



VCS VERIFICATION REPORT THE LUANGWA COMMUNITY FORESTS PROJECT



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Summary:

AENOR CONFIA S.A.U (AENOR) has carried out the fifth VCS verification of the Luangwa Community Forests Project (LCFP). The LCFP is a large-scale REDD+ grouped project implemented on communal land and private ranches in Zambia's Eastern and Lusaka Provinces on a total of 1,236,258 ha (943,646 ha for the first PAI, 92,990 ha for the second PAI and 199,622 ha for the third PAI).

The project was developed in line with the Verified Carbon Standard (VCS, Version 4.4). Furthermore, it is also aligned with the Government of the Republic of Zambia's (GRZ) National REDD+ Program, implemented through the Forestry Department.

The core project climate activities undertaken include forest carbon inventorying, modelling cumulative deforestation patterns and soil carbon assessments. Core community project activities include up to eighteen different types of community-based deforestation mitigation initiatives designed to create sustainable, scalable alternatives to deforestation, and strategic, meaningful incentives that comprise part of pay for performance programs that support forest conservation. Core biodiversity project activities include forest conservation systems, biodiversity monitoring and management, and fire management.

The project start date and implementation date is 1 May 2015 and will be operational until 30 April 2045. The second and third activity instances started on the date of 11 August 2021 and 1 January 2022, respectively. All three instances will also be operational until 30 April 2045. The estimated gross emissions reduction for the 30-year project span with all three project activity instances combined is 102,251,032 tCO₂e, at an average of 3,408,368 tCO₂e/yr (these estimated updated figures for the 30-year project span are due to the reference area update as the PP included a new PAI that required such an update; more information in Section 3.2 and 3.3 of this VCS verification report). The net project emissions of the 3 project activity instances for the current monitoring period (1st January 2022 to 31st December 2022) are 2,163,019 tCO₂e. This is a grouped project.

The purpose of the verification was to determine the compliance of the project with respect to the VCS Standard v4.4. Furthermore, the assessment of the ex-post monitored anthropogenic GHG emissions reductions that have occurred because of the project's activities. The scope of the verification was to assess the conformance of the validated project, once implemented, with the VCS requirements and requirements in the validated PD/1/.

The verification consisted of the following phases to confirm that the monitoring report meets the stated requirements and identified criteria:

- i. A desk review of the project monitoring report (MR) /2/ and monitoring plan implementation
- ii. Follow-up interviews with project stakeholders during on-site visit as well as a review of project activities
- iii. The resolution of outstanding issues and internal technical review, followed by the issuance of the final verification report and opinion.

This is the fifth verification event, corresponding to the monitoring period from 1st January 2022 to 31st December 2022.

In the verification event, 3 CLs and 2 CARs were reported. All the issues raised during the verification process were appropriately closed by means of corrections, clearer explanations, and additional supporting documents. Two FARs have also been raised, to be resolved in the next verification period. The purpose of the field audit visit assessment was to determine the conformance of the project with respect to the VCS Version 4.4 Standard; The field visit took place from 24th April 2023 to 30th April 2023, in which the auditor visited the project area, interviewed key stakeholders, staff and other related experts, and reviewed the VCS-MR /2/ and supporting documents. The scope of the verification was to assess the conformance of information in the project design document with the VCS standards.

After all issues detected were appropriately solved, AENOR, in this document prepared a verification report and deemed with reasonable level of assurance that the project complies with all the verification criteria for VCS. The assessment team has no restrictions or uncertainties with respect to the compliance of the project with the verification criteria. Hence, the audit team concludes that the net GHG emissions reductions for the lands included in the project boundary at the verification stage have been quantified under VCS rules.

The GHG emission reductions were calculated based on the approved methodology VM0009 Methodology for Avoided Ecosystem Conversion, v3.0 of 6 June 2014, and the monitoring plan included in the validated PD /1/. Moreover, during the Project Review Report (PRR) process conducted by Verra, it was concluded the necessity of delineating a new reference area representative of the whole project area, including all the Project Activity Instances (PAIs) (1, 2 and 3), in accordance with VM0009. This is due to the inclusion of a new PAI that resulted in the initial reference area not meeting the methodology requirement of having a forested area at any point in time during the historic reference period equal to or more than the project accounting area (PAA). More information in section 3.3 of this VCS verification report, and section 3.2.2 of the VCS MR.

The AENOR verification team assessed the calculations and can confirm that the GHG emission reductions during the monitoring period amount to 2,163,019 tCO₂e (without discounting buffer emissions) for the whole crediting period. AENOR's verification team can confirm that the project is well managed and that results are well supported. Monitoring plans are effective, and the project proponent has developed enough procedures and tools to collect data. A buffer discount rate of 10% was applied (216,302 VCU to be transferred to the buffer pool), resulting 1,946,715 VCUs eligible for issuance.

However, due to insufficient data available to close PRR finding 9 raised by Verra during its accuracy review (see PRR finding 9 in the Verra Registry publicly listed), a 30% discount deduction has been applied to the gross verified volume (before applying NPRR buffer deduction). As such, the gross figure (before deduction) would be 1,514,113 tCO₂e, whereas the net figure is 1,362,702 after buffer pool allocation (151,411 NPRR buffer pool allocation).

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1 INTRODUCTION

1.1. Objective

The objective of the verification audit was to conduct an independent assessment of the project to determine the following:

1. The extent to which methods and procedures, including monitoring procedures, have been implemented in accordance with the validated project description (PD) /1/, including the monitoring plan.
2. The extent to which GHG emission reductions reported in the monitoring report is materially accurate.

1.2. Scope and Criteria

Verification Scope: The scope of the verification audit is to verify the emissions reductions of the project against the Verified Carbon Standard, the identified methodology and the validated PD/1/ throughout the monitoring period from 1 January 2022 to 31 December 2022.

These audit's objectives included verifying the project's calculated reductions with the Verified Carbon Standard requirements and any additional requirements of VCS AFOLU projects. In addition, the audit assessed the project with respect to the validated baseline scenarios presented in the PD/1/.

The scope of the verification included the review of the GHG project and implementation; physical infrastructure, activities, technologies, and processes of the GHG project; GHG sources, sinks and/or reservoirs; types of GHG's; and time periods covered.

Criteria: The verification assessment was performed in accordance with the requirements detailed in section 4 of the VCS standard, including the following documents:

- VCS Program Guide, v4.3
- VCS Standard, v4.4
- VCS Program Definitions, v4.3
- AFOLU Non-Permanence Risk Tool, v4.0

The assessment was performed against the most recent version of the relevant VCS guidance document.

1.3. Level of Assurance

The assessment was conducted to provide a reasonable level of assurance of conformance against the defined audit criteria and materiality thresholds within the audit scope. Based on the audit findings, a positive evaluation statement reasonably assures that the project GHG assertion is materially correct and is a fair representation of the GHG data and information.

The threshold for materiality with respect to the aggregate of errors, omissions, and misrepresentations relative to the total reported GHG emission reductions was one percent (1%), as established for large projects by the VCS Standard.

All the revisions of the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent AENOR instructions required. The review was performed by a technical reviewer qualified in accordance with AENOR's qualification scheme for VCS validation and verification.

1.4. Summary Description of the Project

The Luangwa Community Forests Project is a large-scale REDD+ grouped project implemented on communal land and private ranches in Eastern and Lusaka Provinces, Zambia with an initial project activity instance and second instance area of 943,646 ha and 92,990 ha respectively. The third project activity instance is 199,622 ha in project area extent. The total project area, at the end of this monitoring period, is estimated at 1,236,258 ha.

Implementation is in partnership with the traditional authorities and the government of the Republic of Zambia. The Project Proponent is Biocarbon Partners (BCP), which is responsible for getting the Project certified and for early-stage Project finance. The core project climate accounting activities undertaken include forest carbon inventorying, modelling cumulative deforestation patterns, and soil carbon assessments. Core community project activities include different types of community-based deforestation mitigation initiatives designed to create sustainable, scalable alternatives to deforestation, and strategic, meaningful incentives that comprise part of pay for performance programs that support forest conservation. Core biodiversity project activities include forest conservation systems, biodiversity monitoring and management, and fire management.

The project implementation and crediting period start date is 1 May 2015 and will be operational until 30 April 2045. The second and third activity instances started on 11th August 2021 and 1st January 2022, respectively. All three instances will also be operational until 30 April 2045. The estimated gross emissions reduction for the 30-year project span with all three project activity instances combined is 102,251,032 tCO₂e, at an average of 43,408,368 tCO₂e/yr. The total VCU_s (after applying 10% buffer as per the NPRR) of the 3 project activity instances for the current monitoring period (1st January 2022 to 31st December 2022) is 2,163,019. The verification of this monitoring period was requested to AENOR by BCP.

However, and as expressed above, due to insufficient data available to close PRR finding 9 raised by Verra during its accuracy review (see PRR finding 9 in the Verra Registry publicly listed), a 30% discount deduction has been applied to the gross verified volume (before applying NPRR buffer deduction). As such, the gross figure (before deduction) would be 1,514,113 tCO₂e, whereas the net figure is 1,362,702 after buffer pool allocation (151,411 NPRR buffer pool allocation).

During the audit of this Monitoring Report, supporting documentation, and interviews conducted by AENOR provided evidence to determine conformance to the VCS Standards with a reasonable assurance.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification was performed through a combination of document review, interviews with relevant personnel and an onsite inspection, as discussed in Sections 2.2 through 2.4 of this report. At all times, the project was assessed for conformance with the criteria described in Section 1.2 of this report. As discussed in Section 2.5, findings were issued to ensure that the project was in full conformance to all requirements. As discussed in this report, findings were issued to ensure that the project fully met all the VCS requirements.

A project-specific sampling plan was developed to guide the verification auditing process to ensure efficiency and effectiveness. The purpose of the sampling plan was to present a risk assessment for determining the nature and extent of the verification procedures necessary to ensure the risk of auditing error was reduced to a reasonable level. The verification sampling plan methodology were derived from all items in our auditing process stated above. Specifically, the sampling plan utilized the VCS guidance documents and ISO 14064-3. Any modifications applied to the verification sampling plan were made based on the conditions observed for monitoring to detect the processes with the highest risk of material discrepancy.

The audit plan also considered the dates of each activity and other factors, such as the level of assurance, the VVB team, and the possible topics to consider. The audit plan explains under what standards, guidance documents or templates the project will be assessed. The verification schedule is here with attached in section 2.4 of this report.

AENOR detailed this verification report and considers with a reasonable level of assurance that the project complies with all the verification criteria.

The verification has been performed through an in-depth desk review, a site visit to the project, interviews with local stakeholders, and interviews with relevant personnel responsible for monitoring. The verification activities in which risks were assessed were the evaluations of the monitoring system (data flow, data control procedures, etc.) but mainly the quality of raw data as well as sources and the spreadsheet calculations.

AENOR reproduced and verified 100% of sheets in the spreadsheet of emission reduction calculations /6-19/, and the data calculations carried out in those sheets for the project area for the monitoring period 1 January 2022 to 31 December 2022. The project area was 100% checked using the GIS database and shape files /20-43/. The carbon calculations were also 100% verified and cross-checked with validated values.

AENOR decided to carry out an in-depth and meticulous review of the sheets due to verify the correct application of the VM0009 methodology (formulae, equations.) and check that data required to calculate the GHG reductions are appropriately provided.

Based on the assessment carried out, AENOR confirms with a reasonable level of assurance that the claimed emission reductions are free from material errors, omissions or misstatements.

In addition, AENOR confirms that sufficient evidence was presented for the reported net anthropogenic GHG emission reductions and that there is a clear audit trail that contains the evidence and records that validate the stated figure in this verification report since:

- Sufficient evidence available: The project participant has provided 100% of data used in the calculations to achieve the final amount of GHG emission reductions reported.
- Nature of evidence: The raw data were collected from reliable sources. They are detailed in the project documents and have been provided to the verification team, and the most relevant ones are appropriately detailed in Appendix 1.

AENOR cross-checked the collected information through an on-site inspection of the project area and reproducing calculations (more information in Sections 2.3 and 2.4 of this verification report). Hence, AENOR confirms that the stated figures in the monitoring report are correct and can certify net anthropogenic GHG reductions based on verifiable and reliable evidence.

2.2 Document Review

A detailed review of all project documentation was conducted to ensure consistency with, and identify any deviation from, VCS program requirements, the Methodology (VCS VM0009 V3.0), and the validated PD /1/. Initial review focused on the Monitoring Report (MR5) /2/ and included an examination of the project details, implementation status, data and parameters, and quantification of GHG emission reductions. Documents reviewed included data from monitoring, carbon rights contracts, forest management agreements /44-61/, maps, and aerial images /20-43/, monitoring and grievance SOPs, biomass, and carbon calculation spreadsheets /6-19/, and responses to Corrective Action Requests (CARs) and Clarifications (CLs)/Appendix 2/.

Modifications to the Verification and Sampling plan were made based upon the conditions observed for monitoring to detect the processes with highest risk of material discrepancy.

The VCS AFOLU Non-Permanence Risk Tool was used by the Project Proponent to assess overall project risk. AENOR reviewed the Non-Permanence Risk Report provided with the verification supporting documentation/4/ and confirmed that the Project adheres to the requirements set out in the VCS AFOLU Non-Permanence Risk Tool 4.0. Each risk factor was thoroughly assessed for conformance. The final score was calculated to be 10%. For a listing of all documents received from the client for this verification, please see Appendix 1 below.

2.3 Interviews

AENOR verification team conducted on-site interviews to confirm selected information and resolve issues identified in the document review. The interview and the identification process are explained as follows.

AENOR carried out a completed and accurate interview process on several dates. Several weeks before the start of the on-site audit visit to the LCFP project area, AENOR's audit team reached the Project Proponent team to let them know the audit team's preferences regarding the stakeholder groups to be interviewed to guarantee confidence, representation, and impartiality, based on the information collected from the Stakeholder Consultation Process and a requested list of community stakeholders. Considering that LCFP is a grouped project, and the initially collected information from the PD, MR and supporting evidence, it could be concluded that, in the time before the audit visit, the following stakeholders from Mpanshya, Shikabeta and Jumbe Chiefdoms were the most relevant to be interviewed; The chiefs from these chiefdoms, The CFMGs/CRB, Community members, The District Commissioner from Mambwe District which hosts Jumbe Chiefdom, The District Forestry Officers from Mpanshya and Jumbe chiefdoms, Agriculture Extension officers and Honey promoters in Mfuwe (Jumbe) and finally the staff of BCP supporting carbon, biodiversity and scouts.

AENOR's audit team defined a preliminary questionnaire to complement and support the desk review process as a starting point to interview each one of the stakeholders on-site. The questionnaire considered Verified Carbon Standards (VCS), Climate, Community and Biodiversity (CCB) topics and Free, Prior and Informed Consent (FPIC) values based on the information compiled by AENOR's audit team about the project before the on-site visit, during the desk-review. A small sample of these questions has been included on the following page for clarification and transparency purposes. Moreover, and as stated below, AENOR's audit team used these questions for gathering purposes. Several new questions were sporadically and systematically included during on-site interviews, considering the direction in which discussions were directed and the topics that stakeholders wanted to discuss freely during the different moments of the interviews. Appendix 3 below, is a list of all the stakeholders, Project staff and the community who were interviewed during the audit visit (24th April to 30th April 2023)

2.4 Site Visits

The objective of the on-site inspection was mainly to cross check the description provided in the monitoring report MR M5 /2/, related to the VCS requirement implemented by the proponent, including:

- Ensure that the geographic area of the project, as reported in the VCS-MR and the accompanying KML file /20-43/, is compliant with Section 3.11.2 of the VCS Standard.
- Perform a risk-based review of the project area to ensure that the project conforms to all other requirements of the VCS rules and the methodology.

- Observe the Project Proponent's evidence and collect and record data to assess whether data collection techniques conform to the monitoring plan and related documentation and to evaluate data quality control systems.
- Select samples of data and information for verification in order to meet a reasonable level of assurance and to meet the materiality requirements of the project, as required by Section 4.1.8 of the VCS Standard.
- Perform a risk-based review of the project area to ensure that the project is in conformance with the eligibility requirements of the VCS rules and the applicability conditions of the methodology; and
- Interview local authorities to confirm that the project operates in accordance with current permits and authorizations and its relationship with local actors and communities. Prior to the site visit, a remote meeting was held with the carbon team from BCP to take through the project calculations, processes of biodiversity monitoring project benefits and others.

The verification activity summary is herewith attached.

Date	Activity	Location
20/04/2023	KOM Meeting (NERs calculations) and overview of Project implementation)	Remotely
24/04/2023	Initial meeting	BCP Head Quarters in Lusaka
24/04/2023	Interview with Simon Weupe-Senior Extension assistant	Chinzete-Mpanshya
24/04/2023	Interview with Chongo Pusa-Government Representative under national parks	Chinzete-Mpanshya
25/04/2023	Interview with Besa Kalinda The carbon specialist at BCP	Mpanshya Samplers Camp
25/4/2023	Mpanshya CFMG	Mpanshya CRB office
25/04/2023	Farm Visit at Mr Mwale's farm	Mpanshya
25/04/2023	Meeting with lead farmers	Mpanshya
25/04/2023	Farm visit to Mr Bernard Chilwa and Wenny Sakala, Horticultural farmers.	Njombolo Village
25/04/2023	Visit to Shikabeta CFMG	Shikabeta

25/04/2023	Visit to project benefits for the community members. Lontia Ngulube and Lizzy Enisulo	Shikabeta Mwateshi village
26/04/2023	Review plots SHI 131	Shikabeta Chiefdom
26/04/2023	Review plot SHI 35	Shikabeta Chiefdom
26/04/2023	Review leakage plot	Shikabeta Chiefdom
27/04/2023	Visit to William Banda, The District Commissioner	Mambwe District Office.
27/04/2023	Meeting with Hakambaze Miyoba Moombe	Forestry department Jumbe
27/04/2023	Chief Oswell Zimba	Chief of Jumbe
27/04/2023	Interview with BCP Biodiversity Manager Charles Albert Petre	Mfuwe Office
28/04/2023	Jumbe CRB/CFMG	Jumbe
28/04/2023	Beekeepers group	Jumbe Community
28/04/2023	School construction	Kazinga primary school Jumbe
28/04/2023	Mechanized borehole and toilet	Clinic and Kawaza School
28/04/2023	Lead farmers group (women)	Jumbe
28/04/2023	Construction of Nsefu CFMG office and the Stakeholder meeting	Nsefu CRB
28/04/2023	Construction of the Chitunda primary school and brief meetings with community	Chitunda Primary school
28/04/2023	Interview with scouts	Mfuwe BCP Office
28/04/2023	Closing meeting	BCP Office Mfuwe

2.5 Resolution of Findings

After document reviews are conducted, findings established during the verification are classified in the forms of Corrective Action Requests (CAR), Forward Action Request (FAR) or Clarification Request (CL).

A Corrective Action Request (CAR) can be raised if there is noncompliance with the program requirements or applied methodology in the project description/ MR that has not been sufficiently documented by the project participant or where mistakes in applying assumptions, data and calculations of emission reductions have been made.

A Clarification Request (CL) shall be raised if the information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A Forward Action Request (FAR) is issued for actions if the project implementation, monitoring and reporting require attention and/or adjustment for the following verification period.

As a result of this assessment, 5 findings were found, three (3) Clarification Requests (CLs) and two (2) Corrective Action Requests (CARs) in the verification process. CAR and CLs were closed based upon adequate responses from the project proponent, which meet the applicable requirements; findings were reassessed before their formal acceptance and closure. All results, including the issues raised, the responses from the project proponent and the conclusions, are contained in Appendix 2. All required changes are observable in the last MR M5 /2/ and the evidence as appears in appendix 1 have been updated.

Two Forward Action Requests (FARs) have also been raised. Find them in Section 2.5.1 below.

This was subsequently concluded by AENOR auditor to be accurate and complete to provide understanding of the projects benefit on climate. The document prescribes well how the emission reductions are attained, monitored and reported.

2.5.1 Forward Action Requests

As mentioned in the previous section, two FARs have been raised during this monitoring period:

1. FAR number one (1).

In line with methodology deviation number 5, this FAR has been raised to provide assurance that any overestimation of emission reductions (ERs) due to the use of PAI-1 carbon stock value for the three active PAIs is compensated during the next verification. This (risk of) overestimation, in the case demonstrated by the VVB in charge of the next verification, will have to be compensated by the PP in the following verification period as soon as the PP updates the carbon stock values for the three PAIs based on remote sensing and ground-truthing monitoring.

It is significant to highlight that the audit team has received assurance from the PP's forest inventory raw data for PAIs 2 and 3 /138/, which clearly identifies an underestimation of emission reductions (nothing related to an overestimation), as carbon stock values for PAIs 2 and 3 are significantly higher than those reported for PAI-1. However, as the VVB has not (yet) visited biomass plots for PAIs 2 and 3, which will have to be pursued in the next verification, this FAR is requested to comply with Section 2.2 of the VCS Standard v4.4, which states that the principles taken from ISO 14064-2, among others, are Accuracy, Transparency and Conservativeness.

2. FAR number two (2).

As part of the Project Review Report (PRR) performed by Verra for LCFP (see the Verra Registry, where the PRR has been made publicly available), ten PRR findings were raised to be addressed by the VVB before the project request could be considered for approval by Verra. In the context of addressing PRR finding 9, named "Incorrect size of the reference region", it was concluded the necessity of delineating a new reference area (RA) representative of the whole project area, including all the Project Activity Instances (PAIs) (1, 2 and 3), in accordance with VM0009. This is due to the inclusion of a new PAI (3) during this monitoring period that resulted in the initial RA not meeting the methodology requirement of having a forested area at any point in time during the historic reference period equal to or more than the project accounting area (PAA).

As such, the PP requested a PD deviation, which was identified and explained specifically in Section 3.2.2 of the VCS MR and assessed by AENOR's audit team in Section 3.3 of this VCS Verification Report. However, and due to insufficient data available to close finding 9, it was agreed that, for conservative purposes, a 30% discount should be applied to the gross verified volume (before applying the NPRR buffer discount) for this MR5 monitoring period (1st of January 2022 to 31st of December 2022). Nevertheless, in the context of the requested FAR, for the next monitoring period (1st of January 2023 to 31st of December 2023), the PP shall delineate a new reference area as a PD deviation that complies with VM0009 methodology and VCS requirements, including landscape configuration similarity criteria. This new reference area shall be representative of all the PAIs at the moment of verification. The future VVB shall assess its compliance with the above-mentioned criteria and provide its assessment in the MR6 VCS Verification Report.

2.6 Eligibility for Validation Activities

AENOR holds accreditation for validation for the relevant sectorial scope 14 under which this project activity is classified.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project was not validated under another GHG program; therefore, there are no Gap Validation findings to report. The Project Description was subject to validation under VCS Standard and was found to conform to the VCS requirements previous (MR1, MR2, MR3 and MR4) verifications.

3.2 Methodology Deviations

There is a new methodology deviation applied in this monitoring period (see number 5 below).

The following 4 methodology deviations (also described in section 3.2 of the MR) were applied to the project from previous monitoring periods:

1. Demonstration of Forest Age

The methodology requires (in PDR.22) that a digital GIS-based) map of the project accounting areas, including aerial or satellite imagery showing that they are comprised of forests or native grasslands as of the project start date and 10 years prior to the project start date. The project did not meet this requirement because it chose to map forests in the project area with PALSAR radar data and the earliest available data for that sensor is from 2007. The Audit team did a desktop assessment using the PD/1/ and the MR/2/ together with the audit visit to the community forests and interviews where they visualized undisturbed forests with beneficial community coexistence. The LCFP project areas are virgin forests that were previously remote and some are inaccessible. Thus, there is no history of large disturbances in the area that would have been followed by regeneration between 2005 and 2007. An accurate 2007 forest map of the areas was used and it was indistinguishable from a 2005 map.

VCS Standards v 4.4, Section 3.18 Methodology Deviations, sets the requirements that a project shall fulfil to ask for a methodology deviation. Based on the evidence that supported the methodology deviation, such as the review of the forest inventory validation estimations /6-19/, AENOR's audit team deems that the proposed deviation is more efficient for project-specific circumstances, and it has allowed to achieve, at least, the same level of accuracy that what is set out in the methodology.

AENOR's audit team deems that the proposed methodology deviation meets with the criteria and specifications for permitted methodology deviations as set out in Section 3.18 of the VCS Standards v 4.4, and that the deviation does not negatively impact the conservativeness of the quantification of GHG emission reductions. The audit team considers that the methodology deviation is valid.

2. Leakage Plot Protocol

The PP described a minor deviation of the visual approach for leakage monitoring (Appendix R, VM0009). During the audit team visit, one leakage plot was visited and the demonstration of the leakage determination was such that no stumps were left out of the accounted figures. Instead of forest Inventory team members estimating degradation, they were required to geo-reference every felled tree in the permanent plots and the total number of felled trees were compared against the average density of trees/ha in the project accounting area, again avoiding biased estimations/erroneous counting of trees in 1 ha plots. This value was then placed in a degradation category as per VM0009. This variation meets the criteria and specification of the methodology deviation as outlined in section 3.1.8 of the VCS standard V4.4 and has been validated for use in the previous monitoring periods (M1-M4/3/).

Though previously validated, AENOR's audit team deems that the proposed methodology deviation meets with the criteria and specifications for permitted leakage plot /35/ protocol methodology deviations as set out in Section 3.18 of the VCS Standards v 4.4, and that the deviation does not negatively impact the conservativeness of the quantification of GHG emission reductions. The audit team considers that the methodology deviation is valid.

3. Biomass estimation

The project proponent describes the use of two different allometric equations to estimate above ground biomass. The audit team assessed the equation developed from data provided by Prof. Chudimayo from Zambian Miombo and was tested on trees up to 55 cm DBH and is used to estimate the biomass of trees up to 63 cm dbh, with the biomass of trees between 55 cm and 63 cm dbh assumed to be equal to a 55 cm dbh tree. The audit team also assessed a second equation developed by Mugasha et al. in Tanzanian Miombo is used to estimate the biomass of trees between 63 cm dbh and 110 cm dbh with trees with a greater than 110 cm dbh assumed to have a biomass equal to a 110 cm dbh tree. The assessment concluded that this biomass estimation deviation meets the criteria and specifications set out in the methodology deviation under the VCS standards. It does not however, overestimate or underestimate the GHG calculations whatsoever.

Though previously validated, AENOR's audit team deems that the proposed biomass estimation deviation meets with the criteria and specifications for biomass /17-19/ estimation methodology deviations as set out in Section 3.18 of the VCS Standards v 4.4, and that the deviation does not negatively impact the conservativeness of the quantification of GHG emission reductions. The audit team considers that the methodology deviation is valid.

4. Soil Emission Calculations

The project proponent describes in section 3.2, that the VM0009 baseline soil emissions model assumes that SOC in deforested areas will deplete to the same value as the proxy area after 5 years. Project SOC emissions are supposed to be tracked directly through field measurements in encroached areas.

The audit team visited the project area and observed that the main drivers of deforestation being the smallholder farmers who instead of deliberately choosing high fertility areas for conversion with higher-than-average SOC values. With this methodology, encroachment that causes an increase in SOC is not consistent with the community in relation with what is occurring to soil stocks. To avoid this bias, the Project Proponent assumed that once encroached, the average SOC stocking per ha in the encroached area becomes the proxy area SOC stocking.

AENOR verified that encroachment has not been experienced so far and these methodology deviations were validated in previous verification events and are therefore valid.

The new methodology deviation and the assessment made by AENOR's audit team can be found below:

5. Carbon Stock Figures – New Project Activity Instances

In correlation with PRR finding number 6 raised by Verra, related to the non-installation of biomass plots within PAI3 (see also PD deviation section for more details on the construction of a new reference area that complies with VM0009 size requirements, designed for being used for a Project Accounting Area or PAA that includes the three project PAIs), the PP decided to request a conservative methodology deviation to use the first instance accounting area carbon stock value of 236.2 tCO₂e/ha in PAIs 2 and 3.

The PP has quoted some studies, such as Handavu et al. (2021)¹ and Bulusu et al. (2021)², to provide assurance that disturbances of miombo woodlands across Zambia (i.e., wood harvesting or charcoal production) affect plant density and height, which is likely to affect carbon storage of these woodlands. Other paper quoted by the PP, Bouvet et al. (2018)³, highlight the available challenges and uncertainties associated with accuracy when estimating carbon stocks in African woodlands. AENOR's audit team assessed the implications of these three studies, acknowledging that Handavu et al. have identified that Miombo woodlands across the Sub-Saharan Africa region have estimated carbon stocks values ranging between 167 tCO₂e/ha and 845 tCO₂e/ha, which indicates the audit team that there is high variability that results in high uncertainty.

The LCFP project management team developed its own forest inventory data using locally derived allometric equations as mentioned in section 4.3 of the MR. Within Section 2.3.1 of the VCS MR, the PP explains the carbon stock values applied for the three PAIs (but calculated for PAI-1), and the remeasurement strategy of measuring 20% of the biomass plots per year, so that the project's overall carbon stock estimates are updated every 5 years after all plots have been re-measured.

¹ Handavu, F., Syampungani, S., Gudeta, W., Sileshi, W. C., Chirwa, W. C. (2021) Aboveground and belowground tree biomass and carbon stocks in the miombo woodlands of the Copperbelt in Zambia, *Carbon Management*, 12:3, 307-321, <https://doi.org/10.1080/17583004.2021.1926330>

² Bulusu, M.; Martius, C.; Clendenning, J. Carbon Stocks in Miombo Woodlands: Evidence From Over 50 Years. Preprints 2021, 2021030029. <https://doi.org/10.20944/preprints202103.0029.v1>

³ Bouvet, A. et al. An above-ground biomass map of African savannahs and woodlands at 25 m resolution derived from ALOS PALSAR. *Remote sensing of environment* 206, 156–173 (2018).

As highlighted in other sections, the upcoming carbon stock dataset would be updated for the 2023 crediting period (M6) as the biomass plot monitoring rotation started in 2019. The forest inventory raw data for PAIs 2 and 3 to date (Appendix G) /138/, assessed by AENOR's audit team, clearly indicates that the carbon stocks in PAI-2 (551.38 tCO₂e/ha) and PAI-3 (388.26 tCO₂e/ha) are actually higher than the PAI-1 value of 236.2 tCO₂e/ha.

Moreover, as assessed by the audit team, there are relevant studies conducted in miombo woodlands that report carbon stocks that are higher than those used by the LCFP project in the current MP. For instance, Munishi et al. (2010)⁴ calculated Miombo carbon stocks values of 385 tCO₂e/ha in the southern highlands of Tanzania, and Missanjo et al. (2015)⁵ obtained carbon stocks of 845±16 tCO₂e/ha in Chongoni, Malawi.

The PP, therefore, conservatively considered the use of the lower value of all the three instances for this MP as conservative decision, 236.2 tCO₂e/ha. The PP will update the carbon stock master dataset for the next monitoring period, and use these values in the next monitoring period.

Moreover, two FARs have been raised, one of them in correlation with the submission request of this methodology deviation, to provide assurance that any overestimation of ERs due to the use of PAI-1 carbon stock value for the three PAIs will have to be compensated in the following verification period, as soon as the PP updates the carbon stock values for the three PAIs based on remote sensing and/or ground-truthing monitoring. Even though the audit team has received assurance from the forest inventory raw data for PAIs 2 and 3 /138/, as mentioned above, this FAR is requested to comply with Section 2.2 of the VCS Standard v4.4, which states that the principles taken from ISO 14064-2, among others, are Accuracy, Transparency and Conservativeness.

Therefore, AENOR audit team deems that methodology deviation number 5 is conservative and applicable.

⁴ Munishi PKT, Shirima, DD (2010). Measuring and Valuing the Carbon Stocks in Chome Nature Reserve, Eastern Arc Mountains, Report submitted to Eastern Arc Endowment Fund for Forest and Beekeeping Division, Dar es salaam Tanzania. p. 17

⁵ Edward Missanjo* and Gift Kamanga-Thole Estimation of Biomass and Carbon stock for Miombo Woodland in Dzalanyama Forest reserve, Malawi. (2010) Research Journal of Agriculture and Forestry Sciences, ISSN 2320-6063 Vol. 3(3), 7-12, March (2015) Res. J. Agriculture and Forestry

3.3 Project Description Deviations

The following 4 project description deviation was applied to the project from previous monitoring periods:

Parameters $t^{[i-1]}$, $t^{[m]}$, $t^{[m-1]}$, $U_B^{[m]}$, $U_{EM}^{[M]}$ have been included as data and parameters. They were mistakenly excluded from section 3.3.2 of the validated PD, but they are monitored during the crediting period and therefore this omission does not impact on the applicability of the methodology, additionality or appropriateness of the baseline scenario. Thus, the audit team considers the deviation to be valid and that the project remains in compliance with the VCS rules.

AENOR verified that this project description deviation was validated in previous verification events by checking the validated PD, validation report and all previously issued MRs and verification reports, published in Verra's Registry.

The Section 3.3.3 of the validated PD, and section 3.2.2 of the Monitoring report was assessed by the AENOR audit team. The section describes the Sentinel-2 or Landsat imagery as data sources for the project visual interpretation of forest disturbance analysis but not including the incorporation of the 4.77m spatial resolution Planet-NICFI mosaics dataset. Section 3.3.3 of the validated PD does not also clearly describe any accuracy assessment procedure for the manually digitized visual forest disturbance analysis. As a result of incorporating Planet-NICFI mosaics dataset in the forest disturbance visual analysis and an accuracy assessment procedure in the current monitoring period, section 5.2 of the Monitoring report was updated by the PP to include the dataset.

The Project Proponent applied a SOP to guide the manual digitization of converted areas, named Manual Deforestation mapping SOP, which also included an accuracy assessment procedure /see 13/.

The incorporation of Planet-NICFI mosaics as a data source for the forest disturbance analysis is attributed to its good spatial resolution of 4.77m, making identification and manual digitization of forest disturbance easier and improves accuracy. Considering that forest disturbed areas are only monitored during the crediting period, both deviations do not impact on the applicability of the methodology, additionally or appropriateness of the baseline scenario. In addition, the use of Planet-NICFI mosaics dataset improved the accuracy of the analysis and did not negatively impact the conservativeness of the quantification of GHG emission reductions. The Planet-NICFI mosaics dataset and the accuracy assessment procedure will be included in the PD at the next project baseline re-evaluation.

The following PD deviation has been applied to the project for this verification period:

1. Early CDM Update

During the Project Review Report (PRR) process conducted by Verra, it was concluded the necessity of delineating a new reference area (RA) representative of the whole project area, including all the Project Activity Instances (PAIs) (1, 2 and 3), in accordance with VM0009. This is due to the inclusion of a new PAI (3) that resulted in the initial RA not meeting the methodology requirement of having a forested area at any point in time during the historic reference period equal to or more than the project accounting area (PAA).

It is important to highlight the efforts made by AENOR's audit team to properly understand and assess the shared files and data related to the delineation of a new reference area, and all its implications in GHG emission reductions. Below it can be found a list of all the meetings and/or milestones performed between VERRA, AENOR and BCP to properly comprehend the scope of the PRR findings (second round) and the steps forward, including the assessment of all the shared files and updates:

- 23/01/2024 – MR5 LCFP Second round of findings were submitted by VERRA.
- 25/01/2024 – MR5 LCFP First meeting with AENOR's audit team to discuss the findings and its resolution.
- 30/01/2024 – AENOR and VERRA sustained a telecom to better comprehend the scope of the still open PRR findings.
- 06/02/2024 – BCP and VERRA sustained a telecom and agreed the way forward for each one of the findings.
- 12/02/2024 – AENOR and BCP meets again to discuss the required updates to comply with VM0009 requirements on reference area size, among other PRR findings (root-to-shoot ratio, inventoried carbon stocks or Emission Factors (EFs), etc.). It was considered to outcomes of VERRA's meetings with AENOR and BCP, separately.
- 14/02/2024 – VERRA sent an email detailing the agreed way forward for each one of open PRR findings.
- 29/02/2024 – MR5 LCFP first intermediate meeting to acknowledge the progress on the delineation of a new reference area, including crosschecking of VM0009 methodology requirements.
- 01/03/2024 – MR5 LCFP second intermediate meeting to acknowledge the progress on the delineation of a new reference area, including crosschecking of VM0009 methodology requirements.
- 22/04/2024 – MR5 LCFP part 1 of the meeting to assess the updates related to GIS-remote sensing, activity data for detecting deforestation, assessment of the PAI-2 and PAI-3 carbon stock measurements and uncertainty analysis to assess the credibility of PAI-1 data for the three PAIs, CDM update (number of CDM interpretation points within the RA, random distribution implementation, SOPs, satellite images used, results and conclusions).

- 23/04/2024 – MR5 LCFP part 2 of the meeting to assess the updates related to GIS-remote sensing, activity data for detecting deforestation, assessment of the PAI-2 and PAI-3 carbon stock measurements and uncertainty analysis to assess the credibility of PAI-1 data for the three PAIs, CDM update (number of CDM interpretation points within the RA, random distribution implementation, SOPs, satellite images used, results and conclusions).
- 02/05/2024 – MR5 LCFP intermediate discussion to resolve some doubts on the shared files, based on a preliminary assessment made by AENOR's audit team.

The following AENOR's audit team assessment refers to Project Description Requirements (PDR from now on) 40 to 47 that can be found within VM0009 methodology⁶.

PDR.40 to PDR.44 refers to those requirements on the delineation of the RA for planned and unplanned types (see page 67 out of 305 of the VM0009⁶), including the following:

- PDR.40 A map of the delineated boundaries, demonstrating that the reference area was held by the identified baseline agent or agents and does not include the project area.
- PDR.41 Results of a spatial analysis to demonstrate the reference area had as much forest or native grassland as the project accounting area at some point in time during the historic reference period.
- PDR.42 Evidence that the management practices of the baseline agent in the reference area are similar to those that would have been applied to the project accounting area or areas in the baseline.
- PDR.43 A description of the rationale for selection of reference area boundaries relative to the respective project accounting area.
- PDR.44 The documentation required in the reference area selection requirements that the selected reference area meets the Reference Area Selection Requirements.

PDR.45 refers to those requirements on defining the RA for planned baseline types (see page 69 out of 305 of the VM0009 methodology⁶), including the following:

- PDR.45 Evidence that secondary agents have been considered in the delineation of the reference area for baseline types F-P1.a, F-P1.b.

PDR.46 and PDR.47 refers to those requirements on defining the reference period for planned types (see page 70 out of 305 of the VM0009 methodology⁶), including the following:

- PDR.46 Established reference period boundaries.

⁶ <https://verra.org/wp-content/uploads/imported/methodologies/VM0009-Methodology-for-Avoided-Ecosystem-Conversion-v3.0.pdf>

- PDR.47 The date when the agent acquired control of the reference area or when the land management practices employed in the reference area changed.

Other PDRs, such as 48-66 and 74-75 are assessed after the CDM interpretation points assessment within this same PD deviation.

1.1.Reference Area Selection

AENOR has witnessed that, just like the initial RA, the selection and delineation of the revised RA for LCFP was done using Administrative Ward boundaries data from the Electoral Commission of Zambia (ECZ) and Central Statistics of Zambia (CSO). Wards are delineated by the Electoral Commission of Zambia (ECZ) and the Central Statistics of Zambia (CSO) for the purpose of the population and housing census and elections. Administrative Wards units were used because they provide a similarity measure, i.e., population density that can be used to relate the RA to the Project Area (PA).

The audit team received the 1990, 2000, 2010 and 2022 Census Population and Housing data /see 142/, and a spreadsheet with all the data organized by Province, District, Area Size, Population, and Population Density, both for the PA and RA and a final comparison between them /142.7/. Figure 9 within the VCS MR provides the new reference area and the LCFP project area considering the three PAs, and also includes cartographic details of cities, main and minor roads, rivers, forest revers and national parks.

In order to come up with the RA, the audit team could assess that the PP selected administrative wards that overlap or are adjacent to the PA administrative wards and have bio-physical characteristics that represent the baseline scenario. The resultant selection was 28 administrative wards in total. In the GIS assessment, the VVB could acknowledge that PAs and potential project expansion areas were then clipped out from the 28 selected RA wards. All areas located beyond 6.5 km from the roads and consisting of slopes steeper than 45% were excluded. The remaining area results in the RA, in compliance with VM0009. Thus, the new RA consists of a total of 28 reference administrative wards (11 wards overlap with the initial RA wards, and 17 are new) with an overall extent of 1,151,327 ha.

To demonstrate that the RA is representative of the PA, a similarity analysis has been performed (see the assessment below).

1.2.RA & PA similarity analysis

The following factors have been considered by the PP in the similarity analysis:

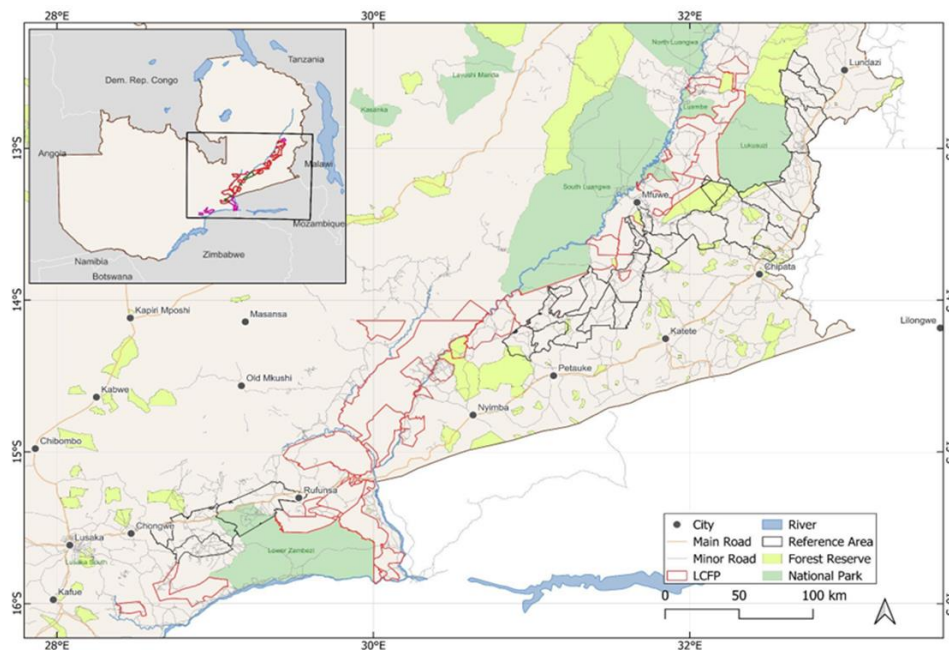
- Geographical proximity.
- Road density.
- Accessibility and mobility of the agents of deforestation and population density.
- Landscape configuration.

1.2.1. Geographical proximity

10 out of the 28 RA administrative wards overlap with the PA administrative wards and the remaining 18 are adjacent. This indicates, after the assessment made by AENOR's audit team, that the RA is geographically contiguous with the PA, implying that the agents of conversion in the RA are affected by similar cultural and socioeconomic factors as the agents of conversion in the PA, and therefore the social economic status of both the PA and the RA area is considered to be similar.

The same inference can be drawn regarding market access. Given the geographical proximity of the RA to the PA (again, of the total 28, 10 wards overlapping and 18 being adjacent), the same transportation routes/roads passing through the PA also traverse the RA, linking the same major towns. Thus, the reference area exhibits significant similarity in terms of market access as the project area.

For greater clarity, Figure 9 of the VCS MR shows the roads and main towns around the PA and RA (find it also attached below).



1.2.2. Road density

AENOR's audit team has acknowledged that road density similarity analysis between the PA and the RA was conducted using 2 roads data sets:

- (1) a historic roads layer (1980-2010) accessed from NASA's socioeconomic data application centre (SEDAC), to assess the road density in the RA at the start of the reference period /see 143/.
- (2) an updated roads layer, with more recent roads (2021), mapped and used to delineate the PAA and to assess the road density in the PA in 2021 /see 143/.

A consolidated number of files (road layers) have been shared with AENOR's audit team. The reported information has been representatively sampled, fitting all the disclosed information in the VCS MR. It is relevant to highlight that many of the roads in the PA have been manually digitized to delineate the PAA. The vast majority of roads present in the PA are not delineated on publicly available maps. However, RA/SEDAC roads are publicly available, only a few were manually digitized or not made publicly available.

To calculate the road density, the historic SEDAN roads dataset (merged with 1986 manually digitized roads) and the updated 2021 roads dataset were clipped using the RA and PA polygons, respectively. Length for the resultant road's dataset was calculated in QGIS and divided by the respective area's sizes, i.e. reference and project areas, to get the road density in table below. This procedure was replicated by AENOR's audit team and deems it in accordance with VM0009 methodology requirements.

Table 16 of the VCS MR provides the road density on both the RA and PA, identifying the period, area, road distance (km), area size (km²), final road density (km/km²) and the difference between them (0.027).

The PP also quoted the analysis of agents, drivers, and underlying causes of deforestation made for BCP Community Forests Program in January 2018 by UNIQUE forestry and land use GmbH organisation /137/. This 64-page report, considered and assessed since the beginning of the verification process, identifies the deforestation quantities in the historical reference period (2006-2017), the agents of deforestation (smallholder farmers, charcoal producers and consumers, firewood collectors and consumers, migrants and settlers, road infrastructure developer, illegal timber harvesters, miners and fire users), the drivers of deforestation (agricultural expansion, charcoal production, firewood extraction and others), driver variables explaining quantities and locations of deforestation, underlying causes of deforestation, chain of events leading to deforestation and opportunity cost and co-benefits, among many other elements.

The results disclosed by the PP in the VCS MR aligns with the explanations and conclusions within the quoted report /137/ above. Thus, based on this similarity analysis factor, the RA delineated is considered a conservative choice for a VM0009 RA.

1.2.3. Accessibility and mobility of the agents of deforestation

LCFP's agents and drivers study quoted in previous similarity analysis factor assessment /137/ established that between 2007 and 2017, all deforestation in Eastern and Lusaka province happened on slopes less than 45 degrees and within 6.5 km from the roads. Therefore, the PP has opted to use these 2 parameters to identify areas that are accessible by the agents of conversion in both the PA and the RA. Thus, for this similarity analysis factor, the PA has been limited to those areas within 6.5 km from roads and slopes of less than 45%. The entire RA is also limited to within 6.5 km of roads, and all areas with slopes greater than 45% were excluded.

Considering that the same distance from roads and slope delimitation was used in the PA to get the PAA (where the CDM is applied) and when delineating the RA, the audit team believes that the RA can be considered similar to the PA as far as accessibility and mobility of the agents of conversion is concerned. The data and argumentation provided confirms it.

1.2.4. Population density

LCFP's agents and drivers' study quoted in the previous two similarity analysis factors /137/, as acknowledged by the audit team, identifies the drivers of deforestation across the entire Eastern and Lusaka Provinces, and thus, includes both the PA and RA. In fact, the study identifies (page 10 out of 64) the following locations:

1. Lusaka Province, Rufunsa District, and Mphansya Chiefdom.
2. Eastern Province, Nyimba, Mambwe and Lundazi District, and Luembe, Nyalugwe, Jumbe, Msoro, Mnkhangya, Malama, Nsefu and Mwanya Chiefdoms.

In this study (page 26 out of 64, first paragraph), population density was "(...) identified as the driver variable that possesses a clear relationship with historical deforestation, and thus, can explain the quantities of deforestation in the historical reference period in [Lusaka and Eastern Provinces]." Population density in the RA wards in 1986, at the beginning of the historic reference period, was examined in relation to population density in 2021 in the PA's reference wards.

The analysis used the following shared data:

- Ward level population data from 2000 and 2010 census reports /see 142/.
- District level 1990-2010 and 2010-2022 average annual population growth rates /see 142/.
- 1980-1990 Provincial annual average population growth rates published by the Zambian Central Statistics Office. <https://www.zamstats.gov.zm/2022-census/reports/>

The assessment made by the PP included the estimation of population density figures (which was reproduced using the same spreadsheet /142.7/), for the individual RA wards in 1986 (beginning of the historic reference period) and PA wards in 2021. This analysis also used population wards spatial data.

The population density simplified results for the PA and RA wards are shown in the table below. However, see also Tables 17 and 18 of the VCS MR for specific information by ward, province, district, area size, population and population density, for the RA administrative wards population density in 1986 and the PA administrative wards population density in 2021, respectively. Figure 10 of the VCS MR makes a comparison between the Population Density in the PA Administrative Wards and the RA wards using a line diagram (wards in the vertical axis, and population in the horizontal axis).

	<u>Average Population Density</u>
<u>Reference Area Wards</u>	8.82
<u>Project Area Wards</u>	17.30

Because district level data was not available in the 1990 census report, the PP used provincial annual growth rates instead of district level to get the 1986 population numbers. In addition, because the Chamtowa, Kachama, Nyamanongo and Ukwimi wards were introduced in 2010, their 1986 population numbers were estimated based on the 2010 population numbers and population growth rates between 1980-1990 and 1990-2010. These estimations have been provided via spreadsheet /142.7/, which was properly assessed by the audit team.

Thus, AENOR's audit team believes that the similarity analysis for the population density factor is sufficient, where it is clear to understand that in the 1986 average population density in the RA wards was estimated to be 8.82 persons per km², while the 2021 population density for PA wards is estimated at 17.3 persons per km². This clearly indicates that there are more people per square kilometer in 2021 in the PA wards than there were in the RA wards in 1986 at the beginning of the Reference Period.

Thus, after considering all the sources of evidence and the assessment provided by the PP, the audit team concludes that:

1. Population density is considered a suitable proxy for deforestation threat, as the agents and drivers of deforestation study /137/ identified population density as the driver variable that possesses a clear relationship with historical deforestation.
2. The results quoted in the VCS MR clearly indicate that the PA faces higher levels of deforestation threat in 2021 compared to the RA at the beginning of the reference period (1986).
3. The choice of the RA for the project is considered conservative and in compliance with VM0009 requirements (PDR.40 to PDR.47).

1.2.5. Landscape configuration.

In terms of landscape configuration similarity analysis, the PP recognizes that there is some disparity between the RA and the PAA in terms of elevation. The PP used NASA SRTM Digital Elevation 30m data to estimate the mean elevation for both regions through GEE. This procedure was shared to AENOR's audit team, who replicated it step by step.

Conclusions clearly define that the RA is predominantly on the plateau with a mean elevation of 926.85 meters above sea level (masl), whereas the PAA is primarily in the Luangwa Valley, with a mean elevation of 728.54 masl.

Nonetheless, findings from focus groups held as part of the project's drivers and agents' study /137/ point that the baseline agents of conversion are moving away from the plateau and toward a landscape more suited to farming, the making of charcoal, and gathering firewood—activities that are the main causes of deforestation in the area. In addition, slope has a greater impact on deforestation than height alone.

The mean slopes of the PAA and the RA are 9.5% and 7.1%, respectively. Moreover, again, all areas with slopes exceeding 45% were excluded from both the PAA and RA. This way, audit team concludes that on average, there is a minimal deference between the RA and the PA as far as vulnerability to deforestation is concerned, highlighting the RA's cautious selection. Within Figure 11 of the VCS MR, readers will acknowledge the PA and RA configuration in terms of elevation and slope

Thus, considering landscape configuration similarity analysis, the RA and the PA can be identified as similar.

1.3.CDM Sample Points

As there is overlap of the new RA with the initial one, the PP has chosen to estimate the necessary number of CDM interpretation points for the new RA by extrapolating from the CDM point density of the initial RA, utilizing the data already collected for the initial RA and thus, ensuring consistency. VM0009 methodology does not present any limitations to this approach.

The new RA covers a total extent of 1,151,327 ha and based on the original RA point density, i.e. 0.004673662 points per ha, approximately 5,443 points were estimated to be dispersed into the new RA (the old ones for the initial RA plus all the new CDM interpretation points due to the delineation of a new RA that includes the old one). Nonetheless, the PP discussed it with AENOR's audit team, choosing to allocate more points than those statistically estimated. In total, LCFP team randomly allocated 5910 points in the new RA.

As introduced in the previous paragraph, as the initial portion of the RA already had 2,600 points installed, only 3,310 points were installed in the new segment of the new RA. This random distribution was carried out using QGIS to ensure an equitable representation across the entire area. The audit team opened all the files in QGIS as well, and representatively chose random points to assess the credibility of the results, using the same remote sensing files as those utilized by the PP /146/150/.

In summary, with 5,910 points distributed within the 1,151,327 ha of the new RA, building upon the previous analysis, the new CDM results from a comprehensive executed sampling approach aimed at capturing the diverse characteristics of the RA, as confirmed to the audit team directly via video conference and through the thorough review of the shared files.

The audit team used the LCFP M5 CDM Update Image Interpretation spreadsheet /141.4/, the CDM Update Accuracy Assessment spreadsheet /141.3/ and replicated the procedure in accordance with the LCFP CDM Point Interpretation SOP /141.1-2/. The resulting logistic function for the second baseline included 50,523 forest state observations during the historic reference period. AENOR's audit team has also accessed and sampled relevant information of the logistical model, including a summary /141.7/ and the R model /141.6/.

1.4.Reference Period

PDR.48 requires that the PD (this is a PD deviation) must include an established reference period boundaries for the reference period, and the PP performed an assessment that has the following period:

Referenced period start: May 1986.

Reference period end: May 2021.

There are no contradictions considering VM0009 requirements or the VCS Standard.

PDR.49 requires that the PD (this is a PD deviation) must include a list of available historic imagery for the RA with respect to the reference period. As such, the PP has included in Table 19 a list of available historical imagery for the RA, quoting Landsat 5, Sentinel-2 and NICFI imagery within the reference period. The PP shared this available remote sensing files to AENOR's audit team /13/, who made the sampling of the CDM interpretation points results using it as the most relevant source of information.

PDR.50 requires that the PD (this is a PD deviation) must include a timeline of important events as they relate to the agents and drivers of conversion with respect to the reference period. However, there are no specific timeline of events for agents of conversion, so no more information was disclosed by the PP.

PDR.50 requires that the PD (this is a PD deviation) must include a narrative rationale for the selection of the reference period. As such, the PP highlighted that the deforestation in the Eastern Province started in the southern part near settlements along the Great East Road and expanded as the population grew. The deforestation progressed towards the Luangwa valley, and no specific events related to this progression were identified. The project utilized historical imagery from different time periods to analyze deforestation, including Landsat 5 imagery from 1986-2009, Sentinel-2 imagery from 2016-2017, and NICFI images from 2020-2021. The incorporation of NICFI images enhanced the accuracy of the analysis compared to Landsat and Sentinel 2 imagery. That narrative has been assessed by the audit team, and deems it correct considering the agents and drivers of conversion study /137/ quoted alongside this PD deviation and the experience of the audit team visiting the project in 2023.

1.5.Historic Imagery to Parameterize Cumulative Deforestation Model

PDR.52 to PDR.56 refers to historic imagery to parameterize α , β and θ , including the following:

- PDR.52 A map of the reference area showing the area of "double-coverage".
- PDR.53 Quantification of "double coverage"(greater than 90%).
- PDR.54 A line plot of the historic image dates to confirm stationarity.
- PDR.55 Evidence that all image pixels are not more than 30m x 30m.
- PDR.56 Empirical evidence that imagery is registered to within 10% RMSE, on average.

For PDR.52 and PDR.53, see Figure 12 of the VCS MR, in which the PP have shared a map of the RA and the double coverage points ($\approx 100\%$). The PP specifically chosen imagery to minimize clouds and was thus almost entirely cloud free, resulting in 100% double coverage, meaning that all parts of the RA were covered by the selected imagery at least twice during the historical reference period. As quoted above, 5910 random points were randomly generated.

For PDR.54, the PP shared in Figure 13 the initial line plot to demonstrate approximate stationarity of historical imagery, and in Figure 14 the updated CDM line plot to demonstrate approximate stationary of historical imagery. See page 72 out of 305 of the VM0009 methodology, which states that:

“The dates of historic imagery should be plotted on a line plot and this plot should be interpreted for stationarity in the time series of imagery. This is necessary to ensure the estimated time components of the image weights per equation [A.3] are unbiased. The time series is stationary if the image dates are distributed, on average, across the entire historic reference period”.

Thus, as the PP’s updated CDM line plot complies with VM0009 methodology requirements (is stationary and evenly distributed through the timeline), it is deemed correct.

For PDR.55 and PDR.56, as stated in the MR, as identified in Table 19, where all the imagery used for the interpretation points in the reference area are identified, year by year, it is clarified that this imagery was 30-meter resolution or less. The audit team investigated to realize that this very typical remote sensing sources of information (Landsat 5, Sentinel-2, and Planet NICFI) are based on a 30-meter resolution or less. Moreover, the registration for the imagery was visually checked before starting the analysis, as providing live demonstrations via video conference. All of the images were well registered with less than 10% RMSE with the exception of the Landsat 5 image from 1999. The shift in that image was considered while interpreting the images.

PDR.57 and PDR.58 refers to the sampling conversion to parameterize α , β and θ , including the following:

- PDR.57 The sample size.
- PDR.58 A map of the reference area showing the sample point locations.

Within Figure 12 of the VCS MR, it can be clarified the RA and the location of the CDM interpretation sample points and double coverage.

For PDR.59 to PDR.62, related to the parameterizing of α , β and θ , they include the following PD requirements:

- PDR.59 The covariates that were considered and their data sources.
- PDR.60 The parameters in θ that were evaluated during model selection.
- PDR.61 The parameters in θ of the selected model.
- PDR.62 The rationale used for selecting θ including comparisons of AIC.

VM0009 allows for using parameters (θ) other than time to improve the fit of the logistic function. However, LCFP team only tested a single model with time and found that it provided a good fit. Therefore, no other parameters were considered. The audit team accessed this data and deemed it in accordance with VM0009.

For PDR.63, it requires a protocol for interpreting land cover state from imagery, which must include guidance for interpreting the following:

- Discerning conversion features using shape, texture and context in the reference area landscape.
- Addressing seasonal variation of vegetation (phenology) within imagery.
- Identifying and addressing the characteristics of specific landscape configurations (i.e., mosaic forest, grassland, etc.).

The point interpretation analysis was conducted using a script in GEE to display the historical imagery and make it easy for the user to navigate to each of the 5,910 points. The script has been shared with the audit team to facilitate the sampling process as quoted above.

A protocol was developed /141.1-2/, named LCFP CDM Point Interpretation SOP, to guide the 3 interpreters who conducted the work. The protocol was developed by a BCP employee who is an expert in remote sensing in Miombo forests in Zambia and very familiar with interpreting a variety of imagery types. The protocol describes, with illustrations:

- How to discern conversion based on changes in pixels, the shapes of changes, surrounding context, and using supplementary higher resolution imagery.
- Being aware of seasonal changes that occur in vegetation, which was most prominent in June imagery (though the historical imagery was specifically selected to avoid this issue as much as possible).
- Defined deforestation as a clearing of 0.5 ha in order to reduce errors associated with image speckle or degradation that did not lead to deforestation. A 5 x 5 grid of Landsat pixel boundaries was overlaid on the imagery and the protocol required that the interpretation pixel (the center pixel) be deforested and have an orthogonal connection to at least 5 other pixels to be considered deforested.

The audit team accessed the protocol, which include explanations on how to record the data (codes 1 to 4, defining forest, non-forest, cloud and no image), setting up the app, open the GEE server, changing the different remote sensing images (from Landsat 5 to Sentinel 2, or using the same satellite images, but changing the years), interpreting the images with real Miombo examples, etc.

PDR.64 refers to the results of an independent check of the interpretation, and PDR.65 requires evidence that systematic errors, if any, from the independent check of the interpretation were corrected.

As such, the audit team was demonstrated via video conference how they to this independent check. Specifically, a 5% ($5,910 \times 0.05 = 296$) random sample was drawn from the forest state interpretations by the 3 interpreters and compared to a forest state classification performed by another interpreter who is more familiar with the study area.

Table 20 of the VCS MR shows the results of an independent Updated CDM error assessment (that was shared via spreadsheet with the audit team). This table identifies the classification accuracy as well as the Kappa statistic for each of the image dates. The accuracies returned were suitable and well within the criteria stipulated by the methodology. There it can be seen the year, degree of agreement, the Kappa, the standard error and the 95% confidence interval. It is relevant to highlight that Kappa's coefficient is a statistical measure that adjusts for the effect of chance on the proportion of observed agreement.

The data used to determine the errors has been shared with the audit team, including relevant spreadsheets such as:

20240410__BCP_LCFP_M5_CDM_Update_Accuracy_Assessment_BK /141.3/.

20240410_LCFP_M5_CDM_Update_Image_Interpretation_BK /141.4/.

On average, there was 97% agreement. No systematic errors were detected, but following guidance from VM0009 v3.0, it was decided to set all values after observed conversion to conversion, so the data was recorded.

PDR.66 and PDR.67 refers to PD requirements on estimating uncertainty in parameters α , β and θ . As such, the following is required:

- PDR.66 The estimated uncertainty from [F.13] and statistical summaries from model fitting software, if available.
- PDR.67 Reference to uncertainty calculations.

Figure 15 of the VCS MR identifies the initial logistic function, whereas Figure 16 provides the updated logistic function used in the CDM interpretation points assessment. This logistic function was fit using a R script.

The audit team, in one of the calls with LCFP, received explanations on each of the R parameters, coding and variables included, and the script was run, providing similar results as those reported in Table 21 (Initial CDM function fitting results from R) and Table 22 (updated logistic function fitting results from R) of the VCS MR.

To respond PDR.74 and PDR.75, which refers to any covariates to conversion used, it was clarified that no covariates to conversion were used.

Moreover, the audit team has accessed relevant items related to this R script, including the logistic model summary /141.7/, the phased logistic curve after recode /141.8/, the proportion of deforestation after recode /141.9/ and the script itself /141.6/. Thus, the audit team deems there is sufficient evidence to assume the data reported in the VCS MR is correct.

Following the review of the justifications and explanations provided by the Project proponent in sections 3.2.1 and 3.2.2 of the monitoring report in addition to the VCS verification report template and VCS standards, the AENOR audit team deems that the deviation does not negatively impact the conservativeness of the quantification of the final GHG emission reductions or impacting other parts of the methodology. In fact, the verified ERs including this PD deviation reduces the amount of VCU that will be issued.

3.4 Grouped Project

The project proponent describes in section 3.3 that a third project activity instance was added to the project during this monitoring period comprising 199,621 ha of project area, of which 183,507 ha consist of forest according to the Zambian definition of forest. The audit team checked through the PD, MR documents provided, VM methodologies and interviews with project carbon staff about the eligibility criteria. The audit team also assessed the MR with new instance in Upper Lumimba in Kazembe Chiefdom, Chisomo in Mwape Chiefdom, Rufunsa in Mburuma Chiefdom, Rufunsa in Mphuka Chiefdom and Rufunsa in Rufunsa Chiefdom and compared with GIS data sets/20-43/. Within the forested area, 122,856 ha has been calculated as a project accounting area after M5 verification. The criteria and means of verification are outlined below. This has been checked with GIS evidence /20-43/.

Criteria	Means of Verification
Must be within the chiefdoms already identified as potential future activity instances in the PD	Map showing project boundaries in the PD/ 20-43/.Interview feedback from the CFMG/CRB, Chiefs, stakeholders and other community members.
The project type for future project instances must avoid unplanned deforestation. Accordingly, the end land use in the baseline scenario must be non-forest.	PD/1/ information, GIS/20-43/ and onsite visit especially where project plans were designed to avoid deforestation.

The baseline drivers and agents of deforestation in future project instances must be of the same type as the current project instances - clearing of forested land for expansion of small-holder farming and, or charcoal production.	The document Drivers and agents study by UNIQUE /136/ has mentioned these criteria among others for grouped projects.
Future project accounting areas must have met the Zambian definition of forest for at least 10 years prior to the project start date.	Information in the PD/1/. The VCS program guides version 4.3 and VCS standards version 4.4
Some point within 2km of the perimeter of future accounting areas must have been converted from forest to farming.	NER calculations /7,8,9/ have been used to describe the verification of this Criteria in accordance with the VCS standards,
Future project accounting areas must be located in a tropical ecosystem and must not contain peat soil.	GIS evidence /20-43/. The MR/2/ provides information on soil types in the project area which is exclusive of peat soils.
For each new accounting area, a reference area meeting the requirements in terms of size and similarity to the accounting area as per section 6.8.1 of VM0009 v3.0 must be delineated.	GIS evidence /20-43/ with detailed map of the new accounting area.
For any new reference area that may be required, there is sufficient historical imagery meeting the requirements of section 6.8.4 of VM0009 v3.0.	GIS evidence /20-43/, PD and MR reviews, Interviews with local community stakeholders, Government representatives and on-site visit.
Project activities for new project instances are the same as those described in this PD.	The PD/1/ and MR/2 in addition to onsite visits
The project proponents can access any new leakage or proxy areas that may be required for monitoring related to new project instances as per sections 8.3.2.1 and 6.4 of VM0009 v3.0.	GIS evidence /20-43/ on leakage and proxy area with onsite visit.
Same Governance and Land Tenure and Social Economic Systems	Title Deeds from the Luangwa community Forest project private game ranch owners and community forest management/56,59/ Agreements signed between government and Community resources boards (CFMGs)/44-61/.

The audit team assessed the documents, interviews and audit visit observation and established that the project meets the applicability conditions as set out in the new project instance methodology, the project uses the and applies similar technology as other previous instances. The project baseline and the geographical boundaries are within the specified zones of the project as such, no conflict will arise. The new project activity area has characteristics with respect to additionality consistent with instances one and two.

For grouped projects, the audit team also checked through the evidence materials/appendix1/ and confirmed the following, that:

- i. The LCFP is within Zambia geographic area as specified in the project description.
- ii. The LCFP third instance activity conforms with the all the eligibility criteria above for the inclusion of new project activity instances.
- iii. The LCFP has included the new project activity instance in the monitoring report/2/ with sufficient technical, financial, geographic, and other relevant information to demonstrate conformance with the above eligibility criteria.
- iv. The new project activity instance has been exclusively described in the project description/1/ with project location information according to the eligibility criteria.
- v. The LCFP third activity instance project ownership titles and lease agreements are valid/44-61/.
- vi. The third project instance has not been enrolled in any other VCS project.
- vii. The LCFP third instance fully conforms with the clustering and capacity limit requirements as set out in the section 3.6.8 and 3.6.9 of the VCS standard v4.4.

After checking the evidence detailed above, the audit team considers that the assessment related to the third project activity instance is complete and consistent with section 3.6.16 and 3.6.17 of the VCS standard version 4.4.

Thus, the verification team deems correct and valid the inclusion of the third Project Activity Instance.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The Luangwa Community Forests Project is a REDD+ project which activities fit in three categories:

- Activity Area 1: Infrastructure Development, Social Service Delivery
- Activity Area 2: Apiculture, Agricultural Improvement, Diversification and Economic Opportunities
- Activity Area 3: Forest Encroachment and Wildlife Monitoring and Poaching Reduction

The MR provides in its Section 3.1 a detailed description of the activities implemented by the project since its start. During this verification process, AENOR has not detected project changes in regards of the project title, its purposes, and objectives. As such, the project activity accurately reflects the proposed project which consists of avoiding deforestation through direct conservation support, engagement and capacity building with key Government and community stakeholders, performance-based payments to community stakeholders delivered through local institutions, and promotion of alternative livelihood activities.

During the verification process, the audit team checked the actual implementation of project activities through the analysis of evidence provided by the Project Proponent /62-88, 89-116/ and through interviews to local stakeholders and project staff /117-131/. No discrepancies have been found between the gathered evidence and the implemented activities reported in the MR, as well between the MR and the planned activities in the PD.

The project is designed as a grouped project, and then the inclusion of new instances is acceptable. For the present monitoring period, the third activity instance was included as explained on the previous section.

After the review of the MR /2/, calculations /6-19/ and the other document to support calculations such as GIS information /20-43/, surveys and others /136/, AENOR deems that the project status follows applicable methodologies and implementation is in support of the VCS principles of Conservativeness and Accuracy. Related to the compliance with the Monitoring Plan, section 4.3 of the MR provides information about the monitoring plan and actions carried out for the current monitoring period. AENOR reviewed the procedures put in place to perform the biomass inventories and deems that they are in accordance with the procedures described in the validated monitoring plan. AENOR checked the monitoring plan contained in the validated PD and compared it with the MR to verify whether there was any difference that would cause an increase in estimates of the GHG emission reductions in the current monitoring period. AENOR has confirmed that there are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodologies. Also, the project proponent effectively monitors the required parameters to determine the project's emission reductions by sinks and emissions by sources as required by the monitoring plan and the applicable methodologies.

The parameters reported, including source, frequency and review criteria as indicated in the monitoring plan were verified to be correct and in line with the monitoring plan of the validated PD. As described in Section 3.3 of this verification report, the parameters $t^{[i-1]}$, $t^{[m]}$, $t^{[m-1]}$, $U_B^{[m]}$, $U_{EM}^{[M]}$ were monitored, despite not being included in the original monitoring plan of the validated PD. These parameters were mistakenly excluded from Section 3.3.2 Data and Parameters Monitored in the PD but have been monitored anyway from the beginning of the project. Necessary management system procedures including responsibility and authority of monitoring activities have been verified to be consistent with the PD. Knowledge of personnel associated with the project activity was also found to be satisfactory.

Regarding leakage emission, they accounted 0. In this regard, AENOR has checked evidence provided /31-34/, /35/, /39/, /44/61/ which confirms the information included in the MR. In addition, no biomass loss events were reported during this verification period.

There is no evidence of double counting or that the project has participated nor been rejected under any other GHG programs. GHG emission reductions generated by the project are not included in an emission trading program or any other mechanism that includes GHG allowance trading. The project has not received nor sought any other form of environmental credit.

Regarding the sustainable development, the project contributes to the following sustainable development goals as observed during audit visit:

1. Decrease the proportion of population below the international poverty lines where at least 47,317 households benefited from the carbon and livelihood funds through the LCFP earnings for the year 2022.
2. Increase in the average income of smallholder producers, volumes of production per labour unit by classes of farming/pastoral/forestry and enterprise size-This was showcased in the audit visit to beehives delivery sites, climate smart farms with a number of lead farmers practicing conservation agriculture and teaching others as well. Other trainings for honey producers and horticultural farms visited on site.
3. Increase in the coverage of essential health services withing the LCFP has been enhanced through the completion of the maternity annex in Sandwe, construction of health post in Luembe, incinerator in Nthumbe, Health post in Chitungulu. Improvement of clinics in addition to facilities like the lavatory system.
4. Increased access to education services where during the Audit team visit the team encountered/ informed about the Mwanya CFMG school scholarship and teachers support program and Chitungulu CFMG supports tertiary education. Overall improvement of 37 Education facilities including Teachers' houses and classroom blocks in Sandwe, Nyalugwe, Luembe, Mwanya, Chitungulu chiefdoms during the monitoring period.

5. Increased proportion of women in managerial positions where BCP has more than 30% senior management team being female on the payroll, in community implementation projects like bee keeping and in the community scouts. The women in our interviews claim that their rights have been fully respected and as such they have been motivated to do their respective work.
6. Increase the proportion of population using clean and safe drinking water and WASH services. Boreholes have been constructed as reported by the PP and the audit team visited some two completed ones.
7. Increase in the proportion of population with primary reliance on clean fuels and technology including renewable energy sources. The PP mentioned of the installation of solar lighting in Chisanga, Luembe and Kamphasa school. This information was acquired during an interview with the District Forest Officer Counterpart at Jumbe in Mambwe District.
8. Increase in annual growth of GDP per capita, proportion of informal employment and average hourly earning especially for women, is seen where the community has been supported with carbon fees, provision of over 5,000 beehives, increased maize yield to improve household income. The PP visited the beehive groups and the apiaries including the climate smart farms that experience yield increase when rotated with legumes, and *Grellicidia Sepum*.
9. Increase in infrastructural developments within the CFMG where the audit team visited the completely constructed CFMG office blocks x 4 (Luembe, Nsefu, Sandwe, Shikabeta); police post x 2 (Mwanya, Shikabeta); scout houses x 4 (Luembe) and guest house completion (Mnkhanya).
10. Increased hectares of watershed forests to protect the ecological system and reduce natural disaster by LCFP protecting 1,236,258 ha of REDD+ forests, with its community benefiting from USD 12,129,831 investment through carbon and livelihood funds. The Audit team was impressed with the intact community forests in every vicinity.
11. Increased proportion of land with sustainable management of natural resources as defined by the PP, they have had 8 years of agreeable sustainable management and efficient use of natural resources in partnership with communities.
12. Increase in tonnes of GHG emissions avoided or removed by conservation of the LCFP to reduce CO2 emissions by over 2 million tonnes in the year 2022.
13. Increased forest area as a proportion of total land area, important sites for terrestrial and freshwater biodiversity that cover protected area, sustainable forest management, red list index of species survival. The PP has achieved these through patrols carried out by community scouts, whom the audit team interviewed and that they described the apprehending of forest encroachers, poachers and snares and hand the culprits over to the authority. Line transects are also used for biodiversity surveys in addition to camera traps.

14. Increased management of expenditure and budgets, inclusivity in decision making. The CFMG were interviewed and gave true accounts that the BCP provided capacity building for their improvement in needs assessments, annual work planning, performances, funds, management, accountability, evaluation and reporting with gender equality.
15. Increased partnership where the LCFP has attracted interested parties with common goals such as the DNPW. AENOR audit team interviewed the officers from the DNPW who acknowledged the presence of BCP in Zambia, and the immense support they receive from BCP to effectively deliver their conservation goals.

AENOR interviewed different stakeholders and verified the claimed contributions of the project /62-88/.

The assessment of KML files shared by the PP have been proven to be consistent with project features outlined under this section, the project accounting area and the leakage area some of which have been visited by the audit team. They fall within the respective project areas visited. During the audit visit in Shikabeta, Mpanshya and Mfuwe, affirmations of the actual locations of the project participation areas and the communities fall within it. Ground truthing using AENORs audit team's GPS tracks demonstrated consistent overlaps with the shared files.

The audit team reviewed the monitoring plan, its implementation, and its suitability. AENOR has carried out a series of reviews of material provided as evidence to demonstrate the implementation of the plan, as well as through interviews carried out with the different stakeholders. This information can be found in section 2.3 and 2.4 of the Verification Report.

The audit team reviewed the presence of livestock in the project areas and during the audit visit, the community and the CFMGs in Nsefu confirmed that there were no prevalence of livestock since most of them are arable farmers. Farmers also mentioned that some few of them practice domesticated and tethered livestock production systems where they are fed within a confined zone that do not exceed the carrying capacity. Oxen were also observed moving with mounted mouldboards being used as means of cultivation and production of farmlands and hence regulated from mass emissions. The calculations reviewed in the annual methane emissions from that number of livestock would be equivalent to 1,386 tCO₂ which is below the threshold of 5% of the GHG emission reductions anticipated from the PP's project hence negligible.

Aenor audit team in its review, states that the PP is not promoting livestock grazing in the project area and will be preventing exactly this type of encroachment that has been associated with livestock in the project areas through the participation of the community forest scouts who were interviewed to be patrolling around their project conservation area. Thus, there is no expected increase in grazing in the project scenario and therefore GHG from livestock are de minimis and are excluded.

There are no new methodology deviations for this monitoring period. The methodology deviations listed in section 3.2 of this report were validated during previous monitoring periods and are all the methodology deviations applied to the project in the current monitoring period.

Regarding the adequacy of implementation of the plan, all carbon calculations /7-9/, geodatabase /20-43/, monitoring report /2/ and its comparison with the previous verification period /3/and the PD/1/ have been reviewed. The analysis carried out by AENOR reproduced all the calculations and parameters reported in both the Excel document and the monitoring report.

After thorough documents review provided by the PP /1/, the VM0009 methodology version 3.0 review and the information gathered and through the calculation process, there is no reversal or loss events in the current monitoring period (M5). This is because the calculated GERs figure does not appear negative, which is the sole criterion for determining a reversal, unless a baseline re-evaluation results in a negative GERs. Aenor assessed that the in recent monitoring period, the project hasn't undergone any baseline re-evaluation, and such a re-evaluation is scheduled in the coming years, as per the validated PD provided by the PP..

AENOR can confirm that the project implementation is in conformance with the validated PD. There are not material discrepancies between project implementation and the project description. description.

4.2 Safeguards

4.2.1 No Net Harm

LCFP project was validated under the Climate, Community and Biodiversity Standards (CCB), in addition to the VCS, and the PD describes in its Section 2.1.11 the potential negative impacts of the project.

AENOR audit team reviewed the section 2.1.11 to spot check the potential negative impacts which were most likely associated with similar projects like negative environment impacts and livelihood disruptions and unequal distribution of benefits in addition to governance issues. These were not significant. However, the PP works with the CFMG/CRB and Village Action Groups (VAG) as explained by themselves to distribute the benefits on the project in a transparent, participatory, and fair way and more so, they have instituted training on the negative environment impacts and the socio-economic impacts to avoid negative effects

Interviews with the local stakeholders demonstrated that the Project Proponent has properly identified the potential negative impacts and that the training, awareness programmes, farmers involvement into climate smart and alternative income generation activities such as beekeeping for honey are reasonable steps have been taken to mitigate such impacts.

Aenor deems that through mitigation strategies such as the community engagements, collaborations, capacity building, promotion of non invasive species and promotion of the CSA practices within their network of farmers and other supports have caused hhe project to generate net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area.

4.2.2 Local Stakeholder Consultation

The Project Proponent has been carrying out a consultation process since the inception of the project, starting with meetings with key government and community authorities. The process evolved from consultations at national level to consultation at village level. During this process, stakeholders were identified, and free, prior, and informed consent (FPIC) was achieved.

The first consultation process involved workshops/meetings with key government and community authorities with a top-down approach from the national level, to provincial, district and chiefdom level meetings and workshops where REDD+ viability assessment process is done by selection of viable forest area for protection and documented consent from all relevant stakeholders/right holders. The government and chiefdom authorities will then permit to proceed with the on-ground viability, participatory Forest identification, stakeholder engagement and FPIC.

Initial stakeholder identification and mapping-involved meetings and workshops with District and chiefdoms where the PP sought information about who could be enlisted as potential stakeholders based on their location relative to the REDD+ project.

Detailed chiefdom/village level stakeholder mapping PRA/PLA FPIC activities. Detailed process was undertaken in each of the 12 partner chiefdoms as part of the FPIC processes undertaken by the PP in 2015-2017. This is where the community stakeholders' identifications are confirmed, and maps are refined to ensure community inputs are considered.

The participatory structure for the management of the project, in which CFMG/CRB and VAG have the competencies to determine the way to use the project funds for the financing of project activities in the relevant interest of each village, ensures that the opinion of stakeholders is duly considered.

Interviews with project beneficiaries confirmed to the audit team that these participatory bodies are democratically elected and that they act as an effective channel of communication between the Project Proponent and the local community stakeholders. Additionally, the Project Proponent provides capacitation to each member of the CFMG/CRB to improve their performance in the administration of their responsibilities. According to the MR, monitoring results that point to serious concerns, such as encroachment within accounting and leakage areas are immediately reported once discovered to the relevant local stakeholders via the engagement teams. These critical results are then thoroughly investigated and discussed by local stakeholders and BCP. The results of the completed annual monitoring process are communicated to local stakeholders at the end of the monitoring period, soon after verification is completed. Since the results are tied to community benefits, a thorough explanation of monitoring results is communicated via the engagement teams to local stakeholders to substantiate their extent of the performance-based benefits accrued.

Local stakeholders have been made fully aware of the requirements for an auditing team to verify the findings of the annual monitoring report, as is standard procedure, and what this auditing process will entail. This process was communicated to the local stakeholders through formal notices to CFMG/CRB and the Forestry Department and via both higher- and lower-level community engagement meetings.

The audit team was able to confirm through the physical interviews carried to stakeholders that they have been properly informed about project implementation, monitoring results carried out by AENOR as VVB. None of the meetings and consultations with stakeholders, and points addressed therein, led to any resultant change of the project design during this monitoring period.

It is the opinion of AENOR, based on the information gathered during the audit process /89, 90, 93/, that the Project Proponent communicates the necessary relevant information about the project implementation, risks, costs and benefits, relevant laws and regulations and the process of VCS Program to local stakeholders. All interviewed community members were aware of the nature of the project, its implementation, and its results, as well as the basics regarding the VCS program and the auditing process. Thus, the project proponent's responses are deemed appropriate.

4.3 AFOLU-Specific Safeguards

The MR describes activities carried out to mitigate risks to local stakeholders due to project implementation. The main affected stakeholders would be those poaching and illegal charcoal producers. The mitigation measure is the creation of jobs and livelihood alternatives. The project has created more than 60 community jobs, mainly for Community Scouts (CS). The CS role requires physical endurance, knowledge of bushcraft, and a willingness to spend one's work time in the outdoors. People with poaching experience are naturally inclined to be high performing CS with a change in mindset towards legally earned income and with the passing of training. Additionally, the improvement in quality of life (water, education, health services) and investment in food security and income diversification through project activities, reduce the risk for community members to engage in illegal poaching and charcoal production.

Regarding land tenure, the project has not altered property nor use rights. The land was previously in game management areas managed by CFMG/CRB, which are still the responsible for the management. The Project Proponent has signed community forest management agreements with the CFMG/CRB, in which their rights are recognized, including rights over carbon assets.

The Project Proponent has continuous communication with local stakeholders through on-field staff and the CFMG/CRB. All community forest management agreements signed include the description of the grievance mechanism, which is well known by community members. Additionally, a Stakeholder Grievance Response SOP has been developed and provided to all lead members of the engagement team and to all CFMG/CRB. Furthermore, all community meetings have an agenda item titled 'Grievances' to ensure that at each meeting there is a public opportunity to air grievances in a formal, more regular, and logged forum. The PP outlines that the project received a total of 7 grievances in 2022 (M5) as depicted below.

Chiefdom	Description	Opening Date	Closing Date
Mpanshya	Complaint over BCP's Gender streaming approach advocated during community engagement meetings in a period of local CRB elections	18/07/22	27/07/22

Malama	Allegation made by community members of inadequacy of forest carbon fees disbursed	11/08/22	14/09/22
Mwanya	Allegation made by community members of misuse of funds by the CFMG	20/08/22	18/01/23
Project level	Complaint over a lack of District hire	26/10/22	19/12/22
Mnkhanya	Complaint over Community Scouts apprehending community members	13/11/22	14/11/22
Malama	Complaint over a lack of Chieftdom hire	14/11/22	17/11/22
Luembe	Allegation made by a community member of misuse of funds by the CFMG	05/12/22	22/12/22

All grievances received were subjected to the grievances SOP and resolved using the framework and strategies designed by the PP and were considered closed. The Project Proponent has demonstrated through its bulk of documentation including the trackers, and data filing systems which the verification team was able to go through that the grievances have been well managed following the Stakeholder Grievance Response SOP/90/, /94/,116/.

The documents reviewed such as the MR5 and the audit vit observation and the interviews with local stakeholders confirmed that the project is mitigating its negative impacts. All interviewees have knowledge of the grievance and redress procedure and manifested that it is being properly implemented for the resolution of any conflict. The Stakeholder Grievance Response SOP and the Community Engagement SOP /93/ are efficient in their design and are aligned with the principles set in by the validated PD.

Thus, AENOR deems that the project proponent has taken the appropriate measures to ensure that the project has not created negative impacts on local stakeholders or has put in place mitigation actions in such impacts where necessary.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Procedures for quantifying emission reductions were conducted in accordance with the VM0009 v.3.0 June 2014: Methodology for Avoided Ecosystem Conversion for Sectorial Scope 14 methodology and its related tools. The verification team performed an intensive review of all input data, parameters, formulas, calculations, conversions, statistics and resulting uncertainties and output data to ensure consistency with the VCS documentation, VCS methodology and associated tools, and the PD.

Furthermore, the verification team reproduced calculations for selected samples to ensure accuracy of the results. Conversion factors, formulas, and calculations were provided by Project Proponent in spreadsheet /6-19/ format to ensure all formulas were accessible for review. The verification team recalculated subsets of the analysis to confirm correctness. Where applicable, references for analysis methods or default values were checked against relevant scientific literature for best practice. Where applicable, references for analysis methods or default values were checked against relevant scientific literature for best practice.

Further, Aenor verification team assessed the PPs approach to biomass monitoring, and reviewed section 3.3.3 of the Project Document /1/ for consistencies with section 9.3.1 of the Approved VCS Methodology VM0009 Version 3.0. This revealed that The PP's monitoring plan employs an annual monitoring of 20% of the initial biomass plots, that ensures consistent and timely assessments of the project's carbon stocks. This implies that carbon stock estimates/dataset are updated at least every 5 years when all the initial biomass plots have been revisited and updated data has been made available. Currently, the project has successfully revisited 80% of the initial biomass plots (during the M1-M4), with the remaining 20% scheduled for revisiting in the upcoming monitoring period (M6). The carbon stock estimates, and dataset will remain unchanged until this point, consequently, the project has excluded carbon stock data for PAI#2 and PAI#3 (slated for monitoring in M6) from the current carbon stock estimations/dataset, as these will only be integrated into the carbon stock estimations/dataset when the project proponent had revisited 100% of the initial biomass plots, as specified in the projects monitoring plan.

In AENOR's opinion, the projects biomass monitoring plan of 20% biomass plot Monitoring annually and project's carbon stock dataset of the 5-year update period as per the PD included is representative and in conformance with the VM0009 methodology and the sections there in listed.

Baseline Emissions

Section 5.1 of the MR and the calculation spreadsheet /7-9/ submitted to AENOR provide information related to the baseline emissions calculations.

It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA that includes the three Project Activity Instances, in compliance with VM0009.

Baseline emissions ($E_B^{[m]}$) for the current monitoring period (01-January-2022 to 31-December-2022) were calculated using Equation F.15. from VM0009 v3.0

$$E_{B\Delta}^{[m]} = E_B^{[m]} - E_B^{[m-1]} \quad [F.15]$$

Cumulative baseline emissions were calculated using a logistic deforestation model, based upon a point interpretation of forest state in the reference area applying equation F.16 from VM0009, v3.0

$$E_B^{[m]} = E_{B\ BM}^{[m]} + E_{B\ SOC}^{[m]} - C_{B\ SOC}^{[m]} - C_{B\ BGB}^{[m]} - C_{B\ DW}^{[m]} - C_{B\ WP}^{[m]} \quad [F.16]$$

Baseline emissions from biomass for the current monitoring period are based on the average per hectare carbon stocks in selected carbon pools from AGOT, BGOT given by equation F.17 for the accounting area.

$$C_{P\ BM}^{[m]} = \sum_{b \in B} C_{P\ b}^{[m]} \quad [F.17]$$

$$C_{B\ BM}^{[m]} = \sum_{b \in B} C_{B\ b}^{[m]} \quad [F.18]$$

Cumulative biomass baseline emissions were calculated using a logistic biomass emission model (BEM), validated in the PD, based upon a point interpretation of forest state in the reference area applying equation F.24.

$$\begin{aligned} E_{B\ BM}^{[m]} &= BEM_{SP}(C_{P\ 1\ BM}^{[m=0]}, C_{B\ BM}^{[m]}, t^{[m]}, x^{[m]}) = BEM_{U2,3/P1}(C_{P\ 1\ BM}^{[m=0]}, C_{B\ BM}^{[m]}, t^{[m]}, x^{[m]}) \quad [F.24] \\ \text{when } E_{B\ BM}^{[m]} &\geq A_{P\ 1}^{[m=0]}(C_{P\ 1\ BM}^{[m=0]} - C_{B\ BM}^{[m]}) \\ \text{then } E_{B\ BM}^{[m]} &= BEM_{U2,3}(WC_{P\ 1,2\ BM}^{[m=0]}, C_{B\ BM}^{[m]}, t^{[m]}, x^{[m]}) \\ \text{when } E_{B\ BM}^{[m]} &\geq A_{P\ 1}^{[m=0]}C_{P\ 1\ BM}^{[m=0]} + A_{P\ 2}^{[m=0]}C_{P\ 2\ BM}^{[m=0]} - C_{B\ BM}^{[m]}(A_{P\ 1}^{[m=0]} + A_{P\ 2}^{[m=0]}) \\ \text{then } E_{B\ BM}^{[m]} &= BEM_{U2,3/P1}(WC_{P\ 1,2,3\ BM}^{[m=0]}, C_{B\ BM}^{[m]}, t^{[m]}, x^{[m]}) \\ &\dots \\ E_{B\ BM}^{[m]} &= A_{P\ 1}^{[m=0]}C_{P\ 1\ BM}^{[m=0]} + A_{P\ 2}^{[m=0]}WC_{P\ 1,2\ BM}^{[m=0]} + \dots + A_{P\ n}^{[m=0]}WC_{P\ i,n\ BM}^{[m=0]} \\ &\quad - C_{B\ BM}^{[m]}(A_{P\ 1}^{[m=0]} + A_{P\ 2}^{[m=0]} + \dots + A_{P\ n}^{[m=0]}) \end{aligned}$$

Cumulative baseline emission from SOC were estimated using a soil emission model (SEM), applying equation F.29.

$$\begin{aligned} E_{B\ SOC}^{[m]} &= SEM_{sp}(C_{P\ 1\ SOC}^{[m=0]}, C_{B\ SOC}^{[m]}, t^{[m]}, x^{[m]}) = SEM_{U2,3/P1}(C_{P\ 1\ SOC}^{[m=0]}, C_{B\ SOC}^{[m]}, t^{[m]}, x^{[m]}) \quad [F.29] \\ \text{when } E_{B\ SOC}^{[m]} &\geq A_{P\ 1}^{[m=0]}(C_{P\ 1\ SOC}^{[m=0]} - C_{B\ SOC}^{[m]}) \\ \text{then } E_{B\ SOC}^{[m]} &= SEM_{U2,3/P1}(WC_{P\ 1,2\ SOC}^{[m=0]}, C_{B\ SOC}^{[m]}, t^{[m]}, x^{[m]}) \\ \text{when } E_{B\ SOC}^{[m]} &\geq A_{P\ 1}^{[m=0]}C_{P\ 1\ SOC}^{[m=0]} + A_{P\ 2}^{[m=0]}C_{P\ 2\ SOC}^{[m=0]} - C_{B\ SOC}^{[m]}(A_{P\ 1}^{[m=0]} + A_{P\ 2}^{[m=0]}) \\ \text{then } E_{B\ SOC}^{[m]} &= SEM_{U2,3/P1}(WC_{P\ 1,2,3\ SOC}^{[m=0]}, C_{B\ SOC}^{[m]}, t^{[m]}, x^{[m]}) \\ &\dots \\ E_{B\ SOC}^{[m]} &= A_{P\ 1}^{[m=0]}C_{P\ 1\ SOC}^{[m=0]} + A_{P\ 2}^{[m=0]}WC_{P\ 1,2\ SOC}^{[m=0]} + \dots + A_{P\ n}^{[m=0]}WC_{P\ i,n\ SOC}^{[m=0]} \\ &\quad - C_{B\ SOC}^{[m]}(A_{P\ 1}^{[m=0]} + A_{P\ 2}^{[m=0]} + \dots + A_{P\ n}^{[m=0]}) \end{aligned}$$

Cumulative carbon not decayed in SOC used a decay emission model (DEM_{SOC}) as per equation F.33

$$C_{B\,SOC}^{[m]} = \sum_{i \in \mathcal{M}} DEM_{SOC}(E_{B\,\Delta\,SOC}^{[i]}, t^{[m]}, t^{[i-1]}) \quad [F.33]$$

Carbon not decayed in below-ground biomass used a decay emission model ($DEM_{DW,BGB}$), as per F.32 of VM0009 v3.0.

$$C_{B\,BGB}^{[m]} = \sum_{i \in \mathcal{M}} DEM_{DW,BGB}(E_{B\,\Delta\,BGB}^{[i]}, t^{[m]}, t^{[i-1]}) \quad [F.32]$$

Both cumulative baseline emissions from below-ground biomass at the end of the previous [m-1] and current monitoring period [m] were calculated according to equation F.30.

$$E_{B\,BGB}^{[m]} = \frac{r_{RS} E_{B\,BGB}^{[m-1]}}{1 + r_{RS}} \quad [F.30]$$

The following table summarizes the calculated values of the baseline parameters:

Parameter	Equation used (VM0009 v3.0)	Value (tCO ₂ e)
$E_{B\Delta}^{[m]}$ Baseline emissions for the current monitoring period	F.15	2,267,514
$E_{B\Delta}^{[m-1]}$ Cumulative baseline emissions from previous monitoring period	F.16	9,432,108
$E_{BBM}^{[m]}$ Cumulative baseline emissions from biomass at the end of the current monitoring period	F.24	11,368,203
$E_{(B\Delta SOC)}^{[m]}$ Baseline emissions from soil carbon in monitoring period	F.29	1,180,491
$C_{BSOC}^{[m]}$ Carbon not decayed in SOC at the end of the current monitoring period.	F.33	- 849,070
$C_{BBGB}^{[m]}$ Carbon not decayed in BGB at the end of the current monitoring period.	F.32	-67,841
$E_{BBGB}^{[m]}$ Cumulative baseline emissions from below-ground biomass at the end of the current monitoring period	F.30	3,942,220

$E_{BBGB}^{[m]}$ Cumulative baseline emissions from below-ground biomass at the end of the previous monitoring period	F.30	3,203,934
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AENOR has checked the calculations provided and confirmed that this amount of baseline emissions is in conformance and have followed the methodology in the validated PD.

Project emissions

It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA that includes the three Project Activity Instances, in compliance with VM0009.

Moreover, to ensure accurate forest disturbance analysis, the PP implemented a three-tier verification approach. Two analysts, a GIS Technician and a Carbon Specialist, along with a Carbon Manager, utilized visual image interpretation expertise to identify forest loss. The first analyst used Sentinel-2 imagery to identify converted areas, while the second analyst assessed the dataset and reconciled any discrepancies. The final dataset disclosed a forest cover loss of 425.55 hectares in the current monitoring period (see table 30 of the VCS MR, for breakdown by chiefdom of the disturbance mapping results in the PA).

The project used Planet-NICFI imagery with a resolution of 4.77m to improve accuracy assessment, as AENOR's audit team replicated, as Planet-NICFI provides free imagery and an accessible review through QGIS. The verifier compared manually digitized polygons with a reference dataset created using the same imagery. The verifier's findings were used to evaluate deforestation mapping accuracy. The sampling design examined 100% of the digitized area and the rest of the PA to identify any errors. An agreement of 95% or higher between the two datasets is considered acceptable. The accuracy assessment produced specific results:

- Total area of final reported dataset (Sentinel-2 imagery) - 425.50 ha
- Total area of reference dataset (Planet-NICFI imagery) - 418.11 ha
- Total Area covered: 430.83 ha
- Commission error: 5.48 ha
- Omission error: 12.72 ha
- Overall agreement (Intersection): 412.63 ha
- Overall accuracy: 95.78%

The accuracy assessment spreadsheets, sentinel 2 images and other documents can be found in /see 13/.

Section 5.2 of the MR describes the calculations for the project emissions. Current emissions from changes in project carbon stocks were calculated with equation F.41 VM0009 v3.0. It was justified by the remote sensing and GIS analysis in the MR.

$$E_{P\Delta}^{[m]} = E_{P\Delta BRN}^{[m]} + E_{P\Delta LS}^{[m]} + E_{P\Delta SF}^{[m]} + A_{PAA} \left(c_P^{[m-1]} - c_P^{[m]} \right) - C_{P\Delta WP}^{[m]} \quad [F.41]$$

The assessment of project emissions has been done with the fully review of spreadsheets calculations /7,8,9/ and the proper comparison with the methodology. Furthermore, GIS material /20-43/ has been checked to be contrasted with the boundaries of the project and the spreadsheet calculation.

The calculations have been reproduced according to the methodology used, and the verification team obtained the same results. Thus, AENOR considers that the calculations were done correctly by the PP.

AENOR has checked the assumptions provided and confirmed that this amount of project emissions is in conformance and have followed the methodology in the validated Project Description /1/. PD.

Leakage

As reported in Section 5.3 of the MR, leakage emission for the current period ($E_{L\Delta}^{[m]}$) was calculated using equations F.44 and F.45 of VM0009.

$$E_{L\Delta}^{[m]} = E_L^{[m]} - E_L^{[m-1]} \quad [F.44]$$

$$E_L^{[m]} = E_{LASF}^{[m]} + E_{LASG}^{[m]} + E_{LME}^{[m]} \quad [F.45]$$

Activity-shifting leakage in forested area is calculated through the validated leakage emissions model (LEM) validated in the PD, as per equation F.46. Market leakage is not accounted by the project.

$$E_{LASF}^{[m]} = LEM \left(c_P^{[m]}, c_B^{[m]}, p_{LDEG}^{[m]}, t^{[m]}, x^{[m]} \right) \quad [F.46]$$

The following table summarizes the calculated values of the leakage parameters:

Parameter	Equation used (VM0009 v3.0)	Value
$E_{L\Delta}^{[m]}$ Emissions from leakage for the current monitoring period.	F.44	0
$E_{LASF}^{[m]}$ Cumulative emissions from activity-shifting leakage in forested areas at the end of the current monitoring period	F.46	0

$E_{L\ ASF}^{[m-1]}$ Cumulative emissions from activity-shifting leakage in forested areas at the end of the previous monitoring period	F.46	0
$P_{(L\ DEG)}^{[m]}$ Portion of leakage due to degradation in forest at the end of the current monitoring period	B.9	0.08
$P_{(L\ DEG)}^{[m=0]}$ Portion of leakage due to degradation prior to first verification event	B.9	0.0815

The assessment of the leakage has been done with the full review of spreadsheets calculations /7-9/. Complementary, GIS files /20-43/ has been checked to be contrasted with the boundaries of the project and the spreadsheet calculation.

The calculations have been reproduced according to the methodology used, and the verification team obtained the same results. Thus, AENOR considers that the leakage calculations were done correctly by the Project Proponent.

AENOR has checked the calculations provided and confirmed that this amount of leakage emissions is in conformance and have followed the methodology in the validated PD.

Net GHG Emissions Reductions

As indicated in Section 5.4 of the MR, net GHG emission reductions were calculated using equation F.53 of VM0009 v3.0.

$$E_{\Delta\ GER}^{[m]} = E_{B\ \Delta}^{[m]} - E_{P\ \Delta}^{[m]} - E_{L\ \Delta}^{[m]} - E_U^{[m]} \quad [F.53]$$

The confidence deduction based on uncertainty in emissions models, carbon stock estimates in the project accounting area and carbon stock estimates in the proxy area ($E_U^{[m]}$) was calculated per equation F.57.

$$E_U^{[m]} = E_{B\ \Delta}^{[m]} \left[\frac{1.64}{E_{B\ \Delta}^{[m]} + A_{PAA}C_P^{[m]} + A_{PX}C_B^{[m]}} \sqrt{(U_{EM}^{[m]})^2 + (U_P^{[m]})^2 + (U_B^{[m]})^2} - 0.15 \right] \quad [F.57]$$

The following table summarizes the uncertainty parameters calculated:

Parameter	Equation used (VM0009 v3.0)	Value (tCO ₂ e)
$E_U^{[m]}$ Confidence deduction based on uncertainty in emissions models, carbon stock estimates in the project accounting area and carbon stock estimates	F.57	0
$U_{EM}^{[m]}$ Total uncertainty in Baseline Emissions Models	F.14	0

$U_P^{[m]}$ Total uncertainty in project accounting area carbon stock estimate	B.10	25,071,680
$U_B^{[m]}$ Total uncertainty in proxy area carbon stock estimate	B.10	15,727

VCUs were estimated using equation F.55, in which emissions allocated to the buffer account are calculated using a non-permanence risk rating of 10% (see Section 4.6 of this report).

$$E_{\Delta NER}^{[m]} = E_{\Delta GER}^{[m]} - E_{BA}^{[m]} \quad [F.55]$$

The following table summarized the GHG emissions of the project calculated for the current monitoring period.

Year	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions (tCO ₂ e)	Buffer pool allocation	VCUs eligible for issuance
2022 (01-January 2022-31-December 2022)	2,267,514	-104,495	0	2,163,019	216,302	1,946,715
Capped	2,267,514	-104,495	0	1,514,113	151,411	1,362,702
Difference				648,906	64,891	584,015
Total				1,514,113	151,411	1,362,702

The net anthropogenic GHG reduction due to the project activity for the monitoring period (01-January 2022 to 31-December 2022) amount to 2,163,019 tCO₂e. The total number of buffer credits that need to be deposited into the AFOLU pooled buffer account are 216,302 and the VCUs eligible for issuance are 1,946,715.

However, and as expressed above, due to insufficient data available to close PRR finding 9 raised by Verra during its accuracy review (see PRR finding 9 in the Verra Registry publicly listed), a 30% discount deduction has been applied to the gross verified volume (before applying NPRR buffer deduction). As such, the gross figure (before deduction) would be 1,514,113 tCO₂e, whereas the net figure is 1,362,702 after buffer pool allocation (151,411 NPRR buffer pool allocation).

AENOR reproduced the calculations to achieve the same results and deems they are depicted clearly and correctly in the provided sheets. AENOR verification team was able to track through the calculations directly from the field measurements. The procedures used follow the MR, the PD and the methodology, like the default values used to determine the parameters, are appropriate. Thus, the net amount of VCUs to be issued is accurate and realistic.

AENOR verified the parameters available at validation, the values reported and the references to the documents where they are used or explained by reviewing, reproducing and crosschecking the evidence provided by the Project Proponent. AENOR checked that the values of these parameters are appropriately and correctly used in equations. Data and parameters available at validation are the ones stated in section 4.1 of the MR.

The data and parameters monitored to calculate the VCUs to be issued are the ones stated in section 3.1.2 of the MR. AENOR checked that the list of parameters to be monitored was complete and consistent with information in the monitoring plan of the PD.

Regarding the accuracy of spreadsheet, formulae /7-9/, conversions and aggregations and consistent use of data and parameters, the Project Proponent elaborated a complete procedure to assure the accuracy and appropriateness of data. During the verification process, AENOR not only verified the spreadsheet calculation, data and parameters but also the AENOR team could verify that the Project Proponent conducted a rigorous QC/QA procedure of its field measurements and an assessment of uncertainty. Thus, AENOR deems the Project Proponent performed good practices in this assessment and concludes that GHG reductions were quantified correctly in accordance with the project description and applied methodology.

AENOR verified the consistency and accuracy of each parameter detailed in it Section 4 of the MR by crosschecking the information in the MR with the information in PD as well as checking values and reproducing the calculations in the spreadsheet calculation package (see Appendix 1) and did not find inconsistencies. Therefore, AENOR deems that values reported for the parameters are accurate and consistent.

The following table summarize the data and parameters available at validation used by the Project Proponent to calculate the GHG emission reductions, which has been assessed by AENOR.

Data/Parameter available at validation	Value	Assessment procedure and result
α Combined effects of β and θ at the start of the historic reference period	0.3530 (unitless)	Value is consistent with the PD deviation updates as can be seen referred in Section 3.3 of this VCS verification report. It has also been correctly inputted in the calculation spreadsheets /7-9/

β Effect of time on the cumulative proportion of conversion over time	0.0003166	Value is consistent with the PD deviation updates as can be seen referred in Section 3.3 of this VCS verification report. It has also been correctly inputted in the calculation spreadsheets /7-9/
γ Time shift from beginning of historic reference period to project start date	10,589	Value is consistent with the PD /1/ Correctly inputted in the calculation spreadsheets /7-9/
λ_{SOC} Exponential soil carbon decay parameter	0.2	Value is consistent with the PD /1/ Correctly inputted in the calculation spreadsheets /7-9/
σ_{EM} Estimated standard deviation of the state observations used to fit the logistic function	0.442783	Value consistent with the PD deviation updates as can be seen referred in Section 3.3 of this VCS verification report. It has also been correctly inputted in the calculation spreadsheets /7-9/
B The set of all selected carbon pools in biomass. Is a subset of C	2	Correctly inputted in the calculation spreadsheets. /7-9/
C The set of all selected carbon pools	3	Correctly inputted in the calculation spreadsheets. /7-9/
J The set of all observations of conversion	13,194	Correctly inputted in the calculation spreadsheets. /7-9/
M The set of all monitoring periods	27	Correctly inputted in the calculation spreadsheets. /7-9/
A_{PAA} Cumulative size of all three activity instance project accounting areas. The accounting areas of the first, second and third project instances are 485,495 ha, 50,730 ha, and 122,856 ha respectively.	659,081	Value is consistent with validated PD and GIS data. /20-43/ Correctly inputted in the calculation spreadsheets. /7-9/
A_{PX} Area of proxy area	3,840	Value is consistent with validated PD, previous MR, and GIS data. /20-43/ Correctly inputted in the calculation spreadsheets. /7-9/

n_d Number of spatial points in the reference area	5,910	Value is consistent with remote sensing data /13/, as explained in the PD deviation section 3.3. As a new reference area (RA) has been delineated, the number of spatial points in the RA have increased from 2,600 to 5,910. Correctly inputted in the calculation spreadsheets. /7-9/
o_i State observation for the sample point in the reference area	0 or 1	Correctly inputted in the calculation spreadsheets. /7-9/
P_{LME} Portion of leakage related to market	0	Value is consistent with validated PD. /1/
q Lag between start of degradation and conversion	620	Value is consistent with validated PD. /1/ Correctly inputted in the calculation spreadsheets. /7-9/
r_{RS} Expansion factor for above-ground biomass to below-ground biomass (root/shoot ratio)	0.54	Value is consistent with validated PD and original source (Chidumayo, E. N. 2013). /14,15/ See Appendix 4 for assessing PRR finding number 10, related to the selection of this root-to-shoot ratio.
r_U Onset proportion of conversion immediately adjacent to project area	0.084 for PAI1 and 0.163 for PAI2 and 0.054 for PAI3	Value is consistent with validated PD. Correctly input in the calculation spreadsheets. /7-9/
t Time since project start date	2,800	Calculation reproduced. /7-9/ Value correctly estimated.
t_i The point in time of the observation made at point i	1-12,810	As stated in the VCS MR, the historical reference period stretches from May 4 th , 1986 to May 30, 2021, which is 12,810 days in total. These updates have been reflected in the PD deviation Section 3.3 of this verification report, in which a new reference area has been delineated. Correctly inputted in the calculation spreadsheets. /7-9/

t_{PL} Length of project crediting period	10957	Value is consistent with validated PD. Correctly inputted in the calculation spreadsheets. /7-9/
w_i Weight applied to the i th sample point in the reference area	Multiple values	Calculation reproduced. Values correctly estimated. /7-9/
$x_i y_i$ Latitude and Longitude of the i th sample point	Varies	GIS evidence /20-43/

The following table summarize the data and parameters monitored used by the Project Proponent to calculate the GHG emission reductions, which has been assessed by AENOR.

Data/Parameter monitored	Value	Assessment procedure and result
$A_{P1}^{[m=0]}$ Area of project accounting area stratum 1 prior to first verification event	485,495	Value is consistent with validated. PD and GIS data. /20-43/ Correctly inputted in the calculation spreadsheets. /7-9/
$c_B^{[m]}$ Baseline carbon stocks at the end of the current monitoring period	15.6	Calculation reproduced. /7-9/ Value correctly estimated.
$c_{BBGB}^{[m]}$ Carbon not decayed in BGB at the end of the current monitoring period	-67,841	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$c_{B SOC}^{[m]}$ Carbon not decayed in SOC at the end of the current monitoring period	-849,070	Calculation reproduced. /7-9/

		It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$C_{Bb}^{[m]}$ Baseline scenario average carbon stock in selected carbon pools	15.6	Calculation reproduced. /7-9/ Value correctly estimated.
$C_{BBM}^{[m]}$ Baseline carbon stocks in biomass at the end of the current monitoring period	15.6	Calculation reproduced. /7-9/ Value correctly estimated.
$C_{BSOC}^{[m]}$ Baseline soil carbon stocks at the end of the current monitoring period	210.6	Calculation reproduced. /7-9/ Value correctly estimated.
$C_P^{[m]}$ Project carbon stocks at the end of the current monitoring period	236.2 in intact forest and 15.2 in encroached forest	Calculation reproduced. /7-9/ Values correctly estimated. As stated in the VCS MR, a methodology deviation was applied so that forest carbon stock of PAI-1 can be also used for PAIs 2 and 3. As stated in the methodology deviation assessment, the VVB received the inventory carbon stocks raw data for PAIs 2 and 3, and it was witnessed that that carbon stocks for PAI 1 is lower than carbon stocks for PAIs 2 and 3, being a conservative approach until the PP updates the datasets in the next verification.
$C_P^{[m-1]}$ Project carbon stocks at the beginning of the current monitoring period	236.2 in intact forest and 15.2 in encroached forest	Calculation reproduced. /7-9/ Values correctly estimated.

		As stated in the VCS MR, a methodology deviation was applied so that forest carbon stock of PAI-1 can be also used for PAIs 2 and 3. As stated in the methodology deviation assessment, the VVB received the inventory carbon stocks raw data for PAIs 2 and 3, and it was witnessed that that carbon stocks for PAI 1 is lower than carbon stocks for PAIs 2 and 3, being a conservative approach until the PP updates the datasets in the next verification.
$C_p^{[m=0]}$ Project carbon stocks prior to first verification event	236.2	Calculation reproduced. /7-9/ Value correctly estimated.
$C_{P1BM}^{[m=0]}$ Project carbon stocks in stratum 1 prior to first verification event	236.2	Calculation reproduced. /7-9/ Value correctly estimated.
$C_{PBM}^{[m=0]}$ Project carbon stocks in biomass prior to first verification event	114,668,494	Calculation reproduced. /7-9/ Value correctly estimated.
$C_{Pb}^{[m]}$ Average carbon in biomass in the project accounting area	236.2	Calculation reproduced. /7-9/ Value correctly estimated.
$C_{P1b}^{[m]}$ Average carbon in biomass for project accounting area stratum 1	236.2	Calculation reproduced. /7-9/ Value correctly estimated.
$C_{PSOC}^{[m=0]}$ Project soil carbon stocks prior to first verification event	235.2	Calculation reproduced. /7-9/ Value correctly estimated.
$E_{\Delta GER}^{[m]}$ GERs for the current monitoring period	1,514,113	Calculation reproduced. /7-9/ Value correctly estimated.

		It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_{\Delta GER}^{[i]}$ GERs for monitoring period i	102,251,032	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_{\Delta NER}^{[i]}$ NERs for monitoring period i	91,697,667	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_B^{[m]}$ Cumulative baseline emissions at the end of the current monitoring period	11,699,622	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_B^{[m-1]}$ Cumulative baseline emissions at the beginning of the current monitoring period	9,432,108	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_{B\Delta}^{[m]}$ Change in baseline emissions	2,267,514	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.

$E_{B\Delta BGB}^{[i]}$ Change in baseline emissions from below-ground biomass during monitoring period i	4,010,031	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_{B\Delta SOC}^{[m]}$ Baseline change in emissions from soil carbon	232,817	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_{B\Delta SOC}^{[i]}$ Baseline emissions from soil carbon in monitoring period i	1,180,491	Calculation reproduced. /7-9/ Value correctly estimated.
$E_{BBGB}^{[m]}$ Cumulative baseline emissions from below-ground biomass at the end of the current monitoring period	3,942,220	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_{B\ BBGB}^{[m-1]}$ Cumulative baseline emissions from below-ground biomass at the beginning of the current monitoring period	3,203,934	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_{BBM}^{[m]}$ Cumulative baseline emissions from biomass at the end of the current monitoring period	11,368,203	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.

$E_{BSOC}^{[m]}$ Cumulative baseline emissions from soil carbon at the end of the current monitoring period	1,135,047	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_{BSOC}^{[m-1]}$ Cumulative baseline emissions from soil carbon at the beginning of the current monitoring period	947,674	Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_{BA}^{[m]}$ Cumulative emissions allocated to the buffer account at the end of the current monitoring period	-1,164,534	Consistent with Non-permanence risk report. /4/ Calculation reproduced. /7-9/ Value correctly estimated. It is relevant to highlight that a PD deviation has been included in Section 3.3 of the VCS verification report, related to the delineation of a new RA.
$E_L^{[m]}$ Cumulative emissions from leakage at the end of the current monitoring period	0	Calculation reproduced. /7-9/ Value correctly estimated.
$E_L^{[m-1]}$ Cumulative emissions from leakage at the beginning of the current monitoring period	0	Calculation reproduced. /7-9/ Value correctly estimated.
$E_{L\Delta}^{[m]}$ Change in emissions due to leakage	0	Calculation reproduced. 7-9/ Value correctly estimated.
$E_{LASF}^{[m]}$ Cumulative emissions from activity-shifting leakage in forested strata at the end of the current monitoring period	0	Calculation reproduced. /7-9/ Value correctly estimated.

$E_{LME}^{[m]}$ Cumulative emissions from market leakage at the end of the current monitoring period	0	Calculation reproduced. /7-9/ Value correctly estimated.
$E_{PA}^{[m]}$ Change in project emissions	-104,495	Calculation reproduced. /7-9/ Value correctly estimated.
$E_{PA\Delta BRN}^{[m]}$ Cumulative project emissions due to burning at the end of the current monitoring period	0	Calculation reproduced. /7-9/ Value correctly estimated.
$E_U^{[m]}$ Cumulative confidence deduction at the end of the current monitoring period	0	Calculation reproduced. /7-9/ Value correctly estimated.
$P_{LDEG}^{[m]}$ Portion of leakage due to degradation at the end of the current monitoring period	0.08	Calculation reproduced. /7-9/ Value correctly estimated.
$P_{LDEG}^{[m=0]}$ Portion of leakage due to degradation prior to first verification event	0.0815	Consistent with previous MR. Correctly inputted in the calculation spreadsheets. /7-9/
$t^{[i-1]}$ Time from the project start date to beginning of monitoring period i	0	Correctly inputted in the calculation spreadsheets. /7-9/
$t^{[m]}$ Time from project start date to end of current monitoring period	PAI1 = 2,800 PAI2 = 507 PAI3 = 364	Calculation reproduced. /7-9/ Value correctly estimated.
$t^{[m-1]}$ Time from project start date to beginning of current monitoring period	PAI1= 2,436 PAI2 = 143 PAI3 = 0	Calculation reproduced. /7-9/ Value correctly estimated.
$U_B^{[m]}$ Total uncertainty in proxy area carbon stock estimate	15,727	Calculation reproduced. 7-9/ Value correctly estimated.
$U_{EM}^{[M]}$	14,616	Calculation reproduced. /7-9/ Value correctly estimated.

Total uncertainty in Baseline Emissions Models		
$U_p^{[m]}$	25,071,680	Calculation reproduced. /7-9/ Value correctly estimated.
Total uncertainty in project accounting area carbon stock estimate		

AENOR assessed the PALSAR Deforestation analysis described in section 1.1.2 of the PD as the source of the r_U values and outlined Steps for the R_u value calculation that included mapping of deforested area using PALSAR deforestation analysis, calculating the size and then computing the ratio of converted area to the difference between the accounting area and the converted area. Aenor further did not find inconsistencies between the PD, technical annex, monitoring report and spreadsheet calculation.

On the accuracy of the of the mapping products, the PP described in Section 5.2 and 3.2.2 of the MR the incorporation of the Planet-NICFI mosaics dataset in the forest disturbance monitoring process/accuracy assessment procedure/results and Corresponding project description deviation, respectively. The accurate analysis of forest disturbance was assessed by combining satellite imagery, field data, and additional datasets, the project increases the reliability of its forest disturbance results. The involvement of multiple PP assessors, with massive experience in the Forestry/ GIS and RS, further enhanced the precision of the assessment.

After thorough review and reproduction of calculations and the corresponding tracks to the other spreadsheets, AENOR deems the parameters monitored and available at validation are correct, reliable, and consistent. Information in the monitoring report follows the PD, the calculations provided and the applicable methodology. Thus, the results showed in the monitoring report are reliable, consistent, and accurate.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The data and parameters used to determine GHG emission reductions are listed in Section 4 of the MR.

During AENOR's verification, the evidence provided by the Project Proponent was enough in both quantity and quality to support the determination of GHG emission reductions reported by the project.

Quality assurance and control is an essential part of company procedures to assure the accuracy of inventory data, modeling results, and carbon accounting. Quality assurance procedures are done to minimize and correct any potential data transcription, calculation, or formatting errors that may result in inaccurate carbon accounting results.

Most field data is collected using digital tools on smart phones and are either directly loaded to the database or saved on G-Drive where it is checked and then transferred to the database. All data submitted to the central database is subjected to quality control by appropriate staff. The Project Proponent has developed SOP and Field manuals which /51/ covers all aspects related to carbon inventory. Spot checks and internal audits are conducted to make sure all data collection is carried out following the standards.

In accordance with VCS, the Project Proponent is committed to storing all project data in a secure and retrievable manner for at least two years after the end of the project crediting period. To facilitate project management and long-term accounting, all primary data outputs supporting annual verification including the spatial database is stored and maintained.

Roles and responsibilities are clearly identified in the MR. QA/QC procedures were developed by the Project Proponent for maintaining consistency and quality of field inventories over time. Interviews with the Project Proponent and inspection of data and results demonstrated that the Project Proponent possess all the competencies required for reporting of GHG emissions reductions in an accurate way.

Data presented to the audit team were clear and coherent and processing steps could be traced to the corresponding sections of the methodology and monitoring plan with transparency.

Above procedures to ensure this are described in Section 4 of the MR, in terms of general QA/QC of the monitoring plan and specific QA/QC procedures applied to data and parameters monitored.

Throughout the verification, the Project Proponent demonstrated commitments towards conservativeness and took all measures appropriate to ensure the reliability of evidence provided. Interviews conducted (oral evidence) are outlined in Section 2.4 of this report, and the final documents received from the Project Proponent supporting the determination of GHG reductions have been outlined in Appendix 1.

AENOR deems that the Project Proponent performed good practices in this assessment and concludes that GHG reductions were quantified correctly in accordance with the PD and applied methodology, and that the evidence is sufficient in quantity and appropriate in quality to determine the GHG reductions of the project.

4.6 Non-Permanence Risk Analysis

The Project Proponent has elaborated a VCS Non permanence Risk Report (NPRR) for the validation process according to the AFOLU Non-Permanence Risk Tool v4.0. As required by the VCS Program, the non-permanence risk rating is reassessed for each verification event.

Below, it is explained the assessment and the issues raised on regard the non-permanence risk rating determined by the Project Proponent in the NPRR.

Risk factor	Risk Rating	Assessment
Internal Risks		
Project Management: It is assessed using table 1 of the VCS AFOLU Risk Tool.	-4 (total may be less than zero)	a-d) Not Applicable. Risk rating=0 is justified. As the audit team assessed, the project is implemented on both chiefdom land and private land. No planted trees are used for GHG credits generation. For M1-M5 monitoring periods, the cumulative encroachment in the project area has been under 1 %, thus enforcement is only required to minimize further encroachment but not to protect more than 50% of stocks on which GHG credits have previously been issued. The audit team met and interviewed a part of the scout team, who patrols the project area. e) BCP has its head office based in Lusaka, then a field office in about an hour drive to Chinzete and another carbon field office in Mpanshya three hours' drive to Mpanshya/Shikabeta project area while in Mfuwe, 12 hours' drive to Mfuwe, another field office. There are well trained, experienced staff based at the field offices responsible for day-to-day management plus a Community Engagement Team living within the neighboring communities, as the audit team could assess during the April 2023 on-site visit. The Carbon Accountants have a proven track record in REDD+ verification, having been involved in one of the biggest VCS REDD+ projects in Africa, Luangwa, also under verification by a similar audit team from AENOR. BCP's Carbon Team is responsible for verifying the LCFP in the past years. The audit team has reviewed the CVs of relevant staff /132/. Risk rating=-2 is justified. f) The LCFP has an overall Environmental Management Plan /62-64/ (reviewed by the audit team) in place that has been submitted to the relevant authorities that outlines the basic adaptive management strategy followed by BCP to ensure successful management of the project. Management holds regular meetings (at least every quarter) to review the impact of project activities. There are several other SOPs for specific components such as forest monitoring and community engagement /2, 93,103/ (reviewed by the audit team as well) all of which describe monitoring feedback systems that ensure corrective actions are taken. Risk rating=-2 is justified. Total Project Management (PM) [as applicable, (a + b + c + d + e + f)]= -4

Financial viability: It is assessed using table 2 of the VCS AFOLU Risk Tool.	0 (total may not be less than zero)	a)-d) The LCFP project has already reached the breakeven point in 2018, and cashflow in the future is predicted to remain positive. Risk rating=0 is justified. e)-h) The project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven. Risk rating=0 is justified. i) The PP has established a not-for-profit organization (BCP Trust) to help counter the risk of low carbon prices affecting community benefits from the project. The Trust has leveraged donor funds specifically to support and build upon community benefits. To date, the Trust has benefited from the support of local donors such as USAID, Mills Foundation, CSEF and Musika. The project is also diversifying revenues into other enterprises (namely beekeeping, climate smart farming) to mitigate the risk of low carbon prices. In addition, the project invests in marketing the project and its strategic conservation and poverty reduction benefits to seek higher credit prices. Risk rating=-0 is justified. Total Financial Viability (FV)=0

Opportunity Cost: It is assessed using table 3 of the VCS AFOLU Risk Tool.	-2 (total may be less than zero)	a)-d) The baseline activities in the project areas is subsistence driven, as was acknowledged by the audit team during the on-site visit in April 2023. The MR covering this monitoring period lists all activities that are having positive community impacts and BCP has consulted extensively with all community stakeholders in order to understand the drivers of deforestation within the project zone and to formulate the most efficient mitigation strategy and beneficial projects, as the audit team could acknowledged during the April 2023 on-site visit, as per the different interviews that happened in the project area. The project certainly has positive socio-economic benefits and has been formerly certified under the CCBA Standard and received Gold validation for community benefits. BCP has a highly qualified and experienced team that have worked on conservation and natural resource management projects in Zambia and across Africa. This team has already started implementing several pilot projects within a very short space of time. Risk rating=0 is justified. e-h) Only projects that have written approval from local residents are implemented (as local stakeholders confirmed to the audit team), and the link between interventions and deforestation mitigation efforts is further cemented through the signing of Community Covenants, and MOUs under the Government laws that oblige both BCP and participants to comply with project guidelines and connect community benefits to forest protection efforts.
		Risk rating=-2 is justified. i) Not applicable

Project Longevity: It is assessed using table 4 of the VCS AFOLU Risk Tool.	15 (total may not be less than zero)	a) Not applicable b) The project is being implemented on both chiefdom land and private land /44-61/ (as reviewed by the audit team on several occasions) and the PP has a long term carbon rights agreement in place with the title deed holders. The contractual agreement is for a 30-year project. Activities will be carried out initially for 30 years. A long-term active adaptive management plan covering the project period is in place for LCFP and has been submitted to the Zambian Forestry Department and the Climate, Community and Biodiversity Alliance (CCBA) /40/. The long-term financial plan has been submitted to a financial institution in Zambia, AMOCPA Certified Public Accountants in agreement with requirements of the VCS (relevant evidence has been shared with the audit team) Risk rating=15 is justified.
Total internal risk=9 (total may not be less than zero)		
External Risks		

Land Tenure and resources access/impact: It shall be assessed using table 6 of the Risk Tool.	0 (total may not be less than zero)	The 12 partner chiefdoms, where the project areas are located, have free and clear title deed /44-61/. The boundaries have been demarcated with full consultation with local leaders, DNPW and DFO have acknowledged during the audit team April 2023 onsite visit. Zambia has strong investment protection laws and the project proponent has been awarded an Investment Licence from the GRZ. This reduces the risk of expropriation. The partner chiefdoms and the private land have already been through a legal suit and upheld their integrity. Through BCP, the properties are covered by BCP's Investment Protection Certificate which further reduces the risk of appropriation. It is highly unlikely that this land risks expropriation again. In addition, the project invests in publicizing the project locally and internationally to ensure that the GRZ remains aware of the values that this project is providing the Nation as the country's first REDD+ project. The Project is building a positive, lasting relationship with neighbouring communities and the Government of Zambia to ensure that the chiefdom lands are conservative, productive and beneficial to the Nation. a) Not Applicable. Risk rating=0 is justified.
Risk factor	Risk Rating	Assessment
		b) Risk rating=2 is justified. c)-d) Not Applicable. Risk rating=0 is justified. e) Not applicable. f) Risk rating=-2 is justified. g) Not applicable.

		Total Land Tenure (LT)=0
Community engagement: It shall be assessed using table 7 of the Risk Tool.	-5 (total may be less than zero)	In an initial survey of people in the project zone in 2015, a very high proportion of households bordering the project area were consulted in an area extending 20 km north of the project boundary and 95% have agreed to the implementation of the LCFP (the audit team accessed relevant evidence from the CCB MR). None of the households were dependent on the conservancy, but the few that illegally settled within the project boundary prior to the project start and have been consulted about the project. The survey was redone and 91% of the respondents were aware that the project is protecting the conservancy and 96% said they supported the project. Direct dependency on the project accounting area is too low to show up in survey data. It mostly consists of illegal poaching and illegal timber felling. Community scouts patrol the conservancy to prevent such activities. While patrol records show that the number of man days used for conservation activities in the conservancy has greatly increased, the poaching of wild animals and illegal logging has not increased. a) Not applicable. Risk rating=0 is justified. b) Not applicable. Risk rating=0 is justified. c) The project generates net positive impacts on social and economic well-being of local communities, and the project is
Risk factor	Risk Rating	Assessment
		validated under the CCB Standards and verified. Risk rating=-5 is justified.

Political Risks: It shall be assessed using table 8 of the Risk Tool.	2 (total may not be less than zero)	a-e) Zambia presents a score of -0.46 according to the World Bank Institute's Worldwide Governance Indicators. AENOR verified the value and reliability of source. Risk rating=4 is justified. f) Zambia was one of the first nine UN-REDD Pilot Countries in the World and there is a high level of interest within government for REDD+ pilot projects. This project is significant in that it is the first REDD+ project in Zambia. It is therefore strategic as a sub-national project which aims to support and feed into the design of a national REDD+ program. The project benefits from solid government support and interest for learning reasons. The project proponent is investing significantly in ensuring that the GRZ is kept well informed of this project, and the project's goals to contribute to national development goals and the national REDD+ strategy. Risk rating=-2 is justified.
Total external risks=2 (Total may not be less than zero)		
Natural risks		
Fire Risk: It shall be assessed using table 10 of the Risk Tool.	LS*M=0.25	The likelihood of a natural fire is every 10 to less than 25 years, being insignificant to carbon stocks. The project is implementing significant fire mitigation activities, as can be seen in the NPRR /4/. Thus LS= 1 is reasonable. Mitigation (M) measures: 0.5
Pest and disease outbreaks: It shall be assessed using table 10 of the Risk tool.	LS*M=0	This risk is considered unlikely, there are no records of disease or pest outbreaks causing any significant impacts (>5%) to carbon stocks in Miombo woodlands. No known literature has documented forest disturbance from pests and diseases in the project area. The audit team visited the project area and asked relevant stakeholders if they know any kind of pest and diseases that are affecting the project area or nearby, and they stated the same information reported in the NPRR /2/. Thus LS= 0 is reasonable. Mitigation (M) measures: Not Applicable

Extreme weather: It shall be assessed using table 10 of the Risk tool.	LS*M=0	Zambia is not impacted by hurricanes. Droughts could possibly be considered an extreme weather phenomenon. However, this risk is considered unlikely and there are no records of drought causing any significant impacts (>5 %) to carbon stocks in Miombo woodlands. No known literature has documented forest disturbance from extreme weather conditions in the project area. The audit team visited the project area and asked relevant stakeholders if they know any kind of extreme weather that is affecting the project area or nearby, and they stated the same information reported in the NPRR /2/.
Risk factor	Risk Rating	Assessment
		Thus LS= 0 is reasonable. Mitigation (M) measures: Not Applicable
Geological risks: It shall be assessed using table 10 of the Risk Tool.	LS*M=0	Zambia is geologically stable and the risk of earthquakes and volcanoes occurring is unlikely. There is therefore, no risk of significant (>5 %) impacts on carbon stocks in the project area due to geological phenomena. Thus LS= 0 is reasonable. Mitigation (M) measures: Not applicable
Other – Elephant Impacts	LS*M=0	There are elephants in the project area. The impact of elephants on woody vegetation is a hotly debated topic in African conservation. Elephants do have some impact on woody species density (Guldemond & Van Aarde 2008). What needs to be kept in consideration is that large tracts of miombo woodland remain intact, despite the presence of elephants (Ribeiro et al. 2008), as the audit team acknowledged during the April 2023 on-site visit. It is unlikely that elephants will increase to such high numbers as to threaten the existence of the project. A simulation model based on studies of Miombo in Zimbabwe has found that elephants at a density of >2 per km² can convert woodland to shrubland in a 10-year period and at densities around 0.27 per km² it will take 120 years to convert to shrubland (Mapaure 2013). Elephants do not occur at such densities in the project area. If large numbers of elephants do start entering the project area, this risk will be mitigated by managing the population through introduction of a rotational grazing system by opening and closing access to artificial water points.

		Thus LS= 0 is reasonable. Mitigation (M) measures: 0.5
Total natural risks=0.5		
OVERALL RISK RATING=9+0+0.5=9.5. Then an overall risk rating of 10% is considered.		

AENOR has checked that information provided in the NPRR for the monitoring period is consistent with supporting documents provided. The assumptions and justifications provided to determine the risk rating of each risk factor have been elaborated and they are based on provided documents using conservative assessments. AENOR deems that information provided is reliable and appropriate from reliable sources, thus, the overall risk rating is credible and realistic. Thus, the overall risk rating of 10% is credible and realistic.

5 VERIFICATION OPINION

The Project Proponent provided all the necessary materials for assessment of project information, procedures, calculations, and supporting documentation and the interview process, AENOR confirms that the monitoring conducted by the Project Proponent, along with the supporting Monitoring Report, are accurate and consistent with VCS Version 4.4, the validated PD, and the selected methodology (methodology VM0009 Methodology for Avoided Ecosystem Conversion, v3.0 of 6 June 2014). AENOR confirms that the Luangwa Community Forests Project Monitoring Report has been implemented in accordance with the validated PD.

AENOR confirms all verification activities, including objectives, scope and criteria, level of assurance, monitoring, and project documentation adherence to VCS Version 4 (and all associated updates), as documented in this report are complete. AENOR concludes without any qualifications or limiting conditions that the Luangwa Community Forests Project meets the requirements of VCS Version 4 (and all associated updates) for the monitoring period (01-January-2022 to 31-December-2022).

The verification of the ex-post emissions of the Luangwa Community Forests Project has been conducted by AENOR in accordance with ISO 14064-3:2019.

The GHG assertion provided by the project proponent and verified by AENOR has resulted in a total net GHG Emission Reductions of 2,163,019 tCO₂e by the project during the monitoring period (01-January-2022 to 31-December-2022). Considering 10% of buffer withholding based on the VCS Non-Permanence Risk Assessment Tool v4.0, which means a buffer allocation of 216,302 tCO₂e, the Verified Carbon Units (VCU) to be issued are 1,946,715.

However, due to insufficient data available to close PRR finding 9 raised by Verra during its accuracy review (see PRR finding 9 in the Verra Registry publicly listed), a 30% discount deduction has been applied to the gross verified volume (before applying NPRR buffer deduction). As such, the gross figure (before deduction) would be 1,514,113 tCO₂e, whereas the net figure is 1,362,702 after buffer pool allocation (151,411 NPRR buffer pool allocation).

It is opinion of AENOR, with a reasonable level of assurance, that the reasonableness of assumptions, the described limitations, the methods that supported each one of the claims about the outcome of future activities and the claimed ex-post emissions reductions are free from major errors, omissions, or inaccuracies.

Verification/monitoring period: From 01-January-2022 to 31-December-2022.

Verified GHG emission reductions in the above verification period:

Year	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions (tCO ₂ e)	Buffer pool allocation	VCUs eligible for issuance
2022 (01-January 2022-31-December 2022)	2,267,514	-104,495	0	2,163,019	216,302	1,946,715
Capped	2,267,514	-104,495	0	1,514,113	151,411	1,362,702
Difference				648,906	64,891	584,015
Total				1,514,113	151,411	1,362,702

Ex-ante emissions reductions	Achieved emissions reductions	Percent difference	Justification for the difference
2,267,514	2,163,019 ⁷	4.64 %	The audit team has received several documents (see Appendix 1, referring to all the spreadsheet calculations, including deforestation monitoring, biomass data, calculations for PAI1, PA2 and PAI3, the CDM imagery interpretation for constructing a new reference area and the uncertainty calculations, among others). Thus, achieved emissions reductions were less than those estimated ex-ante, as project emissions were under-estimated ex-ante.

⁷ Due to insufficient data available to close PRR finding 9 raised by Verra during its accuracy review (see PRR finding 9 in the Verra Registry publicly listed), a 30% discount deduction has been applied to the gross verified volume (before applying NPRR buffer deduction). As such, the gross figure (before deduction) would be 1,514,113 tCO₂e (instead of 2,163,019 tCO₂e), whereas the net figure is 1,362,702 after buffer pool allocation (151,411 NPRR buffer pool allocation).

Net GHG Emission reductions: **1,514,113 tCO₂e.**

Overall non-permanence risk rating: **10%**

VCUs buffer to be deposited: **151,411 tCO₂e.**

Total VCUs to be issued: **1,362,702.**

Date: 31 July 2024



Lead Auditor

Daniel Bermejo



Lead auditor (In supervision)

Daniel Masika

APPENDIX 1: LIST OF EVIDENCE ASSESSED

	Project document, MR and NPRR
1	PD
2	20240327_LCFP_VCS_MR_M5_v1.4_Clean
3	Previous verification report M4
4	2024019_LCFP_M5_NonPermRisk_Report_V1_BK
5	Non-permanence risk tool version 4.0
	Carbon Inventory, NER Calculations, Biomass and leakage plots.
6	LCFP Field raw data biomass M5_BK
7	20230417_LCFP_ER_Calc_M5_FirstActivityInstance_BK
8	20240417_LCFP_ER_Calc_M5_SecondActivityInstance_BK
9	20240417_LCFP_ER_Calc_M5_ThirdActivityInstance_BK
10	Spreadsheet master_biomass_summary_project_updated_with_soil_M4 v3
11	Spreadsheet master_biomass_summary_project_updated_with_soil_M5
12	20230417_LCFP_ER_Calc_M5_NumericOutput_Combined_BK
	Deforestation Monitoring Spreadsheet v1_LCFP_2022
	20220605_Acc_Assessment_def.shp
	20230302_LCFP_deforestation.shp
	20230601_LCFP_deforestation_GRIDS.shp
	Sentinel_2_images.folder (x12)
	20240305_Manual_Deforestation_Mapping_V2.pdf
	Lu_et_al_2017.pdf
13	Olofsson_et_al_2020.pdf
14	Chidumayo 2013 allometry paper.
15	Chidumayo Estimating AG and BG biomass after clearing Miombo Envirolet_2013
16	Mugasha et al 2013 Miombo Allometry
17	BCP Biomass sampling SOP June 2019 v3
18	BCP Spot error protocol Jan 2014
19	Biomass sampling allometry validation V1
	GIS
20	2007-2017 forest loss
21	2016-2022 deforestation
22	20230317_LCFP_instance3_accounting_areas.cpg
23	20230317_LCFP_instance3_accounting_areas.csv
24	20230317_LCFP_instance3_accounting_areas.dbf
25	20230317_LCFP_instance3_accounting_areas.prj
26	20230317_LCFP_instance3_accounting_areas.qmd
27	20230317_LCFP_instance3_accounting_areas.shp
28	20230317_LCFP_instance3_accounting_areas.shx
29	20230317_LCFP_instance3_accounting_areas.xlsx
30	2020230317_LCFP_instance3_project_areas.(cpg, dbf, prj, qmd, shp, shx)
31	2020230317_LCFP_instance3_Threatened_boundaries.(cpg, dbf, prj, qmd, shp, shx)

32	2020230324 LCFP instance3 forest areas 2022.(cpg, dbf, prj, qmd, shp, shx)
33	2020230324 LCFP instance3 forest areas csv, qmd
34	2021 leakage plots replacements.(cpg, dbf, prj, qmd, shp, shx)
35	GIS 20211114 Leakage area M4 (shp, shx)
36	20190610 Proxy area .(cpg, dbf, prj, qmd, shp, shx)
37	GIS 20190612 LCFP Instance1 Project area .(cpg, dbf, prj, qmd, shp, shx)
38	GIS 20220324 LCFP Instance2 Project area .(cpg, dbf, prj, qmd, shp, shx)
39	20230215 LCFP Leakage area M5.(cpg, dbf, prj, shp, shx)
40	GIS LCFP proxy plots .(cpg, dbf, prj, qmd, shp, shx)
41	GIS LCFP Instance1 Accounting Area.(cpg, dbf, prj, qmd, shp, shx)
42	20190809 accounting area plots .(cpg, dbf, prj, shp, shx)
43	GIS LCFP soil proxy plots.(cpg, dbf, prj, qmd, shp, shx)
	Landowners and Community structures
44	CFMG-Shikabeta-CRB constitution and chiefdom
45	CFMG-Sandwe-approved rights and CFMA
46	CFMG-Nyalugwe-CRB constitution and approved rights and CFMA
47	CFMG-NSEFU- CRB constitution, CRB approved rights, CFMA and BCP FMA
48	CFMG-Mwanya-CRB constitution, approved rights and chiefdom
49	CFMG-Msoro- CRB constitution, CRB approved rights and BCP FMA
50	CFMG-Mpanshya-CRB constitution and chiefdom
51	CFMG-Mnkhanya- CRB constitution, CRB approved rights, CFMA and BCP FMA
52	CFMG-Malama-CRB constitution and CFMA
53	CFMG-Luembe-CRB constitution, CFMA and chiefdom
54	CFMG-Jumbe-CRB constitution, CFMA and chiefdom
55	CFMG-Chitungulu CFMA
56	Piamanzi wildlife ltd title deeds
57	Munyamadzi final CRC
58	Map for application for private forest registration
59	Luembe Chiefdom munyamadzi lease signed
60	Chilinga reserve agreement
61	Carmen Casili Piamanzi agreement POA
	Management and implementation plan and status and 2022 Infrastructural projects
62	2022 Nyimba engagement tracker
63	2022 Chinyunyu engagement tracker
64	2022 Mfuwe site engagement tracker
65	Support to delivery of social services (skills training and education support, procurement of banana boats and iron sheets distribution)
66	Solar fences (Chitungulu and Mwanya needs assessment, beneficiary list and picture)
67	Tertiary education support
68	Sinking of boreholes in 10 locations
69	Sandwe staff house at Lumbuka community school
70	Procurement of banana boat
71	Rehabilitation of Nyalugwe Health Centre
72	Lukusuzi health post

73	Rehabilitation of 1x3 classroom block
74	Rehabilitation works at Chinzete wildlife camp Mpanshya VAG
75	Construction of toilets at Mshalila Primary school and the clinic
76	Construction of staff house at Ngambwa school
77	Construction of maternity annex
78	Construction of incinerator
79	Construction of market shelter
80	Construction of CRB offices
81	Construction of 2 scout Houses
82	Horticulture (trainings, input beneficiaries, initiatives and registers)
83	Finance (carbon certificates and carbon fees summary)
84	Crop assessments (2022 Harvest report and 2021 crop yield estimates)
85	Construction and rehabilitations of Wildlife camp (Hand over)
86	Conservation patrols (Msoro aerial flight, Smart reports 2020-2022)
87	Conservation farming (CSA training, inputs, lead CSA farmers register)
88	Bee keeping (Training, delivery notes 2022, honey harvest and farmer data 2022)
	2022 Communication SOPs, notices and grievances resolution
89	20190708 VCS multi proponent communication agreement signed
90	2018 BCP Grievances SOP/mechanism
91	FPIC SOP V7
92	FPIC SOP D6
93	Social monitoring SOP V4 community engagement strategy 2013.03
94	LCFP M5 2022 Grievances register.
95	2022 grievance response letter
96	DC grievance investigation Memo
97	Mf_Ma Grievance resolution Chipako DC
98	Signed grievance response on LT recruitment from DC Mambwe District
99	MFU grievances response letter LT recruitment NH
100	Interview report LT EP
101	Mf_Ma Grievances resolution Malama LN DK
102	Mfu_Ma Grievances response
103	Mfu_Ma Post fire review meeting
104	Malama Grievances
105	Letter to Mwanya
106	Letter from DNPW requesting BCP to fund the audit
107	Grievance letter signed
108	BCP audit review report
109	Grievance close out Mwanya
110	Mwanya DNPW audit review report
111	Grievance registration from Mwanya
112	Investigation form
113	Grievance registration and closure form
114	Nyimba chikwacha grievance resolution signed.

115	Stakeholder grievance investigation
116	Mpanshya Grievance closure Doc.
	FPIC. Government consultations and Consent letters
117	Attendance register 2017.03.22 NYI CET CFG Chief Nyalugwe Consultative meeting.
118	Attendance sheet 2015 08 06-12 MFU Forest demarcation report HY2
119	Attendance register 20150925-10.05 MFU Mwanya community PFMP meeting
120	Attendance sheet 2015.10.09 Draft PFMP review meeting
121	20140813 CFP Rufunsa forest selection process
122	20160212 Malama pre FPIC report
123	20151214 Attendance Q1stakeholders planning and review meeting.
124	20151009 draft PFMP review meeting
125	20151023 GRZ BCP work planning meeting Attendance.
126	Nsefu Consent letter
127	Government ministry consent letter
128	Lundazi District Consent letter
129	Eastern Province Consent letter
130	20160808 DNPW REDD Authority
131	20170726 Authority to carry out a REDD+ project.
	Staff profiles and improvements
132	BCP staff profiles
133	FMT 2022 training report Field based carbon stock assessment refresher training
134	LCFP_Community Needs Assessment Report.pdf
135	SOP and Field Manuals
136	UNIQUE drivers and agents study (Analysis of agents, drivers, and underlying causes of deforestation for VCS Methodology VM0015 for BCP Community Forests Program)
	PRR supporting evidence
137	Copy of 20180319_BCP_CFP_Drivers study_report_final.pdf
138	20240406_lcfp_Instance2&3_BiomassData.xlsx
139	1. Baccini_et_al_2012.pdf 2. Bouvet_et_al_2018.pdf 3. Bulusu_et_al_2021.pdf 4. Handavu_2021.pdf 5. Missanjo_et_al_2015.pdf 6. Munishi_et_al_2011.pdf 7. Saatchi_et_al_2011.pdf 8. Avitabile_et_al_2016.pdf
140	Initial_CDM.folder: 1. 20200515_CDM_image_interpretation.xlsx 2. Copy of 20190708_CDM_image_interpretation.xlsx 3. Copy of 20190708_R-Model_Input_CDM_Points.csv 4. Copy of 20200515_CDM_image_interpretation.xlsx 5. Copy of LCFP CDM Point Interpretation SOP.docx 6. Copy of LCFP_Annex_cdm_v2.0.R

	7. Copy of logistic model summary_after_recode.txt 8. Copy of Phased_logistic.curve_after_recode.png 9. Copy of proportion.deforestation_after_recode.txt
141	Updated_CDM.folder: 1. 20240214_LCFP CDM Point Interpretation SOP .docx 2. 20240214_LCFP CDM Point Interpretation SOP .pdf 3. 20240410__BCP_LCFP_M5_CDM_Update_Accuracy_Assessment_BK.xlsx 4. 20240410_LCFP_M5_CDM_Update_Image_Interpretation_BK.xlsx 5. 20240410_R_Model_Input_CDM_points.csv 6. LCFP_Annex_cdm_v2.0.R 7. logistic model summary_after_recode.txt 8. Phased_logistic.curve_after_recode .png 9. proportion.deforestation_after_recode.txt
142	Ref_Area_Selection/Population_Data.folder: 1. 1990 Census of Population and Housing, Agriculture - Volume 10 Part B(1).pdf 2. 1990 Census of Population and Housing, Agriculture - Volume 10 Part B.pdf 3. 1990 Census of Population and Housing, and Agriculture - volume 10 Part A.pdf 4. 2000-Census-of-population-and-housing-report.pdf 5. 2010-Census-of-Population-Summary-Report.pdf 6. 2022-Census-of-Population-and-Housing-Preliminary.pdf 7. 20240411_Population_Data_1980_1990_2000_2010_2022_BK.xlsx
143	Ref_Area_Selection/Spatial_Data.folder: 1. 20240327_LCFP_Reference_Area_Administrative_Wards.shp 2. 20240402_LCFP_Roads_Updated2021.shp 3. 20240402_SEDAN_1980_2010_Roads.shp 4. 20240326_LCFP_Reference_Area.shp 5. 20240327_LCFP_Project_Reference_Administrative_Wards.shp 6. Popward.shp
144	20240209_LCFP_Project_Areas (Instances_1_2_&_3).shp
145	20240214_LCFP_Initial_Ref_CDM_image_interpretation_pixel_Grids.shp
146	20240214_LCFP_Initial_Ref_CDM_image_interpretation_Points.shp
147	20240221_LCFP_Accounting_Area_Consolidated.shp
148	Groads-v1-africa.folder: 1. gROADS-v1-africa.shp 2. gROADS-v1-africa.shp.xml 3. gROADS-v1-africa.shx 4. gROADSv1-ReadMe.txt 5. gROADSv1_documentation.pdf
149	20240327_LCFP_New_RA_CDM_image_interpretation_Grids.shp
150	20240326_LCFP_New_RA_CDM_image_interpretation_Points.shp
151	Root-to-shoot ratio refutal.folder: 1. Chidumayo_2013(2).pdf 2. Chidumayo_2013.pdf

	3. Handavu_2021.pdf 4. Kachamba_2016.pdf 5. Mugasha_et_al_2013.pdf 6. Ryan_et_al_2011.pdf 7. 20241804_Chidumayo_BCP_rebutal.docx
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APPENDIX 2: CORRECTIVE ACTION AND CLARIFICATION REQUESTS

Corrective Action Requests (CARs)

CAR ID:	01	Date: 18/05/2023
Description of CAR		
The following issues of the MR are not in accordance with the VCS Template Version 4.2 and/or the VCS Standard Version 4.4: 1. The MR head title is not in the correct format as provided in the VCS template 2. The date of issue on the MR head page is not in the correct format and so are all other dates as per the VCS template. 3. The header note in Section 1.1 is not Monitoring Report VCS version 4.1. Countercheck the section for full compliance with VCS Standard Version 4.4. 4. Section 1.7 does not provide the project location as a geodetic polygon or coordinates. Update the map with the project accounting area 5. Section 1.11 has more than 1890 words instead of 100 words. 6. Check section 1.11 that activities implemented during the former monitoring periods shall not be described in the current MR. 7. Section 1.11 should provide evidence of the project's SD contributions as an appendix. 8. In Section 2.2 of the MR, Appendix E does not provide an appended FPIC document nor a letter of permission signed by the relevant authorities. Provide more evidence to Districts and chiefdom-level meetings and workshops. 9. Section 2.2 has a sentence 'Appendix A contains evidence of agreements between BCP and CRBs outlining BCPs responsibility to communicate monitoring and verification findings' that appears to be repeated. 10. In Section 2.3, meeting minutes (written records) of community sensitization meetings and other stakeholders meetings are not provided. 11. Check section 3.1 that activities implemented during the previous monitoring periods shall not be described in the current MR. 12. Section 3.2.1 does not provide evidence to describe the methodological deviations 13. Section 4.1 is not updated to provide further details according to the requirements of the VCS template version 4.2 14. Section 4.3 does not differentiate the proxy area and the LCFP 1st Project instance on the map legend.		
Project Participant response		Date: 19/05/2023
1. The MR head title has been edited and now conforms with the VCS Template Version 4.2 and/or the VCS Standard Version 4.4.		

2. Date of issue has been corrected.
3. The header has been edited accordingly by copying-pasting the header from the v4.2 template
4. The project coordinates have been Included in section 1.7. For the Maps showing accounting areas ,Please check Figure 2, Figure 3, Figure 4, and Figure 5 under section 1.7. Accounting areas are also in figure 9 under section 4.3
5. The narrative of the section 1.11 has been reduced to the maximum of our ability
6. Section 1.11 has been rewritten and describes the contribution to the SDG for the year 2022 only. A row has been added in the table which has been omitted in the previous version of this monitoring period. It concerns the contribution to the SDG 16 with associated evidence uploaded in the subfolder CAR#1 of the folder VCS_Audit_Findings_First_Round.
7. SDGs supporting evidence has been placed in folder \CARBON ACCOUNTING\09 VERIFICATION\9dVerification_LCFP\2023_M5\VCS_Audit_Findings_1st_Round\CAR #1\01_SD_evidence. As a remark, some of the figures presented in Table 4, in particular within the column “Current Project Contributions”, relates to the monitoring period 2022. Therefore additional evidence can be found in Appendix B.
8. The signed agreements between the communities and BCP for the transfer of Forest rights can be found in appendix A. FPIC documentation for two chiefdoms of the third project activity instance, and Consent Letters to implement REDD+ activities from the chiefdom level to the Ministerial level have been uploaded in the subfolder CAR#1 of the folder VCS_Audit_Findings_First_Round.
9. The repetition has been resolved.
10. Links to the 2022 Meeting Minutes for ongoing community engagement with stakeholders are in the Engagement tracker in Appendix E that was already shared.
11. Corrections have been made in 3.1. Almost all previously implemented activities have been removed. Please note that there may still be a few previously implemented projects mentioned , but only meant to highlight a comparison with the current monitoring period.
12. Evidence describing the deviations has been provided in folder \CARBON ACCOUNTING\09 VERIFICATION\9dVerification_LCFP\2023_M5\VCS_Audit_Findings_1st_Round\CAR #1\12 Methodological Deviations
13. Section 4.1 provides the data and parameters that are available at validation and remain fixed throughout the project crediting period. There was one parameter (*t*) listed in 4.1 that is changing at every monitoring period and therefore has been removed from the section 4.1 and placed in section 4.2 instead. Further more, additional details have been included under 4.1 according to the requirements of the VCS template version 4.2
14. Figure 9 map under section 4.3 has been replaced with one that differentiates the proxy area and the LCFP 1st Project instance on the map legend

Documentation provided by the Project Participant

7. (i) 2020- 2022 Cons Certificates folder (disbursement certificates)

	(ii) Livelihood folder (invoices) (iii) 20200421_Firearms Donation to DNPW.pdf (iv) 20210826_CRB 2022 AWP roll out phases_V1_ZL.doc (v) 20220902_Beneficiaries per chiefdom_HH.xls (vi) 20220906_Deed of donation.pdf (vii) 20221214_Beneficiary_List_LCFP-LZRP.xls (viii) BCP 2021 Harvest Report_Crop Yield Estimate.pdf (vix) BCP.HRMANUAL.V6.2020.pdf (x) CFMG - AWP-Needs Assessment Status.doc (xi) Community project and livelihood trackers and summary.xls (xii) FD_GIS_Equipment_Delivery_Note.pdf (xiii) Final BCP 2022 Harvest Report2_Final.pdf (xiv) HR_P014_Employee Emergency Loan Policy.pdf (xv) LCFP Carbon Fees Summary 2020_2022.xls (xvi) Number Hectares under Sustainable Agriculture_LCFP_2020_2021.xls (xvii) Number Hectares under Sustainable Agriculture_LCFP_2022.xls (xviii) Training summary LCFP_2015_2022.xls
8.	(i) Kazembe engagement sketch maps_FPIC (ii) Kazembe expression of interest document (iii) Kazembe people present during signing expression of interest document (iv) Kazembe signed application_Form 1 (v) Kazembe VAG level sensitisation and FPIC meetings_Attendance registers (vi) Kazembe CFMG Letter of Interest (vii) Event Key summary report Fly FPIC Mwape chiefdom (viii) Mwape FPIC Report (ix) Signed Letter of Interest Mwape Chiefdom (x) Nsefu_Consent Letter (xi) Lundazi District_Consent Letter (xii) Eastern Province_Consent Letter (xiii) Ministry_Consent Letter
12.	(i) 20160426_BCP_Biomass_Sampling_SOP_V2.pdf (ii)BCP_Biomass_SpotError_Protocol_Jan_2014.pdf (iii)BCP_Biomass_Sampling_SOP_June_2019_V3.pdf (iv)LZRP_Annex_N- BCP_Biomass_Sampling_AllometryValidation_May_2013_V1.2.pdf (v) Mugasha_et_al_2013_Miombo_Allometry.pdf

(vi) BCP_Biomass_Sampling_LeakageMon_8June_2013.pdf (vii) BCP_Biomass_Sampling_LeakageMon_8June_Addendum2013.pdf (viii) PALSAR_Analysis_Steps.doc (ix) 20230320_master_biomass_summary_project_updated_with_soil_M5.xlsx	
VVB Assessment	Date: 06/06/2023
1. The MR head page is now in the correct format 2. The MR head provides a correct date of Issue and format. 3. The Header page has been corrected to Monitoring Report: VCS version 4.2 4. Section 1.7 as been corrected to include the geodetic coordinates of the project area 5. Section 1.11 now provides a summarised Sustainable Development Contributions. 6. Section 1.11 has attachments provided by the PP about Needs assessments conducted previously, this is clear. 7. Evidence has been sufficiently provided 8. The mentioned evidence is not found in the specified folder of CAR#1 x 9. The section has been corrected 10. The links provided in the engagement tracker under appendix E are not yet accessible to the VVB x 11. The section has been corrected as requested. 12. Evidence has been provided in this section 13. Section 4.1 has been updated accordingly with correct explanations. 14. The map has been updated to distinguish the legends. This is accepted. Thus, CAR 01 is not closed.	
Project Participant Response	Date: 13/06/2023
8. The mentioned evidence was mistakenly uploaded in folder VCS_Audit_Findings_1st_Round_Response/ CL#1 and not CAR#1. The documents have however been also included in VCS_Audit_Findings_2nd_Round_RESPONSE / CAR#1 folder. 10. The VVB has been granted access to all the meeting minutes in the engagement tracker.	
Documents Provided by the Project participant	

8.	(i) Kazembe engagement sketch maps_FPIC
	(ii) Kazembe expression of interest document
	(iii) Kazembe people present during signing expression of interest document
	(iv) Kazembe signed application_Form 1
	(v) Kazembe VAG level sensitisation and FPIC meetings_Attendance registers
	(vi) Kazembe CFMG Letter of Interest
	(vii) Event Key summary report Fly FPIC Mwape chiefdom
	(viii) Mwape FPIC Report
	(ix) Signed Letter of Interest Mwape Chiefdom.pdf
	(x) Nsefu_Consent Letter.pdf
	(xi) Lundazi District_Consent Letter.pdf
	(xii) Eastern Province_Consent Letter.pdf
	(xiii) Ministry_Consent Letter
	(xiv)2017.07.26_Authority to Carry Out A REDD+Project
	(xv)20160808_DNPW REDD Auth.pdf
	(xvi) Copy of 2022 Mfuwe Site engagement Tracker.xlsx
	(xvii)Copy of 2022 Nyimba_Site engagement Tracker.xlsx
	(xviii)Copy of 2022 Rufunsa_Site engagement Tracker.xlsx

CAR ID:	02	Date: 18/05/2023
Description of the CAR		
Concerning the Non-Permanence Risk Report, this issue is required to be addressed by the Project Proponent:		
1. The head page and other pages in the NPRR have not been filled out using Arial or Century Gothic 10.5 point, black, regular (non-italic) font.		
Project Participant response		Date: 22/05/2023
1. <i>The head page has been edited and now conforms with the standard(head page and other pages in the NPRR have not been filled out using Arial or Century Gothic 10.5 point, black, regular (non-italic) font)</i>		

Documentation provided by the Project Participant	
VVB Assessment	Date: 06/06/2023
1. The head page has been accurately updated. Thus, CAR 02 is closed.	

Clarifications (CLs)

CL ID:	01	Date: 18/05/2023
Description of the CL		
The following evidence and modifications shall be provided to support affirmations, arguments and assumptions made in the MR, in accordance with the VCS Template and/or the VCS Standard: 1. In the content and other sections, different fonts, sizes and formats have been used, The MR needs to be updated in accordance with the VCS Template conditions. 2. The table before section 1.2 is not captioned. Update the table in the MR to specify the monitoring periods of each verification to this current period, the program and the VVB Name. 3. Section 2.2 does not provide enough evidence of the engagement of government and local stakeholders. Appendix E does not provide the signed FPIC, and letter of permission signed by the Government authorities. Update the MR to substantiate this section. Provide more evidence on meetings and workshops. 4. Section 2.3 does not clearly identify the dates on which the meeting between the Chiefdoms of Mpanshya, Luembe, Mwanya, Malama and Mnkhangha and the PP were conducted to close the grievance. Clearly provide both dates for the grievances meeting and the closure of these for the VVB to check the Engagement Tracker spreadsheet and assess meeting deliberations. 5. Section 2.3 mentions Appendix E containing the Engagement Tracker spreadsheet for VVB access, however, some minutes of the meetings conducted in 2022 are inaccessible. Please, update this spreadsheet and make sure that all the minutes are accessible to VVB. 6. Section 2.3 must include additional information regarding how the Shikabeta grievance has been closed, as per the meetings that the VVB had during the Luangwa Community Forests Project visit in Mfuwe.		
Project Participant response		Date: DD/MM/YYYY
1. All the fonts, sizes and formats have been updated in accordance with the VCS Template v4.2 2. Although the template doesn't have a caption for that table, we added one. The table has been updated to specify each verification event separately. 3. Supporting documents for the FPIC process and a sample of signed letters authorising the implementation of REDD+ activities from the Ministry down to the chiefdom level has been provided in the subfolder CL#1. 4. A table has been added which contains the grievance opening and closing dates for the 7 grievances received in 2022. The grievance Register Tracker in the Subfolder Grievance Register of the AppendixE_CommSOP contains the link of all the evidence and supporting documents related to these grievances. 5. The Engagement tracker has been re shared In the subfolder CL#1 of the folder		

VCS_Audit_Findings_First_Round 1 and Considering that we have over 600 links to meeting minutes and no specific inaccessible link has been highlighted by the VVB. We suggest access be requested by the VVB in any instance where there is no access, so that it can be granted accordingly

6. The grievance discussed during the VVB site visit in Mfuwe took place in January 2023 which is beyond the monitoring period and therefore could not be described in the current report. It will be presented in the next monitoring report(M6)

Documentation provided by the Project participant

3. (i) Kazembe engagement sketch maps_FPIC
- (ii) Kazembe expression of interest document
- (iii) Kazembe people present during signing expression of interest document
- (iv) Kazembe signed application_Form 1
- (v) Kazembe VAG level sensitisation and FPIC meetings_Attendance registers
- (vi) Kazembe CFMG Letter of Interest
- (vii) Event Key summary report Fly FPIC Mwape chiefdom
- (viii) Mwape FPIC Report
- (ix) Signed Letter of Interest Mwape Chiefdom
- (x) Nsefu_Consent Letter
- (xi) Lundazi District_Consent Letter
- (xii) Eastern Province_Consent Letter
- (xiii) Ministry_Consent Letter
- (xiv)2017.07.26_Authority to Carry Out A REDD+Project
- (xv)20160808_DNPW REDD Auth.pdf
- (xvi)2016.06.09_NYI_CET_Forest Meeting_Mushalila_Chitumbi_CB_HY.docx Selection
- (xvii)2016 03 19_29_NYI_CET_Forest Selection Meeting_Chikwasha_Mbilisao.docx
- (xviii)2016.02.12_Malama PRE-FPIC_Report.docx

VVB Assessment

Date: 06/06/2023

1. The PP has updated the fonts, sizes and formats as per the VCS template
 2. Caption has been added to name it table 1 and details have been updated.
 3. The PP provided sufficient documentary evidence in this section
 4. The section has been updated to include a table of opened and closed grievances.
 5. A sample of the minutes shared under the CL#1 folder provide proof of the minutes in question. So, this is elaborate
 6. The explanation in this section is accepted
- Thus, CL 01 is closed.

CL ID:	02	Date: 18/05/2023
Description of the CL		
The following evidence and modifications shall be provided to support affirmations, arguments and assumptions made in the MR, in accordance with the VCS Template and/or the VCS Standard: 1. Section 2.3 has not fully described the Community Sensitization, Agroforestry promotions and elaborated on the climate-smart technologies applied. Provide additional pieces of evidence. 2. Section 2.3, Sustainable Eco-Charcoal Production, provide further information and more evidence on eco-charcoal and other activities that counterpoise the illegal logging and illegal charcoal production. 3. Section 3.1, Sustainable Honey Production, provides further information to have a clear comparison between beekeepers in 2021 and 2022 resulting in the different production capacity. 4. Section 4.3. Figure 9 should be an updated map of the accounting, Leakage and Proxy plots with clarity and distinctive map legend. 5. Section 4.3, the staff portfolio should be described according to their CVs for clarified quality assurance and quality control. 6. Section 4.3 provide evidence on the recent refresher training and topics covered to the forest monitoring teams that support their current monitoring activities.		
Project Participant response		Date: 23/05/2023
1. Section 2.3 has been edited and more information has been included i.e Community Sensitizations, Agroforestry promotions and climate-smart technologies applied. 2. There is no eco-charcoal production yet in the LCFP project zone and a statement indicating as such has been included in section 2.3. Nonetheless, additional information for other activities that counterpoise the illegal logging and illegal charcoal production have been included to section 2,3. 3. 2021 and 2021 number of beekeepers/bee hives information has been included in section 3.1 4. The monitoring report has been updated with beekeepers' data for 2021 and 2022. 5. The Figure 9 has been replaced with a map that has a clear /distinctive legend i.e Accounting Area, Leakage and Proxy plots 6. The section 4.3, sub-section Quality Assurance and Quality Control, has been updated by providing details of the Carbon team's skills and experience and their CVs are available in the subfolder CL#2 of the folder VCS_Audit_Findings_First_Round 7. The 2022 training report has been uploaded in the subfolder CL#2 of the folder VCS_Audit_Findings_First_Round		
Documentation provided by the Project participant		

5. (i) CV_Carbon Manager
- (ii) CV_Senior Carbon Specialist
- (iii) CV_Carbon Specialist
- (iv) CV_Carbon Accountant
- (v) CV_Carbon and GIS analyst
- (vi) CV_GIS Technician
6. (i) FMT Training report 2022

VVB Assessment
Date: DD/MM/YYYY

1. The section has been updated to include more information on the community sensitizations.
2. Eco-charcoal production is categorically not in the LCFP project zone. So, this has been corrected.
- 3.The number of beekeepers mentioned has not been referenced to any table, while the distributed beehives have not been correctly referenced x
- 4.A clear updated map with distinct legend has been provided
- 5.Information is updated on the section and the CVs of the carbon teams have been shared as well.
6. A refresher training report has been shared in the evidence folder CL#2

Thus, CL 02 is not closed.

Response from Project Participant

2. (i) *Table 13*. Has been updated and has also been properly referenced in the text.
- (ii). *Table 14: Beehive distribution by Nature's Nectar in the project zone* has now been correctly referenced in the text.

CL ID:	03	Date: 18/05/2023
Description of the CL		
The following additional evidence or clarifications are required to be provided by the Project Proponent: 1. Provide the CVs of the employees working in the LCFP project, to assess consistencies. 2. Section 2.2, provide more information and evidence regarding 'BCP solicited inputs from relevant Government and community authorities' 3. The LCFP public comment period ended with one commentary which according to the VCS standard version 4.4, section 3.18.9 provides that the PP shall take due account of any comment received during the consultation. Could this be clarified as such?		
Project Participant response		Date: 24/05/2023
1. The CVs of the LCFP sector managers have been uploaded in the subfolder CL#3 of the folder VCS_Audit_Findings_First_Round 2. A sample of meeting minutes and reports have been provided as evidence that BCP solicited inputs from relevant Government and community authorities. Evidence includes community consultative meetings ,work planning meetings and FPIC meetings minutes held with government and local partners. 3. Since the comment received during the public comment period is specific to the CCB monitoring report, and the VCS report was not subject to a public comment period, this clarification request will be addressed during the revision of the CCB report.		
Documentation provided by the Project Participant		
1. (i) CV_David Kabani.pdf (Lundazi Sector Manager) (ii) CV_Manson Libayi.pdf (Mfuwe Sector Manager) (ii)Gundaza, Christopher.pdf -Curriculum Vitae.pdf (iv) DAVID KABANI CV.pdf		
VVB Assessment		Date: 07/06/2023
1.The requested documents have been provided and checked to be consistent 2. Elaborate evidence has been provided in the folder CL#3 3. The explanation provided by the PP is not well clarified. X Thus, CL 03 is not closed.		
Project Participant response		Date: 13/06/2023
2. The LCFP (1775) VERRA CCB verification public comment period has closed with one comment "<i>The project has applied multiple Minor Changes to the Project Design which appear related to VCS requirements. Minor changes to the project design are only applicable for CCB requirements</i>". The comment has been addressed on the first round of findings of the CCB MR v1.0 submitted to the VVB. Section 2.1.2 which comprised VCS minor changes has been removed from the document and replaced with "not applicable". Furthermore, within the CCB shared folder 2023_CCBVAENOR_CCB_Second_round_findings we have incorporated both, the		

submitted original CCB MR 1 (13022023_LCFP_CCB_M1) for open comment period as well as the comment summary (1775 Public Comment Summary) as a mean to understand the changes effectuated in the CCB document.

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DATE: 24/4/2023

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ATTENDANCE LIST

PROJECT: LCFP

LOCATION: Mukopola.

MEETING TOPIC: Community CSA Lead farmers

DATE: 25/4/2023

No	NAME & SURNAME	ROLE/PROFESSION/STAKEHOLDER GROUP	COMMUNITY	SIGNATURE
	CABECA MATHANZA	LEAD FARMER	Mukopola Village	<i>[Signature]</i>
	Benedict M. Chong	Lead farmer	Mukopola Village	B. Mung'ochau
	Brenda Mung'ochi	Lead farmer	Makulu Village	B. Mung'ochi
	Obet Ngulube	Lead farmer	Dungem Village	<i>[Signature]</i>
North farmer	Bernard Chilisa	Horticulture Farmer	Njombo Village	<i>[Signature]</i>
North farmer	Wenny Sakala	Horticulture Farmer	Dungem Village	<i>[Signature]</i>
	Rapha Mupfema	Executive officer	Shikabeta Village	<i>[Signature]</i>
	Sebastian Nyandu	CIP	Shikabeta	<i>[Signature]</i>
	KENNEDY Mwendu	L.M.C	Shikabeta	<i>[Signature]</i>
	Chisulo PETER	Member	Shikabeta	<i>[Signature]</i>
	TEMBO ROBIE	V/CPC	Shikabeta	<i>[Signature]</i>
	Godfrey Tembo	Vice CRB Chairperson	Shikabeta	<i>[Signature]</i>
	Justine Pogita	CRB Chairperson	Shikabeta	<i>[Signature]</i>
North farmer	Lontia Ngulube	Headwoman	Shikabeta (Munteshi Vg)	L. Ngulube
North farmer	Lizzy Chisulo	Community member	Munteshi Vg	L. Chisulo

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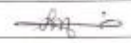
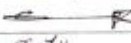
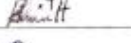
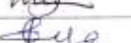
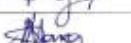
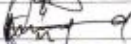
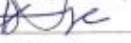
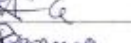
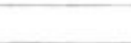
ATTENDANCE LIST

PROJECT: LCFP

LOCATION: Mpanshya CRB office.

MEETING TOPIC: Community/stakeholders engagement

DATE: 25/4/2023

No	NAME & SURNAME	ROLE/PROFESSION/STAKEHOLDER GROUP	COMMUNITY / location	SIGNATURE
1	Sokwani MSISKA	MPANSHYA CFMG/EXECUTIVE OFFICER	KASHIKA VILLAGE	
2	CHRISTOPH CHIKOPA	C/person CFMG	MPANSHYA	
3	Joseph Phiri	CFMG EXECUTIVE MEMBER	Kamitowo	
4	MPANSHYA SEBASTIAN	NRAC VICE CHAIR	MPANSHYA VILLAGE	
5	Joseph Mutale	CDC CFMG	mpanshya	
6	Ignatius Chumya	NRMC Chairperson	mpanshya	
7	MOSES DAKA	VICE F.M.C	MPANSHYA	
8	Kasibali George	mpanshya CFMG/ F.M.C	mpanshya	
9	Francis Nyona	Chiridom Lead BCP	chiridom	
10	Danitus Wapaya	CDC VICE CHAIR	mpanshya	
11	Agress Kazimilo	Chieftainess	MPANSHYA	
12	Richard Mwale	LEAD FARMER	MPANSHYA	
13	Shadreck Ngom	Agriculture Dev. Coordinator	BCP	
14	RESA KALANDA	Carbon Specialist - BCP	BCP - LUSAKA	

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LOCATION: Shikarbeda

DATE: 26/04/2023

ATTENDACE LIST

No	NAME & SURNAME	ROLE/PROFESSION/STAKEHOLDER GROUP	COMMUNITY	SIGNATURE
1.	Muswehen Chacha	Chefdom Lead (BCP)	BCP	[Signature]
2	Festo Chindamba	FIO (BCP)	BCP	[Signature]
3	Peter Mosewe	FIO lead BCP FMT	BCP	[Signature]
4	Masasa Mpole	L-T-B-C-P.	B.C.P	[Signature]
5	Gibby Jobani	F.I.O BCP FMT	BCP	[Signature]
6	George Mungala	H/man kacheqa	Shikabeta CRB	[Signature]
7	Aluni Munamonga	Munamonga	Shikabeta CRB	[Signature]
8	Lufego Zulu	F-I-O	BCP	[Signature]

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ATTENDACE LIST

DATE: 27th/04/2023

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ATTENDANCE LIST

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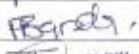
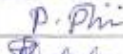
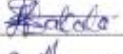
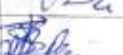
BCP

LOCATION: JUMBE

MEETING TOPIC:

C.F.M.G. Meeting

DATE: 28/04/23

No	NAME & SURNAME	ROLE/PROFESSION/STAKEHOLDER GROUP	COMMUNITY	SIGNATURE
	JAMES KAMBO	FMC CHAIR JCFG	JUMBE	
	DUBE EUTICASF	FMC, JCFG	JUMBE	
	Banda Jelday	V chair JCF.M.G	Jumbe	
	Isaac Nkhoma	C&C Chairperson	Jumbe	
	Peter Phiri	Board member JCF.M.G	Jumbe	
	EMENI SAKARA	Beckkeeper JCF.M.G	Jumbe	
	CHARLES NKHOMA	RESOURCE OFFICER JCF.M.G	Jumbe	
	LUCY NJAMBILA	CHIEFDEM OFFICER	BCP	
	SHEPARD PHIRI	LIVELIHOODS RESTORATION	LEAD BCP	
	ELISIA SINKONDE	FIELD SUPERVISOR	NATURE'S NECTAR	
	Bennedict mwale	Beckkeeper	community	
	Michael Zulu	Beckkeeper	community	
	Arman Soko	Beckkeeper	community	
	John Zimba	Beckkeeper	community	
	Gert Phiri	Beckkeeper	community	
	Tobias Saka	Beckkeeper	community	
	Jumbe MS Banda	Beckkeeper	community	

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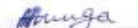
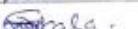
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PROJECT: LCFP

LOCATION: BCP MFUNE OFFICE

MEETING TOPIC: Scots Meeting

DATE: 28/4/23

No	NAME & SURNAME	ROLE/PROFESSION/STAKEHOLDER GROUP	COMMUNITY	SIGNATURE
	Mutale Mwila Mulega	SMART/Conservation officer	Mfune	
	Beyard Nyama	driver	Mfune	
	Mike Nyrenda	driver	Mfune	
	Mildred Mtonga	Scout	Turnbe	
	Bessie mbembe	Scout	Turnbe	
	Michael Chipaya	driver	Mfune	
	JOPHAEL ZIMBA	Scout	Turnbe	
	BRIDGET CHISANGA	Scout	Turnbe	
	CHLOSON MWALE	Scout	Turnbe	
	KWIFFESO SAKALA	Scout	Turnbe	

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DATE: 28/04/2023

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ATTENDANCE LIST

PROJECT:

LOCATION: JUMBE KASINGA

MEETING TOPIC:

DATE: 28/04/23

No	NAME & SURNAME	ROLE/PROFESSION/STAKEHOLDER GROUP	COMMUNITY	SIGNATURE
01	ABRAHAM MWALE	PTA CHAIRPERSON	NJACHITA V/G	
02	MISONI SAMUEL	VICE PTA C/PERSON	MUCACA V/G	
03	DONALIA PHIRI	TREASURER	MACHITA V/G	D. PHIRI
04	SOLITA ZULU	C-MEMBER	DAMASEKE V/G	S. ZULU
05	BRENDA CHILEMBO	VS SECRETARY	DAMASEKE V/G	Bh-bb.
06	HARRISON NGOMA	SECRETARY V/G	CHIZIMATI V/G	
07	JENALIA PHIRI	CHAIRPERSON V/G	CHISONI V/G	J. PHIRI
08	ANDREW NGOMA	TREASURER V/G	MANYONI V/G	
09	JAMES CHULU	RESOURCE V/G	KAKONO V/G	J. CHULU
10	ELIJAH MWALE	PTA SECRETARY (HEAD TR)	SCHOOL KASINGA	
11	NICHOLAS MBWE	LEADFARMER	MATIAS Village	NICHOLAS MBWE
12	GRACE MWANZA	LEADFARMER	JOSEPH KAPOLE	G. Mwanza
13	VERONICA S. BANDA	L.F.	Kamibani	Veronica
14	GLADYS VABALUVU	L.F.	JOSEPH KAPOLE	G. Vabaluvu
15	SARA MBWE	L.F.	Kamphukutu	S. Mbewe
16	REBECCA SIMULANGE	L.F.	PAULENI	R. Simulange
17	MATAMA ALEXANDER	MOA / CEO - GRZ	JUMBE	

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PROJECT:

LOCATION: NSEFU CHIEFDOM

ATTENDANCE LIST

MEETING TOPIC:

DATE: 28/04/23

No	NAME & SURNAME	ROLE/PROFESSION/STAKEHOLDER GROUP	COMMUNITY	SIGNATURE
1	Enioma nebrase	Book-keeper NSEFU CRB	Shelileni VAG	Enioma nebrase
2	MOSES MURUJI	NSEFU CRB ROMEA MEMBER	NSEFU Community	MOSES MURUJI
3	BENABICIO IEMBO	TRC	SHALILENI	BENABICIO IEMBO
4	PHIRI KAPOPO	NSEFU CRB VICE CHAIRPERSON	SHALILENI	PHIRI KAPOPO
5	Nelson Banda	Chair	Ramaza	Nelson Banda
6	JOHN MWANZA	V/Resource (NRC)	Lotite	JOHN MWANZA
7	PHIRI ANDREW GESHOM	TEACHER	KAWAZA	PHIRI ANDREW GESHOM
8	SAMANTWE RICHARD	CLINIC INCHARGE	NSEFU RHC	SAMANTWE RICHARD
9	IEMBO MATILDA	D.H. TEACHER	CHITUNDI PRIMARY SCHOOL	IEMBO MATILDA
10	Regina Banda	P.F.A chair / VG	Chitunda	Regina Banda

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APPENDIX 4: JUSTIFICATION FOR THE USE OF BELOW-GROUND BIOMASS ROOT TO SHOOT (RS) RATIO OF 0.54 ESTIMATED BY CHIDUMAYO

PRR finding 10 addressed to the VVB and PP stated that “A report (*Quality Assessment of REDD+ Carbon Credits Projects by Haya et al, 2023*) has been released during the verification process that raised concerns about the conservativeness of below ground biomass (BGB) estimates”. Within the PRR, VERRA’s review team questioned “**is not clear whether this report was considered by the VVB and how the VVB has confirmed, using which evidence, that the root-to-shoot ratio was correctly selected given the alternative ratio available**”.

It is important to remark that this finding has been raised as an additional corrective action over the PRR second round of findings (it was not present in the first PRR round of findings). Furthermore, the VVB shared all the consolidated answers to the first round of PRR findings to BCP, who submitted all the documentation to VERRA for verification **more than a month** prior (6th of August) to the publication of the article in question (published on the 23rd of September).

Haya et al. (2023) stressed “we found specific choices of BGC estimation methods that were not conservative. For instance, BGC estimates from projects VCS 1392 and VCS 1775 (LCFP) were much higher than the alternative estimates. While both projects used methods from peer-reviewed literature, they were not contrasted with other possible peer-reviewed methods to show that their choices were conservative”. After an effective due diligence and investigations, a meeting between the PP and AENOR’s audit team led to conclude that the proposed alternatives are considered inappropriate for project VCS1775 based on the following:

- i. Lack of consideration of differences in forest stand structure.
- ii. The behaviour of RSR in relation to diameter of excavated trees.
- iii. Variation in the distal diameter cut-off points of excavated roots.
- iv. Inappropriateness of the proposed alternative methods of estimating BGB for project VCS1775.

The high variability in species composition, structure, and ecology within Miombo woodland vegetation, which stretches across a vast swathe of the southern African subtropical region, is broadly recognized. Thus, when using allometric models, such as root to shoot ratios, the most trusted models, or those considered to be most accurate predictors, are generally also those that were developed on measurement samples taken closest to the area in which these models are to be applied. This aligns with the similarity principle central to science in general, but also in terms of REDD+ and other carbon accounting methodologies. In Miombo woodlands, areas are considered more similar in terms of environmental influences, conditions and disturbances, according to their proximity to one another. Indeed, in most published allometric papers, there is a clear recommendation for using local models when estimating biomass and/or carbon stocks and flows of a particular site.

The LCFP REDD+ project uses a below-ground biomass root to shoot (RS) ratio of 0.54, estimated by Chidumayo (2014) as a minimum RS ratio for Miombo vegetation in the Chongwe district, Zambia

(mean annual rainfall of 895 mm). The LCFP project is located within a 60 km radius of the sample site for this study, and thus share similar annual rainfall, ecology and observed vegetation patterns, as well as similar disturbances. Other studies that estimated belowground biomass within Miombo vegetation include those by Mugasha et al. (2013) in Tanzania (four sites that range between 771 and 1915 mm mean annual rainfall) with a mean RS ratio of 0.41, and Ryan et al. (2011) in Mozambique with a mean RS ratio of 0.42 (and 850 mm of annual rainfall). More recently studies by Kachamba (2016) in Malawi (two sites with a combined range of 950-1700 mm annual rainfall) and Handawu (2021) in the Copperbelt region of Zambia (1200 mm mean annual rainfall) appeared that estimated mean RS ratios of 0.47 and 0.3 respectively.

Interestingly, the evaluation of model performance between both aboveground and belowground models developed by Mugasha et al. (2013), Ryan et al. (2011) and Chidumayo (2014) by Kachamba et al. (2016) showed that only the below and aboveground models developed by Chidumayo (2014), (except for one aboveground model by Mugasha et al. (2013)) had non-significant mean prediction error when applied to their dataset (Kachamba et al. 2016, Table 8). This suggests that the Chidumayo (2014) models are the most accurate available models across a range of Miombo sites. The researchers of this study (Kachamba et al. 2016) recognize the high RS ratio value obtained by Chidumayo (2014) and relates it to the higher incidence and density of plants with smaller stem diameters in his sampling sites. This is reflected in the findings presented by Mugasha et al. (2013) and others that shows that the RS ratio decrease with increasing stem diameter.

This situation is also reflected in the forest inventory dataset of the LCFP project which was developed in very similar Miombo woodlands located closely nearby, where high degradation is common and much of the woodlands can be considered as secondary woodlands that entails higher stem densities but lower stem diameters. The PP describes in the LCFP PD (p. 124) the application of its carbon estimation equations and RS ratios by using two different models depending on stem diameter size. Mugasha et al. (2013)'s models were applied for all trees with stem diameters of more than 55 cm, as the Chidumayo (2014) equations have their model limits around that limit. Only 33 trees out of 3589 trees in the inventory had a dbh above 55 cm (less than 1 %), and only 3 had a dbh above 110 cm. "Applying the equations in this way is conservative and erases the possibility of the equation over predicting biomass of trees outside the size classes for which it was tested" (LCFP PD, page 124). Furthermore, Chidumayo (2014) considers his belowground models and RS ratio conservative, despite recognizing it to be high, as he used pit samples as method, rather than whole tree root excavation, which tends to underestimate belowground biomass due to its inability to sample tree taproots and hence only coarse roots were sampled and applied to the model. Chidumayo (2014) also employed a 2 cm width cut-off point for root material to be measured in his, adding to the conservative approach he undertook in this study.

In summary, the PP provided sufficient evidence to the VVB to still use Chidumayo (2014) RS ratio of 0.54 for belowground biomass estimation, due to the fact that this study was conducted in close proximity to the LCFP and LZRP project areas, was already developed with a conservative approach, and the fact that BCP already applied safeguards to misusing this ratio on trees with a DBH higher than 55 cm. Also of importance is the fact that an independent testing of models developed by Ryan et al. (2011), Mugasha et al. (2013) and Chidumayo (2014) by Kachamba et al. (2016) proved that Chidumayo's belowground model is the only one with mean prediction errors that were found to be none significant, suggesting it to be the more accurate model to apply over a wider range in Miombo woodlands.

References /151/

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