclusion	<p>As per the monitoring plan and requirement of the registered methodology following parameters needs to be monitored:</p> <ol style="list-style-type: none"> Op_kitchen i,y : Operating status of kitchen <i>i</i> (equipped with IICS) in year <i>y</i>. The operational status of each kitchen in the year <i>y</i> is reflected by the parameter (Op_kitchen <i>i,y</i>) at a value of 1 if kitchen <i>i</i> still operates all of the improved cookstoves installed, or a prorata of the IICS found in order of operation out of the total number of IICS initially installed, and a value of 0 if none of the IICS is operated. The value is provided in the ER sheet kitchen by kitchen, year by year. The value is calculated based on Statistical average of monitoring findings (Report of the physical check). The value for the parameter is found to be appropriate and correct. M_{renewable.biomass,y} : Quantity of renewable biomass consumed by the project activity in year <i>y</i>. Assessment team checked the BQS delivery note for the complete monitoring period for the project activity. At each distribution site a delivery notes is made for each batch of briquettes sold containing the following information: distribution site, production site, school provided and quantity of biomass. The delivery notes are kept and collected for monitoring the quantity of renewable biomass consumed by the project from each production site. The BQS delivery note is also cross checked with school's receipt. The same is acceptable to the assessment team. The parameter is used for monitoring leakage emissions from electricity consumption. Quantities of School years 2015-16 only represent briquette deliveries from date of Stove installation in the first half of Calendar year 2016 to end of school year on 2015-16 i.e. 30/06/2016. Similarly, quantities in school year 2018-19 represent briquette deliveries from start of school year in September 2018 to end of December 2018 (cf. to ER calculation sheet for further details). N_{pers / kitchen i,y} : Number of person dependant on kitchen <i>i</i> in the year <i>y</i>. The

	<p>value is sourced from Education ministry records for the state of Burundi. The same is as per the requirement of registered PDD and hence acceptable to the assessment team.</p> <p>4. $N_{IICS,i,y}$: Total number of IICS large size (distributed) or replaced by an equivalent appliance in year y. The primary source of data as per the registered PDD is Order and delivery records. The same is checked for the present monitoring period to ascertain the value.</p> <p>Given the above, the DOE considers that the ex-post monitored parameters are in compliance with the monitoring plan and the applicable rules and requirements.</p>
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E.6.3. Implementation of sampling plan

Means of verification	The verification assessed whether the compliance of the sampling efforts and surveys with the registered sampling plan in accordance with the “Standard for sampling and surveys for CDM project activities and programme of activities”
Findings	There is no CAR/CL raised in this section.
Conclusion	<p>Please refer section D.4 of this report for the Sampling approach applied by the DOE for the onsite visit. The sampling approach is only adopted for the visit to the schools (as per the restriction and conflicting situation inside the country) however all the supporting documents for the monitoring parameters related to emission reduction calculation were checked by the assessment team for the present monitoring period and found correct. No sampling approach adopted for the supporting document verification related to the monitoring parameter and emission reduction calculation. Moreover, the wood-fuel supply refund will be centralised at the ministry level so all wood-fuel ordered by schools for cooking activities thus is easily tracked and recorded. The ministry records were checked and the values are found correct and conservative. Assessment team therefore confirms that the actual emission reductions calculation is correct and conservative for the present monitoring period.</p> <p>PP, however, has not adopted sampling plan since all participating school sites are exhaustively monitored in the Project Activity.</p> <p>This is found acceptable to the DOE.</p>

E.7. 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 PP at a frequency specified in the registered monitoring plan
Findings	No CAR raised.
Conclusion	The calibration is not a requirement, as no monitoring parameter used for the present verification requires measurement with an instrument. Assessment team checked the value with the primary source of data required for the monitoring parameter and ascertain the fact that Calibration is not a requirement.

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

E.8.1. 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 GHG emission reductions achieved resulting from the registered CDM project activity. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan
Findings	CAR 06 and CAR 07 were raised during the verification process. The description of the CARs and its closure are described below in Appendix 4 of this report.

<p>Conclusion</p>	<p>Baseline Emissions of the project activity are calculated as:</p> $ER_y = B_y * f_{NRB,y} * NCV_{biomass} * EF_{projected_fossilfuel} \quad (1)$ <p><i>Where:</i> ER_y: Emission reductions during the year y in tCO₂e B_y : Quantity of woody biomass that is substituted or displaced in tonnes $f_{NRB,y}$: Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable biomass using survey methods or government data or approved default country specific fraction of non-renewable woody biomass (f_{NRB}) values available on the CDM website⁵ $NCV_{biomass}$: Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne) $EF_{projected_fossilfuel}$: Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO₂/TJ</p> <p><i>Determination of B_y:</i></p> <p>B_y is determined as per option (a) approach:</p> <ol style="list-style-type: none"> Calculated as the product of the number of appliances multiplied by the estimate of average annual consumption of woody biomass substituted per appliance (tonnes/year); This can be derived from historical data or estimated using survey methods. <p>B_y is determined based on the sum of woody biomass substituted by each kitchen ⁶ in the year y ($M_{substituted\ biomass,i,y}$) in tonnes/kitchen/y taking into consideration the operating status of each kitchen as follows:</p> $B_y = Leakage_{adj} * \sum i (Op_kitchen_{i,y} * M_{substituted_biomass,i,y}) \quad (2)$ <p><i>Where:</i> B_y : Quantity of woody biomass that is substituted or displaced in tonnes in year y $Op_kitchen_{i,y}$: Operating status of kitchen i (equipped with IICS) in year y $M_{substituted_biomass,i,y}$: Quantity of woody biomass that is substituted by operating kitchen i in year y (tonnes/kitchen i/y) $Leakage_{adj}$: Net to gross adjustment factor to account for leakages</p> <p>Operating status of kitchen i in the year y ($Op_kitchen_{i,y}$)</p> <p>The operational status of each kitchen in the year y is reflected by the parameter ($Op_kitchen_{i,y}$) at a value of 1 if kitchen i still operates all of the installed IICS, or a pro rata of the IICS found in operation out of the total number of IICS initially installed, or a value of 0 if none of the IICS operate.</p> <p>The operating kitchen status is further discounted by the weighted duration of eventual renewable briquettes shortages (in this case they temporarily have to revert to using firewood instead). In this context, it can be assumed that schools have classes and cook the meals every single day of the school year calendar (except in case of Force Majeure closure). Student attendance is incentivized by the provision of the meals.</p> <p>Quantity of woody biomass that is substituted by kitchen i in the year y ($M_{substituted\ biomass,i,y}$)</p>
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⁵ Default values endorsed by designated national authorities and approved by the Board are available at <http://cdm.unfccc.int/DNA/fNRB/index.html>

⁶ In the project activity, one appliance is defined as one kitchen, i.e. the entire premises whereby cooking activities are performed in the school. One kitchen may be composed of a variable number of stoves, however each school site identified in the project activity operates one kitchen, which overall fuelwood consumption and project briquettes consumption will be monitored.

The quantity of woody biomass that is substituted by kitchen i in the year y ($M_{\text{substituted_biomass},i,y}$) is calculated as follows:

$$M_{\text{substituted_biomass},i,y} = M_{\text{woody_biomass_hist},i} \quad (3)$$

Where:

$M_{\text{substituted_biomass},i,y}$ Quantity of woody biomass that is substituted by kitchen i in the year y (tonnes/kitchen i/y)

$M_{\text{woody_biomass_hist},i}$ Historical consumption of woody biomass using three stones open fire / traditional stoves / former masonry stoves in the absence of the project activity by kitchen i (tonnes/kitchen i)

Historical consumption of woody biomass using three stones open fire / traditional stoves / former masonry stoves in the absence of the project activity ($M_{\text{woody_biomass_hist},i}$)

The historical consumption of woody biomass using three stones open fire, traditional stoves or old masonry stoves in the absence of the project activity by kitchen i (tonnes/kitchen i) is determined as follows:

$$M_{\text{woody_biomass_hist},i} = M_{\text{woody_biomass_hist_pp},i} * N_{\text{pers/kitchen},i,y} \quad (4)$$

Where:

$M_{\text{woody_biomass_hist},i}$ Historical consumption of woody biomass by kitchen i (tonnes/kitchen i)

$M_{\text{woody_biomass_hist_pp},i}$ Historical consumption of woody biomass per person dependant on the kitchen i (tonnes per person)

$N_{\text{pers/kitchen},i,y}$ Number of person dependant on kitchen i in the year y (pers/year)

Historical consumption of woody biomass per person dependant on the kitchen i (tonnes per person) ($M_{\text{woody_biomass_hist_pp},i}$)

Historical data from Education ministry (28/06/2017) provides the following up-to-date figures in kg per day or stere per day based on records across 15 boarding schools around Bujumbura and 12 day schools in three different provinces of the country⁷:

The average historical wood fuel consumption of the boarding schools over the last three years prior to project start (2009, 2010 and 2011) is 9.3 wood steres per day per school and the average historical wood fuel consumption of day schools in 2017 is **5 kg per student per day**. A comparison reveals that the latter value is more conservative.

The following ex-ante assumptions are used for converting the boarding school value into kg through dividing the mean historical woodfuel consumption by the historical number of persons per school:

⁷ Kirundo, Ngozi and Muyinga.

The data available for the 12 day schools are representative of the historical woodfuel consumption per student for the following reasons:

- i. The same traditional food with same cooking practices is observed in all schools' kitchens requiring the same amount of energy.
- ii. Same woodfuel type (non-renewable biomass) is used in all schools' kitchens around Burundi.
- iii. Same climate can be observed around all the country thus not having any differential impacts over the energy consumption for cooking activities around the country.

- The average number of students per school is 653.
- The students are at school during 226 days over 365⁸.
- A factor of 0.35 is used for converting stere into tonnes of woodfuel (GTZ-HERA, Manual for Programs and Projects to Implement Cooking Energy Interventions, 2012).

While boarding schools serve lunch and dinner, day schools provide for breakfast and lunch.

Calculation for one year:

The historical consumption per person per school per year will be obtained by multiplying the daily consumption by 226 days.

Table 1: School's historical consumption per person of woodfuel in tonne/days/year

	$M_{\text{woody_biomass_hist_pp}, i}$	$M_{\text{woody_biomass_hist_pp}, i}$
SCHOOL	tonnes per capita per day	tonnes per capita per year
Conservative baseline consumption retained	0.005	1.13

Number of persons dependent on kitchen i in the year y (pers/year)
($N_{\text{pers/kitchen } i, y}$)

In order to take into consideration the occupancy rate of each school, the number of person dependant on kitchen i is monitored ex-post along all monitoring period.

School-year 2014-2015	School-year 2015-2016	School-year 2016-2017	School-year 2017-2018	School-year 2018-2019
-	184,129	185,519	205,817	213,240

Non-renewable woody biomass fraction ($f_{\text{NRB}, y}$)

The schools' kitchens are fired with non-renewable wood fuel. The non-renewable biomass fraction ($f_{\text{NRB}, y}$) was taken at its national default value of 77%, as approved by the CDM Executive Board at its 67th meeting and lately by the Burundi's DNA the 6 September 2012⁹.

Emission factor for relevant substitution fossil fuel ($EF_{\text{projected_fossilfuel}}$)

According to methodology AMS-I.E, the Emission Factor of the substitution fuel likely to be used by similar consumers has to be taken at 81.6 tCO₂/TJ.

Net calorific value of the substituted non-renewable woody biomass (NCV_{biomass})

According to methodology AMS-I.E, the Net Calorific Value of the non-renewable woody biomass that is substituted has to be taken as IPCC default for wood fuel, 0.015 TJ/tonne.

Given the above, the DOE considers that the calculation of baseline emissions

⁸ Three-year average. Student holiday calendar for 2016/17 to 2018/19 is provided to the DOE. The finally applicable value will be determined ex-post. See above.

⁹ <http://cdm.unfccc.int/DNA/fNRB/index.html>

are in compliance with the applied methodology and any other applicable regulatory document and as per the monitoring plan.

Furthermore, it is important to note that the amount of substituted non-renewable biomass calculated as per the methodological choices given above, has resulted to be higher than the needed renewable biomass (briquettes) used under the implementation of the project activity (in kg. and/or tonnes), being several times higher and not constantly related between each other (not a constant ratio). This situation, observed in the PP's calculations for the whole monitoring period, has been evaluated by the DOE by means of the following:

The DOE has evaluated the correctness and considered as suitable to occur, hence acceptable, the differences between the efficiency of the non-renewable woody biomass used in the baseline scenario against the renewable briquettes, by considering the following parameters/sources:

- a) Higher calorific value of the renewable briquettes against the non-renewable woody biomass.

Efficiency (and NCV Cal./kg TJ/ton) gains		NCV briq	NCV _{biomass}
75% coffee husk	75%	0,017	0,015
20% wood chips	20%	0,020	
5% cow dung	5%	0,022	
Weighted Average =		0,018	0,015
<i>Increase of 15.8% over baseline (1.19 times)</i>			

- b) Higher efficiency of the IICS against the traditional three-stone fire stoves used for cooking in the schools subjected to the project activity.

ICS Efficiency	baseline efficiency
44,80%	10,00%
<i>Increase of 77.68% over baseline (4.48 times)</i>	

- c) Testing Reports issued by different authorities/third parties of the host country, which results lead to the possibility of establishing a range of average higher efficiencies of the briquettes against the non-renewable woody biomass.

- Report of the Briquetting Cooperative (BRICOOP) based in Bujumbura, Burundi.

The tests are conducted in two boarding schools ("Lycée Cibitoke" and "ETS Kamenge Internat A et B").

The results show the following:

School	Sterres of wood (no./day)	Equivalent Wood ¹⁰ (kg./day)	Briquettes (kg./day)	Ratio
Cibitoke	4	1,400	170	8.2
Kamenge A	4	1,400	90	15.5
Kamenge B	2	700	29	24.3

It has to be noted that these results, as specified in the testing report, are obtained by adapting (through bed metal bases) the baseline stoves to the use of briquettes. Hence it is not taking into account the higher efficiency of the IICS or the combination of IICS and briquettes against the traditional cooking practices, hence, it is understood that the efficiency of the combined Project's measures may be much higher.

- Report of the Ministry of Education of Burundi (Directorate of Region Ngozi), "*Rapport sur l'utilisation d'un nouveau combustible*" (Report about the use of a new fuel).

The conclusions are summarized in the provided document stating that in average a 1,500 student's school consumes 150 kg. of briquettes per day against 8 to 10 sterres of wood, and that they recommend its utilization.

Considering the 350 kg./stere and the average from 8 to 10 sterres per day, that leads to a result of a ration between 18.6 and 23.3 times of higher efficiency of the briquettes.

Considering these ranges can vary greatly from school to school (as shown by the aforementioned reports) depending on the baseline type of wood used, weather conditions, cooking practices, number of students, *inter alia*, the results shown in the survey efforts by the PP are deemed reasonable.

In this sense, the PP has also indicated to the DOE, and so has been observed in stocks during the Verification onsite assessment by the DOE, that may occur a time difference between briquettes delivery slips and briquettes consumption, of even months, that may affect the results of periods showing higher NR biomass reduction ratios than expected.

Also shall be taken into account that the parameter $M_{\text{woody_biomass_hist_pp,i}}$ is conservative as detailed in the MR, Section E.1. This has been evaluated by the DOE (above in this same section) and found to be acceptable and conservative for the determination of the parameter, which also influences the estimation of the substituted non-renewable biomass.

In conclusion, the ranges identified in the PP's calculations of substituted/displaced non-renewable woody biomass are considered likely to occur in the project's scenario, considering all the identified variables (hence reasonable to show very different ratios of substitution depending on the combinations of such variables), and between the expected ranges of efficiency if we take into account the experiments of using briquettes with traditional cooking stoves and the introduction of IICS with nearly 80% higher efficiency against the baseline ones.

The DOE also presents along with this verification, a PRC for, *inter alia*, updating the baseline school days duration and corresponding historical biomass consumption, as well as the determination of the operating status of the kitchens,

¹⁰ A conversion factor of 0.35 tonnes of wood per stere is applied as reflected in the PDD of the Project Activity in Section B.6.1. GTZ-HERA, Manual for Programs and Projects to Implement Cooking Energy Interventions, 2012

	<p>leading finally to an achievement of emission reductions that is conservative in comparison with the expected as per the initial PDD estimations, with a decrease of around 30%. Hence, no risk of overestimation of emission reductions has been observed.</p> <p>Considering the above, and after the consultation of the different sources and evidences, plus the observations done during the onsite assessment, the DOE considers the calculations acceptable.</p>
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E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the registered CDM project activity. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
Findings	No CAR/CL were raised for this section.
Conclusion	<p>A. <u>Shifts of pre-project activities</u></p> <p>As the renewable biomass used is all from residue/waste, this emission source is not applicable to this project.</p> <p>B. <u>Emissions related to the production of the biomass</u></p> <p>As the renewable biomass used is all from residue/waste, this emission source is not applicable to this project.</p> <p>Given the above, the DOE found correct the approach of the PP for the project emissions.</p>

E.8.3. Calculation of leakage GHG emissions

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the registered CDM project activity. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and 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.
Conclusion	<p>A. <u>Competing uses for the biomass</u></p> <p>The Project activity's biomass supply involves agro-industrial wastes which are widely available in the region and currently burnt without energy purpose, therefore this source of leakage can be neglected. The biomass used in the project activity could not be used for other purposes in the absence of the project.</p> <p>"The data from agricultural sector of Burundi estimates that every year a theoretical potential of 1,127,302 tonnes of biomass wastes are not used". Less than 36,000 t of biomass (wet basis) is needed per year for all BQS's projects. The surplus of renewable biomass for the project is more than 100%. Thus this source of leakage can be neglected.</p> <p>Methodology AMS-I.E further indicates that leakage related to the non-renewable woody biomass saved by the project activity shall be assessed based on <i>ex post</i> surveys of users and the areas from which this woody biomass is sourced (using 90/30 precision for a selection of samples).</p> <p>➔ Alternatively, B_y is multiplied by a net to gross <u>adjustment factor of 0.95</u> to account for leakages, in which case surveys are not required.</p>

If the equipment currently being utilised is transferred from outside the boundary to the project boundary, leakage is to be considered.

- The improved cook stoves to be disseminated in the project don't include any second-hand equipment but exclusively brand new ones, therefore no currently utilised equipment will be transferred from outside the boundary to the project activity.

Emissions related to the transformation of renewable biomass wastes into briquettes.

Furthermore, potential leakage emissions arise from the electricity consumption from the briquetting machines processing the transformation from renewable biomass into briquettes.

- This emissions source is calculated as per the tool 'Tool to calculate baseline, project and/or leakage emissions from electricity consumption'.

Leakage emissions from electricity consumption

Leakage emissions from consumption of electricity are calculated as follows:

$$LE_{EC,y} = \sum_j EC_{PJ,j,y} * EF_{EL,j,y} * (1 + TDL_{j,y})$$

(5)

Where:

$LE_{EC,y}$ Leakage emissions from electricity consumption in year y (tCO₂/yr)

$EC_{PJ,j,y}$ Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/yr)

$EF_{EL,j,y}$ Emission factor for electricity generation for source j in year y (tCO₂/MWh)

$TDL_{j,y}$ Average technical transmission and distribution losses for providing electricity to source j in year y

J Sources of electricity consumption in the project

Quantity of electricity consumed by the project ($EC_{PJ,j,y}$)

The quantity of electricity consumed by the project $EC_{PJ,j,y}$ is calculated based on a default value for the specific quantity of electricity consumed per ton of briquettes produced SEC_{briq} (MWh/ton) multiplied by the quantity of briquettes supplied to the project activity $M_{renewable.biomass,y}$.

Quantity of renewable biomass consumed by the project activity in year y ($M_{renewable.biomass,y}$)

Quantity of renewable biomass consumed by the project activity in year y :

Year	$M_{renewable.biomass,y}$ (tons)
2014-15	-
2015-16	3,401,000
2016-17	3,066,000
2017-18	3,714,500
2018-19	2,449,500

Quantities of School years 2015-16 only represent briquette deliveries from date of Stove installation in the first half of Calendar year 2016 to end of school year on 2015-16 i.e. 01/07/2016. Similarly, quantities in school year 2018-19 represent briquette deliveries from start of school year in September 2018 to December 2018 (cf. to ER calculation sheet for further details).

	<p>Emission factor for electricity generation ($EF_{EL,i,y}$)</p> <p>→ Option A2 chosen: <i>conservative default value of $1.3 \text{ tCO}_2/\text{MWh}$.</i></p> <p>Average technical transmission and distribution losses for providing electricity to source j in year y ($TDL_{j,y}$)</p> <p>→ Option chosen: <i>default values of 20%.</i></p> <p>Leakage emissions from transportation of biomass</p> <p>→ Transportation of renewable biomass wastes from collection sites to the briquetting plant is neglected as the briquetting plants are operated close to the residues provision sites.</p> <p>Moreover, taking into consideration that:</p> <ul style="list-style-type: none"> the average distance of collection of renewable biomass for the Project activity is shorter than the mean distance of origin of previously used biomass in the baseline and; AMS-I.C methodology mentions that "If biomass residues are transported over a distance of more than 200 kilometres (one way) due to the implementation of the project activity then this leakage source attributed to transportation shall be considered, otherwise it can be neglected." For the proposed project, the residues will never be transported over a distance more than 200 km (one way) thus can be neglected. <p>Therefore, no additional leakage emissions from transportation is considered for this present verification.</p> <p>This is found acceptable by the DOE.</p>
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E.8.4. Summary calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the registered CDM project activity. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan.
Findings	There is no CAR/CL raised in this section.
Conclusion	<p>Emission reductions in this monitoring period are:</p> <p>Total Baseline Emissions: $307,371 \text{ tCO}_2\text{e}$</p> <p>Total Project Emission: $0 \text{ tCO}_2\text{e}$</p> <p>Total Leakage: $749 \text{ tCO}_2\text{e}$</p> <p>Total emission reduction (ER_y) = $306,622 \text{ tCO}_2\text{e}$</p> <p>The values for BE_y and ER_y are rounded down while the value of the LE_y is rounded up.</p> <p>The summary calculation of ERs are found acceptable by the DOE.</p>

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

Means of verification	The verification team has determined the CER achieved during this monitoring period with the estimated value and reason for increase if any.
Findings	There is no CAR/CL raised in this section.
Conclusion	Assessment team checked that Monitoring period is 2 years, 11 months and 7 days (1,072 days) and PDD ex-ante annual estimate is based on 284 schools:

	<p>182,061 tCO₂/yr / 365 days x 1,072 days</p> <p>The estimated value is therefore 534,711 tCO_{2e}. The actual value for emission reduction is 306,622tCO_{2e}.</p> <p>The actual value is less than the estimated value. Therefore, no more explanation is required and this has been found acceptable by the DOE.</p>
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E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	The verification team has determined the CER achieved during this monitoring period with the estimated value and reason for increase if any.
Findings	There is no CAR/CL raised in this section.
Conclusion	<p>Assessment team checked that Monitoring period is 2 years, 11 months and 7 days (1,072 days) and PDD ex-ante annual estimate is based on 284 schools:</p> <p>182,061 tCO₂/yr / 365 days x 1,072 days</p> <p>The estimated value is therefore 534,711 tCO_{2e}. The actual value for emission reduction is 306,622tCO_{2e}.</p> <p>The actual value is less than the estimated value. Therefore, no more explanation is required and this has been found acceptable by the DOE.</p>

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

Means of verification	The verification team has determined the GHG emission reductions achieved during first commitment period and second commitment period
Findings	There is no CAR/CL raised in this section.
Conclusion	<ol style="list-style-type: none"> 1. GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012: 0 tCO_{2e} 2. GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards: 306,622 tCO_{2e} 3. Total emission reduction for the monitoring period: 306,622 tCO_{2e}. <p>This has been found acceptable by the DOE.</p>

E.9. Assessment of reported sustainable development co-benefits

Means of verification	Not applicable for the present monitoring period
Findings	Not applicable for the present monitoring period
Conclusion	Not applicable for the present monitoring period

E.10. Global stakeholder consultation

Means of verification	Not applicable for the present monitoring period
Findings	Not applicable for the present monitoring period
Conclusion	Not applicable for the present monitoring period

SECTION F. Internal quality control

As a final step of verification, the final documentation including the verification report has to undergo an internal quality control by the Technical Reviewer. Then each report has to be finally approved by either the DOE's Technical Manager or the Deputy. In case one of these two persons is part of the assessment team, the person who is not a part of the assessment team can only give the approval. If the documents have been satisfactorily approved, the request of issuance is submitted to CDM EB along with the requisite documents. Internal quality control ensures impartiality and quality of the report.

SECTION G. Verification opinion

Applus+ Certification has been engaged by Burundi Quality Stoves S.A. to perform the 1st periodical verification of the project entitled BQS improved cook-stoves for Burundi's schools (UNFCCC reference number: 9791)

The management of Burundi Quality Stoves S.A. are responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's Monitoring Plan in the registered PDD version 2.0 completed on 21/09/2020 and the applied methodology AMS-I.E version 05.

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is operated as planned and described in the project design document approved by the EB;
- the monitoring plan is as per the applied methodology;
- the monitoring in Monitoring Report is as per the PDD and the monitoring plan approved by the EB;
- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for BQS improved cook-stoves for Burundi's schools or the monitoring period 25/01/2016 - 31/12/2018 (inclusive of both days) as reported in Monitoring Report, prepared on the basis of the project's Monitoring Plan are fairly stated.

Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: From 25/01/2016 - 31/12/2018
(inclusive of both days)

Verified emissions in the above reporting period:

Leakage emissions	749 tCO ₂ equivalents
Project emissions	0 tCO ₂ equivalents
Baseline emissions	307,371 tCO ₂ equivalents
Emission reductions	306,622 tCO _{2e} tCO ₂ equivalents

SECTION H. Certification statement

Same as in section G.

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
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
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
MP	Monitoring Plan
OE	Outsourced Entity
PCP for PA	Project Cycle Procedure for Project Activities
PDD	Project Design Document
PP	Project Participant
PS for PA	Project Standard for Project Activities
UNFCCC	United Nations Framework Convention on Climate Change
VVS for PA	Validation and Verification Standard for Project Activities

Appendix 2. Competence of team members and technical reviewers

1. **Mr. Sukanta DAS**, has done M. SC in (Electronics and Photonics) and M. Tech in (Energy technology) from Tezpur Central University/ Indian Institute of technology Bombay in India. He is a certified lead auditor for ISO 14001 EMS LA and ISO 9001 QMS LA from International registry for Certified Auditors (IRCA) and Certified Lean Management practitioner from Quality Council of India (QCI). He has more than Nine (9) years of working experience at TUV NoRD/ Re-consult/CRA/APPLUS certifications under various categories of projects stating from Renewable to waste to supercritical projects. He was JI/ CDM Lead Assessor in TUV NoRD and was involved in more than 100 CDM validation and verifications activities in Gold Standard, VCS, CDM projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1, 3 and 13 technical areas 1.1/1.2/3.1/13.1. Currently he is associated with True Quality Certifications Private Limited and is empanelled with APPLUS certification to carry out GHG audits.
2. **Mr. Denny Xue** (Master's Degree in Environmental Engineering, Bachelor's Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and technical review with Applus+. Before he joined Applus+ LGAI, he has been working for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	NA	BQS delivery note of briquettes for the monitoring period.	Delivery note for the monitoring period.	Project participant
2	NA	Contract of the project participant with the DOE	Contract document signed between PP and DOE	Project participant
3	NA	VVS standard- version 02	UNFCCC web site	UNFCCC
4	NA	Order and delivery records of stoves	Order and delivery records for the monitoring period	Project participant
5	NA	MR version 01 MR version 02.1	MR version 01 dated 28/10/2019 MR version 02.1 dated 21/09/2020	Project participant
6	NA	ER sheet version 01 ER sheet version 02.1	ER sheet version 01 dated 28/10/2019 ER sheet version 02.1 dated 21/09/2020	Project participant
7	NA	Actual geo-coordinates by GE	Actual coordinates for the project activity via GPS meters	Project participant
8	NA	Guidelines for Application of materiality in verifications version 2.0	UNFCCC web site	UNFCCC
9	NA	Education ministry records of student count	Education ministry records for the complete monitoring period	Project participant
10	NA	Training records	Training records: 1. Training given to Distributer of the cook stove to the schools 2. Training provided to the personal who cooks food 3. Training provided to PP personal so that CDM management system is properly followed.	Project participant
11	NA	Sales receipts of the provided renewable biomass	Sales Receipts corresponding to the monitoring period.	Project participant
12	NA	Lease contract for the provision of renewable biomass briquettes to BQS	BQS – Office Du Café Du Burundi (04/2005)	Project participant
13	NA	Report of testing of briquettes consumption along different schools in Burundi.	Briquetting Cooperative (BRICOOP) based in Bujumbura, Burundi	Project participant
14	NA	“ <i>Rapport sur l'utilisation d'un nouveau combustible</i> ” (Report about the use of a new fuel).	Ministry of Education of Burundi (Directorate of Region Ngozi),	Project participant

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

Table 2 Remaining FAR from validation and/or previous verifications

FAR ID	xx	Section no.	E.2	Date: DD/MM/YYYY
Description of FAR				
<i>No FAR is remaining from validation or previous verifications.</i>				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

Table 3 CL from this verification

CL ID	xx	Section no.		Date: DD/MM/YYYY
Description of CL				
N/A				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

Table 4 CAR from this verification

CAR ID	01	Section no.	E.3	Date: 05/12/2019
Description of CAR				
<p>In Page 1 of the MR, it is mentioned that “<i>The implementation of 907 stoves in 284 schools, supplied with 12,586 tonnes of renewable biomass briquettes, and the associated awareness and training campaigns in schools has helped halving these communities’ fuel use and turning it 100% renewable</i>”..</p> <p>The amount of biomass supplied in these 284 schools is not backed by appropriate evidence. Hence the figure 12,586 tonnes of renewable biomass briquettes is reserved. Associated awareness and training campaigns in schools are provided. Training documents are missing.</p> <p>Corrective action is sought.</p>				
Project participant response				Date: 10/01/2020
<p><i>The evidence to substantiate the number of stoves involved and briquettes delivered as well as training certificates in the use of the installed cook stoves (including some recipes) are submitted herewith. As it can be seen the delivery notes are counter-signed by the project participant at time of transfer of the product to the shipping company (against signature of the latter) and the school representatives upon receipt. As the training certificates show, training has been carried out both by the project participant and by the World Food Programme.</i></p> <p><i>The training documents show the following:</i></p> <ul style="list-style-type: none"> - TRAINING ATTENDENCEE.pdf: Minutes of trainings of school directors on project cook stove use conducted by WFP (including list of participants) - TRAINING RECORDS.pdf: Records which show test cooking sessions in schools after stove installation indicating products to be cooked, their quantities, cooking times and amounts of briquettes required 				

<ul style="list-style-type: none"> - <i>SCHOOL TRAINING.pdf: Records which show test water boiling sessions in schools after stove installation indicating quantity of water, amount of briquettes used and cooking time.</i> - <i>SCHOOL DIRECTOR COMMITMENT.pdf : Declaration of school directors that they have been shown/trained how to use the project stoves properly and they are now capable to do so.</i> <p>Furthermore, each stove comes with a little manual in Kirundi language on how to use the stove, which is submitted herewith.</p>
Documentation provided by project participant
<ul style="list-style-type: none"> - <i>Delivery records of stoves (folder: STOVES DELIVERY RECORDS-WFP)</i> - <i>Delivery notes and school receipts of briquettes delivered (folder: BRIQUETTES DELIVERY RECORDS)</i> - <i>Download at (valid until 22/01/20):</i> - <i>Certificate of awareness and training certificates in schools (folder: TRAINING OF SCHOOLS)</i> - <i>Manual (STOVE USE INSTRUCTIONS)</i>
DOE assessment
Date: 03/06/2020
The documents for biomass briquettes are now submitted and the typo error in the MR is now corrected. CAR is closed.
The training requirements are met and therefore this part of the CAR is closed.

CAR ID	02	Section no.	E.3.	Date: 05/12/2019
Description of CAR				
During the site visit it was noticed that the PP has a contractual agreement with WFP to supply the briquette in the school premises. The contractual agreement is not submitted to the assessment team.				
Project participant response				Date: 10/01/2020
Extract (Annex II) of the contract is provided herewith, which mentions on page 1 that				
<p>“ Le contractant est tenu d’assurer la qualité de la construction des foyers améliorés telle que prescrite par le promoteur du foyer ILF dans le document lui fourni et vu qu’il en a reçu la formation et la certification après la construction des vingt foyers pilotes.</p> <p>Le contractant a l’obligation d’assurer le transport et la livraison des briquettes aux diverses écoles concernées par cette adjudication dont la liste est reprise dans l’annexe I.</p> <p>Le contractant aura l’exclusivité mais l’obligation de fourniture des briquettes aux dites écoles sur la période de durée de la garantie des foyers améliorés qui est de sept ans minimum (voir garantie dans le document technique ILF). »</p>				
Free translation :				
<p>“The contractor is required to ensure the quality of the construction of the improved stoves as prescribed by the promoter of the ILF stoves in the document provided to him and as he has received training and certification after the construction of the 20 pilot stoves.</p> <p>The contractor is obliged to ensure the transport and delivery of the briquettes to the various schools involved in this tender, the list of which is given in Annex I.</p> <p>The contractor will have the exclusivity but the obligation to supply the briquettes to the said schools over the duration of the warrant of the improved stoves, which is a minimum of seven years (see guarantee in the ILF technical document).”</p>				
Documentation provided by project participant				
- <i>Annex II of contract with WFP</i>				
DOE assessment				Date: 03/06/2020
The Annex II of the contract with WFP is checked and the points on construction of the improved stoves transport and delivery of the briquettes to the various schools and exclusivity but the obligation to supply the briquettes to the said schools is met as checked by the assessment team during the verification site visit. The complete agreement is now submitted.				
At the same occasion, the ERs have been revised to be presented on an annual basis and include ERs from full year of 2016 (column BO of ER calculations) to take due account of ERs from date of installation to beginning of school year 2016/17.				
CAR is closed.				

CAR ID	03	Section no.	E.3.	Date: 05/12/2019
Description of CAR				
As per the registered PDD a certification document per masonry stove (if included) will be delivered and added during the verification. The detail if done is not provided to the assessment team.				
Project participant response				Date: 10/01/2020
<i>There are no masonry stoves, which have been refurbished. Only new stoves have been constructed and as such taken account of in the ER calculations.</i>				
Documentation provided by project participant				
-				
DOE assessment				Date: 03/06/2020
Only New Stoves are used for the monitoring period and hence CAR is closed.				

CAR ID	04	Section no.	E.6.2	Date: 05/12/2019
Description of CAR				
Following observation made by the DOE regarding the monitoring practice:				
<ol style="list-style-type: none"> Parameter 1: Operating status of kitchen <i>i</i> (equipped with ICS/refurbished masonry stoves) in year <i>y</i>: The parameter is sourced from Estimates based on surveys then monitored. Calculated based on Statistical average of monitoring findings. Moreover, a physical check will be performed by the CDM project proponent at least once every two years (biennial). The frequency of survey is not confirmed during the onsite visit. Corrective action is sought for the same. Moreover, as per the registered PDD APPENDIX 5 needs to be followed by each field agent while doing the survey to determine the Operating Status of Kitchen. The appropriate survey format as per APPENDIX 5 of the registered PDD is not submitted to the assessment team. Corrective action is sought for the same. Parameter 2: Quantity of renewable biomass consumed by the project activity in year <i>y</i>. The primary source of data for the parameter is BQS delivery note (containing the date, location and name of School kitchen supplied). The delivery note for the monitoring period is not submitted to the assessment team. Also, as per the registered PDD the quantity is cross checked with school's receipt as well. The secondary source of data Schools receipt (i.e. for cross checks the parameter) is also not provided to the assessment team. Corrective action is sought for the same. Parameter 3: Number of person dependent on kitchen <i>i</i> in the year <i>y</i>. The primary source of data for the parameter is Education ministry records of the country. The records are not submitted to the assessment team and hence the number provided for the parameter is thus reserved. The monitoring frequency is annual however the same is not confirmed during onsite visit. Corrective action is sought for the same. As per the registered PDD Data will be cross check with relevant literature. The relevance of the cross check mechanism is not detailed out. Corrective action is sought regarding the same. Parameter 4: Total number of ICS (medium and large) (distributed and refurbished masonry stoves) or replaced by an equivalent appliance in year <i>y</i>. The primary source of data for the parameter is Order and delivery records. The details and supporting are not submitted to the assessment team hence the number provided for the parameter is thus reserved. The parameter is Cross-check with monitored operational figures. The relevance of the cross check mechanism is not detailed out. Corrective action is sought regarding the same. 				
Project participant response				Date: 10/01/2020
<ol style="list-style-type: none"> As per aggregate and specific survey sheets submitted herewith, a physical check has been performed by the CDM project proponent at least once every two years (biennial) in accordance with the monitoring plan during which the elements mentioned in Appendix 5 of the PDD have been checked and all unusual observations noted. Cf. documentation provided under CAR1. Delivery and receipt are noted on the same supply note/delivery sheet. Education ministry records are submitted herewith. As the records reveal, the monitoring frequency is annual. The relevance of the cross-check mechanism has been detailed in section D.2 of the MR 				

(relevant literature to cross-check with has not been found).

4. Cf. documentation provided under CAR1. The cross-check mechanism has been detailed in section D.2 of the MR ("monitoring surveys")

Documentation provided by project participant

1. Surveys as per Appendix 5 of the PDD and aggregate sheets are submitted to the assessment team (Folder: Verification Records).
3.
 - Education ministry records of the country (2016-2019 effectifs ecoles (Ministry of Education).pdf)
 - Revised MR
4. Revised MR

DOE assessment

Date: 03/06/2020

1. Operating Status of the Kitchen in the form of Survey is now submitted to the assessment team. The survey matches with Appendix 5 of the registered PDD. CAR is thus closed
2. The Quantity of renewable biomass consumed by the project activity is checked via BQS delivery note for the complete monitoring period. CAR is thus closed
3. Number of person dependent on kitchen is checked via Education ministry records of the country. . In absence of detailed public data on student count per village, the provided number by the education ministry has been approximately cross-checked by comparing student count per school using available. CAR is closed
4. Total number of ICS (medium and large) (distributed and refurbished masonry stoves) or replaced by an equivalent appliance in year y is checked via Order and delivery records and hence CAR is closed.

CAR ID	05	Section no.	E.6.2	Date: 05/12/2019
Description of CAR				
As per section B.7.3 of the registered PDD “Before any kitchen i is included in the project, <u>a sales agreement between the project proponent and the responsible</u> of wood-fuel supply of each kitchen will be signed”. The sales agreement format as defined in the registered PDD is as below:				
<div><div>1. Name and location of the kitchen</div><div>2. Number of persons depending on the kitchen</div><div>3. Agreement that the kitchen cede all its Carbon Emissions Reductions rights to BQS</div><div>4. A warranty of 5 years on the ICS and re-established masonry stoves installed in the kitchen</div><div>5. Information regarding the unique identification of all ICS and refurbished stoves with detail specification (including power output) or certification by relevant entities for every refurbished masonry stove</div><div>6. Installation and training terms</div><div>7. Briquette supply exclusivity¹¹</div><div>8. Maintenance services</div></div>				
The Sales agreement fulfilling the above creteria is not submitted to the assessment team. Corrective action is sought for the same.				
Project participant response				Date: 10/01/2020
A sample of sales agreement is submitted to the auditor.				
Documentation provided by project participant				
- Sample sales agreements				
DOE assessment				Date: 03/06/2020
As discussed during the onsite visit the sale agreement do complies with all the 8 points of the registered PDD. Exclusivity of the briquette supply and a 7 year warranty is provided in the contract with the World Food Programme, who supports the PoA and the construction of the stoves in particular (cf. Annex II of the contract with the WFP). CAR is closed				

¹¹ In case of shortage, a procedure is described in Appendix 5 of the registered PDD is used.

CAR ID	06	Section no.	E.8.1	Date: 05/12/2019
Description of CAR				
<p>As per section B.7.3 of the registered PDD following details are required: A database gathering data about ICS will be maintained to consolidate and archive information about:</p> <ul style="list-style-type: none"> - Number of ICS per type j distributed per school (Including Installation date) - Number of refurbished / restored masonry stoves per type j per boarding school - Date and quantity of briquettes delivered - Sales agreement signed number - Certification document per refurbished / restored masonry stove - Project stove's serial number. <p>The details fulfilling the above criteria are not provided to the assessment team.</p> <p>Every school's kitchen quartermaster (in collaboration with BQS field agents) will be trained to monitor continuously for each kitchen i:</p> <ul style="list-style-type: none"> - The operating status of kitchen i - Mass of renewable biomass consumed by the school based on delivery notes. <p>The training records fulfilling the above criteria are not submitted to the assessment team.</p> <p>In every centralized purchasing site a field agent from BQS sales team will be trained to monitor continuously:</p> <ul style="list-style-type: none"> - Quantity of briquettes sold (renewable biomass) based on delivery notes - Date of delivery - Production site - Beneficiary kitchen <p>The training records of BQS sales team fulfilling the above criteria are not submitted to the assessment team.</p> <p>As per the registered PDD section B.7.3, A large quantity of agricultural wastes has been secured with contracts in order to supply without any shortage all kitchens included in the project. In case of shortage, a procedure is applied in order to not count any emissions reductions during period of shortage (Appendix 5 of the registered PDD). The contract is not submitted to the assessment team.</p>				
Project participant response				Date: 10/01/2020
<ul style="list-style-type: none"> • The database is (re)submitted as part of the ER calculations (no masonry stoves have been refurbished/restored). The associated serial numbers correspond to the number in the sale's agreements. Cf. comments in Cells A291 & A 292 of ER calculations • Training/awareness raising of school kitchen quartermaster takes place "on-the job" when the BQS field agents pass biennially for the physical check of each school (cf. CAR04 for onsite check records submitted). As submitted under CAR01, there is also a simple manual in Kirundi language for the use of each stove. • Training of BQS sales team took place end of 2013. Training covered aspects of life cycle management (including monitoring). Records of certificates of participants, attendance list, and contents are submitted. • Contracts with agricultural waste providers are submitted (coffee and rice producer) 				
Documentation provided by project participant				
<ul style="list-style-type: none"> - Revised ER calculations - Training records of BQS sales team - Contracts with agricultural waste providers 				
DOE assessment				Date: 03/06/2020
<p>The training records are submitted and the part of the CAR related to training is now closed. The contracted parties have the obligation to ensure the availability of the briquettes in the school during the school year; in case of shortage of stocks, the following procedure must be respected:</p> <ul style="list-style-type: none"> - The school sends a message to the responsible person at BQS, who is in charge of the briquettes supply in the school kitchens - BQS ensures the supply of the school in question in less than two days 				

- In less than a week, the cause of the shortage is analyzed and correctives measures are taken
 - Waiting for the briquettes supply, the school uses wood as temporary solution.”
 CAR is thus closed.

CAR ID	07	Section no.	E.8.1	Date: 05/12/2019
Description of CAR				
<p>During the field survey by the assessment team following discrepancies are observed with the submitted ER sheet:</p> <ol style="list-style-type: none"> 1. The Model Number of the stove for ECOFO RUKARAMU I and II during the field visit has been observed to be 00089BQS for ECOFO RUKARAMU-II and 00088BQS ECOFO RUKARAMU-I however the number of students are not matching with the details as mentioned in the ER sheet. As per the field survey the number of student for ECOFO RUKARAMU-II is 860 Students total and for ECOFO RUKARAMU-I 714 Students whereas the ER sheet mentions separate details. 2. The number of student as per the field survey are as follows: <ol style="list-style-type: none"> 1. Model Number : 00091BQS – 1002 Students, Model Number : 00092BQS – 1000 Students 2. Model Number: 00102BQS- 665 Students (CHECK) 3. Model Number: 00103BQS- 800 Students 4. Model Number: 00094BQS- 768 Students (vs. 595, 910, 919 students in the years 2016/17 to 2018/19) 5. Model number : 00085BQS- 947 students (vs. 941, 1173 and 1189 in the years 2016/17 to 2018/19) 6. Model number : 00086BQS- 1278 students 7. Model number : 00001BQS-1099 Students 8. Model number : 00002BQS-1130 Students 9. Model number : 00005BQS-1502 Students (CHECK) 10. Model number : 00006BQS-804 Students (vs. 866 students last year) 11. Model number: 00104 BQS- 1034 Students (CHECK) <p>The details are not matching with the ER sheet</p> <p>Moreover, during the onsite visit PP informed assessment team ECOFO MUYANGE falls in Bubanza province however in the ER sheet the school is mentioned under Bujumbura province. The same problem is observed for Model numbers 00104 BQS, 00092 BQS, 00091 BQS, 00102 BQS 00103 BQS. Corrective action is sought for the same.</p> <p>Also, in some of the Schools like ECOFO MUYANGE/ECOFO BUHOMBA assessment team found that the fuel wood is also used in case of shortage of briquettes and in practice for the monitoring period. The details regarding the practice and consideration of ER as per the requirement of Appendix 5 of the registered PDD is not detailed out in the MR. Corrective action is sought for the same.</p>				
Project participant response				Date: 10/01/2020
<p><i>The difference in the number of students can be explained by the fact that the student number changes from one scholar year (Sept-June) to the other, and are slightly higher in 2018/19 (Nov 2019) than provided for the past three years in the ER calculation sheet.</i></p> <p><i>This is supported by a general trend of increasing student populations, which the cells AN288-AP288 in the ER calculations indicate.</i></p> <p><i>The student numbers in the ER sheet for Rukaramu II have been 600, 840 and 902 for the school years 2016-17, 2017-18, 2018-19 and 667, 655 and 659 for Rukaramu I, respectively. The numbers provided in the ministry records remain roughly within the range of the last three years with the current numbers (Nov 2019) provided by the school directors during the onsite visit or conservative:</i></p> <p><i>The only schools, for which the number provided to and by the ministry are not conservative but remain quite in conformity, are</i></p> <ul style="list-style-type: none"> - Model Number: 00094BQS- 768 Students (vs. 595, 910, 919 students in the years 2016/17 to 2018/19 according to the ministry's records) - Model number : 00085BQS- 947 students (vs. 941, 1173 and 1189 in the years 2016/17 to 2018/19) 				

according to the ministry's records)

- Model number : 00006BQS - 804 Students (vs. 809, 812, 866 students in the years 2016/17 to 2018/19 according to the ministry's records)

In case of doubts ministry records need to be followed, which are official and conservative, as they also exclude for pre-scholarized students, (which are also feed through the school's kitchen).

As per database submitted with the ER sheet, ECOFO MUYANGE (number 00094) is part of GIHANGA, which is part of Bubanza province.

https://en.wikipedia.org/wiki/Commune_of_Gihanga

As concerns the other stoves

00104: BWIZA BWA NINGA, Gihanga, Bubanza

00092: MUGERERO, Gihanga, Bubanza

00091: NYESHANGA, Gihanga, Bubanza

00102: EP Mahoro, Gihanga, Bubanza

00103: GIHUNGWE I ET II, Gihanga, Bubanza

As concerns wood fuel supply, it is clarified that schools use firewood in times of a stock shortage of briquettes. However, this is taken into discounted through parameter Op_kitchen,i,y (cf. documentation provided under CAR01)

Documentation provided by project participant

-

DOE assessment

Date: 03/06/2020

The ministry data is acceptable and thus the part of CAR related to Ministry evidence is closed now.

As per registered PDD the monitored parameter Op_kitchen,i,y captures the Operating status of the kitchen i (basically number of stoves installed and working).

This parameter value also takes due account of the time the stove is not supplied with briquettes during the school year (241 days). The time fraction of the supply shortage is subtracted from this parameter value.

More representative averages of two years are assumed since the values are collected every two years only.

CAR is thus closed.

Table 5 FAR from this verification

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

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 project activities” (CDM-EB93-A05-STAN); • Make structural and editorial improvements.
02.1	11 January 2018	Editorial revision to correct the numbering of appendices in the instructions.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
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