BQS IMPROVED COOKSTOVES FOR BURUNDI'S SCHOOLS

Document Prepared by

LGAI Technological Center S.A. (Applus+ Certification)

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Report Title	BQS improved cookstoves for Burundi's schools
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Summary:

Burundi Quality Stoves (BQS) has developed an institutional improved cook stoves (IICS) 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 switching from non-renewably logged trees to a sustainable energy supply: briquettes made of renewable biomass waste.

GAP Validation purpose: The project activity involves the distribution of institutional improved cook stoves. 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 100% 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 project will allow the implementation of up to 1,372 IICS[2] . The distribution of IICS, supplied with renewable biomass briquettes, and the associated instructions will help halving these communities' fuel use[3] and turning it

[1] BQS expect 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). 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] One stove serves more than 197 students.
[3] Experiments to estimate the approximate renewable briquettes consumption per cookstove have been conducted and recorded, evidencing savings up to 90% in quantity and 50% time. Communities will save fuel and time.

100% renewable. Thus, the project will reduce greenhouse gas emissions by reducing the use of non-renewable biomass within the country, thus slowing down deforestation.

The expected annual amount of greenhouse gas reductions thanks to the project activity averages 163,854 tCO_2e and the total amount of greenhouse gas emissions reductions for the chosen crediting period is 1,146,983 tCO_2e. The type of GHG reduced is CO_2 emissions from substitution of fossil fuel consumption by similar consumers, equivalent to the non-renewable woody biomass saved by the project activity.

The project is registered under CDM mechanism (reference number: 9791[4]). The present validation (gap validation) is under VCS mechanism and assessment of clause (1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12. 1.13, 1.14, 1.15.1, 1.16, 1.17 and 3.6) of the VCS Project Description Template. The same is in line with Para 3. 20.5 of VCS standard version 4.2.

The scope of the gap validation is the independent and objective review of VCS Project Description document (VCS PD). VCS PD is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The validation was based on the guidance given in the CDM validation and verification standard for project activities, version 03.0, review against previous registered project documents, CDM Project Standard for project activities, version 03.0, CDM project cycle procedure for project activities, version 03.0, VCS program guide version 4.1 and VCS Standard version 4.2.

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

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 VCS PD. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VCUs. The gap validation 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 VCS PD.

The only purpose of the validation is its usage during the registration 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 validation opinion, which will go beyond that purpose.

The Gap validation has been planned and organized to achieve a Reasonable Level of Assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/verification conducted to arrive at positive validation conclusions.

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

CONTENTS

1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Hereafter referred as Applus+ Certification) has been appointed by "AERA Group" on behalf of "Burundi Quality Stoves S.A" to perform the Gap Validation of the project activity "BQS improved cookstoves for Burundi's schools" according to the requirements of the Verified Carbon Standard, version 4.2.

The objective of this gap validation activity is to have an independent third party for the assessment of the VCS project design clause clause (1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 1.12. 1.13, 1.14, 1.15.1, 1.16, 1.17 and 3.6) and ensure a thorough assessment of the project activity "BQS improved cookstoves for Burundi's schools" against the applicable CDM and VCS requirements.

1.2 Scope and Criteria

The scope of the gap validation is to establish that:

- the appropriate VCS PD template was used and correctly filled up;
- the project activity is in accordance with all relevant host country criteria (Burundi);
- the project activity is in accordance with all relevant VCS rules and requirements;
- the project activity is in accordance with conditions of the applied methodology AMS I.E, version 05 – "Switch from non-renewable biomass for thermal applications by the use".

1.3 Level of Assurance

☒ Reasonable level of assurance

☐ Limited level of assurance

The gap validation has been planned and organized to achieve a Reasonable Level of Assurance as per the requirement of VCS. The entire documents checked/Remote audit conducted to arrive at positive validation 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-renewabe 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 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. Non-renewable biomass fuel consumed in schools will be switched to briquettes made of renewable biomass waste. 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. BQS will ensure through a sale agreement and robust supply strategy that no shortage of briquettes will appear, while unlikely/exceptional shortages may imply residual baseline woodfuel supply by the families.

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[5].

The project will allow the implementation of up to 1,372 IICS[6] . The distribution of IICS, supplied with renewable biomass briquettes, and the associated instructions will help halving these communities' fuel use[7] and turning it to renewable. Thus, the project will reduce greenhouse gas emissions by reducing the use of non-renewable biomass within the country, thus slowing down deforestation.

The expected annual amount of greenhouse gas reductions thanks to the project activity averages 163,854 tCO_2 eq and the total amount of greenhouse gas emissions reductions for the chosen crediting period is 1,146,983 tCO_2 eq. The type of GHG reduced is CO_2 emissions from substitution of non-renewable fuel consumption by similar consumers, equivalent to the non-renewable woody biomass saved by the project activity.

[5] As per CRUEA Water Boiling tests performed on 14-April-2019.
[6] One stove serves more than 197 students.
[7] Experiments to estimate the approximate renewable briquettes consumption per cookstove have been conducted and recorded, evidencing savings up to 90% in quantity and 50% time. Communities will save fuel and time.

2 VALIDATION PROCESS

2.1 Method and Criteria

Gap Validation Scope: The scope is defined as an independent and objective review of the VCS PD. The VCS PD 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 validation was based on the requirements in the Validation and Verification Standard for project activities, version 03.0, Project standard for project activities, version 03.0, and VCS program guide version 4.1 and standard, version 4.2.

The validation 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 combined project description.

Gap Validation Process: The project assessment is based on the Clean Development Mechanism Validation and Verification Standard for project activities, version 03.0 and VCS standard Version 4.2 and VCS 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:

i. A desk review of the VCS PD against the registered PDD;

ii. Follow-up interviews with project participant;

iii. The resolution of outstanding issues and the issuance of the final GAP Validation report and Validation opinion.

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

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.

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:

i. Lead Auditor (LA).
ii. Auditor (A) / Auditor in Training (AiT).
iii. Technical Expert (TE).
iv. 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. Denny Xue	TR	YES	YES	NA	NA

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

Document review

The VCS PD version 1 submitted by the project proponent was reviewed against the approved methodology 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, video conferencing 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 validation 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 VCS PD. 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 validation process, the concerns raised and responses given are summarized below in the Appendix 2.

The final VCS PD version 3.5 dated 14-October-2022 submitted by the project proponent serves as the basis for the final assessment presented. Additional changes to the project during the validation 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 Validation of the final documentation including the final validation 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 GAP Validation opinion and relevant documents are submitted to the VCS secretariat through the VCS web-platform.

2.2 Document Review

The basis of gap validation activity is VCS PD version 01 which was submitted to the validation team. The PD was assessed against,

a. Applied CDM methodology - AMS-I.E – “Switch from non-renewable biomass for thermal applications by the user” – Version 05.0
b. Host country criteria
c. VCS Validation and Verification Manual version 3.2
d. VCS standard version 4.2
e. VCS Program guide version 4.1

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

2.3 Interviews

A remote audit was conducted for the project activity on 16-November-2021. 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’s 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 personnel & consultant (refer section 2.3) with the PP's representative. This is also in line with the COVID-19 travel guidance for projects of VERRA.

During the remote audit, the PP's 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,	Mr. Pankaj Kumar
Burundi Quality Stoves S.A.	Mr. Pascal Rwemera	MR, ER ex ante and ex post calculations etc.[8]	

VVB would like to point out that although for this GAP Validation 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 (see Section 3.1 below for more information regarding this 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 Gap Validation, thus the VVB technical management and the team for this Gap Validation share the knowledge regarding the project's characteristics and particularities observed onsite.

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

[8] Gap Validation has been done in parallel with Verification.

Telephonic interviews of users by validation 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

2.4 Site Inspections

Duration of Remote Audit: 16-November-2021 (Via video conferencing)				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Assessment team also checked that whether the monitoring plan as described in the VCS PD is actually practised onsite. Also, assessment team checked any change in host country criteria which may affect the baseline of the project activity.	**Virtual Audit** (Through Skype Video conference call)	16-November-2021	Mr. Pankaj Kumar

2.5 Resolution of Findings

The objective of this phase of Validation was to resolve the requests for corrective actions and clarifications and any other outstanding issues from previous assessments done in the UNFCCC CDM which need to be clarified for Applus+ Certification's positive conclusion on the VCS PD. 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 validation process, the concerns raised, and responses given are summarized below in the Appendix 2.

The final VCS PD version 3.5 dated 14-October-2022 submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the validation 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.

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	01	00
Description of project activity	01	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	00	01
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**	**01**

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

2.5.1 Forward Action Requests

One FAR has been raised and can be found in Appendix 2 to this Gap Validation Report.

3 VALIDATION FINDINGS

3.1 Project Details

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.

The IICS come instead of the initially considered ICS designed by the Turkish company SOBAH, which was an indicative choice in the initially registered PDD in the UNFCCC CDM. The fixed

stoves, mostly installed in batches of two or three per school kitchen, have an average thermal efficiency of 44.8% and an average firepower of 32.78 kWth[9].

The project will allow the implementation of up to 1,372 IICS[10] . The distribution of IICS, supplied with renewable biomass briquettes, and the associated instructions will help halving these communities' fuel use[11] and turning it to renewable. Thus, the project will reduce greenhouse gas emissions by reducing the use of non-renewable biomass within the country, thus slowing down deforestation.

With 1,372 IICS with each having rated thermal output of 32.78 kWth, total thermal output would be 44.97 MWth which is within the SSC threshold. Thus, VVB confirms that the project size limit calculations for the compliance with the SSC thresholds are consistently determined under current PA circumstances.

The technology to be implemented by the Project activity falls into Sectoral Scope 1: Energy industries (renewable/non-renewable sources), as it concerns the provision of briquettes made of renewable biomass waste to schools for cooking activities together with the introduction of improved cooking devices adapted to briquettes consumption. PP will arrange supply of renewable biomass source to provide thermal energy to the participating schools and will avoid consumption of non-renewable wood fuel. It falls into Type (I) project activities: renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts (or an appropriate equivalent i.e. 45 MWth). Moreover, the project falls into Category (C) project activities: thermal energy for the user.

The project is not a grouped project.

The Project Ownership is with "Burundi Quality Stoves Ltd." who is also implementing the project. The ownership is confirmed from the "Letter of Approval" issued by the host country Designated National Authority (DNA) for CDM in Burundi, dated 28-February-2011. The ownership was further confirmed from Emission Reduction Purchase Agreement between Burundi Quality Stoves S.A. and AERA group, dated 19-April-2020 and agreements between Burundi Quality Stoves S.A. and the participating schools, minutes of cookstove installations receipts and briquettes delivery notes.

The start date of the project activity is 25-January-2016, in accordance with the VCS Project Start Date guidelines as this date is the date on which the project began generating GHG emission reductions or removals i.e., Project implementation was initiated. CDM Project webpage was referred to confirm that this date is considered as crediting period start date.[12]

[9] As per CRUEA Water Boiling tests performed on 14-April-2019.
[10] One stove serves more than 197 students.
[11] Experiments to estimate the approximate renewable briquettes consumption per cookstove have been conducted and recorded, evidencing savings up to 90% in quantity and 50% time. Communities will save fuel and time.

[12] CDM: BQS improved cookstoves for Burundi's schools (unfccc.int)

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.

The project activity will be developed by Burundi Quality Stoves S.A., hereafter referred to as BQS. BQS is a Bujumbura-based private entity aimed at undertaking the CDM project. In addition to the proposed project, BQS is involved in a Programme of Activities aiming at distributing IICS to households of Burundi, including the supply of renewable biomass from sustainable forests management and briquettes production.

Physical/ Geographical location: The project will involve schools in Burundi, starting with Bujumbura province. As a reference, Bujumbura city centre's geo-coordinates (3°22'34" S and 29°21'36" E) where checked through google maps and confirmed. The country-wide geographical area corresponds to the area where renewable biomass will be distributed and used in replacement of the former non-renewable wood fuel in IICS.

According to methodology AMS-I.E version 5, It is assumed that in the absence of the project activity, the baseline scenario would be the use of fossil fuels for meeting similar thermal energy needs.

Letter of information from Education Ministry (Education Ministry, September 2012) and a site interview with a representative of the Education ministry have highlighted a strong prevailing practice of cooking with traditional low efficiency open stoves supplied with non-renewable wood fuel in the vast majority of schools of Burundi, resulting in severe deforestation and higher emissions than the proposed project activity. Hence, same is accepted as a baseline scenario for the propose project activity.

Validation team confirms that there are no local, government laws which mandate use of IICS in the schools in Burundi. Following laws and regulations were checked by assessment team to confirm the same;

i. Environment Code, which was promulgated by law n°1/010 dated 30-June-2000.
ii. Decree-Law n° 100/241 dated 31-December-1992 regulating the evacuation of wastewater in urban areas.
iii. Decree n° 100/ 292 dated 16-October-2007 on the creation, mission, composition, organisation and functioning of the of the National Platform for Risk Prevention and Disaster Management,
iv. Law No. 1/07 dated 15-July-2016, revising the forestry code, which regulates the use of woodlands in the private domain of the State of afforestation in the private domain of the State or the communes.

The project activity has received Host Country Approval on 28-February-2011 from local National CDM Authority.

The expected annual amount of greenhouse gas reductions thanks to the project activity averages 163,854 tCO_2 eq and the total amount of greenhouse gas emissions reductions for the

chosen crediting period is 1,146,983 tCO_2 eq. The type of GHG reduced is CO_2 emissions from substitution of non-renewable fuel consumption by similar consumers, equivalent to the non-renewable woody biomass saved by the project activity.

Other details pertaining to the project's situation in the UNFCCC CDM to be considered during this GAP Validation process:

Increase in the expected ERs to be claimed by the project.

There is a rise observed in emission reductions claimed over the CDM registered PDD. The higher emission reductions are primarily due to change in the number of schools and students per school.

Initially, the project envisaged implementation in only boarding schools at project inception and so was reflected in the initial registered version of the CDM PDD. However, 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.

Initially, number of schools were 99 (boarding schools only) which is now revised to 284 (both boarding and non-boarding schools) with average number of students per school is changed from 612 to 653. The value is based on the data monitored during the verification of CDM project for the school year 2016-2017, hence this is considered acceptable by the VVB.

The VVB has cross-checked the Host Country Government's communication referred by the PP and found the same reflects the situation in which the PP is basing its decision of extending the PA to the non-boarding schools, The higher no. of school and students therefore has resulted in rise in the Project's emission reductions.

These circumstances were already considered in the latest UNFCCC CDM Verification process, including Post-Registration Changes under the Issuance Track (see below for further details about this Verification + PRC process for the project).

Status of the CDM PA, its Request for Issuance and PRC under the UNFCCC CDM.

The project is registered under the Clean Development Mechanism (Project 9791) on 05-March-2014 (Date of registration action 29-May-2014), although its GHG emission reduction may either be claimed under the VCS programme or the CDM programme, but never both for the same monitoring period.

The project has not been rejected by any other GHG program at the registration stage.

However, the CDM Executive Board rejected its first proposed request for issuance for monitoring period from 25-January-2016 to 31-December-2018 as reported on

https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1385004301.04/iProcess/Applus1572282921.37/view

The Ruling Note for Rejection of the RfI states the following:

The CDM-Executive Board decided to reject the proposed request for issuance for CDM project activity 9791 for the monitoring period 25 January 2016 – 31 December 2018 on 7 April 2021, in accordance with the "CDM project cycle procedure for project activities" (PCP-PA), version 02.0, paragraph 239. Further, in accordance with paragraph 249 of the PCP-PA, the ruling shall contain an explanation of the reasons and rationale for the final decision, which are as follows:

(a) The DOE (LGAI Tech. Center S.A.) failed to justify the displacement of the baseline non-renewable woody biomass (e.g. 56,217 tonnes in year 2015/2016) with the monitored quantity of project renewable biomass (e.g. 3,401 tonnes in year 2015/2016) in accordance with paragraph 14 of AMS I.E version 5.

(b) The relevant requirement is:

The applied methodology AMS I.E, version 5, paragraph 14 states "Monitoring should confirm the displacement or substitution of the non-renewable woody biomass at each location. In the case of appliances switching to renewable biomass the quantity of renewable biomass used shall be monitored".

(c) The reasons and rationale for the final decisions are:

> *(i) The higher calorific value of the renewable briquettes and higher stove efficiency of the ICS (amount up to an 81% reduction of fuel usage) cannot justify the complete displacement of baseline non-renewable woody biomass claimed for emission reductions (e.g. in year 2015/2016, 56,217 tonnes baseline woody biomass against 3,401 tonnes of project renewable biomass monitored by the project participant);*

The VVB as a part of CDM Verification and PRC process under Issuance Track (disregarding its correctness, the rejection of the Request for Issuance has also affected the proposed PRCs under Issuance Track, thus these PRCs have not been implemented in the registered UNFCCC CDM PDD and so are reported here in this Gap Validation Report as part of this explanation) conducted a site visit during 2019 (refer to Section 2.3 above), checked the documents and had interviews with stakeholders. Further, as a part of VCS programme VVB has conducted remote audit. VVB assessed the Project changes and is of opinion that the project activity is eligible under the VCS program.

Post Registration Changes contents.

While the UNFCCC has collaterally rejected the Post Registration Changes applied under Issuance Track, because of the Rejection of the Request for Issuance, the Ruling Note does not mention that the Post- Registration Changes were suitable to provide any reason for Rejection.

This is further demonstrated by checking that the Request for Review Responses by the UNFCCC CDM DOE (being also Applus+ Certification), already contains one response to a query regarding the PRC Part (2nd issue, *cf.* RfR Responses by DOE provided to VERRA and listed on Appendix 1 of this Report) that does not appear afterwards referred in the ruling note for rejection, hence accepted by UNFCCC CDM, and considering was an editorial issue, VVB has considered correct.

In this sense, the VVB has considered those PRCs that were submitted under the Issuance Track to UNFCCC CDM, that the VCS Gap Validation PD elaborated by the PP has already incorporated. This information is further elaborated in the UNFCCC CDM PRC Report (provided to VERRA and listed on Appendix 1 of this Report).

The proposed changes do not affect the applicability of the methodology proposed for the project, as well as do not impact the additionality or the appropriateness of the baseline scenario and thus are considered acceptable and allowing the project to remain under the conditions for the compliance with the VCS rules.

Justification given as part of the Request for Review to the UNFCCC CDM and to VERRA at clarification stage for demonstrating the variability of the substitution of non-renewable biomass in the project activity.

As part of the process to answer the concerns raised at RfR stage under the UNFCCC CDM RfI + PRC under Issuance Track, some aspects have been reported and are summarized below[13]:

PP, through a quantitative analysis, was able to justify the increased efficiency of the project's devices and renewable biomass against the baseline scenario to determine the results related to the variability of the ratio of substitution. The higher efficiency of the renewable biomass briquettes against the non-renewable woody biomass used in the baseline scenario is justified as presented below and found acceptable by the VVB.

1. The 'energy' quantitative improvements because of:

a) Efficiency gains (the most significant one): between project's Institutional Improved Cookstoves with a PDD-documented efficiency of 44.8% and traditional (baseline 3-stones) with a poor 10% efficiency, the improvements are around 78% or 1-to-4.5.

[13] The complete RfR responses document has been forwarded to VERRA as part of the clarifications raised for this Gap Validation process and is referred under the Appendix 1 of this Validation Report.

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

b) Heat content (density): between the baseline wood (presumably eucalyptus mostly, or poorer quality because supplied by families) accounted at default NCV of 0,015 TJ/ton and project's briquettes (mix of 75% coffee husk, 20% wood chips and 5% cow dung) at pro-rata NCV of 0,018 TJ/ton, the improvements are around 16% or 1-to-1.2.

Efficiency (and NCV Cal./kg TJ/ton) gains[14]		NCV briq	$NCV_{biomass}$
75% coffee husk	75%	0,017	
20% wood chips	20%	0,020	
5% cow dung	5%	0,022	
Weighted Average =		**0,018**	**0,015**
Increase of 15.8% over baseline (1.19 times)			

The overall 'quantitative' factors amount up to an 81% reduction factor.

The calculations leading to the conclusions reported above have been provided by the PP to the VVB and found acceptable. The same evidence (filename: *Copie de RfR inputs (uploaded 18 Oct 20 20_24_09) rev2022*) has been also provided to VERRA as part of the clarification requests about this topic and referred under Appendix 1 of this report.

Apart from the quantitative analysis given above by the PP, the project scenario is also affected (leading to an increase on the ratio of efficiency in the substitution of non-renewable biomass apart from the one related to quantitative factors) by qualitative (non-quantifiable) aspects that shall be taken into account, being the following the most relevant ones:

a) Briquettes consumption duration is even longer than charcoal (let alone wood)[15] thus less refuel needed once firing/simmering.

b) Training/practice factor (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).

[14] http://www.biofuelmachines.com/Calorific-value-of-pressed-fuel-briquettes.html

[15] http://documentation.2ie-edu.org/cdi2ie/opac_css/doc_num.php?explnum_id=1901

c) At times some of the baseline wood could be notoriously 'stolen' or 'misplaced' when only partially burnt, by some of the kitchen people to bring back home for their own cooking, which they can't do anymore because briquettes cannot be used in their individual stoves at home.

d) Last but not least, some time difference between briquettes delivery slips (when quantities are accounted/received) and briquettes consumption (which might be several months later) also help explain that some periods show higher calculated 'biomass reduction rates' than others.

These qualitative reasons, documented by pre-registration tests, observations and newer 2020 in-situ experiment, and confirmed by VVB's inspection, are thus explaining the additional consumption improvement up to circa 95% reduction.

The same has been justified by the PP in the aforementioned file provided to VERRA as part of the clarification request.

Derived from these qualitative circumstances, PP has determined that, for example, the contribution of the qualitative factors could be stated as 13.8% for the first monitoring period, as resulted from the rejected UNFCCC CDM Request for Issuance, of the total amount of increased efficiency in the non-renewable biomass substitution patterns of the project activity.

In view of this and for the sake of conservativeness, and for the purpose of this GAP Validation under VCS (*i.e.* additional conservative measure for VCS process) the PP opted for the introduction of a default value of 10% discount factor for the estimation of the ERs that may be achieved annually by the project activity, to mitigate the potential effects of the qualitative aspects referred above.

Moreover, for *ex-post* calculations, the PP will apply the discount factor representing the exact gap for the monitoring period[16].

Both quantitative and qualitative aspects have been considered by the VVB at the time of the onsite inspection (please refer to Section 2.3. above) and observed to be in line with the implementation and current operation of the project .

Likewise, the VVB has also cross-checked (including 3rd party evidences) that the substitution ratio of non-renewable biomass is suitable to vary greatly depending on the particular circumstances of each of the schools (that implicitly takes into consideration the qualitative aspects, behavioural related impacts, awareness of the users and their practices, etc.) and the following actions were taken by VVB:

[16] As part of the combined process of Gap Validation and Verification undertaken by the VVB, the first monitoring period will apply a conservative measure in the form of the mentioned discount factor of 14% (13.8% rounded-up).

1. The VVB 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, as specified above by the PP.

   b) Higher efficiency, also as specified above by the PP, of the IICS against the traditional three-stone fire stoves used for cooking in the schools subjected to the project activity.

   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	Steres of wood *(no./day)*	Equivalent Wood[17] *(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 steres of wood, and that they recommend its utilization.

Considering the 350 kg./stere and the average from 8 to 10 steres 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.

[17] 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

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

Also shall be taken into account that the parameter $M_{woody\_biomass\_hist,\_pp,i}$ is conservative. This has been evaluated by the VVB (the comparison of the two scenarios) as follows,

Historical consumption of woody biomass per person dependant on the kitchen *i* (tonnes per person) ($M_{woody\_biomass\_hist\_pp,i}$)

Historical data from Education ministry (28-June-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 nos. of day schools in three different provinces of the country[18]:

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[19].** A comparison reveals that the latter value is more conservative.

During the process of PRC in UNFCCC CDM that has been commented along this Section of the Validation Report, PP has proposed PRCs of type Corrections for the purpose of conservatively updating the average fuel consumption per capita and per day.

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 in the UNFCCC CDM.

As mentioned above, 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 UNFCCC CDM PRC, this value was revised to 1.13t/p/y based on more conservative value of is 5 kg per student per day.

The value was obtained from a study conducted in 2017[20] on boarding schools stating that firewood consumption may be conservatively stated as 5kg/student/day.

The changes were proposed during the UNFCCC CDM PRC process and these changes occurred from the beginning of the crediting period.

[18] 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.

[19] 2017-06-28 DNCS note to lenders.pdf (SURVEYS ON WOOD CONSUMPTION IN SCHOOL CANTEENS IN BURUNDI)

[20] 2017-06-28 DNCS note to lenders.pdf (SURVEYS ON WOOD CONSUMPTION IN SCHOOL CANTEENS IN BURUNDI)

VVB confirmed that the proposed corrections will not have any repercussions or adverse impact in the baseline, additionality and methodological or regulatory documents related requirements being conservative against the value applied in the original UNFCCC CDM PDD.

Based on the above. the following ex-ante assumptions are used for converting the boarding school value into kg through dividing the mean historical wood fuel consumption by the historical number of persons per school:

- The average number of students per school is 653.
- The students are at school during 226 days over 365[21].
- A factor of 0.35 is used for converting stere into tonnes of wood fuel (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.

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

	$M_{woody\_biomass\_hist,\_pp,i}$	$M_{woody\_biomass\_hist,\_pp,i}$
SCHOOL	*tonnes per capita per day*	*tonnes per capita per year*
Conservative baseline consumption retained	0.005	1.13

The parameter $M_{woody\_biomass\_hist,pp,i}$ is hence conservative. This has been evaluated by the VVB and found to be acceptable and conservative for the determination of the parameter, which also influences the estimation of the substituted non-renewable biomass.

Considering the above, and after the consultation of the different sources and evidences, plus the observations done during the onsite assessment, the VVB considers the calculations acceptable and conservative and likely to occur within the ranges of substitution of NRB in the project's scenario resulting from the different studies, circumstances and conservative assumptions.

In conclusion, the ranges as 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

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

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.

Furthermore, the VVB likes to remark that the CDM request for issuance has been requested along with 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, 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% for the introduction of these changes. This is apart from the introduction of a conservative discount factor of 10% for the *ex ante* estimation to take due account on the impacts of the qualitative and behavioral aspects.

Particularly regarding the operating status of the kitchens, and in order to account for the situations in which either a kitchen is not operational or the kitchen is using non-renewable biomass because of eventual renewable briquettes shortages (in this case they temporarily have to revert to using firewood instead), the PP will use the parameter Op_kitchen i,y. The parameter will have 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. This parameter Op_kitchen i,y has been also proposed to apply a conservative discount factor based on the weighted duration of eventual shortages of renewable briquettes thus providing a method for the account of the use of baseline firewood for cooking and the same has been found acceptable by the VVB.

Hence, no risk of overestimation of emission reductions has been observed.

As explained above, the reason of the PRC not being applied finally on the CDM PDD, leading to a difference between the estimations and design characteristics done at PDD level against those in this VCS PD, is that the PRC has been requested in Issuance Track of the CDM PRC procedures (as the type of changes were suitable to be submitted along with issuance request as per the PS for PAs and other UNFCCC CDM Regulatory documents, as applicable), so, being rejected the issuance, the PRC has neither been applied.

PP has declared that they would not claim other forms of credit for the emission reductions from the project and the project has neither sought nor received another form of GHG-related environmental credits.

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

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[22].

The project helps decrease expenses for firewood (or respective working time to collect the same), and thus reduces a household'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).

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

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

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 (SDG target 3.9).

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/SDG target 7.B).

Coffee, rice, timber and other agricultural crop/timber producers can earn additional income by selling their biomass waste to the project participant. (SDG target 8.3)

The project creates new long-term and short job opportunities including income generation. 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. More than 15 temporary jobs with decent work conditions in briquette production should be created. Further jobs will be created through use of third-party services (transport of briquettes, lawyers, etc.) (SDG target 8.5)

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. (SDG target 13.3)

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)

Due to taxes paid by project participant, domestic resource mobilisation is strengthened (SDG target 17.1).

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 (SDG target 17.7 and SDG target 17.9).

Additional information relevant to the project, including:

Eligibility criteria for grouped projects

Not applicable to the project activity.

Leakage management for AFOLU projects

Not applicable to the project activity.

Commercially sensitive information

No commercially sensitive information has been excluded from the public version of the project description.

Findings:

CL 01 and CAR 01 were raised and successfully closed. Refer appendix 2 for more information.

FAR 01 has been opened and it is reflected in appendix 2 of this report.

Opinion:

The assessment team observed that the project is in line with the requirements for the gap validation under the VCS and with the applied methodology and other regulatory documents.

Assessment team confirms following during the validation remote audit:

i. Start date of the project is 25-January-2016 (as per VCS PD).

ii. 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.

iii. Assessment team confirms that VCS crediting period is of 07 years and 25-January-2016 is the start date and crediting period ends on 24-January-2023. At any point of time during the crediting period, the project proponent will abide by the "Double Counting".

iv. 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

In view of the assessment of VCS PD and supporting documents, the validation team is able to confirm that the description contained in the VCS PD of the project activity provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation. Consequently, VVB confirms that the project description of the project contained in the VCS PD to be complete and accurate. The VCS PD complies with the relevant forms and guidance for completing the VCS PD.

3.2 Safeguards

3.2.1 No Net Harm

The project activity is utilization of Institutional Improved Cook stoves (IICS) for cooking in schools and does not involve any negative impact. As no potential negative environmental and socio-economic impacts identified, hence this section is not required.

3.2.2 Local Stakeholder Consultation

All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. There was no change in project description from the VCS PD.

3.2.3 Environmental Impact

The project activity involves distribution of cook stoves for cooking using renewable biomass and involves no environmental impact. Assessment team confirms this based on its local and sectoral expertise.

3.2.4 Public Comments

Section not applicable as project is undergoing VCS GAP Validation.

3.2.5 AFOLU-Specific Safeguards

Not applicable

3.3 Application of Methodology

3.3.1 Title and Reference

CDM approved methodology – AMS-I.E, version 05 – “Switch from non-renewable biomass for thermal applications by the use”.

Assessment team checked the type and category of the project activity and found that the project is eligible under Type I and renewable category of project.

3.3.2 Applicability

Not applicable being GAP Validation project.

3.3.3 Project Boundary

Not applicable being GAP Validation project.

3.3.4 Baseline Scenario

Not applicable being GAP Validation project.

3.3.5 Additionality

Not applicable being GAP Validation project.

3.3.6 Quantification of GHG Emission Reductions and Removals

Not applicable being GAP Validation project.

3.3.7 Methodology Deviations

Not applicable being GAP Validation project.

Please note that, however, the PP has proposed in the Section of Methodology deviations in the PD 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 this 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 reflects the same in Section 3.1. of this Validation Report, so to be able to reflect and explain the situation in some part of the documents,

3.3.8 Monitoring Plan

Not applicable being GAP Validation project.

3.4 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	
NA	NA	NA	NA	NA

4 VALIDATION CONCLUSION

Applus+ Certification has been engaged by AERA Group on behalf of Burundi Quality Stoves S.A. to perform the Gap Validation of the "BQS improved cookstoves for Burundi's schools".

The management of the project participant/owner 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 the applied methodology AMS-I. E version 5.

Our Validation 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 board. Our approach is risk-based, drawing on an understanding of the risks associated with estimated GHG emissions data and the controls in place to mitigate these. The validation can confirm that:

- The projects description 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 project's baseline and additionality are assessed against AMS-I. E, version 5.
- The project's monitoring plan is assessed against AMS I. E, version 5.
- A risk-based approach has been followed to perform this validation activity. The review of the project description and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews with Project Owner have provided LGAI Technological Center S.A. (Applus+ Certification) with sufficient evidence for positive validation opinion as per the requirement of VCS.

The project is expected to generate 163,854 tCO_2e per year and the total amount of greenhouse gas emissions reductions for the chosen crediting period (25-January-2016 to 24-January-2023) is 1,146,983 tCO_2e.

APPENDIX 1: DOCUMENTS REVIEWED DURING GAP VALIDATION

No.	Author	Title	References to the document	Provider
1.	NA	Initial VCS PD Final VCS PD	Version 1 dated 25-October-2021 Version 3.5 dated 14-October-2022	PP
2.	NA	CDM Approved methodology AMS I.E	Version 5	UNFCCC
3.	NA	Standard: Sampling and surveys for CDM project activities and programme of activities		UNFCCC
4.	NA	VCS webpage for the project, VCS ID 2616; https://registry.verra.org/app/projectDetail/VCS/2616		VERRA
5.	NA	Registered CDM PDD 8791 https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1385004301.04/view	Version 1.7 dated 27-February-2014	UNFCCC
6.	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
7.	NA	Third party efficiency test report		PP
8.	NA	Third-party survey report		PP
9.	NA	Training Records		PP
10.	NA	Remote audit records		PP
11.	NA	Technical specifications of cook stoves		PP
12.	NA	VCS Standard	Version 4.2	VERRA
13.	NA	VCS Program Guide	Version 4.1	VERRA
14.	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
15.	NA	Lettre Ministre WFP internats	Dated 22-August-2019	Ministère de l'Education, de la Formation Technique et Professionne

No.	Author	Title	References to the document	Provider
				Ile (Republique Burundi)
16.	NA	BURUNDI - Rapport national sur les OMD 2015	July, 2015	Système des Nations Unies au Burundi et gouvernement du Burundi
17.	NA	Évaluation des programmes intégrés de cantines scolaires financés par l'Ambassade des Pays Bas (provinces Bubanza, Bujumbura rural et Cibitoke) et par l'Union européenne (province itega) et mis en œuvre par le PAM au Burundi	July, 2019	World Food Programme (WFP)
18.	NA	School stoves tests CRUEA (University of Burundi)		PP
19.	NA	Letter of Ministry of Education to WFP, FAO, UNDP, GIZ and Dutch Embassy dated 28-June-2017 2018-09-11 NOTE CIRCULAIRE DPE dated 11-September-2018		Ministry of Education, Burundi
20.	NA	Final CDM Verification Report for the Monitoring Period 25-Janaury-2016 to 31-December-2018 (version 02.1)	23-September-2020	Applus+ Certification
21.	NA	Final CDM PRC Validation Report under Issuance Track (version 01.0)	23-September-2020	Applus+ Certification
22.	NA	Proposed revised PDD for the PRC under Issuance Track (version 2.0)	21-September-2020	Applus+ Certification
23.	NA	Request for Review Responses RfR Reponses (9791) for the UNFCCC CDM Verification process	01-February-2021	Applus+ Certification
24.	NA	Ruling Note for Rejection of the Request for Issuance	17-May-2021	UNFCCC
25.	NA	International Lifeline Fund Institutional Stove Construction Manual		ILF
26.	NA	GTZ-HERA, Manual for Programs and Projects to Implement Cooking Energy Interventions, 2012		GTZ_HERA
27.	NA	Report of testing of briquettes consumption along different schools in Burundi. Briquetting Cooperative (BRICOOP) based in Bujumbura, Burundi.		PP

No.	Author	Title	References to the document	Provider
28.	NA	"Rapport sur l'utilisation d'un nouveau combustible" (Report about the use of a new fuel). Ministry of Education of Burundi (Directorate of Region Ngozi)		PP
29.	NA	*Copie de RfR inputs (uploaded 18 Oct 20 20_24_09) rev2022*		PP
30.	Ministry of Education, Vocational and Technical Training	SURVEYS ON WOOD CONSUMPTION IN SCHOOL CANTEENS IN BURUNDI		PP

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

Table 1.CL from this validation

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				
DOE 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.**

Table 2.CAR from this validation

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 4.1, 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. DOE to specify revision needed 6) The section 3.6 has been updated to include changes and deviations				
Documentation provided by project participant				
1) Revised VCS-PD				
DOE 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.

Table 3.FAR from this validation

FAR ID	**01**	**Section no.**		**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/behavioral aspects as established by the PP as a conservative measure.				
~~**Project participant response**~~				~~**Date:** DD/MM/YYYY~~
~~**Documentation provided by project participant**~~				
~~**DOE assessment**~~				~~**Date:** DD/MM/YYYY~~

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 DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OE	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 DOE 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 DoE (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
DOE	Designated Operational Entity
DR	Document Review
VCS	Verified Carbon Standard
VCU	Verified Carbon Units
VVB	Validation and Verification Body