BQS IMPROVED COOKSTOVES FOR BURUNDI'S SCHOOLS

Document Prepared By LGAI Technological Center, S.A. (Applus+ Certification)

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Summary:

Verification purpose: Burundi Quality Stoves (BQS) has developed an improved cook stoves project for schools of Burundi. The small-scale VCS project activity aims at, distributing institutional improved cookstoves (IICS) in the schools of Burundi to replace currently used old masonry stoves and open fire three-stone system (and traditional stoves); and providing incentives for switching from non-renewably logged trees to a sustainable energy supply: briquettes made of renewable biomass waste.

From 25-January-2016 to 31-December-2018, the project activity installed 940 institutional improved cooking stoves (IICS) in 284 schools spread over 16 communes in 4 provinces (Bubanza, Bujumbura, Cibitoke, and Gitega) in Burundi. They have been supplied with 12,631 tonnes of renewable biomass briquettes over the first monitoring period saving 263,695 tCO_2e.

This is 1st monitoring under VCS and covers this activity from 25-January-2016 to 31-December-2018 (inclusive both days). During current monitoring period, the project activity has supplied with 12,631 tonnes of renewable biomass briquettes saving 263,695 tCO_2e.

This project activity crediting period is a renewable crediting period of 07 years x 3, total duration of 21 years. First crediting period starts from 25-January-2016 to 24-January-2023.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 01 Corrective Action requests (CAR), 01 Clarification Requests (CLs) and 00 Forward action requests (FARs) were raised and successfully closed. The review of the monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, and follow-up interviews with the Project Proponent have provided the VVB with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

LGAI Technological Center S.A. (Applus+ Certification) (hereafter referred to as Applus+ Certification or the VVB) has been appointed by "AERA Group" on behalf of "Burundi Quality Stoves, SA" (hereinafter referred to as BQS) to perform the 1st periodic verification of the "BQS improved cookstoves for Burundi's schools" under VCS standard 4.2 and program guide version 4.1. The objective of this verification activity is to have an independent third party assessment of the project design, monitoring report and monitoring implementation (including its results) and issuance of a Final Verification Report (FVR), to ensure a thorough assessment of the proposed project activity against the applicable VCS Requirements (and UNFCCC CDM Requirements where applicable).

In particular:

The project's baseline and monitoring plan is assessed against "AMS-I.E, version 05 – "Switch from non-renewable biomass for thermal applications by the user".

The project's compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS Standard version 4.2 and Program Guide version 4.1 , *inter alia* with:

i. CDM Validation and Verification Standard for project activities, version 03.0

ii. CDM Project Standard for project activities, version 03.0

iii. VCS standard, version 4.2

iv. VCS program guide, version 4.1

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified carbon units (VCUs).

The scope of the verification is the independent and objective review of the monitoring report (MR). The MR is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VERRA VCS program, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM Validation and Verification Standard for the project activities, version 03.0, review against registered PD and Final Validation Report, CDM Project Standard for project activities, version 03.0and VCS program guide, version 4.1 along with VCS Standard version 4.2.

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the

generation of VCUs. The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose.

The verification has been planned and organized to achieve a reasonable level of assurance as per the requirement of VCS. The VVB had planned to apply sampling in accordance with the paragraph 27 of the "Standard: Sampling and surveys for CDM project activities and programme of activities, version 09.0".

Total verified GHG emission reductions and removals in this verification period are 263,695 tCO2e and the summary of the generation of these ERs along the Monitoring Period can be found in the Section 5 of this Verification Report. 263,695

1 INTRODUCTION

1.1 Objective

LGAI Technological Center, S.A. (hereinafter referred to as Applus+ Certification or the VVB) has been appointed by "AERA Group" on behalf of "Burundi Quality Stoves S.A" to perform the 1st verification of the project titled "BQS improved cookstoves for Burundi's schools" under VCS standard version 4.2 and program guide version 4.1. The objective of this verification activity is to have an independent third party assessment of the project design, monitoring report and monitoring implementation (including its results) and issuance of a Final Verification Report (FVR), to ensure a thorough assessment of the proposed project activity against the applicable VCS Requirements (and UNFCCC CDM Requirements where applicable). In particular; the project's baseline and the project's monitoring plan is assessed against AMS-I.E, version 05.

The project's compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS program guide, version 4.1 and standard version 4.2. The guidance documents for the verification activity are;

CDM Validation and Verification Standard for project activities, version 03.0

CDM Project Standard for project activities, version 03.0

VCS standard, version 4.2

VCS program guide, version 4.1

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of estimated Verified Carbon Units (VCUs).

1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered PD and registered approved methodology AMS I.E version 05. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard, version 4.2 and guide version 4.1, including the approved baseline and monitoring methodology AMS-I.E, version 05. The verification was based on the requirements in the CDM validation and verification standard for project activities, version 03.0,

CDM Project Standard for project activities, version 03.0, and VCS program guide, version 4.1 and standard version 4.2.

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted the verification of the information presented in the monitoring report and data monitored in a sample basis in accordance with the regulatory requirements applicable for sampling, as presented in the emission reduction calculation spread sheet. There are no material errors, overestimation of ER, omissions or misstatements. The verification team has reviewed all the relevant documentation of the project activity for this verification to determine compliance with the relevant regulatory requirements, *inter alia,* documents like sales agreements, project surveys, etc.

1.3 Level of Assurance

☒ Reasonable level of assurance

☐ Limited level of assurance

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. The entire documents checked/remote audit verification conducted to arrive at positive verification conclusions.

1.4 Summary Description of the Project

Burundi Quality Stoves (BQS) has developed an improved cook stoves project for schools of Burundi. The small-scale VCS project activity aims at:

1. Distributing institutional improved cook stoves (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 currently used three-stone fires or traditional stoves, the advanced technology of IICS 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 will be 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. BQS will ensure a competitive and attractive price for using briquettes together with improved cook stoves in order to give incentives to the state's communities to switch from the previous costly non-renewable wood fuel to the innovative

briquettes made of renewable biomass wastes.[1] BQS will ensure through a sale agreement and robust supply strategy that no shortage of briquettes will appear.

The IICS come instead of the initially considered ICS designed by the Turkish company SOBAH, which was an indicative choice reflected in the initially registered CDM design document. The fixed stoves, mostly installed in batches of two or three per school kitchen, have an average thermal efficiency of 44.8% (against a 10% baseline cooking devices efficiency) and an average firepower of 32.78 kWth[2]..

From 25-January 2016 to 31-December-2018, the project activity installed 940 institutional improved cooking stoves (IICS) in 284 schools spread over 16 communes in 4 provinces (Bubanza, Bujumbura, Cibitoke, and Gitega) in Burundi.

They have been supplied with 12,631 tonnes of renewable biomass briquettes over the first monitoring period saving 263,695 tCO2e.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process: The project assessment is based on the Clean Development Mechanism Validation and Verification Standard for project activities, version 03.0 and VCS standard 4.2 and program guide, version 4.1 and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

Once the project is received by the assessment team, the members of the assessment team carried out:

A desk review of the monitoring Report against the registered PD and the Validation Report in VCS;

Follow-up interviews with project participant;

The resolution of outstanding issues and the issuance of the final verification report and opinion.

[1] With IICS cook stoves, BQS expects to replace 1 stere of wood by 18kg of briquettes based on experiences done in schools (the report of test has been provided to VVB). Actually, one stere of wood is sold at about 15,000 to 20,000 FBU whereas BQS plans to sell 1 kg of briquettes at 378 FBU (indicative price); satisfying the same thermal energy need, will thus cost about two times less than in baseline situation. Calculations are further detailed in excel sheet provided to VVB.

[2] As per CRUEA Water Boiling tests performed on 14-April-2019.

The prepared verification report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the VCS Registry.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. LGAI Technological Center, S.A. (Applus+ Certification) has developed a specific checklist customized for the project. The checklist demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from verifying the identified criteria.

Refer to the VCS PD and VCS Validation Report.

As part of the assessment process, the review of the VCS PD has been taken into account as stated above.

The VCS PD for this project, transparently describes in its Section 1.15.2 the rejection of the issuance process in the CDM. Furthermore, the VCS PD describes in its Section 3.6. the deviations that have taken place in the project due to the CDM rejection, the measures taken, the conservative factors to be applied, and the substantiation of the decisions to make the necessary explanations for the acceptance in the VCS program.

The VCS Validation Report by the VVB, transparently describes in its Section 3.1. the rejection, along with the explanation for a better clarity on: the reasons; the rationale; the justification for eligibility; conservative approach taken by the PP; and its assessment and acceptance. The VCS Validation Report provides the assessment done on what it is stated in the VCS PD (see above paragraph) and the necessary context to undertake this verification.

The same has been reproduced and summarized in this Verification Report, Sections 3.2. and 3.3.

VVB's Sampling Approach:

The Project Proponent has not applied sampling approach[3], hence the VVB had planned to apply sampling in accordance with the paragraph 27 of the "Standard: Sampling and surveys for CDM project activities and programme of activities, version 09". VVB carried out random sampling from the PP's records (schools and stoves database) and checked (using its professional judgment) the acceptability of the data for each sampled record in the PP's database. The VVB has determined sample size based on the Para 27, Para 38 (b) and (c) and using as a reference Table 2.of the standard "Sampling and surveys for CDM project activities and programmes of activities" version 09.0.

[3] Refer to CDM Verification Report for the monitoring period 25 Jan 16 - 31 Dec 18 Section D.4.

The VVB however, has applied also onsite sampling and its design during the CDM Verification[4] (please refer to above and VCS PD and VCS Validation Report for more context about the CDM issuance process), being the sample selected during this verification an extended sampling effort with the purpose of increasing the level of assurance that has been reasonably achieved already during CDM Verification process. Refer to the CDM Verification report for more details about the sampled users of the IICSs in this project.

The total number of samples for the verification of this monitoring period done by the VVB is thus 16 (VCS) and 18 (in CDM, onsite), total 34 samples.

During the remote audit verification, a random sampling approach has been used by the verification team to verify the reported values for the monitored parameters as listed in the MR which are monitored by the PP.

Verification team has determined sample size for all the parameters using the standard "Sampling and surveys for CDM project activities and programmes of activities" version 09.0. The verification team determined the sample size (n) as 16, thus complementing up to 34 samples for the same monitoring period considering the CDM Issuance process. The sample size has been used to verify the reported values for the monitored parameters by PP. The VVB interviewed the Improved cook stove users and filled the VVB survey form to check the acceptability of the data for each record in the PP's database. Verification team shared the samples with PP during remote audit.

The actual number of sample size where the acceptance survey was done given below:

Parameters	Total Population	PP's records	Sample size	Sampling method used
Monitoring parameters as per section 4.2 of the MR	Total distributed stoves: 940	940 (total number)	16	Sampling based on random selection of stoves and its users. See below for more information..

Using sampling approach, verification team checked the PP's records of the monitored parameters (reported in the Monitoring forms), finding no material discrepancies leading to the appearance of deviations, along with the following evidences:

i. Remote inspection/interview.
ii. PP schools/stoves database.
iii. Database of all project participating schools using the technology(ies) as per the ER sheet.
iv. Thermal efficiency of the stoves from stove supplier/determined from qualified laboratory.

[4] Refer to CDM Verification Report for the monitoring period 25 Jan 16 - 31 Dec 18 Sections D.3 and D.4.

v. Shipping details of the technology(ies) used by project participating schools.

The result of the survey is given below:

Parameters	VVB Sample size	Discrepancies found with the PP's records	Accepted
Monitoring parameters as per 4.2 of the MR	16	0	16

All the sampled data for the monitoring parameters were in line with the PP's records and there were no discrepant records found from the PP's records. Since there were no discrepant records (0), the PP's set of records has been accepted based on the VVB's sampling.

Appointment of the 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 composition of audit team shall be approved by the LGAI Technological Center S.A. (Applus+ Certification) ensuring that the required skills are covered by the 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 sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Mr. Pankaj Kumar	LA/TE	YES	YES	NA	YES
Mr. Deny Xue	TR	YES	YES	NA	NA

The complete list of CVs is included as Appendix 3 of this report.

Document review

The Monitoring Report version 1 submitted by the PP was reviewed against the approved methodology, registered PD, final validation report and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-

check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in appendix 1.

Follow-up interviews

A remote audit was conducted by LGAI Technological Center S.A. (Applus+ Certification) who performed interviews, telephone conferences with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report in the below sections.

Resolution of Clarification and Corrective Action Request

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ Certification positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The final MR version 2.4 dated 28-December-2022 submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Internal quality control

As final step of a verification of the final documentation including the final verification report and the checklist have to undergo an internal quality control by the technical review committee, i.e. each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

After confirmation of the project owners the positive verification opinion and relevant documents are submitted to the VCS secretariat through the VCS web-platform.

2.2 Document Review

The details of the document observed during the verification process are listed below in appendix 1 of this report.

2.3 Interviews

A remote audit was conducted for the project activity on 16-November-2021[5]. Remote audit was conducted due to ongoing COVID-19 pandemic situation in Burundi. Taking into account the rules of relevant national and local authorities (local to the VVB offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the VVB and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return). Moreover, The VCS Program does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per Section 4.1.2 of the VCS Standard, v4.2).

The VVB has taken alternative measures to reach reasonable level of assurance and conducted remote audit through Skype/Telephone with site personal & consultant (refer section 2.3) with the PP representative. This is also in line with the COVID-19 travel guidance for projects of VERRA.

Technical details & metering/monitoring arrangement verified through onsite photographs/name plates and calibration certificates shared by PP. All the documents were cross checked to ensure conservative estimation of emission reduction.

During the remote audit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of IICS installed, recording, and monitoring of the data and the error accountability were discussed. To cross check the information provided by PP, various documents like technical specifications, sale agreements, training records, school data etc. were also verified. The names of the persons interviewed during remote audit through skype & telephonic interview is given below;

Organization	Name of Persons/Designation	Topics discussed	Team Member
AERA Group	Mr. Alexandre Dunod Mr. Jokhanan Toe Mr. Sebastian Mayr	Project activity implementation Operation, O&M practices, etc. LSC mechanism, Mechanical maintenance, Project description,	Pankaj Kumar

[5] The project has undergone gap validation and verification in parallel. However, due to the CDM rejection of the Verification and PRC, in order to avoid any confusion and given that there could be some questions raised in the sense of having the CDM Rejection, the VVB has provided at first instance the Gap Validation Report. Once all the aspects (regarding CDM Rejection of Verification and PRC) leading to VERRA's comments in PRR for the Gap Validation Report have been closed, then the Verification Report has been issued accordingly. Thus, the date of registration has been set as 22 November 2022 and the interviews to the users were done on Nov. 2021 to completent those done in 2019 by the same VVB, during the CDM assessment.

Organization	Name of Persons/Designation	Topics discussed	Team Member
Burundi Quality Stoves S.A.	Mr. Pascal Rwemera	MR, ER calculations etc.	

VVB would like to point out that although for this Verification the assessment has been conducted by alternative means using ICT tools and remotely, the VVB has conducted an onsite inspection for the UNFCCC CDM Verification process from 25/11/2019 to 27/11/2019 by a team member that forms part of the same VVB's outsourced entity that the Lead Auditor in charge of this Verification, thus the VVB technical management and the team for this Verification share the knowledge regarding the project's characteristics and particularities observed onsite.

Nonetheless, the Verification Team for the present Verification has also interviewed IICS users for the purpose of the Verification process.

Telephonic interviews of schools by verification team:

Sr.	Cook stove no.	Name of the School	Address
1.	00181BQS	ECOFO BUGUMBASHA	MAKEBUKO/GITEGA
2.	00279BQS	ECOFO MURIMIRO	MUTAHO/GITEGA
3.	00205BQS	ECOFO KIGARA	NYARUSANGE/GITEGA
4.	00273BQS	ECOFO GATABATABA	MUTAHO/GITEGA
5.	0005BQS	ECOFO BUGANDA 1	BUGANDA/CIBITOKE
6.	00091BQS	ECOFO MUGERERO	GITHANGA/BUBANZA
7.	00099BQS	ECOFO RUMOTOMOTO	GITHANGA/BUBANZA
8.	0006BQS	ECOFO BUGANDA 2	BUGANDA/CIBITOKE
9.	00120BQS	ECOFO MBUYE	RUGAZI/BUBANZA
10.	00019BQS	ECOFO BUSIGA	RUGOMBO/CIBITOKE
11.	00187BQS	ECOFO KIGATI	MAKEBUKO/ GITEGA
12.	00191BQS	ECOFO MUMURI	MAKEBUKO/ GITEGA
13.	00192BQS	ECOFO MURENDA	MAKEBUKO/ GITEGA
14.	00236BQS	ECOFO GATERAMA	BUGENDANA/ GITEGA
15.	00237BQS	ECOFO KAREHE	BUGENDANA/ GITEGA
16.	00266BQS	ECOFO NDAVA	RYANSORO/ GITEGA

2.4 Site Inspections

As a result of the COVID-19 pandemic, taking into account the rules of relevant national and local authorities (local to the VVB offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the VVB, VERRA notification of Covid-19 Travel

Guidance for Projects[6] and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return from specific countries), the VVB has skipped the on-site visit. Further, "The VCS Program does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per Section 4.1.2 of the VCS Standard, v4.2). Hence, the VVB has used other standard auditing techniques for validation or verification as referred to in VCS Rules/requirements.

Verification team has used the following alternative means for its assessment and to justify that they are sufficient for the purpose of verification. Along with desk review, audit team has conducted remote audit interview as follows:

i. A complete desk review of the MR, as well as all applicable country legal requirement and supportive evidences have been checked by the verification team.
ii. Verification team has performed interview with PP in order to check implementation, project boundary, current situation, monitoring procedures etc.
iii. Cross-check evaluation, for information received from interviews, under the scope of all information and references provided in MR and supporting documents.
iv. A check of the monitoring equipment including performance and observations of monitoring practices against the requirements of the VCS PD and registered CDM PDD and the selected methodology.
v. Total 16 users were inspected through video conferencing and interviewed in order to assess the baseline practice and usage of cookstoves in the project case for PA.

Details of interviewees, topics covered and additional information are provided in Section 2.3 above & VVBs sampling approach in Section 2.1 above.

2.5 Resolution of Findings

The objective of this phase of the verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for LGAI Technological Center S.A. (Applus+ Certification)'s positive conclusion on the project design and Monitoring report. The Corrective Action Requests and Clarification Requests raised by LGAI Technological Center S.A. (Applus+ Certification) were resolved during communications between the Client and LGAI Technological Center S.A. (Applus+ Certification) to guarantee the transparency of the validation process, the concerns raised and responses given are summarized below in the appendix 2.

The final MR version 2.4 dated 28-December-2022 serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives

[6] https://verra.org/covid-19-travel-guidance

are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	01	00	00
Description of project activity	00	00	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
- Applicability of methodology and standardized baseline	00	00	00
- Deviation from methodology	00	00	00
- Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	00	00
Emission reductions	00	01	00
Calibration details	00	00	00
Monitoring plan	00	00	00
No Net harm assessment	00	00	00
Local stakeholder consultation	00	00	00
Others (please specify)	00	00	00
Total	**01**	**01**	**00**

The list of findings and their resolution is presented in appendix 2 of this report.

2.5.1 Forward Action Requests

This is 1st periodic verification of the project activity and one FAR was raised during validation, which is closed during this verification process (please refer to Appendix 2).

2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ Certification holds the accreditation for Validation of projects under this Sectoral Scope

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3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project was registered under the Clean Development Mechanism[7] (Project 9791) on 21-September-2020, although its GHG emission reduction will either be claimed under the VCS programme or the CDM programme, never both.

As per MR and undertaking provided, PP would not consider the credit from any other mechanism for the current monitoring period. The undertaking is provided to confirm that there is not any double counting for current monitoring period. Further, Assessment team confirms that the project activity is not participating in any other form of environmental credits.

Please refer to the Validation Report for this project activity for more details about validation findings, regarding, in particular, status of the previous request for issuance for the same monitoring period under the CDM, which is rejected and further claimed under the VCS, so carbon credits will only be issued under the VCS mechanism and no double counting arises from the monitoring period under consideration.

3.2 Methodology Deviations

The project activity has used CDM approved methodology – AMS-I.E, version 05 which is as per the registered CDM PDD and the VCS PD.

The project proponent has applied for a deviation in methodological requirements by the application of a discount factor due to accounting of some qualitative factors that contribute to a better performance of the IICS, leading to increased emission reductions that cannot be quantitatively accounted. The Deviation is presented accordingly in the Monitoring Report, Section 3.2 and is found acceptable and conservative. The VVB during the GAP Validation process raised a FAR in order to check during this verification the application of the discount factors. The ER sheet presents the calculations to arrive to the conclusion that a discount factor of 14% is applicable in a conservative manner to discount these qualitative factors, *inter alia*, training/behavioural factors (wasteful traditional cooking style with 3-stones wood-fired kitchens supplied by poor wood ballots from students families, vs. trained, awareness-raised kitchen representatives by BQS with improved institutional stoves and briquettes).The FAR thus is closed and the VVB finds acceptable and conservative the discount factor and concludes that the deviation does not negatively impact the conservativeness of the quantification of GHG emission reductions or removals.

[7] https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1385004301.04/view

The Project proponent has also included in the Section 4.2. of the Monitoring Report the new parameter named as "DF" and the same is considered acceptable and its results are evaluated below in this Verification Report.

Please note that, additionally, the PP has proposed in the Section of Methodology Deviations in the registered PD (Section 3.6) some changes that are related to those incorporated into the UNFCCC CDM Post Registration Changes Request that has been rejected because of the rejection of the UNFCCC CDM Issuance process (more information in Section 3.1 of the Validation Report).

In absence of a particular Section in the VCS PD for project description deviations, the PP has agreed to reflect these changes in the Section 3.6 of the VCS PD, and the VVB reflected the same in Section 3.1. of the Validation Report.

However, these deviations are appropriately presented in this Verification Report in the Section 3.3. below for the PD Deviations.

3.3 Project Description Deviations

There is no PD Deviation applied during this monitoring period, and being first verification, no PD Deviation applies from previous monitoring periods.

However, as per what has been depicted in Section 3.2. above, the PP has applied some deviations at the time of GAP Validation of the PD, that are reflected below:

The deviations are regarding the following topics:

Corrections

1) Reasons and explanation of the outcome: To improve and correct the project description, the wording has been slightly updated, such as specification of the term "Improved Cook Stove (ICS)" by Institutional Improved Cook Stove (IICS)" (multiple sections). The changes occurred with the beginning of the crediting period.
Impacts:
i) applicability of the methodology: The corrections do neither relate nor impact the eligibility of the project under the methodology as described in section B.2 of the registered CDM-PDD.
ii) additionality: The corrections do neither relate nor impact the additionality as described in section B.5 of the registered PDD.
iii) or the appropriateness of the baseline scenario: The corrections to do neither relate nor impact the baseline scenario as described in section B.4 of the registered PDD.

2) Reasons and explanation of the outcome: update of the average fuel consumption per capita and per day

Historical consumption of woody biomass per person dependant on the kitchen i (tonnes per person) (Mwoody_biomass_hist_pp,i)

The parameter Mwoody_biomass_hist_pp,I, was estimated at 1.28t/p/year (0.053 t/d for 241 days) at the time of the PDD registration.

The value was obtained from average historical wood fuel consumption of the boarding schools over the last three years prior to project start (2009, 2010 and 2011) giving 9.3 wood steres per day per school (0,015 stere/p/d). However, during the PRC, this value was revised to 1.13t/p/y based on more conservative value of 5 kg per student per day. The value was obtained from a study conducted in 2017[8] on boarding schools stating that firewood consumption may be conservatively stated as 5kg/student/day in the pre-project scenario instead of the value provided in the registered UNFCCC CDM PDD.

The changes are permanent changes to the registered monitoring plan and occurred with the beginning of the crediting period.

Impacts:

i) applicability of the methodology: The change does neither relate nor impact the eligibility of the project under the methodology as described in section B.2 of the registered CDM-PDD.

ii) additionality: The change does neither relate nor impact the additionality as described in section B.5 of the registered PDD.

iii) or the appropriateness of the baseline scenario: The corrections are more conservative with regard to the value in section B.4 of the registered PDD.

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

Reasons and explanation of the outcome: 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.

Op_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.

[8] 2017-06-28 DNCS note to lenders.pdf

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 the monitoring parameter table to have a biennial monitoring frequency (instead of annual), to make it consistent with the currently required and actual biennial "physical check" performed by the project implementer under current measurement procedure requirements of the PDD. Removal of "statistical average" in "source of data" of the parameter table, which is more conservative.

The changes are permanent changes to the registered monitoring plan and occurred with the beginning of the crediting period.

Impacts:

i) applicability of the methodology: The change does neither relate nor impact the eligibility of the project under the methodology as described in section B.2 of the registered CDM PDD.

ii) additionality: The change does neither relate nor impact the additionality as described in section B.5 of the registered CDM PDD.

iii) or the appropriateness of the baseline scenario: The corrections to do neither relate nor impact the baseline scenario as described in section B.4 of the registered CDM PDD.

Changes to project design

Reasons and explanation of the outcome: Replacement of ex-ante indicative Turkish-manufactured cook stove by "Institutional Improved Cook Stove (IICS)" (price and design reasons) and focus on installation of new IICS (as opposed to refurbishment of masonry stoves for briquettes consumption) for technical-economic reasons.

Furthermore, update of the school types involved and corresponding baseline woodfuel consumption: While initially envisaged in boarding schools only at project inception and initial CDM-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. Both school schemes have been surveyed and show comparable cooking woodfuel consumption baseline/history, with day schools offering breakfast and lunch when boarding school serve two meals per day too, yet the non-boarding schools consumption amounting to slightly lower.

The changes occurred with the beginning of the crediting period.

Impacts:

i) applicability of the methodology: The change does neither relate nor impact the eligibility of the project under the methodology as described in section B.2 of the registered CDM PDD.

ii) additionality: The change does neither relate nor impact the additionality as described in section B.5 of the registered CDM PDD

iii) appropriateness of the baseline scenario: The corrections to do neither relate nor impact the baseline scenario as described in section B.4 of the registered CDM PDD.

3.4 Grouped Project

The project does not involve any addition of new project activity and thus the project does not fall under grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

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

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

As part of the implementation status of the VCS project and to provide the necessary context, please refer to the Section 2.1. of this Verification report, along with the Sections 3.2. and 3.3. Complete information about these aspects are provided in the VCS PD and the Validation Report. The context therein reflected is essential for the conduction of this verification.

Compared to the currently used three-stone fires or traditional stoves, the advanced technology of IICS 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.

The project involves schools in Burundi, starting with Bujumbura province. The targeted schools are scattered throughout the country. The indicative list of schools to participate is given in Appendix 5 of this Verification Report.

The project proponents have identified several renewable biomass resources[9] throughout the country. The renewable biomass is from crop residues (like bagasse and coffee husks), forest litter (like pine needles) and timber residues (like sawmill residue).

BQS currently operates three briquetting plants across the country, two in the vicinity of Bujumbura (West) and one in Bubanza (North-West). Further machines are planned to be installed in other parts of the countries such as Cankuzo (East), so as to adequately gather and process the surrounding biomass resources and supply the relevant schools with minimal transportation. The first and second plant will operate in Bujumbura and Gitega respectively with supplies comprising coffee husks, and pinus biomass residues, while the third one will operate in Rutana, supplied with sugar cane bagasse surplus from SOSUMO, the national sugar cane company.

The installation of 940 cook stoves in 284 schools over 16 communes in 4 provinces (Bubanza, Bujumbura, Cibitoke, and Gitega) from 25-January-2016 to 31-December-2018, the supply of 12,631 tonnes of renewable biomass briquettes during the monitoring period and the associated awareness and training campaigns in schools has helped reduce their fuel use significantly. Over this first monitoring period, the project has reduced 263,695 tCO_2e by the use of non-renewable biomass within the country. The school canteens program has benefited 213,240 students as per 2018/19 schools population.

The assessment team confirmed through interviews with PP during remote audit that there are no changes in to the project design during this monitoring period (please refer to Section 3.3 for design changes that have been incorporated in the Gap Validation process in the PD that affect this monitoring period as well). It was found that the monitoring plan was implemented as per the requirement of the VCS PD and the approved monitoring plan and applied methodology – AMS I. E, version 05. The organisational roles and responsibilities as mentioned in the registered VCS PD are followed onsite.

The project will cover all the 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 were selected which were checked by the assessment team and found correct.

[9] Renewable resource should be understood as per the definition provided in CDM-EB 23, Annex 18

The Project Participant's contribution from the project activity towards sustainable development in accordance to host country as explained below:

The project reduces and prevents diseases due to reduced health damaging air pollution (asthma, cancer, etc.). The institutional improved cookstoves employed in the project allow for less combustion fumes (since project stoves are enclosed and more efficient requiring less cooking time, which reduces air pollution in the open-air kitchen (PM and black carbon, VOCs, CO, NOx, PAHS, etc.). Furthermore, the institutional improved cookstoves of the project activity installs enclosed stoves, i.e. reduce accidents due to open fires (due to wind) significantly. The working conditions of the women in the school kitchens improve significantly.

Coffee, rice, timber and other agricultural crop/timber producers can earn additional income by selling their biomass waste to the project participant.

Educational services are enhanced since parents (and sometimes their children) do not have to collect firewood for the school kitchens anymore. Therefore, educational services become more affordable / accessible and school attendance incentivized (in particular in deforested areas) since students who do not bring firewood to the school are not allowed to attend. The project activity forms a complementary part of the World Food Programme against malnutrition of children. While the WFP provides food to the participating school, the project participant provides efficient cook stoves and briquettes.

Due to taxes paid by project participant, domestic resource mobilisation is strengthened.

The activity promotes the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries. In particular, at least three machines of briquettes making (Jumbo) are introduced from India. Highly efficient improved cookstoves designed in the United States are introduced by the International Life Fund in Uganda and transferred to Burundi. Workers will be trained to use the briquette making machines by technology provider (Jumbo) and the technology provider (International Life Fund Uganda) will train the project participant in cook stove construction(.

In the context of the 17 sustainable development goals adopted at the UN Sustainable Development Summit in New York in September 2015, Burundi has neither stated explicitly any priority goals nor provisions for monitoring and reporting same. However, it endorsed those goals and referred to them in the National Development Plan 2018-2027[10].

The monitoring report states the following impacts to the SDGs in Section 1.11 that have been analyzed and found appropriate for the project activity.

[10] http://www.presidence.gov.bi/wp-content/uploads/2018/08/PND-Burundi-2018-2027-Version-Finale.pdf

The project helps decrease expenses for firewood (or respective working time to collect the same), and thus reduces the population's poverty. According to the statistical service in Burundi more than 60% of the population live below the national poverty threshold at around 1 USD/day (SDG target 1.1).

Instead of student's parents spending hours on looking for firewood in the forest, project participant organizes centralized supply of free biomass briquettes to all schools. (SDG target 7.1.2) which is due to the installation of the 940 IICS in 284 schools, increasing the reliance of population on clean fuels and technology.

The project creates new long-term and short term job opportunities including income generation. 20 short terms jobs created by 2018 and 138 permanent job created by 2018. More than 100 permanent jobs with decent work conditions should be created in briquette drying & production (collection of raw material, drying, mixing of biomass residues, briquette production), in administration & management and in security services during the project's lifetime. Further jobs will be created through use of third-party services (transport of briquettes, lawyers, etc.) (SDG target 8.5).

The project contributes as well to the SDG 13 by providing emission reductions in an amount corresponding to 263,695 tCO2e during the current monitoring period (SDG target 13).

Apart from using more efficient cook stoves, the use of renewable biomass briquettes from agricultural waste instead of non-renewable biomass reduces deforestation significantly. (SDG target 15.2)

Reducing biomass consumption for cooking purposes reduces pressure on forests. Therefore, the activity protects species diversity as the habitat of these species is conserved. (SDG target 15.5)

Finding: No findings raised

The assessment team observed that the project is in line with the registered CDM PDD and VCS PD and applied methodology and thus no clarification/deviation is sought.

Assessment team confirms following during the verification remote audit:

1. Start date of the project is 25-January-2016 (as per VCS PD).
2. An undertaking letter has been submitted by PP for double counting with any other GHG program. PP also has given a written declaration that project has not claimed other form of GHG credit for the concerned monitoring period (please refer to Section 3.1. of this Verification Report for further details).

3. Assessment team confirms that this is the 1st monitoring under VCS and covers the activity from 25-January-2016 to 31-December-2018 (inclusive of both dates). VCS crediting period is of 07 years and 25-January-2016 is the start date and crediting period ends on 24-January-2023. The GHG credits from 25-January-2016 to 31-December-2018 will be claimed under VCS only (please refer to Section 3.1. of this Verification Report for further details). At any point of time during the crediting period, the project proponent will abide by the "Double Counting".
4. Assessment team checked and found that the Project proponent of the project activity is as below for the current monitoring period:

Organization name	Burundi Quality Stoves S.A.
Contact person	M. Pascal Rwemera
Title	Director
Address	Q.Industriel, Av. Nyabisindu, B.P. 5612 Bujumbura, Burundi
Telephone	+257 22259470
Email	info@bqs.bi

5. Assessment team checked and found that the Other Entities involved in the Project are as below for the current monitoring period:

Organization name	AERA Group
Contact person	Carbon consultant
Title	Alexandre Dunod Head of Certifications
Address	28 Cours Albert 1er, 75008 Paris, France
Telephone	+33 1 42 18 02 02
Email	a.dunod@aera-group.fr

6. The quantified emission reduction calculation for the monitoring period is correct and conservative.

4.2 Safeguards

4.2.1 No Net Harm

The project activity is utilization of Improved Cook stove for cooking in host country's schools and does not involve any negative impact. As no potential negative environmental and socio-economic impacts identified, hence this section is not required.

4.2.2 Local Stakeholder Consultation

According to the ongoing communication process with the stakeholders, there has been no comment received during the monitoring period and all the stakeholders are happy with the implementation and operation of the project activity. There has been no changes in the project design form the VCS PD due to comments from the ongoing communication mechanisms with the stakeholders.

4.3 AFOLU-Specific Safeguards

Not applicable

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the MR. 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 monitoring plan of the VCS PD and MR.
Findings	No findings were raised.

Conclusion	All the ex-ante & monitored parameters are described in sections 4.1 & 4.2 of the MR transparently. It is confirmed that all the ex-ante parameters have been correctly used in the emission reduction calculations. **Ex-ante Parameter:** 1. Pj: Useful thermal output capacity of the IICS in kWh The value 32.78 is based on Performance test results from the manufacturer which is in line with the registered CDM PDD. 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 considered as a national default value based on table 2 of information note EB 67 Annex 22 which is in line with the registered CDM PDD. The value has been approved by DNA of Burundi on 06-November-2012. 3. $NCV_{biomass}$: Net calorific value of the non-renewable woody biomass that is substituted in Tj/tonne The value 0.015 TJ/Tonnes is considered based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories. 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 in tCO_2/TJ The value 81.6 tCO=/TJ is considered based on 2006 IPCC Guidelines for National Greenhouse Gas Inventories which is in line with the registered CDM PDD. 5. Mwoody_biomass_hist_pp,,l : Historical consumption of woody biomass per person dependent on the kitchen *i* (tonnes per person) in tonnes/capita The value 1.13 tonnes/capita is derived historical data of wood fuel consumption in the schools from the study area. 6. $Leakage_{adj}$: Net to gross adjustment factor to account for leakages The value 0.95 is considered based on the applied CDM methodology. 7. $EFE_{EL,j,y}$: Emission factor for electricity generation for source *j* in year *y in* tCO_2/MWh

	The value 1.3 tCO_2/MWh is considered based on option A2 in the Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (Version 01) 8. $TDL_{j,y}$: Average technical transmission and distribution losses for providing electricity to the briquetting machine The value 0.20 is considered as default value of 20% for option: (a) project or leakage electricity consumption sources; 9. SEC_{briq}: Default value for the specific quantity of electricity consumed per tonne of briquettes produced in MWh/tonne The value 0.038 MWh/tonnne is estimated based on based on historic specific electricity consumption per ton of briquettes produced. 10. $M_{woody\_biomass\_hist\_pp,l}$: Historical consumption of woody biomass per person dependent on the kitchen i in tonnes per person. The value 1.13 tonnes per person is derived from historical records of schools' wood fuel's consumption During the verification, all relevant monitoring parameters of the registered monitoring plan have been verified with regard to the appropriateness of the verification method; the correctness of the values applied for ER calculation, the accuracy and applied QA/QC measures. All monitoring parameters have been measured / determined without material misstatements and are in line with all applicable standards and relevant requirements. It is confirmed that the monitoring mechanism is effective and reliable. Therefore, from the document review and remote inspection, it is confirmed that all the parameters were monitored in accordance with the registered monitoring plan during the monitoring period. Following are the details of monitoring in accordance with the monitoring plan of the registered CDM PDD and VCS PD. *1.* $OP_{\_kitchen,l,y}$: Operating status of kitchen i (equipped with IICS) in year y The value for this parameter calculated through physical checks at the schools participating which is performed at least biennially. The value recorded during the physical check are as bellows which were confirmed by the assessment team. - School year 2016/17 (survey date/start of data collection: 13 September 2016) - School year 2017/18 (survey date/start of data collection: 19 February 2018) - School year 2018/19 (survey date/start of data collection: 30 September 2018) The values were found consistent and were cross checked with the supportive evidences and during remote audit. Assessment team checked that 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 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.

2. $M_{renewable.biomass,y}$: Quantity of renewable biomass consumed by the project activity in year y in tonnes/year
The value for this parameter is calculated based on an average student count per school from 2016/17 (over 284 school) and 226 days of schools (average from 2016/17 to 2018/19). The values were cross checked through sampling of delivery note maintained at the schools. At each distribution site a delivery note is made for each batch of briquettes sold containing the following information: distribution 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.
Assessment team checked the BQS delivery note for the complete monitoring period for the project activity. 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.
The values recorded with a recording frequency of a month are below which are verified;

School-year 2015-2016	School-year 2016-2017	School-year 2017-2018	School-year 2018-2019
3,401	3,066	3,714.5	2,449.5

3. $N_{pers/kitcheni,y}$: Number of persons dependent on kitchen i in the year y

The value is based on the occupancy of the schools during the monitoring period which is recorded on an annual basis. Letter from education ministry act as source of document which were checked .The assessment cross checked the values with registers maintained at the schools, school attendance records. The values verified by the assessment team are as follows;

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

4. $NI_{ICS/,j,y}$: Total number of IICS distributed or replaced by an equivalent appliance in year y

The value 940 is assessed based on the order and was cross checked with delivery records which is confirmed based on the evidences submitted and during remote audit by the assessment team.

	5. DF: Discount factor to account for qualitative improvements. The parameter established additionally to those referred under the CDM-PDD and the registered VCS PD, as part of the methodological deviation, is used to discount total emissions reductions to account for qualitative improvements following introduction of IICS. The factor has been assessed by the PP, based on qualitative improvements following distribution of IICS. The factor is the difference between total assessed reduction (95%) and the quantitative reduction (81,2%), hence a gap of 13.8% (rounded at 14% for conservativeness) Calculation has been evaluated as per the evidences presented by the PP (i.e. ER sheet). Final value applied for this factor is 14% and its application will have an annual frequency or at each monitoring period. The parameter is found to be acceptable by the VVB.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	All relevant documents were checked to assess the correctness and quality of data submitted by the project participants, which are used to determine emission reductions.
Findings	No finding raised on the section.
Conclusion	All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant lack of evidence and missing data were detected during remote audit discussion and inspection. Hence, the verification team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures. The monitoring parameters have been measured / determined without material misstatements and is in line with all applicable standards and relevant requirements. The information inflow (from data generation, aggregation, to recording, calculation and reporting) is included in the relevant sections of the Monitoring Report and under each parameter and confirms adequacy to the requirement of the VCS PD. It was also verified through remote audit that the team involved in the monitoring of project activity is well experienced. Hence, the verification team concludes that competent staff is employed by the project proponent to carry out the relevant tasks with sufficient accuracy. Furthermore, it was

	confirmed during remote audit that internal training program for the monitoring staff is conducted on regular basis. Comparison of Estimated Vs actual ERs: On comparison of achieved emission reductions (263,695 tCO_2e) with the estimated emission reductions (480,790 tCO_2e) for the monitoring period, around 45% decrease was observed. According to the applied methodology, the conservativeness of the achieved emission reduction was checked and the detailed emission reduction calculation has been transparently provided in the ER sheet. All the formulae and the calculation procedure were checked by the verification team. In the opinion of verification team, the assumptions, emission factors and default values that were applied in the calculations have been justified.

4.6 Non-Permanence Risk Analysis

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.	Not applicable	Not applicable	Not applicable	Not applicable

5 VERIFICATION CONCLUSION

Applus+ Certification has been appointed by "AERA Group" on behalf of "Burundi Quality Stoves, SA" (hereinafter referred to as BQS) to perform the 1st periodic verification of the "BQS improved cookstoves for Burundi's schools" under VCS Regulatory Requirements.

The management of the project participant is responsible for the preparation of the GHG emissions data and the reported/estimated GHG emissions reductions on the basis set out within the project's Monitoring Plan in the VCS PD and MR and the approved 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 and VCS Standard version 4.2. 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 document;

the monitoring plan is as per the applied methodology;

the monitoring process in Monitoring Report is as per the PD

the development and maintenance of records and reporting procedures are in accordance with the monitoring plan

the monitoring system is in place and generates GHG emission reductions data;

the GHG emission reductions are calculated without material misstatements.

A reasonable level of assurance was achieved during the verification.

No limitation observed for the present verification

Verification period: From 25-January-2016 to 31-December-2018 (first and last date included)

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
25 January 2016-31 December 2016	82,025	-	228	81,797
01 January 2017-31 December 2017	87,564	-	169	87,395
01 January 2018-31 December 2018	94,749	-	247	94,503
Total	**264,338**	**-**	**644**	**263,695**

APPENDIX I: DOCUMENTS REVIEWED DURING VERIFICATION

No.	Author	Title	References to the document	Provider
1.	NA	VCS PD	Version 02 dated 12-Janauary-2022	VERRA
2.		Draft VCS Monitoring Report Final VCS Monitoring Report	Version 1 dated 15-June-2021 Version 2.4 dated 28-December-2022	PP
3.	NA	ER spread-sheet (corresponding to the Draft monitoring report) ER spread-sheet (corresponding to the final monitoring report)	Version 1 dated 15-June-2021 Version 2 dated 21-December-2022	PP
4.	NA	CDM Approved methodology AMS I.E	Version 5	UNFCCC
5.	NA	Standard: Sampling and surveys for CDM project activities and programme of activities	Version 09.0	UNFCCC
6.	NA	VCS webpage for the project, VCS ID 2616; https://registry.verra.org/app/projectDetail/VCS/2616	VCS PD and the Validation Report along with the PRR	VERRA
7.	NA	Registered CDM PDD 8791 https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1385004301.04/view	Version 1.7 dated 27-Febraury-2014	UNFCCC
8.	NA	CDM Project validation report https://cdm.unfccc.int/filestorage/T/5/0/T50H7LVQAORXZDUPKM4BN1S86FGCIE/T50H7LVQ.pdf?t=c258cjVsYjInfDAPITYbaLcyTXaMHaBN8pHY	Version 02 dated 02-March-2014	UNFCCC
9.	NA	Third party efficiency test report		PP
10.	NA	Third-party survey report:		PP
11.	NA	Training Records		PP
12.	NA	Remote audit records		PP
13.	NA	Technical specifications of cook stoves		PP
14.	NA	Grievance register with details of the complaints and the mitigation measures		PP
15.	NA	Monitoring/ stove distribution database		PP

No.	Author	Title	References to the document	Provider
16.	NA	VCS Standard	Version 4.2	VERRA
17.	NA	VCS Program Guide	Version 4.1	VERRA
18.	NA	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period and double counting		PP
19.	NA	Rejected issuance process in CDM, including a PRC in issuance track done by the same VVB performing this verification. Issuance process: https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1385004301.04/iProcess/Applus1572282921.37/view PRC Process: https://cdm.unfccc.int/PRCContainer/DB/prcp573489849/view The information in these links might not be the latest one prepared by the DOE in CDM, because it has been finally rejected.	-	UNFCCC

APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

FARs from Validation and/or previous Verifications

FAR ID	01	Section no.	Monitoring Plan	Date: 14/09/2022
Description of FAR				
The VVB verifying the next monitoring period shall cross-check that the *ex-post* calculations take due account of the conservative discount factor to mitigate the effects of the qualitative/behavioural aspects as established by the PP as a conservative measure.				
Project participant response				**Date:** 10/11/2022
DF applied				
Documentation provided by project participant				
Revised MR and ER sheet				
DOE assessment				**Date:** 18/12/2022
PP has applied the Discount Factor and reflected the same under Methodology Deviations. The same has been evaluated and found acceptable by the VVB, thus, the FAR is closed.				

CARs from this Verification:

CAR ID	01	Section no.		Date: 08-December-2021
Description of CAR				

1. On the first page it is written that this is 'Joint Project Description and Monitoring Report' however the document template referred is for VCS Project Description. 2. Format used for date on the first page is not in line with VCS Project Description template. 3. PP to use consistent date format throughout the document. 4. PP to correct 'Contents' as per VCS Project Description template. 5. Section 1.5, 1.6, 1.11 needs a revision in line with VCS Project Description template and use Arial or Franklin Gothic Book 10.5 point, black, regular (non-italic) font as per the template in the tables. 6. As per paragraph 3.19.5 of VCS standard version 1.4, PP needs to mention methodology deviations, if any, under section 3.6 of VCS PD which is missing.
Project participant response **Date:** 15-December-2021
1) The document is a VCS-PD, and not a join PD+MR. This is now reflected on the first page of the VCS-PD 2) The date has been updated to be aligned with VCS-PD template (DD-Month-YYYY) 3) The VCS-PD has been updated following the DD Month-YYYY format to be consistent throughout the document 4) Content has been corrected 5) The font has been corrected. VVB to specify revision needed 6) The section 3.6 has been updated to include changes and deviations
Documentation provided by project participant
Revised VCS-PD
VVB assessment **Date:** 11-January-2022
1. PP has corrected the document title which is checked and confirmed. 2. PP has used correct date format which is in line with VCS Project Description template and hence accepted. 3. PP has made date format consistent throughout the revised VCS PD which is checked and confirmed. 4. PP has corrected 'Contents' as per VCS Project Description template which is checked and confirmed. 5. Section 1.5, 1.6, 1.11 needed a revision with respect to the font used which is now corrected in the revised PD which is appropriate. 6. PP has updated section 3.6 of the revised VCS PD to include changes and deviations which is checked and accepted. **CAR is closed.**

CLs from this Verification:

CL ID	**01**	**Section no.**		**Date:**08-December-2021
Description of CL				
1. PP to clarify how it will ensure '100% of fuel consumed in schools will be switched to briquettes made of renewable biomass waste' as mention in the section 1.1 of VCS PD. 2. In section 1.4, registered CDM-PDD is referred, PP is requested to provide web link of the project page. 3. PP to specify Project Crediting Period in section 1.9 as same is not appropriately defined. 4. PP has used CDM methodology AMS I.E. however; the version number is inconsistent within the VCS PD.				

Project participant response	Date: 15-December-2021
1) PP has an agreement with school to supply briquettes, which are less expensive than wood. It is therefore more interesting for schools to get briquettes instead of wood/charcoal. Also, to monitor briquettes usage, BQS also monitor each year all the schools to detect number of days of briquettes shortage. Therefore, when it is found that there is shortage, the number of days of shortage are withdrawn from the total of school's days. This approach is conservative as it considers that stoves were not working when briquettes are not available. 2) The Link is added to the PDD section 1.4. Link is also provided here: *PDD BS improved cookstoves for Burundi's schools* 3) The crediting period has been updated in the VCS-PD. A total of 21 years (7*3), with a first crediting period from 25 January 2016 to 24 January 2023 4) The version number has been corrected. The version has been corrected to AMS I.E version 5	
Documentation provided by project participant	
1) Example of monitoring survey 2) Revised VCS-PD 3) Revised VCS-PD 4) Revised VCS-PD	
VVB assessment	**Date:** 11-January-2022
1. PP has an arrangement with school to supply briquettes which is confirmed based on the supporting evidence submitted. Further, it is also confirmed that briquettes are less expensive than the wood which is a baseline fuel, based on the supporting evidence submitted. This gives confidence that, for a school, a supply of cheaper but more efficient fuel source is guaranteed which will ensure that 100% of fuel consumed in schools will be switched to briquettes made of renewable biomass waste'. Hence, this part of CL is closed. 2. PP has provided the web link of the project page in the revised VCS PDD, section 1.4 which is checked and confirmed. 3. PP has specified Project Crediting Period in section 1.9 of revised VCS PD which is checked and confirmed. 4. PP has provided correct version of the applied CDM methodology AMS I.E i. e. version 5 in the revised MR and is made consistent within the VCS PD. **CL is closed.**	

FARs from this Verification:

N/A

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of VVB or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	Kumar	Pankaj	TQC-Outsourced entity	Yes	No	Yes	Yes

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 VVB or outsourced entity)
1.	Technical reviewer (TR)	EI	Xue	Denny	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustin	Applus+ Certification

Short CVs of the Team:

1. **Pankaj Kumar** worked as team leader – Bihar for South Asia Climate Proofing and Growth Development (CPGD) – Climate Change Innovation Programme (CCIP) supported by DFID that seeks to mainstream climate change resilience into planning and budgeting at the national and sub-national level in India, Pakistan, Nepal, and Afghanistan. Pankaj Kumar has worked previously with IL&FS Infrastructure Development Corporation and BUIDCO (Bihar Urban Infrastructure Development Corporation), Govt. Of Bihar as Environmental Specialist for WB & ADB funded projects. Prior to this, he worked with Carbon Check (UNFCCC accredited DoE), Johannesburg, RSA as Team Leader for validation, verification of around 100 GHG projects in Asia, Africa, USA, Asia Pacific & Americas. Pankaj is accredited Lead Auditor, Validator, Verifier and Technical Expert for Sectoral Scope/Technical Area – 1.1, 1.2, 3.1 & 13.1 by UNFCCC VVB (Designated Operational Entity), APPLUS, Spain. He is also member of task force

on climate change & human health, Health Department, GoB and on roster of UNICEF's WASH experts.

He is an experienced, qualified and result oriented Environment Professional having more than 14 yrs. Of relevant experience in Climate Change (Mitigation &Adaptation), Environmental Due Diligence, Disaster Risk Reduction, Validation and Verification of GHG project under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He provides technical support for environmental investigative, consultative and remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and Carbon foot printing

Pankaj Kumar is Masters in Environment Management from Forest Research Institute (University), I.C.F.R.E, Dehradun, which is Centre of Excellence in South East Asia for Forestry education & research and PGDEL from National Law School of India University, Bangalore (India).

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 4: ABBREVIATIONS

Abbreviations	Full text
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNA	Designated National Authority
DR	Document Review
VCS	Voluntary Carbon Standard
VCU	Verified Carbon Unit
VVB	Validation/Verification Body

APPENDIX 5: LIST OF ALL PARTICIPATING SCHOOLS (EDUCATION MINISTRY, SEPTEMBER 2012)

Regions	SCHOOL	/
Bujumbura Rural	SCHOOL OF L BUHONGA	1
	SCHOOL OF L KIVOGA	2
	SCHOOL OF L JENDA	3
	SCHOOL OF L KABEZI	4
	SCHOOL OF L MUTIMBUZI	5
Bujumbura Mairie	SCHOOL OF L DE LA PAIX NGARA	6
	SCHOOL OF L NGARA	7
	SCHOOL OF L GISENYI	8
	SCHOOL OF L SHEPPERS	9
	SCHOOL OF L ND VUGIZO	10
	SCHOOL OF L SAINT ESPRIT	11
	SCHOOL OF L D BOSCO	12
	SCHOOL OF L ESPOIR	13
	SCHOOL OF L SAINT KIZITO	14
	SCHOOL OF L KIROMBWE	15
Bururi	SCHOOL OF L MATANA	16
	SCHOOL OF L BURURI	17
	SCHOOL OF L KIREMBA SUD	18
	SCHOOL OF L RUBANGA	19
	SCHOOL OF L RUMEZA	20
	SCHOOL OF L RUMONGE	21
	SCHOOL OF L RUTOVU	22
	SCHOOL OF L TORA	23
	SCHOOL OF L BUTA	24
	SCHOOL OF L BUTWE	25
	SCHOOL OF L MUTANGARO	26
	SCHOOL OF L VYANDA	27
Cankuzo	SCHOOL OF L MURORE	28

Region	SCHOOL	/
Kirundo	SCHOOL OF L KIRUNDO	54
	SCHOOL OF L MUKENKE	55
	SCHOOL OF L KINYINYA	56
	SCHOOL OF L MARANGARA	57
	SCHOOL OF L VUMBI	58
	SCHOOL OF L GASENYI	59
	SCHOOL OF L NTEGA	60
Bubanza	SCHOOL OF L BUBANZA	61
	SCHOOL OF L NDORA	62
	SCHOOL OF L BUKINGA	63
	SCHOOL OF L MUZINDA	64
Muramvya	SCHOOL OF L NDA BUKEYE	65
	SCHOOL OF L MURAMVYA	66
	SCHOOL OF L BUKEYE	67
	SCHOOL OF L KIGANDA	68
	SCHOOL OF L BUGARAMA	69
	SCHOOL OF L MBUYE	70
Rutana	SCHOOL OF L RUTANA	71
	SCHOOL OF L GIHOFI	72
	SCHOOL OF L MUSONGATI	73
	SCHOOL OF L SHANGA	74
	SCHOOL OF L MPINGA	75
	SCHOOL OF L GIHARO	76
Mwaro	SCHOOL OF L MWARO	77
	SCHOOL OF L MUYEBE	78
	SCHOOL OF ENAC KIBIMBA	79
	SCHOOL OF L KIBUMBU	80
	SCHOOL OF L GISOZI	81

	SCHOOL OF L MUYAGA	29
	SCHOOL OF L MURORE	30
Ruyigi	SCHOOL OF L NYABITARE	31
	SCHOOL OF NYENKANDA	32
	SCHOOL OF L RUYIGI	33
	SCHOOL OF L RUSENGO	34
	SCHOOL OF L BWAGIRIZA	35
Gitega	SCHOOL OF L ST TH MUSHASHA	36
	SCHOOL OF L BUKIRA SAZI	37
	SCHOOL OF L MUGERA	38
	SCHOOL OF L NDS GITEGA	39
	SCHOOL OF L GISHUBI	40
	SCHOOL OF L MUZINZIRA	41
	SCHOOL OF L GITEGA	42
	SCHOOL OF L R PACIS	43
	SCHOOL OF E N MWEYA	44
	SCHOOL OF L GIHETA	45
	SCHOOL OF KWIBUKA	46
	SCHOOL OF L SONGA	47
	SCHOOL OF ENG GITEGA	48
Makamba	SCHOOL OF L MAKAMBA	49
	SCHOOL OF L KAGAYO	50
	SCHOOL OF L MARANDA	51
	SCHOOL OF L KAYOGORO	52
	SCHOOL OF L NYANZA LAC	53
	SCHOOL OF L NDAVA	82
	SCHOOL OF L NYAKARARO	83
Kayanza	SCHOOL OF L KAYANZA	84
	SCHOOL OF L MUSEMA	85
	SCHOOL OF L GATARA	86
	SCHOOL OF L BANGA	87
	SCHOOL OF L MTONGO	88
Ngozi	SCHOOL OF L BUSIGA	89
	SCHOOL OF L DON BOSCO	90
	SCHOOL OF L BUYE	91
	SCHOOL OF L KIREMBA NORD	92
	SCHOOL OF L MUSENYI	93
	SCHOOL OF L GASHIKANWA	94
Karusi	SCHOOL OF L BUHIGA	95
	SCHOOL OF L GITARAMUKA	96
	SCHOOL OF L ESP BUHIGA	97
Muyinga	SCHOOL OF L RUGARI	98
	SCHOOL OF L GISANZE	99