



THE LOWER ZAMBEZI REDD+ PROJECT



Document Prepared by BioCarbon Partners

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Prepared By	BioCarbon Partners
Contact	5th Floor, Barkly Wharf, Le Caudan Waterfront, Port Louis, Republic of Mauritius, Telephone: +260 211 290 051, Email: info@biocarbonpartners.com, Website:www.biocarbon partners.com

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I.1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Lower Zambezi REDD+ Project (Project) is a reducing emissions from deforestation and degradation (REDD+) project on 40,126 ha of privately-owned land in Rufunsa District, Zambia. The Project Area is known as 'Rufunsa Conservancy', and is owned by a Zambian company named Sable Transport Limited. The Conservancy is one of the last intact areas of forest within Lusaka Province (named after the nearby capital city), and provides a 60-kilometer buffer to Lower Zambezi National Park (NP), a strategic protected area in Zambia in a globally significant trans-frontier conservation area. Lower Zambezi NP is adjacent to Mana Pools National Park in Zimbabwe which is a United Nations Educational, Scientific and Cultural Organization (UNESCO) designated World Heritage Site. The population of the Project Zone as of the 2012 baseline evaluation was approximately 8,933 people living in 28 villages spread within 4 community zones.

The Project Proponent is BioCarbon Partners, which is responsible for certifying the Project and for early-stage Project finance.

The core project climate activities undertaken include forest carbon inventorying, modeling 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. Project area boundaries were marked at project start date and since then, aerial and/or ground patrols are conducted weekly to monitor compliance. Every monitoring period, 20 % of accounting and proxy area biomass plots and 100 % of leakage area monitoring plots are inventoried. Remote sensing is used to monitor disturbance and fires while wildlife and other biodiversity indicators are monitored in bi-annual fixed transects surveys as well as random ground

patrols. Ongoing and new community benefit projects are monitored by the Impact Monitoring division and their statuses are described in section 3.1.

The project was developed to conform to the Climate, Community and Biodiversity Standard (CCBS, Second Edition) and the Verified Carbon Standard (VCS, Version 3.3 and further updated to conform with Version 4.0). Furthermore, the Project is aligned with the Government of the Republic of Zambia's (GRZ) National REDD+ Program, implemented through the Forestry Department.

The project start and implementation date is 1 October 2009 and will be operational until 1 October 2039. The estimated emissions reduction for the 30-year project span is 5,673,505 tCO₂e at an average of 189,117 tCO₂e/yr. The emissions reduction for the current monitoring period (January 1st, 2021 to Dec. 31st, 2021) is 221,813 tCO₂e.

1.2 Sectoral Scope and Project Type

VCS Sectoral Scope 14 – Agriculture, Forestry, and Other Land Uses (AFOLU), project activities Reduced Emissions from Deforestation and Degradation (REDD), using Methodology for Avoided Ecosystem Conversion, VM0009, v3.0 and qualifies as baseline type F-U3, unplanned mosaic or frontier deforestation. This is not a grouped project.

1.3 Project Proponent

Organization name	BioCarbon Partners
Contact person	Nicholas Mudaly
Title	Interim Chief Executive Officer
Address	BioCarbon Partners, 5th Floor, Barkly Wharf, Le Caudan Waterfront, Port Louis, Republic of Mauritius
Telephone	+260 211 290 051
Email	info@biocarbonpartners.com

1.4 Other Entities Involved in the Project

Organization name	Musika Development Initiatives Ltd.
Role in the Project	Funding and Technical Partner
Contact person	Mr. Rob Munro
Title	Director of Strategy
Address	6 Tukuluho Rd. Longacres, Lusaka, Zambia
Telephone	+260 211 251 371
Email	info@musika.org.zm

Organization name	Natures Nectar Ltd
Role in the Project	Implementing Partner
Contact person	Katherine Milling
Title	Co-Founder & CEO
Address	PO Box KLA14, Kalumbila, North-Western Province, Zambia
Telephone	+260 976139341
Email	katherine@naturesnectarzambia.com

Organization name	Vitalite
Role in the Project	Implementing Partner
Contact person	John Fay
Title	Director

Address	15 Lubwa Road, Rhodes Park, Lusaka, Zambia
Telephone	+260 978 431 684
Email	john.fay@vitalitegroup.com

Organization name	New Rotations Zambia
Role in the Project	Implementing Partner
Contact person	Colin Fletcher
Title	Director
Address	P.O. Box 34863, Lusaka, Zambia
Telephone	+260 974 770 823
Email	fletch@chc.co.zm

Organization name	BioCarbon Partners Trust
Role in the Project	Implementing Partner
Contact person	Joke Hoffman
Title	Director
Address	Plot #4658/A Chikwa Road, Ridgeway, Lusaka, Zambia
Telephone	+260 211 290 051
Email	jhoffman@biocarbonpartners.com

Organization name	Peace Parks Foundation
Role in the Project	Funding and Technical Partner
Contact person	Werner Myburgh
Title	Chief Executive Officer
Address	11 Termo Road, Technopark, Stellenbosch, South Africa
Telephone	+27 21 880 5100
Email	wmyburgh@ppf.org.zm

1.5 Project Start Date

MR.2

1 October 2009

1.6 Project Crediting Period

MR.3

The project crediting period starts on the project start date – 1 October 2009 and ends on 1 October 2039 and runs for a total of 30 years with the option to renew.

1.7 Project Location

The Lower Zambezi REDD+ project is located approximately 120 km southeast of Lusaka and falls within the miombo eco-region which is host to a plethora of endemic species. It falls within the recently declared Rufunsa district and borders the Lower Zambezi National Park to the east and south, Chiawa Game Management Area (GMA) to the west and the Soli Shamifwi Royal Establishment (Chief Unda Unda's Chiefdom) to the north (Figure 1). The project area is accessible by road via the small towns of Chinyunyu and Sinjela on all-

weather dirt roads. The project area is the Rufunsa Conservancy, privately owned by Sable Transport Ltd, a local Zambian company.

The project area consists primarily of intact, primary miombo woodland that has never been logged with some open grassland and deep ravines with dense Acacia woodlands. The project area is 40,126 ha in size. A portion of Rufunsa Conservancy has been encroached by illegal charcoal producers and this area has been excluded from the project area (labelled Encroachment, Figure 1). Figure 2 shows the land cover and topography of the Lower Zambezi REDD+ project area.

There are an estimated 7,182 people living in the project zone which falls in the Rufunsa district which is further divided into four zones and 28 villages. The project zone is bound between -15° 16' 57.72"S – 28° 58' 25.68"E (NW Corner) -15° 16' 57.72"S – 29° 23' 43.4394"E (NE Corner), -15° 35' 51.3594"S – 29° 23' 43.4394"E (SE Corner), and -15° 35' 51.3594"S – 28° 58' 25.68"E (SW corner).

MR.6

The project accounting area is the boundary of Farm 10.800, known as Rufunsa Conservancy, as shown in Figure 1. Sable Transport Limited, a Zambian registered and a Zambian citizen owned company, privately owns Rufunsa Conservancy under a leasehold from the Government of the Republic of Zambia. This area was originally registered as a game ranch for wildlife tourism operations. Due to a lack of resources and wildlife poaching pressure, the area has not been used or promoted for eco-tourism or hunting and has been operated as a conservancy.

The accounting area was calculated by firstly excluding non-forested portions of the project area (bare earth and grassland). Then, all steeply sloped lands (greater than 20 degrees' slope) which are inaccessible to agents of deforestation were also excluded. The slope of 20 degrees was selected based on the assessment of the maximum slope of fields in the reference area. Figure 3 shows the topography and slope of the Lower Zambezi REDD+ project area.

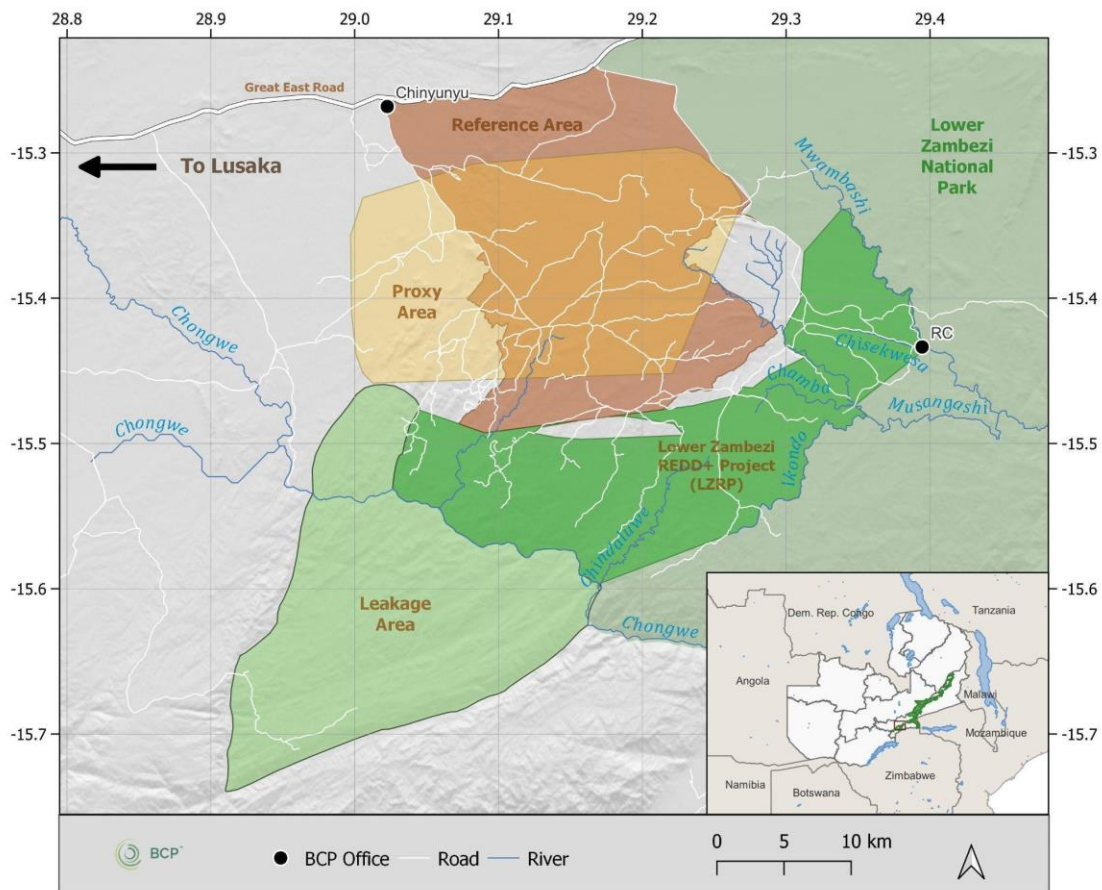


Figure 1. Location map of the Lower Zambezi REDD+ Project. (MR.1)

For clarity, steep slopes were excluded only if the size of the polygon to be excluded is greater than 0.4 ha, in which case a 15 m buffer was created around these polygons. The accounting area comprises 33,338 ha of the total project area of 40,126 ha. A 30 m Digital Elevation Model (ASTER Global Digital Elevation Model Version 2) was used in the slope calculation.

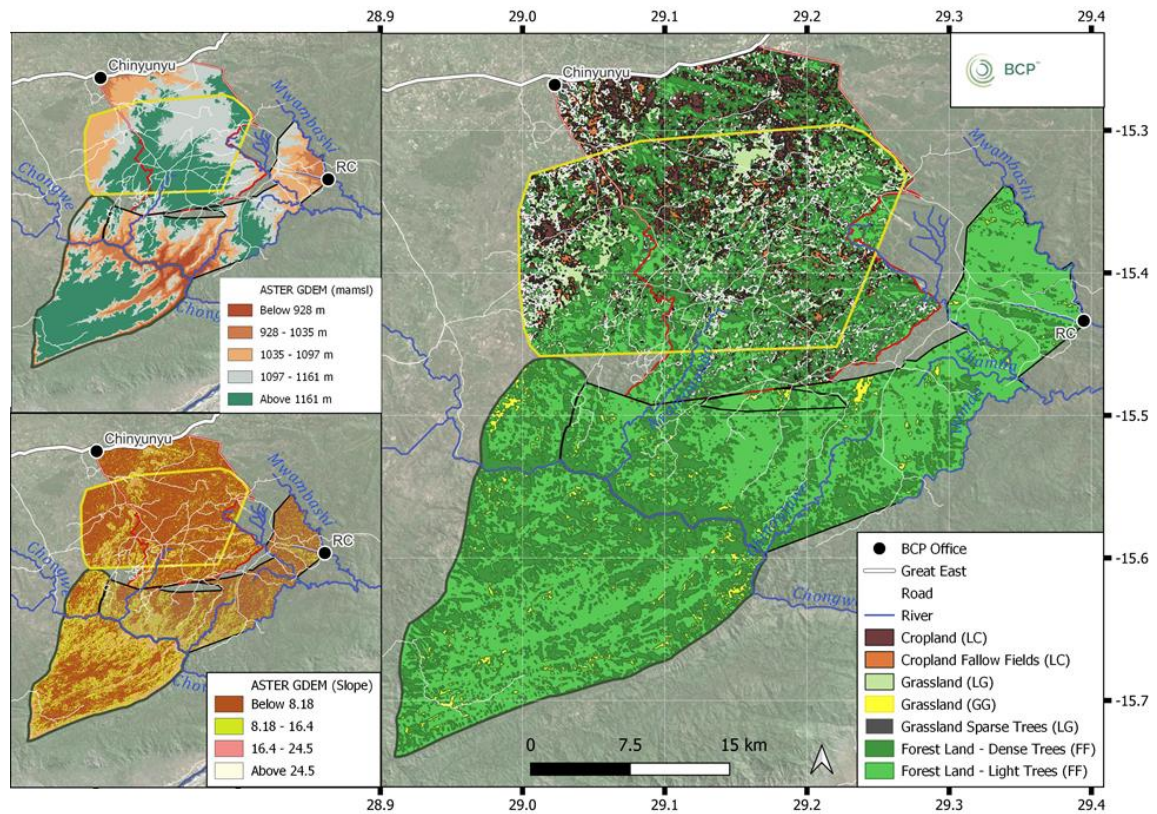


Figure 2. Land cover and topography of the Lower Zambezi REDD+ Project.

For the project accounting area boundaries, it is important to note that while the title deed outlines the boundaries of the conservancy, the reader will see that a portion of this area has been removed along the northern boundary (Figure 1). This excluded area has been removed as this portion of the property has been encroached by illegal squatters currently undertaking charcoaling and subsistence agriculture activities. This illegal squatting resulted from confusion as to the exact location of the Northern boundary of the property. As a result of this confusion, a small number of households (approximately 19) had settled on private property within the boundaries of the Project Area. An additional 24 households live on communal land on or near to the boundary of the property. It is possible that some of these illegal squatters arrived prior to the project start date, but there certainly has been new occupation after the project start date. It has now been brought under control.

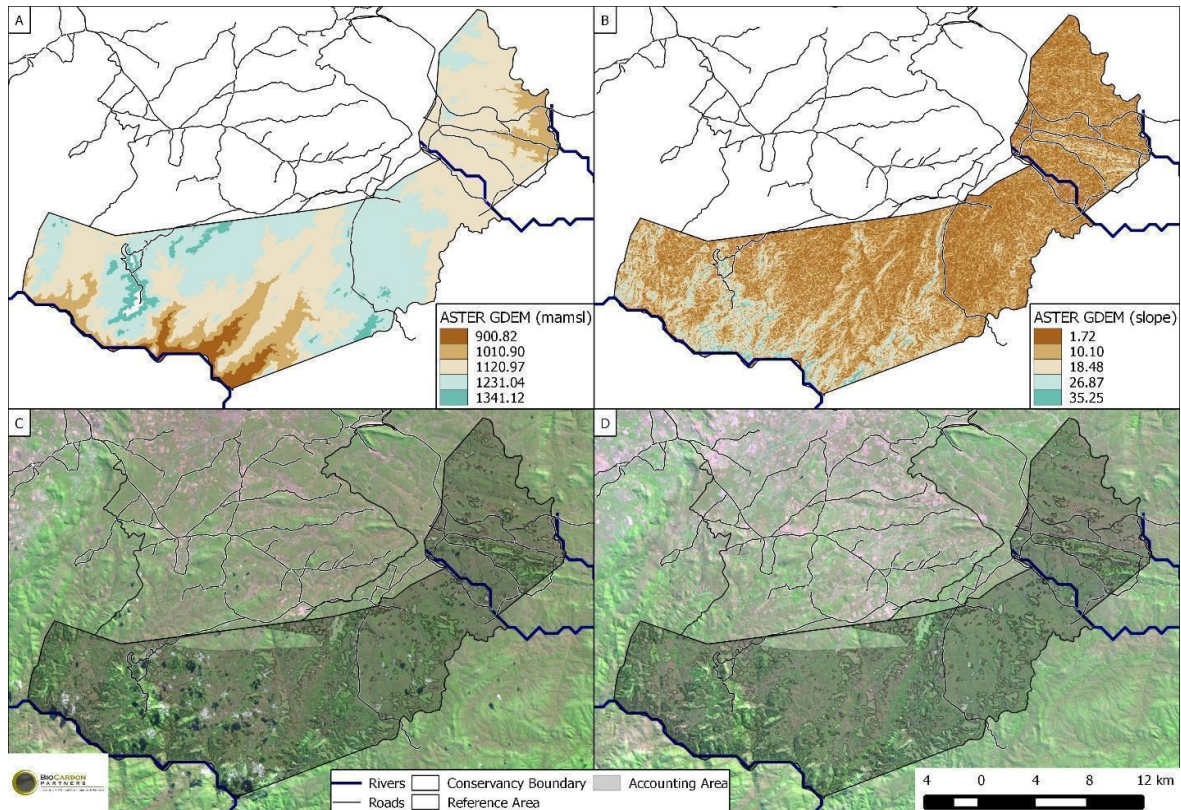


Figure 3. Topography (A), Slope (B), Accounting Area and forest cover in 1989 (C) and 2009 (D).

Due to the sensitive nature of land tenure in Zambia it was decided not to evict these people, but rather exclude this encroached area from the accounting area. It has been decided that the best option is to exclude the encroached area from carbon accounting as including it will most likely make it necessary to relocate the occupants which could lead to unnecessary conflict. It is a conservative exclusion; the area has not been included in emissions reductions accounting.

The boundaries of the exclusion area are based on a survey undertaken by BioCarbon Partners. Each illegal squatting household was surveyed with additional location data also collected using a hand held Global Positioning System (GPS) unit. A convex hull was then generated around these points and used to adjust the boundaries of the conservancy.

There will be no BCP eco-charcoal production in the Project Area (Rufunsa Conservancy-boundaries as per title deed) or the accounting area or the excluded encroached area. All eco-charcoal production is taking place in a degraded patch of forest in the proxy area several kilometers from the project area.

1.8 Title and Reference of Methodology

VM0009 – Methodology for Avoided Ecosystem Conversion, v3.0. Other tools include AFOLU Non-Permanence Risk Tool v4 and VT0001 Tool for the Demonstration and Assessment of Additionally in VCS AFOLU Project Activities, v3.0.

1.9 Participation under other GHG Programs

The project has not applied to any other GHG programs.

1.10 Other Forms of Credit

The Lower Zambezi REDD+ Project is not subject to binding emissions limits or emissions trading programs.

The project was validated under the Climate, Community and Biodiversity (CCB) standards (Second Edition – Gold Level) in 2013 and CCB Triple Gold verified in 2018:
<https://registry.terra.org/app/projectDetail/CCB/1202>

1.11 Sustainable Development Contributions

Zambia subscribes to the UN Sustainable Development Goals, the contribution of the LZRP to 16 of the 17 goals is listed below. There is no requirement for any formal monitoring and reporting of activities that pertain to these goals.

SDG 1. No Poverty - End poverty in all its forms everywhere

Local communities benefit from a range of employment and income generating projects ranging from jobs as community scouts and teachers; to honey and eco-charcoal production.

In partnership with local communities in Zambia, LZRP uses the REDD+ mechanism to create a sustainable model where communities receive performance-based, forest carbon fees for any activities that protect their forests and the wildlife inhabiting these forests. BCP reduces social and economic risk through the monetization of carbon and other livelihood interventions.

SDG 2. Zero Hunger - End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Sustainable conservation farming and honey production projects contribute to this goal.

In collaboration with the Ministry of Agriculture and Livestock, LZRP has been working with farmers in an effort to address food security challenges through the farmer to farmer extension model. In an effort to respond to the country's vulnerability to climate change challenges, which directly affects food security in the country, the project has invested in

Climate-Smart Agriculture technologies, supporting approximately 722 farmers (lead & follower). With agriculture expansion as such a major threat to the forests, Climate-Smart Agriculture helps to provide food security and a sustainable future for some of Zambia's most nutritional insecure families.

SDG 3. Good Health and Well-being - Ensure healthy lives and promote well-being for all at all ages

Forest Carbon fees are invested into community development projects that will support the uplifting of the community as a whole. Health care facilities, such as the upgrading of a clinic and solar lighting to another, have been completed to support our community partners to allow for easier access to necessary healthcare when required.

SDG 4. Quality Education - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Through Forest Carbon Fees Education facilities, such as 2 teacher houses and a school have been built to support our community partners with easier access to education. Building teachers' houses is necessary to attract and retain good quality and qualified teachers to support education needs. The salaries of 8 teachers have been paid throughout 2021.

LZRP also supports the uplifting of community partners through the training, equipping and compensation of supported community scouts. This provides community partners with skills development and the opportunity to support higher education for financial success of our community partners.

SDG 5. Gender Equality - Achieve gender equality and empower all women and girls

All LZRP projects and activities are specifically aimed at marginalized groups such as women and girls. Records illustrating this are kept by BCP.

All the meetings are run in a way that women are properly included in the decision making process. Despite cultural norms that make resource protection predominantly a male role, the project has supported women into community scout roles. A large part of the role of the community scouts will be to engage local communities in biodiversity conservation issues. We believe that female community scouts and engagement officers will have a better understanding of the needs of local women and the factors governing their decision making. The REDD+ benefit-sharing mechanism is designed to give women equal rights and equal access to economic resources. More than half of the beneficiaries are currently women.

SDG 6. Clean Water and Sanitation - Ensure availability and sustainable management of water and sanitation for all

Forest Carbon Fees are used to fund community development projects supporting sanitation and access to clean water. Several boreholes have been refurbished and new ones installed, both within the neighboring community and within Rufunsa conservancy.

SDG 7. Affordable and Clean Energy - Ensure access to affordable, reliable, sustainable and modern energy for all

In partnership with a solar company, LZRP has provided solar lighting for several households and schools. The eco-charcoal project is a prime example of a sustainable, green energy project. Eco-Charcoal was created in response to the clear need to create legal, sustainable alternative energy products for the Zambian market. It is sustainably produced to protect Zambian forests and currently has 11 active community-based producers.

SDG 8. Decent Work and Economic Growth - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

The LZRP has created and will continue to create jobs and improve economic conditions within the surrounding community through activities such as honey production, eco-charcoal, direct employment opportunities such as community scouts, forest monitoring officers, engagement officers and community teacher positions. Through projects funded by the carbon fees, we further support indirect opportunity through asset provision and construction projects.

SDG 9. Industry, Innovation and Infrastructure - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Forest carbon science innovation supports technology and industry development within developing countries such as Zambia and supports rural communities gaining access to global markets through various livelihood initiatives such as bee keeping and Eco-Charcoal.

SDG 10. Reduced Inequalities - Reduce income inequality within and among countries

One of the main aims of the project is the equal distribution of benefits as prescribed by the CCB Standard. BCP projects and the corresponding benefit sharing mechanisms are designed to allow equal opportunities and reduce inequality for all community partners. Beneficiaries are incentivized both directly and indirectly through the community value creation package for activities that support the protection of forests and wildlife. LZRP is supporting increased household income, infrastructure development and foreign investment into developing countries in Africa such as Zambia.

SDG 11. Sustainable Cities and Communities - Make cities and human settlements inclusive, safe, resilient and sustainable

Through the mobilization of Forest Carbon Fees generated from the sale of verified carbon offsets, communities are able to develop infrastructure and support livelihood initiatives that make community settlements inclusive, safe, resilient and sustainable.

Climate Smart Agriculture techniques passed on to community partners helps to reduce environmental impact as well as support and oversupply of crops for market entry.

SDG 12. Responsible Consumption and Production - Ensure sustainable consumption and production patterns

Conservation Farming and Eco-Charcoal production contribute to this goal.

SDG 13. Climate Action - Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy

This is a greenhouse gas mitigation project avoiding approximately 200,000 tCO₂e emissions annually.

At a project level, community partners are educated and sensitized on the importance of climate action and our projects support climate smart agricultural techniques as well as other livelihood initiatives that involve the sustainable management and use of forest resources such as Eco-Charcoal and honey production.

SDG 14. Life Below Water - Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Not applicable. This is a terrestrial-only project.

SDG 15. Life on Land - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

The project protects more than 40,000 ha of intact Miombo woodland while ensuring sustainable charcoal production and conservation farming on several hundreds of hectares.

The LZRP acts as an important protective buffer to the Lower Zambezi National Parks, providing safe habitat and protected migration paths for wildlife.

BCP will only choose to operate in zones that hold high ecological value and are considered to be legacy landscapes in terms of threatened biodiversity. As much as social benefits are important to BCP's mission, conservation of wildlife strongholds are equally as important. In order to provide the security required to protect these zones, BCP supported community scouts are deployed to address encroachment as well as wildlife crime. Scouts are also trained to identify wildlife and log this important data on handheld devices as part of their line of work. Aerial patrols are also conducted weekly in order to keep a look out for encroachment and poachers from the skies.

BCP partners with the Oxford affiliate, Lion Landscapes, in order to support biodiversity monitoring efforts within our project zones. This is the 4th consecutive year that a structured biodiversity survey was conducted in LZRP. The survey design is based on a line transect method which is statistically robust. The results from the surveys indicate that the recovery rate of wildlife in LZRP is slow, mainly as a result of the level of depletion prior to 2012, when BCP took over management. Additionally, Miombo Forest is a lower density habitat. However, the trends in wildlife abundance ratios are encouraging. While the actual wildlife numbers remain low, steady increases were recorded for Klipspringer, Kudu, Roan Antelope, Sable Antelope and Warthog, Bushbuck, Grey Duiker and Sharpe's Grysbok. The correlation between zero encroachment and the return of wildlife to Rufunsa is clear.

SDG 16. Peace, Justice and Strong Institutions - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Not applicable. This project focuses on conservation practices.

SDG 17. Partnerships for the Goals - Strengthen the means of implementation and revitalize the global partnership for sustainable development

The project supports the government(Forestry Department) with capacity building i.e Procurement of equipment and training support.

Table Showing Sustainable Development Contributions

R o w n u m b e r	S D G T a r g e t	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	1.1	1.1.1 Proportion of population below the international poverty line	Implemented activities to decrease	1,199 households benefited directly from conservation fees A total of USD 125,251 were paid in livelihood investments in LZRP	The project area has experienced a 56 % increase of household income in ZMW income since the project inception. \$385,585 paid to LZRP communities where 1,199 Households benefit directly from conservation and livelihood fees for a total of 7,194 community beneficiaries Since project inception, 39 community impact projects were implemented

2)	2.3 & 2.4	2.3.1 Volume of production per labor unit by classes of farming/pastoral/forestry enterprise size 2.3.2 Average income of small-scale food producers, by sex and indigenous status 2.4.1 Proportion of agricultural area under productive and sustainable agriculture	Implemented activities to increase	Soil testing and analyses have been completed on 24 sites. 996 beehives have been provided. 4,658.25kg of honey was harvested. Average maize grain yield recorded from 1.8ton/ha to 4.9 ton/ha. 11 New Lead farmers were trained, adding to the 25 previously trained. 8 Honey harvesters were trained. 8 Horticulture farmers trained and provided with starter packs Construction of 1 poultry house	31 Lead Farmers have been trained in CSA technologies, and 691 follower farmers; and provided with farming inputs. 5 Agriculture Extension officers have been trained, and supported with fuel per month. 1 Agroforestry Chiefdom nursery has been established in Bunda Bunda. 11 Eco-charcoal producers are actively producing. 692 beehives were deployed at end of 2021 for active honey production 8 Horticulture farmers
3)	3.8	3.8.1 Coverage of essential health services	Implemented activities to increase	No impact during this monitoring period	Refurbishment of Chilimba Clinic Solar lighting at Namanongo Clinic

4)	4.6	Access to education services (BCP defined indicator) or 4.6.1 Percentage of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex	Implemented activities to increase	Construction of a 1X2 classroom block. 8 teacher community teachers benefiting from teacher salary support	Built a Teachers house, constructed a classroom block and salary support for 8 teachers.
5)	5.5	5.5.2 Proportion of women in managerial positions	Implemented activities to increase	8% increase of women on BCP payroll in 2021 154 female-led households in Bunda Bunda Chiefdom 50 of 160 registered beekeeping farmers are female	26.6% female representation on BCP payroll
6)	6.6	6.1.1 Proportion of population using safely managed drinking water services	Implemented activities to increase	Drilled 8 boreholes providing safe clean water to 8 Communities (5 in Namanongo and 3 in Mweshyangombe Zones).	27 boreholes drilled since project start

7)	7.1 & 7.2	7.1.2 Proportion of population with primary reliance on clean fuels and technology 7.2.1 Renewable energy share in the total final energy consumption	Implemented activities to increase	Increased hectareage under sustainable Eco-charcoal production to 190.72ha Total of ZMW50,618 were paid to community producers (Charpreneurs) 36.96 tons of Eco-charcoal sold as sustainable energy source to the Lusaka energy demand 18% of producers are women	Collaborated with Forestry Department to ensure the community rights to sustainable production empowering communities, avoiding deforestation of sensitive areas on 190.72 hectares
8	8.1 & 8.3 & 8.5	8.1.1 Annual growth rate of real GDP per capita 8.3.1 Proportion of informal employment in non-agriculture employment, by sex 8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	Implemented activities to increase	A poultry house was developed to support improved income from chicken production 8 teacher community teachers benefiting from teacher salary support 1,199 households benefited directly from conservation fees A total of USD 125,251 were paid in livelihood investments in LZRP 996 beehives have been provided Average maize grain yield recorded from 1.8ton/ha to 4.9 ton/ha. Total of ZMW50,618 of revenue for the community from eco-charcoal production	The project area has experienced a 56 % increase of household income in ZMW income since the project inception.

9	8.8	8.8.1 Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status	Implemented activities to decrease	Project functions under the BCP HR manual which ensures correct policies at the workplace and protects the health and safety of all employees.	Project functions under the BCP HR manual which ensures correct policies at the workplace and protects the health and safety of all employees.
10	9.1 & 9.4	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure	Implemented activities to increase	Supported Co-operative bodies with Annual Work Plan development and Needs Assessments.	Rehabilitation of Chinyunyu District Forestry Office. Rehabilitation of Mukamba Entry Gate to Lower Zambezi National Park
11	10.1	10.1.1 Growth rates of household expenditure or income per capita among the bottom 40 percent of the population and the total population	Implemented activities to increase	1,199 households benefited directly from conservation fees A total of USD 125,251 were paid in livelihood investments in LZRP	The project area has experienced an 56 % increase of household income in ZMW income since the project inception.

12	12.2	Proportion of land with sustainable management of natural resources (BCP defined indicator)	Implemented activities to increase	Sustainable forest management and use of ecological services are primary topics during community engagement meetings. Increased hectareage under sustainable Eco-charcoal production to 190.72ha New waste management SOP implemented on company level	9 years of agreeable sustainable management and efficient use of natural resources with partnership communities Collaborated with Forestry Department to ensure the community rights to sustainable production empowering communities, avoiding deforestation of sensitive areas on 190.72 hectares
13	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By conserving 40,126 ha of forest, Project LZRP has prevented the release of 221,813 tonnes of carbon into the atmosphere during the monitoring period REDD+ topics and explanations to community members at VAG level meetings	Prevented the release of 2,105,039 tonnes of carbon into the atmosphere since the implementation of the project.

14	15.1 & 15.2	15.1.1 Forest area as a proportion of total land area 15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type 15.2.1 Progress towards sustainable forest management 15.5.1 Red List Index of species survival 15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020	Implemented activities to increase	Added 2 EcoCharcoal sites (Total forest size added: 42.22ha) In 2021, scout's patrols resulted in 33 people apprehended, 9 snares and 1 firearm confiscated. No animal carcasses were found by the patrol team. One line transect biodiversity survey was completed, in conjunction with camera trapping surveys. Nesting surveys are specifically earmarked for the Southern Ground Hornbill species.	Increased forest area under sustainable charcoal production to 190.72ha The systematic data collection system using Spatial Monitoring and Reporting Tool (SMART) was implemented in June 2020. Since then, a total of 9,235 km of foot patrols were covered, resulting in 40 people apprehended and 1 firearm and 122 snares confiscated. BCP partners with Oxford affiliate, Lion Landscapes, in order to support biodiversity monitoring efforts within our project zones. This is the 4th consecutive year that a structured biodiversity survey was conducted in LZRP. The survey design is based on a line transect method which is statistically robust. The results from the surveys indicate that the recovery rate of wildlife in LZRP is slow, mainly as a result of the level of depletion prior to 2012, when BCP took over management. Additionally, Miombo Forest is a lower density habitat. However, the trends in wildlife abundance ratios are encouraging. While the actual wildlife numbers remain low, steady increases were recorded for Klipspringer, Kudu, Roan Antelope, Sable Antelope and Warthog, Bushbuck, Grey Duiker and Sharpe's Grysbok.
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15	17.3 & 17.9 & 17.1 1 & 17.1 5	17.3.1 Foreign direct investments (FDI), official development assistance and South-South Cooperation as a proportion of total domestic budget 17.9.1 Dollar value of financial and technical assistance (including through North-South, South-South and triangular cooperation) committed to developing countries 17.11.1 Developing countries' and least developed countries' share of global exports 17.15.1 Extent of use of country-owned results frameworks and planning tools by providers of development cooperation	Implemented activities to increase	Donated a full GIS system to Forestry Department, and provided related training Funds paid to GRZ during 2021 amounts to ZMW 6,331,884 Sale of carbon credits contributes to the exports of the country, ensuring inbound flow of financial resources Supports through various meetings the jurisdictional process towards national REDD+	Funds paid to GRZ during the years 2020 and 2021 amounts to ZMW 8,226,275
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2 SAFEGUARDS

2.1 No Net Harm

The project has been Gold Level Validated for positive community impacts under the CCB Standard. The positive impacts and any perceived negative community impacts have been described in the PDD available on the CCB website, please see <https://registry.verra.org/app/projectDetail/CCB/1202>.

The project was also successfully verified against the CCB standard at the Gold Level in 2018 for the period from 2013-2017.

A summary of potential negative environmental and socio-economic impacts and steps to mitigate them is provided as it follows:

Natural Risk

☐ Risk	☐ Assessment of rationale, assumptions and justification	Assessment of quality of documentation and data provided	☐ Conclusion regarding appropriateness of the risk rating
☐ Fire	Given the expertise of the audit team with the forest types comprising the project area, the audit team can confirm that miombo woodlands are highly fire adapted and are susceptible to loss of carbon stocks from natural fire due to human created conditions. The success of the project in reducing slash and burn agricultural activities that result in fire vectors near and within the project boundaries is sufficient for keeping the likelihood and significance of natural fire static. • The audit team was provided with a suite of peer reviewed literature confirming that natural fire does not present a risk to the project carbon stocks	As is allowed by the non-permanence risk tool, the audit team considers peer reviewed literature to be high quality	Risk rating is appropriate

Pest and Disease Outbreaks	Given the expertise of the audit team with the forest types comprising the project area, the audit team can confirm that miombo woodlands are highly resistant to pest and disease outbreaks. The audit team visited inventory plots across each district in the project area and confirmed that the species composition is consistent with the forest type listed above and therefore the risk of any changes to the ability of the forest areas to resist pest and disease outbreaks is insignificant	N/A	Risk rating is appropriate
• Extreme Weather	No changes have occurred to the likelihood and significance of extreme weather since validation and the previous verification. The audit team is experienced working in the region and agrees that extreme weather does not pose a risk to the carbon stocks in the project area	N/A	Risk rating is appropriate
Geological Risk	No changes have occurred to the likelihood and significance of geological events since validation and the previous verification. The audit team is experienced working in the region and agrees that geological events do not pose a risk to the carbon stocks in the project area	N/A.	Risk rating is appropriate
Elephants	The audit team reviewed the rationale provided by project personnel and confirmed that it is supported by the peer reviewed literature provided in the project risk report. In addition, whereas the audit team agrees with the rationale of the risks that elephants have on the carbon stocks, conversation with wildlife experts both near the project area and along the opposite banks of	As is allowed by the non-permanence risk tool, the audit team considers peer reviewed literature to be high quality	Risk rating is appropriate

	the Zambezi River allowed the audit team to confirm that the lack of significant elephant populations in or around the project area at this time supports the risk score		
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Socio economic Risk

BioCarbon Partners 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. BCP has a highly qualified and experienced team that have worked on conservation and natural resource management projects in Zambia and across Africa. BCP has one of the most qualified and experienced REDD+ teams in Africa, and possibly the world. This team has built its experience since 2012 in Zambia, successfully leading LZRP as Zambia's first REDD+ project and Africa's first CCB triple gold validated project. This team has worked with communities to successfully pass a dozen of validations and verifications. It could be argued that BCP as a developer has accrued unparalleled experience and traction with REDD+ in the Zambian context. BCP's FPIC Manual V. 8.0 (see attachment) has also been developed by trial and error in Zambia, and is under continued refinement through the support of consulting firm, The Landscapes and Livelihoods Group (TLLG).

The project has clearly benefitted local communities. Only projects that have written approval from local residents are implemented, and the link between interventions and deforestation mitigation efforts is further cemented through the signing of Community Covenants that oblige both BCP and participants to comply with project guidelines and connect community benefits to forest protection efforts.

Substantial and repeated crop failure in surrounding communities could lead to increased poaching and charcoal production for financial benefit. More erratic rainfall and pests make this likely, and all of our alternative economic development efforts are aimed at mitigating this risk. This is particularly true of the Sustainable Eco-Charcoal Project, which is based on a strong business model and designed to become a stand-alone, self-sufficient project. It is envisaged that the conservation farming training program will be similarly successful.

Although there are always (legitimate) concerns about corruption, in talking to local residents about the history of external involvement in their communities, BCP has learned that corruption is not the only risk that could potentially threaten projects: other difficult community dynamics (such as high alcoholism rates, internal jealousy and belief in witchcraft) have threatened or ruined other organizations' projects in the past.

However, BCP's extensive community engagement efforts and strong local presence have served as powerful tools against these problems. Local community members have explicitly told BCP representatives that we have already set ourselves apart from other organizations by conducting sensitization meetings and consulting local stakeholders prior to implementing our projects, and by

closely involving the local community in our project activities. As a result, community members report that they feel greater ownership of the projects that we launch in partnership with them.

BCP has engaged in significant capacity-building efforts among our staff, local community members and local implementation partners, so that we can best avoid and respond to such problems. We are also managing the risk of corruption through the use of Zone Development Committees (ZDCs) and other BCP-supported community consultation and implementation structures (see Section G3.8 for more information about our Community Engagement Strategy).

Another key risk mitigation strategy is the development of substantial community benefit projects and systems (conservation community covenants).

2.2 Local Stakeholder Consultation

BCP's Community Engagement Strategy is a comprehensive set of policies and procedures that have been designed to ensure that BCP's REDD+ projects bring maximum positive impacts to local community stakeholder livelihoods and meaningfully reduce deforestation. BCP's Community Engagement Strategy is designed to ensure compliance with relevant international standards, including the CCBA Standards (<http://www.vcsprojectdatabase.org/#/ccb-all-project-details/1202>). There are five main components in BCP's Community Engagement Strategy:

- Community Stakeholder Identification, Mapping and Census Process
- Community Sensitization and Consultation
- Community Projects: Design and Implementation Processes
- Documenting Compliance with International Standards, such as FPIC
- On-going Social Monitoring Program

BCP has thus far consulted over 86% of community stakeholders, and benefited from a more than 75 % project success rating among stakeholders surveyed at community meetings.

All stakeholder communication is documented and minutes of meetings stored. Table 1 below is a summary of all the consultations and meetings held during the current monitoring period (2021). Local communities give direct input into development and deforestation mitigation projects hosted by BCP through the officially recognized Cooperative structures, following the five steps above. All projects are either proposed directly by the local community or in partnership with BCP and then tailor-made according to local needs.

The expansion of the eco-charcoal project is an example of the consultative process. Local community members voluntarily put forward areas of communal forest for charcoal production.

Our community engagement team lives within the local community and interacts formally and informally with community members on a daily basis. The SOP in Appendix B outlines the procedure for project identification and alteration. Sensitization meetings are an ongoing process, as explained in section 3.1. Every meeting conducted with community groups, representatives and other stakeholders is used as an opportunity to share information and updates about the project, including how to spend project revenues. The community and key stakeholders have been updated about the ongoing verification process via memos (See Appendix B) and the verification results will be shared in engagement meetings when the process is complete.

The Zambian laws and regulations covering workers' rights have not changed since the last monitoring period (M8).

Local stakeholders have been made fully aware (via the sensitization meetings referred to above) 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 communication is part and parcel of the REDD+ project information dissemination which occurs since the start of community engagement and continues to be communicated during refresher information sharing meetings. Since the restrictions on travel placed by authorities in response to the global covid-19 pandemic in 2020/2021, BCP has obtained permission from Verra, local stakeholders and the auditors to conduct virtual field visits and interviews on-line, facilitated by our engagement teams. This process was communicated to our local stakeholders through formal notices to CFMGs and the Forestry Department (see Appendix B) and during both higher- and lower-level community engagement meetings.

In 2021(M9), the project conducted over 70 community meetings where project Implementation and project benefits (e.g. borehole drilling, distribution of beehives and construction of the poultry house) were discussed with local stakeholders. These meetings enable communities/local stakeholders to be informed of project benefits over this monitoring period. There have been no relevant changes to the risks and costs to the communities associated with the project implementation in this monitoring period to communicate. See table 1 below for details of these community meetings and the community engagement tracker in Appendix B that has Gdrive links to the meeting minutes.

In 2021(M9), The process of verification and the remote audit evidence data collection was communicated to stakeholders through letters, to the Community Resources Board (CRBs) and Government (Forestry Department and Department of National Parks and Wildlife). Letter that were delivered by hand to the respective offices can be found in the Annex B.

Table 1. List of consent and consultation meetings held with local stakeholders for LZRP in 2021.

Date	Site	Main Activity	Specific Activity	Lead Facilitator	M	F
1/12/2021	Rufunsa	Community sensitization		Brighton Chama	7	2
1/13/2021	Rufunsa	Community sensitization	Cash dividend Update, Penalties for breaches, Teachers' salaries increment FPIC, REDD+ Sensitization	Brighton Chama and the Cooperative	37	26
1/20/2021	Rufunsa	CFMG sensitization meeting for Kasumba Forest	Proposed Kasumba CFMG	Muswema Chanda, Brighton Chama.	28	7
2/16/2021	Rufunsa	Village level engagement meeting	"1. Update on selected project 2. Redd+ sensitization"	Muswema Chanda	4	6
	Rufunsa					
2/16/2021	Rufunsa	Village level engagement meeting	"1. Project update 2. Redd+ sensitization"	Muswema Chanda	19	12
2/17/2021	Rufunsa	Village level engagement meeting	"1. Project update 2. Redd+ sensitization"	Muswema Chanda	5	11
2/17/2021	Rufunsa	Village level engagement meeting	"1. Selected project update 2. Redd+ sensitization"	Muswema Chanda	10	6
2/18/2021	Rufunsa	CFMG sensitization meeting	"1. Presentation of Map from ground truthing 2. CFMG committee and constitution 3. Forms for CFMG formation"	Muswema Chanda	15	25

2/23/2021	Rufunsa	Village level engagement meeting	"1. Project update 2. Redd+ sensitization"	Muswema Chanda	8	1
2/24/2021	Rufunsa	Community sensitization	Cash Dividend Debrief, REDD+ Sensitization and Community Projects Update	Brighton Chama	6	2
2/24/2021	Rufunsa	Community sensitization	Engagement meeting with HH's closer to RC boundary	Brighton Chama	16	2
2/24/2021	Rufunsa	Community sensitization	Community Sensitization on REDD+, CDP review and horticulture project	Brighton Chama	22	10
2/25/2021	Rufunsa	Community sensitization	Community Forest Formation Sensitization	Brighton Chama and Forest Department	32	6
3/2/2021	Rufunsa	Kasumba CFMG constitution formation	Kasumba CFMG constitution formation	Muswema Chanda	23	13
3/3/2021	Rufunsa	Kasumba CFMG committee elections	1.Kasumba CFMG committee elections	Muswema Chanda	24	11
3/16/2021		Community sensitization	REDD+ sensitization, Benefits, Risks and Mitigations	Brighton Chama and Cooperative Secretary	21	6
3/17/2021	Rufunsa	FPIC_meeting	Climate change	Muswema Chanda	22	20
3/17/2021	Rufunsa	CFMG_board_meeting	Engagement plans with headmen and Cooperatives	Cooperative Chairpersons and Brighton Chama	13	2
3/23/2021	Rufunsa	Village level engagement meeting	Sensitization on Climate Change	Muswema Chanda	5	4

3/23/2021	Rufunsa	Community sensitization	REDD+ benefits, risks and mitigation meeting, update on Chicken run	Liyoyelo Chairpersons and Brighton Chama	20	29
3/23/2021	Rufunsa	Community sensitization	REDD+ benefits, Risks and Mitigation, Zone project updates.	Cooperative Chairpersons and Brighton Chama	18	19
3/24/2021	Rufunsa	Village level engagement meeting	Redd+ sensitization and climate change	Muswema Chanda	7	4
3/24/2021	Rufunsa	Monthly village level engagement meeting	Sensitization on Redd+ and Climate change	Muswema Chanda	4	9
3/24/2021	Rufunsa	Monthly village level engagement meeting	Redd+, climate	Muswema Chanda	3	10
3/24/2021	Rufunsa	Community sensitization	REDD+ benefits, risks and Mitigation	Brighton Chama	10	7
3/25/2021	Rufunsa	Village level engagement meeting	Sensitization on Redd+	Muswema Chanda	2	4
3/25/2021	Rufunsa	Monthly village level meeting	Sensitization on climate change	Muswema Chanda	4	3
3/25/2021	Rufunsa	Community sensitization	REDD+ Benefits, Risks and Mitigation	Liyoyelo Cooperative Chairpersons and Brighton Chama	25	10
3/25/2021	Rufunsa	Community sensitization	REDD+ benefits, Risks and Mitigation and Community Projects Update.	Brighton Chama	14	6
3/26/2021	Rufunsa	Zone meeting	Financial Report of the hammer mill in Namanongo Zone	Chakanda Cooperative and Brighton Chama	23	17
3/29/2021	Rufunsa	Monthly village level	Sensitization on Redd+, Project update	Muswema Chanda	15	11

		engagemen t meeting				
3/30/2 021	Rufunsa	Monthly village level engagemen t meeting	Project update, Redd+ sensitization	Muswema Chanda	6	2
3/31/2 021	Rufunsa	Village level engagemen t meeting	Sensitization on Redd+, Project update	Muswema Chanda	12	19
3/31/2 021	Rufunsa	Village level engagemen t meeting	Climate change	Muswema Chanda	7	7
3/31/2 021	Rufunsa	Village level engagemen t meeting	Redd+ sensitization	Muswema Chanda	5	0
4/12/2 021	Rufunsa	Monthly village level engagemen t meeting	Grievance mechanism	Muswema Chanda	3	2
4/14/2 021	Rufunsa	Meeting on horticulture program	Horticulture program	Muswema Chanda , Munalula Akayombo kwa	3	1
4/15/2 021	Rufunsa	Horticulture project	Link between horticulture project and forest conservation	Muswema Chanda	3	1
4/15/2 021	Rufunsa	Community_ sensitization	BioBank Community Forest sensitization meeting	Brighton Chama	10	15
4/15/2 021	Rufunsa	Community_ sensitization	REDD+ sensitization and Cash Dividend review.	Brighton Chama	9	3
4/16/2 021	Rufunsa	Village level engagemen t meeting	Climate change	Muswema Chanda	9	3
4/20/2 021	Rufunsa	Village level engagemen t meeting	Redd+ sensitization	Muswema Chanda	16	13
4/20/2 021	Rufunsa	Village level engagemen t meeting	Grievance mechanism	Muswema Chanda	21	10
4/21/2 021	Rufunsa	Community_ sensitizatio n	RC Boundary engagement with Households on the boundary	Brighton Chama	15	2

4/22/2021	Rufunsa	Village level engagement meeting	"CDF Grievance mechanism AOB"	Muswema Chanda	18	7
4/22/2021	Rufunsa	Community sensitization	CDP Review and REDD+ sensitization	Brighton Chama	11	6
4/23/2021	Rufunsa	Monthly village level engagement meeting	"Grievance mechanism AOB (Quadrangle)"	Muswema Chanda	38	15
4/23/2021	Rufunsa	Management of Namanongo Community hammer mill	Cooperative Chairperson and Brighton chama	Cooperative Chairperson and Brighton chama	17	10
4/26/2021	Rufunsa	Village level meeting	Grievance mechanism	Muswema Chanda	3	1
4/28/2021	Rufunsa	Village level engagement meeting	Climate change	Muswema Chanda	9	8
4/28/2021	Rufunsa	Community sensitization	Climate change and BCP project model sensitization	Brighton Chama	12	3
5/13/2021	Rufunsa	Monthly Village level engagement meeting	Grievance mechanism, Honey Project update	Muswema chanda	13	0
5/14/2021	Rufunsa	Monthly village level engagement meeting	"Climate change/Redd+ Honey project update"	Muswema Chanda	7	5
5/17/2021	Rufunsa	Honey project update	Honey project update	Muswema Chanda , Nature's Nectar	15	12
5/18/2021	Rufunsa	Honey project project	Honey project update	Muswema Chanda, Nature's nectar	23	2
5/19/2021	Rufunsa	Honey project update	Honey project update	Muswema, Nature's nectar	17	36
5/20/2021	Rufunsa	Village level engagement	Honey project update	Muswema Chanda, Nature's Nectar	9	0
5/20/2021	Rufunsa	Village level engagement meeting	Hammer Mill project update	Muswema Chanda	26	18

5/24/2021	Rufunsa	Monthly village level engagement meeting	"Honey project update Leopard signage"	Muswema Chanda	12	7
5/24/2021	Rufunsa	Community sensitization	Conservation fees update and review of agreements on REDD+	Brighton Chama	19	5
5/25/2021	Rufunsa	Cooperative Training meeting	Financial management of Hammer mill and effective Community engagement	Brighton Chama	9	1
5/26/2021	Rufunsa	Cooperative training	"Redd+ sensitization Community Project management"	Muswema Chanda, Brighton Chama	4	2
5/27/2021	Rufunsa	Cooperative training	"- Redd+ sensitization (Revision). -Conservation fees financial report."	Muswema Chanda, Brighton Chama	4	3
5/28/2021	Rufunsa	Community sensitization	Grievance Mechanism sensitization and update on Bee keeping project	Brighton Chama	4	3
5/31/2021	Rufunsa	Monthly Village level engagement meeting	Honey project update	Muswema Chanda	3	0
6/10/2021	Rufunsa	Community sensitization	Community projects operationalization and update on Community projects	Brighton Chama and Liyoyelo Cooperative Chairpersons	13	3
6/16/2021	Rufunsa	Community sensitization	Conservation fees update and sensitization on BCP project model	Brighton Chama	11	1
6/16/2021	Rufunsa	Community sensitization	Beekeeping update and sensitization on RCFA	Brighton Chama	10	0
7/20/2021	Rufunsa	Community sensitization	Community Forestry Management Agreement.	Forest Department	12	5
9/14/2021	Rufunsa	Community sensitization	LZRP verification process, HH mapping and stakeholder grievance mechanism	Brighton Chama	9	4
9/15/2021	Rufunsa	Community sensitization	LZRP verification process, HH mapping exercise and	Brighton Chama	13	6

			stakeholder engagement			
9/16/2021	Rufunsa	Community sensitization	LZRP verification process, HH mapping and stakeholder grievance procedure	Brighton Chama	14	4
TOTAL					936	546

2.3 AFOLU-Specific Safeguards

BCP works closely with local representatives and traditional community leaders to identify local causes and drivers of deforestation, and to design projects that are anticipated to meaningfully and sustainably address them (see section 3.1). To mitigate risks to local stakeholders due to project implementation, alternative livelihood projects i.e., honey and eco-charcoal production, conservation farming interventions, training of lead farmers, education support, and fire management training were implemented.

Trained resource protection teams comprised local community members patrol and secure the project area, reporting any acts of deforestation or wildlife poaching that take place. Particular emphasis is placed on protecting the perimeter of the property, especially the boundary adjacent to community lands, with an aim to prevent further encroachment of the project area. Resource Protection activities are undertaken through close collaboration with the Forestry Department, Zambian Police and the Zambia Wildlife Agency (ZAWA). Resource Protection teams are trained in effective conflict resolution practices, for example, effective communication styles for pursuing non-confrontational discussions with local community stakeholders. BCP's Forest Monitors are also engaged in on-going comprehensive biodiversity monitoring programs, which are designed to track the ongoing impacts of BCP's REDD+ activities on local wildlife. See details of trainings and monitoring in section 3.1 below.

In October 2012, BCP undertook a "boundary demarcation" activity along the Northern boundary of the property, which separates the project area from community lands. The purpose of this activity was to ensure local community stakeholder awareness and acceptance of project area boundaries, in the interest of reducing the potential of conflict stemming from confusion about the boundary location (see section 3.1).

There haven't been any issues in relation to property and land use rights of local stakeholders being negatively impacted. BCP has a well-established and publicly known

grievance mechanism that has been designed to address and resolve any problems. Stakeholder Grievance Response SOP is in place, signed by lead members of the engagement team and signed for as received by each Zone's leadership and kept on file (Appendix B). The grievance mechanism is clearly outlined and discussed in community sensitization meetings, and contact information for BCP representatives is included in all public communications. During the current monitoring period (M9), Namanongo Zone raised a grievance to BCP in relation to project area boundaries not being clear to them following the erection of community project signposts in the villages. Some villages claimed that they were not fully informed about the construction of the sign posts and considered the actions as extension of project area boundaries. This grievance was raised in a meeting facilitated by BCP's Bunda Bunda Chieftdom Lead and proceedings related to the issue recorded in meeting minutes and subsequently tracked in the project grievance trackers until closure. A follow up grievance resolution meeting was conducted where the community members demanded to have an audience with the landowner, Sable Transport and further instructed BCP not to conduct any project related activities in the Zone until the issue was resolved and closed. The community selected one of the head women to represent them and to meet with the landowner to get clarity on the boundary status and was told that there was no extension whatsoever and that the previously painted boundary remained the same. After the meeting with the landowner, the emissary reported back in a follow up community meeting with headmen, community members and BCP. Further clarification of the purpose of erecting the project sign posts was made and a report was given by the community representative who maintained that there was no shift in the boundary. Following the clarifications and deliberations, it was agreed and concluded that there was actually no boundary extension into the project zone and the case was closed, minuted (recorded) and duly signed by the Zone leadership. Minutes of all meetings related to the grievance attached herewith.

3 IMPLEMENTATION STATUS

○ 3.1 Implementation Status of the Project Activity

The LZRP has developed a wide range of deforestation mitigation and benefit sharing activities with local stakeholders. These activities fit broadly into three different categories namely a) Community Sensitization, Education and Consultation, b) Community-Based Deforestation Mitigation Projects, and c) Protection, Enforcement and Monitoring

Activity Area 1: Community Sensitization, Education and Consultation

Stakeholders understand and support the objectives of BCP's project activities, and are meaningfully involved in decision-making processes so as to ensure local legitimacy and buy-in to the project.

Community Sensitization

BCP works closely with local representatives and traditional community leaders to identify local causes and drivers of deforestation, and to design projects that are anticipated to meaningfully and sustainably address them. BCP's community-based approach allows project activities to benefit from local knowledge, legitimacy and support. Since February 2012, BCP representatives have engaged with local communities through a robust and extensive "community consultation and sensitization" process, which adheres to the principles of obtaining Free, Prior and Informed Consent (FPIC) from local stakeholder communities. We have thus far consulted over 86% of community stakeholders, and benefit from over 85% approval rating among stakeholders surveyed at community meetings.

Since 2012, BCP has undertaken an extensive sensitization and consultation process with community stakeholders living adjacent to Rufunsa Conservancy, the project area for the Lower Zambezi REDD+ Project, in line with the principles of ensuring Free, Prior and Informed Consent (FPIC). Since 2012, BCP has facilitated over 1,256 formal sensitization meetings (until end of October 2021) across the 2928 villages within the LZRP project zone. Over 2, 200 names are listed on attendance sheets accompanying these FPIC meeting minutes (1,563 people attended village meetings from January to October 21). To enhance community engagement, BCP in 2015, invested in new office and accommodation facilities in Chinyunya in Ndubulula Zone. While this location increased project costs, it increased the ability of the Community Engagement team to be more accessible, and mobile within the communities than from the prior base in Rufunsa Conservancy.

This is an ongoing project activity that started in February 2012. Every meeting conducted with community groups, representatives and other stakeholders is used as an opportunity to

share information and updates of the project. Quarterly Meetings in all 4 zones include REDD+ sensitization and awareness.

School Environmental Education Program (EEP)

BCP aims to reach out to youths to raise awareness about forests and the environment. By teaching youths about the dangers of deforestation, and raising awareness about alternative activities, BCP hopes to change attitudes and actions, and to promote “better practices” and improved awareness among future generations.

In 2014, the EEP was being piloted and implemented in two schools in the project zone; Ndubulula and Namanongo Primary and Basic schools. In 2015, two community schools Chilimba and Mweeshang’ombe community schools were also included. A total of 118 students and 64 teachers were participating in the program.

At the end of the school year in 2014, BCP staff together with 4 Environmental Education Teachers (EET’s) and 2 new EET’s from the community schools re-evaluated the program and revised materials based on “lessons learned” and feedback from the initial pilot in the two government schools. The revised program consists of 25 short Lessons which have been divided into three Modules that is; Module 1 – Land and Plant Conservation, Module 2- Animal Conservation and Module 3- Community-Led Conservation. It also consists of Special Environmental Education Days (SEEDs) – these are three special days/events that BCP assists in facilitating, ideas for SEED include: Sports Day, Tree Planting Day, Environmental Movie Day, Environmental Protection in Action Day, and Environmental Awareness Days (EADs).

In 2015, two SEEDs were held in the first and third terms by all the four schools.

This project activity started in February 2013 in Ndubulula, Mweshang’ombe , and Chilimba but was put on hold in 2018 as the teachers who had the capacity to lead it had moved. Qualified teachers are now available and the project is being re-evaluated for a possible resumption in 2021. The project did not take off in 2021 as planned mainly due to COVID-19 pandemic disruptions. All things being equal, the project will resume in 2022.

Forest Football: Youth Football and Environmental Education Program

The Eco-Kick program specifically targets youth for involvement in environmentally conscious activities, as well as promoting a healthy lifestyle that emphasizes alternatives to engaging in deforestation (as well as other less-desirable activities, that similar programs are generally designed to steer youths away from).

In January 2015, members of the BCP Community Engagement Team (CET) conducted a “Community conservation football” event which targeted all the youth in the Project Zone. This event was used as a platform for massive REDD+ sensitization and BCP community interventions to the youth and other community members. BCP also took that opportunity to recognize hard working community members that participated in all USAID VIGOR grant funded projects implemented in the project zone in 2013/14.

A full kit football jersey and a football was given to the winners, a football to the runner-ups while caps and T-shirts branded with BCP and USAID VIGOR grant logos were given to others that participated in the event as well as those recognized as BCP USAID VIGOR Stars.

This project activity started in January 2015 but was stopped following completion of the USAID VIGOR Grant and will resume when alternative funds are available.

Governance: Institutional Building

BCP has worked with local communities to develop and support ‘hybridized’ community decision-making institutions, called Zone Development Committees (ZDCs). The ZDCs are designed to promote local ownership of projects and to support locally appropriate decisions made through transparent decision-making structures. ZDCs address (avoid) problems of elite capture by combining local, democratically elected representatives from each village with local traditional leaders, to allow decisions about project activities to simultaneously benefit from local knowledge and support, as well as legitimacy maintained through the inclusion of traditional leaders. BCP meets regularly with ZDCs in each of the 4 community zones for the Lower Zambezi REDD+ Project, to promote local sensitization and understanding of project activities, solicit feedback, and discuss upcoming project activities (including: project identification, project design, and project implementation).

Working with local governance structures in the project zone is the most important engagement strategy BCP uses to reach out to the community. These structures are used as a platform to sensitize on BCP work in the project zone, the REDD+ Project taking place in Rufunsa Conservancy, consult as well as engage with the local leaders and community representatives on community development projects that address the major drivers of deforestation and directly provide a sustainable source of income that assists to reducing poverty

In 2015 members of the BCP CET identified existing governance structures in the project zone which the CET can work with for project implementation in the area. This was done by conducting an assessment with targeted people in the project zone and these include area or ward councilors, former and current members of Area Development Committees (ADC)/ Ward Development Committees (WDC), and other respected community members. The goal

of this assessment was to determine whether local governance structures such as ADC's and WDC's could be supported in the Bunda-Bunda chiefdom and if these structures also need strengthening to build their capacity so that they become self-reliant and take ownership of community development projects and decisions made on behalf of or by the community. Results of the assessment showed that ADC's or WDC's are not present in Rufunsa District as a whole as well as within the LZRP project zone since the year 2011. In addition, there hasn't been any existing ADC or WDC in Chilimba zone. Additionally, the Bunda Bunda CRB has not been in existence while the LZRP was implemented.

Hence, BCP CET members further assessed the local existing cooperatives in the project zone if they had the capacity to work as governance structures in their respective zones i.e. Chilimba, Namanongo, Mweshang'ombe and Ndubulula. Cooperatives are a government recognized structure under the Department of Cooperatives in the Ministry of Commerce, Trade and Industry. Agricultural cooperatives existed in some zones prior to LZRP. Rather than creating a new institution, it was pragmatic to work through existing Government recognized structures which have district-level Government officer support. BCP signed REDD+ Conservation Fee Sharing Agreements (RCFSA) with 3 of the zones to clearly explain the roles of both parties' and the "rules" of benefit sharing from REDD+.

This project activity started in January 2013. BCP participated in District level planning and coordination through the District Development Coordinating Committee. However, formation of sub-district structures – Ward Development Committees was frozen by the Ministry of Local Government in 2017. Existing ones were disbanded in 2018 by the Ministry.

In 2019, cooperatives were supported to register as corporate entities under the Ministry of Commerce and Trade through the Ministry of Agriculture. Meetings have been conducted with cooperatives on the management of income generating projects for financial management (e.g. Hammer Mills).

Activity Area 2: Community-Based Deforestation Mitigation Projects:

This activity area addresses (reduce) local drivers of deforestation by improving local livelihoods and by providing meaningful alternatives to deforestation-dependent livelihood activities.

Agroforestry

Agroforestry is a land use system where woody perennials (trees, shrubs, bamboos etc.) are deliberately used with crops and animals on the same land management unit in some form of spatial and sequential arrangement. Farmers were taught the different benefits that they can get from different agroforestry technologies. These Technologies include Biomass

Transfer, Improved Fallow, Alley cropping, live fencing, Ornamental, Fodder bank, Seed orchard, Fruit trees, Windbreak and many more. In addition to the presentations of the above topics, practicals were done mainly in the following topics:

- i. Tree Nursery Soil Mixture Formation and
- ii. Pot filling.

Agroforestry promotes tree-planting and reforestation projects, particularly those with a commercial or food security improvement aspect (such as fruit tree planting activities in combination with vegetable gardens or conservation farming plots).

There is an agro-forestry component in the Conservation Farming Training Program (CFTP). In 2012, as part of an initial pilot, BCP partnered with Zambia's Conservation Farming Unit (CFU) and Musika to provide initial agro-forestry training to ten households as part of the CFTP. In 2015, BCP focused on the expansion of the CFTP from 197 to 500 new households. This implementation was done in partnership with Community Markets for Conservation (COMACO). Four treadle pumps and *Gliricidia sepium* nurseries were established in each zone at a lead farmer's farm for distribution to CFTP farmers

Agroforestry projects started in November 2012 and since then BCP has supported the Forestry Department with nurseries of different tree species to support farmers in agro-forestry and smart agriculture practices through conservation farming. In 2019 BCP supported the drilling of a borehole at the Chinyunyu District Forest Station to support tree seedling production at the Forestry Department's nursery.

In 2020 BCP supported the Forestry Department in raising seedlings for their nursery as well as those that were distributed to Lead farmers in the district. From the support from BCP, the department was able to raise 25,418 *Gliricidia sepium* seedlings that were distributed to farmers, 250 paw paw seedlings, 280 Mangoes, 320 Guavas and 930 avocados for their nursery. About 30,000 seeds of Musangu (*Faidherbia albida*) were also procured by the Forestry Department with support from BCP and the department is currently mobilizing pots so that the seeds can be raised into seedlings.

From 2016 to date, BCP has supported the department with about 58,866 seeds from which 28,866 seedlings have been raised.

Currently the department is still raising the assorted fruit species and are in the process of raising the Musangu (*Faidherbia albida*) that will be used to support agro-forestry activities in the communities.

Conservation Farming

BCP's Conservation Farming Training Program (CFTP) was originally led in partnership with the Zambian Conservation Farming Unit (CFU) and Musika Development Initiatives. The

CFTP is designed to teach farmers how to become more efficient and productive on their farms, with an aim to improve local food security and reduce two of the strongest local drivers of deforestation: clearing for agricultural expansion, and clearing for charcoal production (to earn income to supplement incomes from agriculture). There are six main ‘interventions’ promoted by the CFTP:

- i. Early Planting – helps farmers to take advantage of “natural fertilizer” from first rains
- ii. No burning of crop residue – improves soil health, reduces emissions
- iii. Minimum-tillage basins – allows farmers to plant without needing animals to plough (less labour, less expensive, and allows for early planting that allows for “natural fertilizer” from first rains)
- iv. Precision farming – higher efficiency; maximum yields from minimum inputs
- v. Agro-forestry – helps to minimize inputs (fertilizer) over time; *Faidherbia albida* trees provide natural fertilizer
- vi. Inter-cropping, crop rotation, diversification – help farmers to remain productive on the same area of field/farm over time (reduces need to clear new areas of fields).

In November 2012, BCP launched an initial pilot Conservation Farming Training Program (CFTP) with 10 households, through support and collaboration with CFU and Musika.

In 2013/2014 farming season, BCP expanded participation in the CFTP to include 197 households, with 4 individuals trained as “Senior Lead Farmers” and 41 trained as “Lead Farmers.” Trainings were provided through a combination of CFU, Musika and BCP trainers, with SLFs and LFs playing an important role in disseminating information and providing training to Contact Farmers in their villages.

In 2015, in partnership with COMACO, 500 farmers were recruited and trained from the project zone in conservation farming, a significant proportion of the area’s estimated 1,200 households. Sixteen (16) Lead Farmers from all four zones were trained in conservation farming on September 17th – 18th at Kaunga Agriculture Training Centre (KATC). The purpose of the training was to introduce the farmers to the conservation farming model intervention and associated value chain.

In 2015/16, a single season partnership with New Rotations Zambia (NRZ) was experimented with to help link farmers to the market. NRZ provided certain seed types and then guaranteed an offtake market. This was discontinued due to high cost after a year.

BCP has since partnered with the Ministry of Agriculture via District Agricultural Coordinators (DACOs) to provide Conservation Farming training to households. This is more cost effective and a more pragmatic partnership with the Government.

Conservation farming projects started in November 2012 and in 2020, BCP trained 23 new lead farmers who later recruited follower farmers.

During 2021 further lead farmers were trained leading to 28 in total, with approximately 475 follower farmers.

In 2020/2021 farming season, the following conservation farming activities were conducted and funded from the agriculture budget:

Lead Farmer Training

A Training of 18 out of 20 lead farmers from Bunda Bunda chiefdom took place from the 15th to 19th of June 2020. The other two were trained in-situ.

The main objective of the training was to teach farmers the different Climate smart agricultural technologies that are being implemented at the moment. The technologies included agroforestry, Integrated Soil Fertility Management, Conservation Agriculture, Conservation farming and other unique agricultural models like Evergreen Maize for Africa and SILMS. The other objective of the training was to teach farmers the importance of the Farmer Field Schools and how to establish Farmer Fields Schools within their communities.

Distribution of inputs for farmer field school demonstration.

All the 20 lead farmers in Bunda Bunda (from the project zone) received a pack of demonstration inputs which included the following:

- i. Maize seed 5kg
- ii. Soya beans seed 20kg
- iii. Basal dressing fertilizer 2 X 50kgs
- iv. Top dressing fertilizer 1 x 50kgs

Distribution of *Gliricidia sepium*

This activity started in December 2020 with a total of 7,000/25,000 seedlings of *Gliricidia sepium* delivered to lead farmers. A total of 25,000 seedlings were raised by the Forestry Department and are all set to be distributed by the end of February 2021.

Distribution of PPE

18 of the 20 lead farmers have received their PPE

A total of 18 out of 20 lead farmers from Bunda bunda chiefdom were trained in Climate Smart Agriculture in 2020 and also supported with inputs for 2 lima portion of land.

Topics cover during training

Training topics were tailored to ensure farmers take up interventions that increase productivity and profitability without depleting their soils and increasing their agricultural land.

Climate Smart Agriculture

Climate smart agriculture is presented as an integrated approach to managing landscapes to help adapt agricultural methods, livestock and crops to the ongoing human induced climate change. It can also be defined in simpler terms as agriculture that sustainably increases productivity, enhances adaptive capacity, and removes green gas emission where possible. Under this section the trainers guide farmers on evidence based actions and technologies needed to transform and reorient agricultural systems to effectively support development and ensure food security in changing climate conditions. To be precise the following sub-topics are presented;

- i. Definitions and overview of climate smart agriculture –farmers are made to understand in simple terms what climate smart agriculture is and the components involved therein.
- ii. Agricultural approaches and practices that contribute to climate change adaptation (mulch cropping, cover crops, water management, conservation agric) – these approaches that farmers can use to mitigate and adapt climate change are illustrated
- iii. Technology demonstration (EMA technology) – visual demonstration of evidence based technologies that have been used before are illustrated through farmers' participation during the illustrations.

Integrated Soil Fertility Management

Integrated Soil Fertility Management (ISFM) is presented as 'a set of soil fertility management practices that necessarily include the use of fertilizer, organic inputs and improved germplasm combined with the knowledge on how to adapt these practices to local conditions in aim of maximizing the agronomic use of efficiency of the applied nutrients and improving crop productivity. ISFM seeks that all inputs are managed following sound

agronomic practices', (Vanlauwe et al. 2010). Farmers are taught the importance of ISFM and the need to adopt it since it aims at maximizing crop production and productivity from a small piece of land and that land remains sustainable for a long period of time. Farmers are made to understand what soil fertility is all about and thereafter a clear explanation on good agronomic practices that farmers are required to practice in order to improve and sustain their soil for high crop production and productivity is presented.

Deforestation Free Supply Chain

'Deforestation-free supply chain' is presented as a process that is about managing the relationships between the businesses responsible for efficient production and supply of products from the farm level to the consumers to meet the requirements in terms of quality, quantity and price, without encouraging the activity of deforestation. Under this topic we slowly presented the following sub-topics in logic order in order to help the farmers understand the meaning of "Deforestation-free supply chain"

- ii. What is deforestation?
- iii. What are the causes of deforestation?
- iv. What are the effects of deforestation?
- v. Agricultural supply chain and
- vi. Deforestation-free supply chain

Improved Small Livestock Production

Throughout BCP's extensive first round of the community "Project Identification and Design Process," which was designed to solicit detailed community feedback concerning priority project activities, Small Livestock Projects were consistently and frequently identified as a top-priority project activity. BCP's small livestock projects are designed to simultaneously improve local food security and help participants to develop small-scale community-owned livestock businesses that can generate income for participants. Participation in livestock project activities is linked to deforestation mitigation through the use of Community Covenants, which restrict participation to those members who agree not to engage in deforestation or poaching activities inside the project area of Rufunsa Conservancy.

In February 2013, BCP launched a "pilot" round of 23 Village Chicken Projects (VCP) taking place throughout the Project Zone. By October 2013, the project intensified through the provision of improved-genetics chickens to project groups. In 2014, groups began to receive focused "small business development" training.

The VCP aimed to provide an alternative to deforestation by supporting the development of successful community-owned village chicken businesses that channel benefits in terms of improved income and food security to households. Following the initial pilot project launch in 2013, in 2014, BCP focused on providing intensive training on Improved Village Chicken Care and Production, and small-business development.

In 2014, through a VIGOR grant from USAID, BCP Trust facilitated the donation of “improved” village chickens to 266 participating households in 22 pilot groups.

Also in 2014, BCP collected feedback from participants in these initial pilot projects and incorporated “lessons learned” into a new project design that promoted a more “individualized” model that provided support at a household level, instead of group level.

In 2015, the village chicken support was implemented with eight households identified at the end of 2014 as pilot households to receive 10 village chickens each to add to their own chickens so as to develop successful community-owned village chicken businesses that channel benefits in terms of income and food security to households so that the project addresses the major drivers of deforestation by providing a sustainable source of income and reduce poverty.

Each participant received chicken wire to build chicken houses, 5 litre Feeders and drinkers as start-up materials for the project. In addition, all participants received business skills training so as to empower the participants with business development skills that they can apply in this project.

This project activity started in February 2013 and ran through 2018. Then after, it was not supported following the exhaustion of the VIGOR Grant.

In 2020, BCP resumed the Community Improved Village Chicken Project (see appendix J) under the Agriculture division in both LZFP and LCFP projects. The project is designed to be a breeding (multiplication) hub of Improved Village Chicken for the area of operation. The Project will focus on the production of Improved Village Chicken with the goal of giving every household in the area 10 improved village chickens each, to keep at their homesteads. The poultry house for LZRP is being constructed in Ndubulula zone and is being managed by the Zone Development Committees. This will be followed by empowering every household with 10 Improved Village Chickens from the hub in villages across all the 4 zones (see Appendix J for supporting media files).

The poultry house was completed during 2021. The construction works of the building were completed in 2021 and certified by the District Buildings Engineer. The next step is the installation of the incubator and the solar panel which is under consultation with the community and suppliers. The project will be officially handed over to the community in 2022(M10).

Social Services (i.e.: school, borehole, and clinic)

BCP's social service projects are intended to improve quality of life for residents within the project zone, and to ensure that our project activities are designed to target and involve the "poorest of the poor"—defined, for example, as those who cannot otherwise access decent educational facilities, medical care or clean water supplies.

- In October 2012, BCP refurbished the borehole for central Ndubulula Zone (Kantiantya village).
- In February 2013, BCP collaborated with the Forestry Department to assist with the planting of 2 School Fruit Orchards, in Mweshang'ombe and Chilimba Zones.
- In April 2013, BCP provided solar lighting to the Namanongo Clinic.
- In June and August 2013, BCP provided support (locks, desks) to classrooms at Chilimba School.

Additional project activities are planned, and will continue to be scheduled according to newly prioritized needs.

In 2014, through the School Support Program, BCP supported 3 teacher salaries at two community schools (Chilimba and Mweshang'ombe).

In August 2014, BCP— through a partnership with Water282, an implementing partner— BCP helped to facilitate Water, Sanitation and Hygiene training programs for 4 local villages.

In 2015, the School support program continued with BCP and the community increasing the amount of money paid to community teachers from K400 shared by BCP and the community (i.e. K200 each) to K721 (i.e. K360,50 from BCP and the community). Further, the number of supported teachers under this program increased from 3 to 5 (2 Mweshang'ombe and 3 Chilimba).

Furthermore, BCP through Community Forests Program (CFP) funding drilled one new borehole at Chilimba school and fixed one old borehole at the school during a training done by Water 282 through BCP where 21 people were trained as pump minders.

In 2019 a total number of 7 community teachers (2 Mweshang'ombe and 5 Chilimba) were supported with salaries through BCP's Conservation Fees. The total amount spent was K24, 000. In 2019 BCP continued with rehabilitation of a total number of 17 Boreholes, 2 in Ndubulula, 4 in Namanongo, 5 in Mweshang'ombe, and 6 in Chilimba. A total of K 200,000 was allocated for this since 2018. The operation includes flushing of broken boreholes, and the construction of aprons.

Construction of Hammer Mill Houses using Conservation Fees in Ndubulula costing K74,692 and K37,346 in Namanongo is still ongoing. Oil expellers were procured and await installation. Conservation Fee Funds of K25,987.58 were allocated for this project.

In 2020 BCP continued supporting the education sector in Rufunsa through the provision of salaries for 8 teachers: 4 at Chilimba primary school and another 4 at Mweshang'ombe primary school (see appendix J for evidence). During 2021 BCP increased its support to 10 teachers, but 2 left during the year, resulting in 8 teachers supported with salaries.

In support of education, BCP constructed a 1x2 Classroom in Chilimba Zone during 2021.

Furthermore, BCP completed the drilling of 8 new boreholes during 2021 in Mweshangombe and Namanongo zones, benefitting the following villages: Mweshangombe, Mwachombela, Chikuse, BS, Shimaluba, Malilakufa, Musanshika, Kabandi, Msambilo, Shantunka and Chifta.

These improvements in education will increase the knowledge of students about nature and the benefits of protecting biodiversity among others. The construction of borehole will improve the access to water and will reduce the displacements of local communities to look for water as well as the usage of water for other activities.

Sustainable Honey Production

BCP aims to promote honey production as an alternative source of food and income among rural stakeholders. Since honey production is reliant on the protection of forest areas, the project will also create an incentive for participants and beneficiaries from the project to protect areas of forest where the production is taking place. BCP will help to connect participants to markets for locally produced honey. We have already formed a strategic partnership with a large-scale honey seller in Zambia.

Three honey project pilots were initiated in Ndubulula, Namanongo and Mweshang'ombe zones. BCP through the Chinyunyu Forest Department trained 8 participants; 3 from Mweshang'ombe and 5 from Ndubulula in honey production and bee-keeping. The five from Ndubulula were picked from a group that was formed and previously trained by the Forestry Department and the remaining three are households from the Biodiversity Banking project. An additional 16 participants have been trained by Luano Honey.

A total of 230 top-bar Kenyan hives, 50 swarm boxes, 20 gloves, 20 veils, 3 bee-keeping manuals and 5 smokers were procured to assist in the success of this pilot in the project zone. Later on additional 131 top-bar Kenyan hives were hung in the project zone; 3 Forest department, 36 Ndubulula, 6 Mweshang'ombe and 86 Namanongo. All participants were trained on the baiting and monitoring of the placed hives. The program was then expanded in partnership with BeeSweet to 5,000 hives in the 4 Zones of the LZRP Project Zone.

In the first quarter of 2020, Beekeepers sold a combined total of 2,737.00 Kilograms, earning them K27,372.00. Unfortunately, the contract with BeeSweet ended in April 2020 without renewal. The farmers are, however, still harvesting honey and selling to whoever they please, including BeeSweet on individual agreements as BCP is conducting a feasibility study for expanding the honey project as well as consulting potential new partners. BCP working with Nature's Nectar conducted a feasibility study between September and October 2020 for expanding the honey project. This study was used to provide baseline data to the new partner on the current status on the honey project.

Following the feasibility study, BCP in March 2021 entered into a Specific Partnership Agreement with Nature's Nectar to manage the beehives and purchase honey from the managed beehives. Currently this Specific Partnership Agreement is working well with Nature's Nectar having already trained 8 Mentors in honey harvesting. During the first harvest season of 2021, a total of 4,658.25kgs of honey was harvested and purchased by Natures Nectar in LZRP and the total amount of money generated by farmers through honey sales was K93,175.00. A further 996 beehives have been delivered for assembly to the Ndubulula zone. This has contributed to improved and diversified household income for beekeeping farmers across LZRP.

Below is a summary of the harvest data for LZRP for the first harvest season of the year.

Zone	Total Kgs Bought	Total paid out (ZMW)
Chilimba	2,212.00	44,250.00
Namanongo	1,231.25	24,625.00
Ndubulula	1,025.00	20,500.00
Mweshang'ombe	190.00	3,800.00
TOTAL	4,658.25	93,175.00

Sustainable Eco-Charcoal Production

BCP's pilot Sustainable Eco-Charcoal project combines sustainable harvesting practices taking place on protected areas of (degraded) community forest, improved higher-efficiency kiln technologies, and critical value chain interventions (such as access to transportation "at cost" for sustainably produced products), with the aim of creating strong incentives for rural producers to switch from current unsustainable charcoal production practices to sustainable charcoal production practices. The project is designed to replace unsustainable harvesting practices with sustainable practices that allow for the regeneration of forests, promote community-based forest protection, and improve rural producer livelihoods through the development of a commercially viable sustainably harvested charcoal product.

In 2015 Eco-Charcoal expansion consultative meetings continued with different villages in the project zone. Following these consultations, in Shimaluba village of Mweshang'ombe zone, a new Charpreneur started production in his eco-charcoal forest on his private farmland. Further, in Mweshang'ombe village, the headman allocated a forest for two Charpreneurs to work in, which was then demarcated into strips for production. In Musanshika village of Namanongo Zone one Charpreneur also started production in his private farm land. Total hectarage with these new production areas grew to 182 ha under sustainable charcoal production. There are now a total of 4 project sites involved in this project, across 3 community zones. The other sites were not feasible as they could not meet the minimum size for a sustainable harvesting system.

Four new Charpreneurs, three in Mweshang'ombe and one in Namanongo started production in the last half of 2015. This brought the total number of Eco-charcoal producers to 9 from 5.

During the year 2015 two trainings on sustainable charcoal production were undertaken. One took place in the first half of the year and was attended by 24 aspiring eco charcoal producers of whom 3 started production one in august and the other two in November. In the second half of the year 7 new Charpreneurs were trained in Sustainable charcoal production.

The Eco-charcoal project continued to grow, and as of 2020 had a total of 37 active Charpreneurs, 5 of whom are female. A total of 51.6 tons of Eco-charcoal were produced in and sold in 2020, providing a total revenue of ZMW 31,216 for the Charpreneurs.

In 2021, Viability Assessments were conducted by the Forest Management Team (FMT) on two (2) new potential Eco-Charcoal forests in Bunda Bunda chiefdom where Eco-Charcoal production is taking place. These included Machila forest (22 ha) in Mweshang'ombe, and Sebele (20.3 ha) in Namanongo. After a successful Viability Assessment Report, production kicked off on the two (2) new sites in July 2021. This brought the total number of active Eco-Charcoal sites in 2021 to five (5) with a total hectarage of 190.72 ha.

Following an eco-charcoal sites viability assessment conducted in 2021, two(2) new eco-charcoal sites were added. This brought the total number of active Charpreneurs in 2021 to 11 from 8 in 2020, two of whom are female producers. A production total of 48.64 tons produced and 36.96 tons sold in 2021, providing a total revenue of ZMW 50,618.00 for the Charpreneurs. Considering that this activity replaces unsustainable harvesting practices with sustainable practices that allow for regeneration of forests and promotion of community-based forest protection, the increase in the number of Charpreneurs helps with reducing GHG emissions of the project Zone.

A price market survey was conducted in April 2021 for the purpose of restructuring the Eco-Charcoal pricing structure. The survey was conducted in urban markets within Lusaka town where Eco-Charcoal's customer base are located, and areas within/ surrounding Chinyunyu where Eco-Charcoal production currently takes place. The survey revealed the Eco-Charcoal pricing model was far below market price and needed to be revised. In May 2021, both the selling price and base purchase price from Charpreneuers were increased for the first time since inception of the project.

Tree Planting (woodlots), Tree Nurseries, and Orchards

BCP's tree planting and afforestation projects are the result of a strong partnership and collaboration with the Zambian Forestry Department. In February and March 2013, over 500 trees were planted in 2 School Fruit Orchards, as part of a community 'nursery' project, as well as a forest rehabilitation project connected to the Sustainable Eco-Charcoal Project. Tree planting is promoted as a means of afforestation and improved forest management, which can additionally support the health of forest-compatible projects that promote the sustainable management of forest resources, as well as commercial opportunities for communities that wish to develop and manage local nurseries.

In 2014, BCP facilitated 40 fruit trees to be planted at Namanongo and Ndubulula Schools as part of the Environmental Education Programme (EEP) Special Environmental Education Day in the first quarter of the year.

In 2014, BCP also facilitated an afforestation program taking place in the harvested "strip" areas within the Ndubulula Eco-Charcoal forest, in partnership with the local Forestry Department officer. Through this program, 100 indigenous trees were planted.

In 2015, BCP provided 40 trees to the 4 schools participating in the EEP with each school getting 10 each i.e. Guava, Avocado, Lemon, Pawpaw, Water berries and *Gliricidia sepium* trees to add to their school orchards.

In 2018 BCP supported the drilling of a new borehole to provide water to the nursery at the DFO's office. The office was supplied with fruit seeds in 2016 that they managed to raise into seedlings. Distribution of the seedlings reached till 2018 as the department had challenges in logistics.

The total number of seeds that were bought by BCP are 360 Mangoes (*Mangifera indica*), 729 Lemons (*Citrus limon*), and 579 Avocados (*Persea americana*) bringing the total to 1,668.

In 2020 BCP supported the Forestry Department in raising seedlings for their nursery as well as those that were distributed to Lead farmers in the district. From the support from BCP, the department was able to raise 25,418 *Gliricidia sepium* seedlings that were distributed to

farmers, 250 paw paw seedlings, 280 Mangoes, 320 Guavas and 930 avocados for their nursery. About 30,000 seeds of Musangu (*Faidherbia albida*) were also procured by the Forestry Department with support from BCP and the department is currently mobilizing pots so that the seeds can be raised into seedlings.

From 2016 to date, BCP has supported the department with about 58,866 seeds from which 28,866 seedlings have been raised.

Currently the department is still raising the assorted fruit species and are in the process of raising the Musangu (*Faidherbia albida*) that will be used to support agro-forestry activities in the communities.

Crop Diversification

As a key element to the Conservation Farming Training Program (CFTP), crop diversification was promoted through BCP's strategic partnership with Musika Development Initiatives—an organization committed to connecting rural producers to urban markets. Crop diversification promotes long-term field health, increases yields, and improves household resilience in the face of climatic changes or other unexpected events, reducing the likelihood of total poverty or livelihood destruction - especially among the 'poorest of the poor' - as a result of such unfortunate events.

The Crop Diversification program was implemented through Musika, a partner organization, and it is linked closely to the CFTP supported by BCP. As such, 197 participating households had access to this program.

This activity was discontinued in 2017 due to limited funding but most of the farmers are now participating in the current sustainable agriculture initiatives explained above.

During 2021 the Horticulture project was initiated and 8 Horticulture Lead Farmers were trained and provided with horticulture starter packs.

Employment

BCP views meaningful job creation as one of the strongest and most sustainable ways of providing an alternative livelihood opportunity to local stakeholders. By providing community stakeholders with regular alternative sources of income, BCP hopes to drastically reduce the pressures they otherwise face to engage in deforestation-dependent activities, such as charcoal production, to earn income.

BCP has created multiple employment opportunities in local communities, including:

- i. Forest Inventory Team: Members of local communities trained in forest carbon measurement and reporting techniques, including data collection using Android phone technology. In 2014 there were 3 members of the team, with 5 members from the local community trained in plot sampling and MRV techniques. Since 2015 BCP has maintained 2 FMT teams in both LZRP and LCFP projects, each with 5 members (4 for forest inventory and 1 for logistics) selected from the community and receive training annually.
- ii. Village Scouts: In 2014, BCP collaborated with ZAWA to undertake a selection-process to identify 12 new scouts who were then sent for formal training through ZAWA, and then became part of the Security Team at Rufunsa Conservancy
- iii. Tourism Support / Domestic Workers: Since 2013, BCP employs 1-2 “Domestic Workers” who assist with campsite maintenance as part of a tourism development initiative at the Rufunsa Conservancy, and who assist with basic camp maintenance at the Rufunsa Conservancy headquarters.
- iv. Land Management / Construction: Employment opportunities have been created through construction (infrastructure improvement) and land management activities (such as roads maintenance, erosion control) at Rufunsa Conservancy.

In 2014/2015, BCP through Musika linked 5 community members from the project zone to the Zambian Seed (ZamSeed) Company to their seed agents.

In collaboration with the Department of National Parks and Wildlife (DNPW) recruitment and training of 12 new community scouts commenced in November 2018. The graduates included 4 women who encouraged further women to be part of the community scout programme. For 2021, a total of 100 Community Scouts are supported by BCP, of which 35 is patrolling within the LZRP area

Indirect employment opportunities created within LZRP via Asset provision amounts to approximately 52 positions, and approximately 249 opportunities via construction of community projects.

New Projects Implemented in 2021

During the current monitoring period (2021), with the help of BCP, the ZDCs in LZRP completed these projects which was initiated during 2020:

- i. Drilling 3 boreholes to develop a solar-powered irrigation system for a horticulture project in Mweshang'ombe zone.
- ii. Drilling of 5 boreholes to supply 5 villages in Namanongo zone.
- iii. Construction of a 1 X2 classroom block in Chilimba zone.

iv. Construction of a poultry house in Ndubulula zone.

The borehole areas have been cited and drilling will start in 2021's dry season. The bricks for the classroom block have been moulded and construction is under way (see Appendix J for short testimonial videos of these projects' beneficiaries). BCP also continued supporting the projects described above as ongoing or completed in 2020, trained new farmers in conservation agriculture, continued facilitating beekeeping activities for the first quarter, embarked on a partnership with a new beekeeping partner, launched a poultry livelihood project (described above), as well as piloting a cash dividend project. A total of 28 lead farmers in LZRP were trained in sustainable agriculture in 2021 (See Appendix J).

During the 2020 monitoring period, supported by The Mills Foundation, BCP launched a cash dividend pilot project; targeting 178 households from 6 villages in Mweshang'ombe zone of Bunda Bunda chieftdom. This one-year pilot scheme offered communities a direct cash incentive as an initiative way of incentivizing communities to co-manage and conserve forests. The aim of the cash injection is to reduce the socioeconomic pressure that triggers illegal poaching and land-use change and instead motivate the communities to value wildlife to an extent where income and conservation become mutually inclusive motives for participating in REDD+ activities (see Appendix J for more information). Before the project was launched, one consultant was hired to carry out a pre-implementation survey, which has been followed by a post-implementation survey to assess the change in perceptions and help answer the question: Are cash dividends higher impact for poverty reduction and wildlife conservation behavior change compared to conventional group project investment? Another consultant was hired to develop an implementation manual and provide back-stopping services. Appendix J has more details about the proposal, pre-implementation survey report, and implementation manual.

The project closed in July 2021 and phase two is planned to commence before the end of 2021. An end of project evaluation was undertaken by an external consultant in July/August 2021 and analysis of findings currently underway. Recommendations to be reviewed and incorporated in phase two of the project.

Activity Area 3: Protection, Enforcement and Monitoring

Project boundaries are known and respected by all parties, and ongoing carbon stock monitoring activities take place with full cooperation from all parties involved.

Forest Monitors and Scouts

Trained resource protection teams composed of local community members patrol and secure the project area, reporting any acts of deforestation or wildlife poaching that take place. Particular emphasis is placed on protecting the perimeter of the property, especially the

boundary adjacent to community lands, with an aim to prevent further encroachment of the project area. Security activities are undertaken through close collaboration with the Forestry Department, Zambian Police and the (Department of National Parks and Wildlife) DNPW. Resource protection teams are also trained in effective conflict resolution practices, for example, effective communication styles for pursuing non-confrontational discussions with local community stakeholders. BCP's Forest Monitors are also engaged in ongoing comprehensive biodiversity monitoring programs, which are designed to track the ongoing impacts of BCP's REDD+ activities on local wildlife.

Four Community members mandated by the (Department of National Parks and Wildlife) DNPW as Village Scouts have been patrolling strategic zones within the project area. Several trespassers attempting to extract timber were arrested on the property with the assistance of the Zambia Police. Several dozen snares have been collected, mostly along the boundaries of the project area. Collaboration between BCP, DNPW resulted in the successful arrest of several timber harvesters inside Lower Zambezi National Park, within a few km of the boundary of the project zone.

During October to December 2014 twelve new recruits received intensive paramilitary and conservation-oriented training at a ZAWA training facility at Chunga, Zambia. They graduated from their course at the end of December and are deployed as fully certified village scouts. New teams were trained in partnership with DPNW during 2021 (Delta group) resulting in 35 DNPW and BCP Community Scouts that operate in six teams during 2021.

BCP Forest Monitors have received refresher training in biodiversity data collection and plot sampling.

Boundary Demarcation

In October 2012, BCP undertook a "boundary demarcation" activity along the Northern boundary of the property, which separates the project area from community lands. The purpose of this activity was to ensure local community stakeholder awareness and acceptance of project area boundaries, in the interest of reducing the potential of conflict stemming from confusion about the boundary location. This activity was undertaken in cooperation with the Principal Surveyor from the GRZ Ministry of Lands, to ensure correctness and legitimacy of the demarcation in the eyes of all stakeholders, including local government authorities. In the demarcation process, local traditional leaders, BCP representatives, and the GRZ Surveyor walked along the demarcated boundary, following the GPS points listed on the original Title Deed and beacons that had been placed on the ground to mark the boundary. BCP representatives painted trees along the boundary, to provide a more visual demarcation than the beacons had originally provided.

The boundary demarcation is done annually to prevent illegal activities within the limits of the project. Through this activity, local communities are aware of the limits of the project area. Around 6 km of the Rufunsa Conservancy boundary bordering with the community areas is cleared every year as mean to 1) reduce on the encroachment and 2) to use them a firebreak.

Community-Based Forest Biomass and Carbon Stock Monitoring

The Forest Inventory Team, composed of local community members, has pioneered the use of innovative digital biomass data collection systems, using ODK Collect on smartphone devices, in order to collect important data concerning forest carbon stocks in Rufunsa Conservancy. Members of BCP's community-based Plot Teams have received intensive training in tree and soil sampling, and the use of smartphone technology to collect data used for carbon accounting. The FMT serves an important dual-function of promoting community involvement and ownership of local forest resources, and ensuring high quality data collection for the purposes of our carbon accounting.

In 2020, the forest inventory team completed a 5-years rotation period of collecting accounting area and proxy biomass data, thus the project area's carbon stocks have been updated for the first time since 2016. Leakage monitoring and biodiversity monitoring are undertaken annually.

Social Monitoring Program

The robust Social Monitoring Team Standard Operating Procedure (SOP) calls for the ongoing monitoring and evaluation of the impacts of project activities on local stakeholder livelihoods. This will allow BCP to ensure that it's project activities are effectively designed (and re-designed, as necessary) to achieve their aims of positively impacting local communities and effectively addressing (reducing) local drivers of deforestation.

In 2012, BCP completed a robust and representative Baseline Survey of community stakeholders living within the project zone for the Lower Zambezi REDD+ Project. Throughout 2013, as BCP has continued to implement a variety of project activities, BCP representatives have collected data through project-specific surveys that are specially designed to track the impacts of each project.

BCP's Social Monitoring Program has been ongoing, with recent efforts in 2014 to improve our data collection and tracking capacity. In 2014, a database of community project participants was created, with the aim of allowing for more centralized reporting on overall project impacts, and reducing the risk of double-counting, as many community stakeholders are by now engaged in multiple BCP activities. Beginning 2014, BCP maintains at least one full-time Monitoring and Evaluation Specialist on the payroll, who further assists with the

formalization and strengthening of BCP's data collection and monitoring techniques, as well as data analysis and reporting.

In the fourth quarter of 2017, social monitoring follow-up surveys were undertaken among a representative sample of 100 community stakeholders living within the project zone for the LZRP. These surveys follow the initial socio-economic baseline study undertaken in 2012.

Key highlights of the social monitoring follow-up survey include:

- i. 95% of respondents reported that the LZRP benefits their community.
- ii. 91% reported receiving direct benefits to their household from the project.
- iii. 75% reported active participation in the LZRP by a member of their household.
- iv. 79% reported understanding that the LZRP is a long-term project.
- v. 91% reported understanding that the LZRP is taking place on the privately-titled Rufunsa Conservancy.
- vi. 86% reported understanding that the LZRP is performance-based.
- vii. 96% say BCP/CFP is welcome in the community.

In 2020, another Social Monitoring Survey was conducted as a follow-up to the 2017 survey. In the third quarter of 2020, an Income and Perceptions Survey was undertaken among a representative sample of community stakeholders living within the project zone for the LZRP. These surveys follow the initial socio-economic baseline study undertaken in 2012 and in 2017 by Mint Advisory Services under USAID. The key findings of the 2020 survey was:

- i. An overall increase in total household income across all respondents of 56% since 2012.
- ii. An increase of 6% in average income per household was observed since 2012.
- iii. The contribution of agriculture as an income source rose from 32% in 2012 to 48% in 2020, where it was the leading contributor to total household income.
- iv. The contribution of forestry products reduced from 37% in 2012 to 6 % in 2020.
- v. Alternative sources of income, including small business, piecework, sale of livestock and others, now collectively contributed the second highest income at 46% of total household income.
- vi. 23% of respondents benefited directly through tender or direct employment.
- vii. It was found undeniably that the community projects implemented in the LZRP zones (hammer mills, boreholes and schools) benefitted women and children the most. In Ndubulula and Namanongo zones for example, women used to walk over 20km to the nearest hammer mill, and children for more than 25 km to the nearest school (upper primary).

- viii. The most commonly collected forestry products from the GMA were firewood (by 60% of those accessing the GMA), wild fruits (47%) and thatching grass (41%).
- ix. In 2012 the key income source was charcoal production with 68% of respondents partaking. The 2017 survey found 52% participation, whilst the 2020 survey shows a drastic decline to 17% of households earning an income from charcoal. Only 3 of the respondents took part in Eco-charcoal, but were generating higher average income (ZMW3,633) compared to traditional charcoal (ZMW2,895).
- x. On average 1.34ha of virgin land per household was being considered for agricultural production. The incremental rate of deforestation due to agricultural production was not a threat in the LZRP. 72% of respondents indicated that they would continue to use conservation farming in the following 2 years.
- xi. 79% of the respondents approved of extending the REDD+ to community forests given the benefits they received from the conservancy, while 58% said they would approve extending the project to community forests even without the benefits.
- xii. 72% of respondents reported that they were receiving benefits from the REDD+ forests at community and/or household levels, through the money generated as a result of conserving the forest.
- xiii. 83% of respondents were in support of the project, with the largest increase observed among females who increased from 58% to 79%.
- xiv. 72% of respondents said their consent was requested at the start of the project.
- xv. 63% of people with disabilities reported that they received community benefits from REDD+, with beekeeping mentioned as livelihood intervention.
- xvi. Respondents' perception as to the reason for deforestation was 79% charcoal production, 40% agricultural purposes and 29% clearing for human settlement.
- xvii. 59% of respondents rated women's attendance at meetings as high to very high. Women's contributions during meetings were rated at 56%, whilst participation in self-help projects was in the same range at 55%. Their participation during workshops (attendance at training) was rated at 39%.
- xviii. 97% of respondents claimed to have experienced climate change effects in the 2 years prior to the survey, with reduced rain being cited by 57 of the respondents.
- xix. It was observed that, in the spirit of promoting inclusiveness, understanding and excellence, the local people have been educated about what the project is all about.
- xx. 72% of respondents reported that the LZRP benefits their community.
- xxi. 83% say BCP/CFP is welcome in the community.

Understanding of REDD+	%LZRP n=93
Conserves forests to reduce emissions of important gasses such as CO2	68
Deforestation is a major cause of global warming/climate change	47
It provides alternative livelihoods to those dependent on forests	36
Community developments arises from forest carbon fees	33
Understanding of the principles in permanence	
Carbon is stored for an extended period of time in forests and soils	80
The projects will last for at least 30 years	54

No social monitoring activities were conducted in 2021.

Community Covenants

In the LZRP BCP has pioneered the use of innovative “Community Covenants,” which are written contracts between BCP and project participants that explicitly link participation in BCP-supported projects to achievable forest protection aims. For example, all BCP employees from local communities are required to sign a Community Covenant, written into their employment contract, which specifies the conditionality of their ongoing employment on their agreement to stop any deforestation activities taking place in the project zone. The purpose of the Community Covenants is two-fold: first, Community Covenants provide a direct and explicit link between BCP’s activities and reductions in deforestation activities taking place within the project zone. Second, Community Covenants prevent/reduce the risk of adverse effects from project activities or benefits—for example, BCP does not want community stakeholders to use their incomes from employment with BCP in order to fund charcoal production or poaching activities that threaten the project.

Community Covenants are ongoing agreements used as an innovative tool for linking community development / livelihoods “benefits” to biodiversity and forest protection aims of the project. In some cases, we have transitioned from the title of “Community Covenant” and have begun to use the language of a Memorandum of Understanding (MoU), in which the forest protection terms of the project are clearly outlined. In 2014, MoUs linking participation in community projects to forest protection were signed as part of the Eco-Charcoal Project

expansion into Namanongo and Mweshang'ombe Zones (nine new project sites identified) and the "Bio Bank" project that is implementing forest protection activities on 990.4 hectares of community forest in Mweshang'ombe Zone, adjacent to the Rufunsa Conservancy. These MoUs explicitly document participants' agreement to implement improved/sustainable forest management techniques on demarcated areas of community forest, in exchange for access to services / "benefits" through these projects.

Additionally, all of BCP's employment contracts contain an enforceable "Community Covenant" clause, that documents that employment is contingent upon respect for BCP's Ongoing deforestation mitigation activities, and violation of this covenant is a terminable offence.

In 2015, community covenants were signed between BCP and community members participating in various projects such as School support program, Village chicken and Honey projects.

All community projects were covered under an Agreement with the community, headmen signed in 2016. Community covenants were signed for individual projects in each zone.

In 2021, We did not sign any community covenants. This is because most of the projects implemented in 2021 completed in December and the commissioning and handover to the community will be done in 2022(M10) together with the signing of covenants.

Structured Biodiversity Monitoring

The Line Transect Distance Sampling method is used to monitor medium to large mammals and other species of conservation importance, and indirect signs of wildlife presence are also recorded. In this survey scouts/forest monitoring teams walk in a straight line in a predetermined and fixed direction. In order to infer abundance estimates, the perpendicular distance between the transect line center and the observation is recorded precisely which enables afterward to derive a detection probability function and then an effective strip width based on which density estimates are computed. Transects are positioned across the whole Conservancy in a North-South orientation. A sampling frame consisting of 37 cells of 3km x 3km is overlaid on the Conservancy and each cells are crossed by 2 parallel transects of 3km long positioned 1.5 km apart. This results in a total of 74 transects for a total length of 222 km. Two surveys are planned for each year, one early in the dry season, in June, and another towards the end of the dry season, in October-November. In 2021, only the late dry season survey was conducted because of Covid-19 positive cases within the survey team.

Additionally, a total of fifty-six (56) camera traps were also deployed across the conservancy in 2020 and 2021, on the same grid based system then the Line Transects, for a period of two months. The camera trap surveys will be repeated annually over two to three months to support the data from transect surveys and are particularly valuable for capturing the

presence of locally rare, nocturnal and elusive species. It enables as well to compute patch occupancy analysis which provides information on population trends.

Finally, to complement the Line Transect survey and camera trap arrays, wildlife is monitored on a daily basis by the scouts patrolling the conservancy.

Southern Ground-hornbill monitoring

A system has been developed to identify different family groups of this high conservation value, territorial bird species which is considered a trigger species under CCB. This system combines data from call sound surveys conducted during the nesting season and live sighting data, including demographic breakdowns of the groups, recorded by community scouts and monitoring teams using SMART (Spatial Monitoring and Reporting Tool) during formal surveys and general patrols. In 2020, the focus was on collecting live sighting data and training field teams to use the SMART system and correctly identify males, females and juveniles.

In 2021, implementation of the call sound survey technique of southern ground-hornbill monitoring started. The survey involves deployment of team members at the post locations before the sunrise to listen to the avifauna until 07:00, trying to detect the characteristic territorial calls of Southern Ground-Hornbill groups. A pilot survey took place in the second quarter of 2021 and the actual survey started in December 2021 and will be repeated in January 2022. The time of the survey coincides purposefully with the start of the breeding season (December-March) where the groups are calling every morning from the nest sites.

Aerial Resource Protection Surveys

BCP has teamed up with Conservation Lower Zambezi to improve security through aerial patrols. In this agreement, Conservation Lower Zambezi flies two aerial patrols for BCP every month over pre-determined parts of the conservancy to look for encroachment, illegal logging, poachers, carcasses and wildlife. BCP's Airwing department also periodically flies over the conservancy and collects data on wildlife observations and illegal activities using the BackCountry Navigator, SMART, and CyberTracker applications.

Fire Impact Monitoring

BCP uses a Belt transect monitoring system to monitor the impact of fire on tree population. Forty belt transects of 100x2m have been setup and get regularly enumerated. All live trees are tagged and will be monitored over time. However, this was not monitored in 2019 and

2020 but resumed in 2021. Fire hotspots from the Visible Infrared Imaging Radiometer Suite (VIIRS) were downloaded monthly and verified by ground patrols.

3.2 Deviations

- 3.2.1 Methodology Deviations

MR.97

As in M8, there was a minor deviation of the visual approach for leakage monitoring (Appendix F, VM0009). 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 approach removed all potential bias and greatly improves the robustness and repeatability of degradation monitoring. This deviation does not affect the conservativeness of any emissions reductions as it is in fact an improvement of the prescribed procedure and removes observer bias that could result in degradation in the leakage area being underestimated.

There was also a minor variation with regards to the monitoring of disturbances. VM0009 requires that disturbances in the project area must be monitored in plots. The very low density of disturbances experienced in the LZRP are not captured by plots. Therefore, when disturbances are detected by other means, their size is directly measured using ground surveys. Additionally, cloud-free Sentinel-2 imagery from April-May, 2021 in comparison to April-May, 2020 were used to check for potential encroachment. The imagery was obtained from Google Earth Engine, exported to Google Cloud as map tiles (script provided to VVB), and then opened in QGIS where imagery from different years was compared to identify changes. No encroachment was detected for the current monitoring period.

This methodology deviation does not affect the conservativeness of emissions reductions. It is an improvement as a minor disturbance would have unlikely been captured during routine monitoring with plots and the manner in which a disturbance would be quantified by this approach is much more accurate than what could be achieved with fixed plots.

Neither of these deviations relate to any other part of the methodology except for monitoring and measuring of activity shifting leakage and disturbances in the project area.

The project uses two different allometric equations to estimate above-ground biomass. One was developed from data provided by Prof. Chudimayo from Zambian Miombo (see Appendix C) and was tested on trees up to 55 cm DBH. It 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. Then, a second equation developed by Mugasha et al. in Tanzanian Miombo (see Appendix C) 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 biomass equal to a 110 cm dbh tree. This parsing is necessary because the methodology requires that the directly measured biomass of the largest tree in the representative sample of destructively harvested trees be greater than the biomass predicted by the equation and that the value of the first-order derivative of the largest tree in the representative sample and inventory not differ by more than 10%. The first selected allometric equation does underpredict the biomass of the largest tree in the representative sample, but the difference of the first-order derivative values was greater than 10%. The second allometric equation doesn't pass the first test (it slightly over predicts the biomass of the largest tree in the sample). However, compared to the Zambian equation, it predicts lower biomass for every size tree. Therefore, the equations were applied as described above to enable the project to make an estimate of the biomass of larger trees that fell outside the range of the size of trees used to develop the equations. Less than 1 % of the trees in the inventory had a dbh between 55 cm and 110 cm or 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. This deviation only relates to how biomass is measured for monitoring purposes and doesn't affect any other part of the methodology. It results in a more conservative estimate of biomass and emissions savings. Therefore, it meets the criteria for an acceptable methodological deviation.

3.2.2 Project Description Deviations

There were no Project Description deviations during this monitoring period.

3.3 Grouped Projects

This is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	α
Data unit	Unit less
Description	Combined effects of β and θ at the start of the historic reference period, updated every 10 years after project start date, see appendix I
Source of data	Reference area and historic reference period
Value applied	1.484
Justification of choice of data or description of measurement methods and procedures applied	Time and place in which the logistic model is fit. BioCarbon Partners Carbon Accounting department. Analysis undertaken in 2020.
Purpose of Data	Calculation of baseline emissions
Comments	Is one of the results of applying the cumulative deforestation model but is not used in baseline type U3 as it is replaced with ru

Data / Parameter	β
Data unit	Unitless
Description	Effect of time on the cumulative proportion of deforestation over time, updated every 10 years after project start date, see appendix I
Source of data	Reference area and historic reference period
Value applied:	0.000371
Justification of choice of data or description of measurement methods and procedures applied	Time and place in which the logistic model is fit. BioCarbon Partners Carbon Accounting department. Analysis undertaken in 2020.
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	γ
Data unit	Days
Description	Time shift from beginning of historic reference period to project start date

Source of data	Historic reference period
Value applied:	10,957
Justification of choice of data or description of measurement methods and procedures applied	Time and place in which the logistic model is fit. BioCarbon Partners Carbon Accounting department. Analysis undertaken in 2013
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	λ_{soc}
Data unit	proportion (unitless)
Description	Exponential soil carbon decay parameter
Source of data	VCS AFOLU default for tropical regions
Value applied:	0.2
Justification of choice of data or description of measurement methods and procedures applied	Conservative default based on IPCC value.
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	$\hat{\sigma}_{EM}$
Data unit	standard deviation (unitless)
Description	The estimated standard deviation of the state observations used to fit the logistic function
Source of data	Remote sensing image interpretation
Value applied:	0.4978
Justification of choice of data or description of measurement methods and procedures applied	Time and place in which the logistic model is fit. BioCarbon Partners Carbon Accounting department. Analysis undertaken in 2020.
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	$\mathcal{B}$
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Data unit	Set
Description	The set of all selected carbon pools in biomass. Is a subset of
Source of data	PDD
Value applied:	2
Justification of choice of data or description of measurement methods and procedures applied	The project accounts for AGOT and BGOT. All other biomass pools are conservatively excluded and were found to be insignificant. AGMT and BGMT pools are not applicable to the project as there are no commercially valuable timber trees that occur in the accounting area.
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	<i>c</i>
Data unit	Set
Description	The set of all selected carbon pools
Source of data	Monitoring records
Value applied:	3
Justification of choice of data or description of measurement methods and procedures applied	The project accounts for AGOT, BGOT and SOC. All other pools are optional, were found to be insignificant and have been conservatively excluded.
Purpose of Data	Calculation of baseline emissions

Data / Parameter	<i>j</i>
Data unit	Set
Description	The set of all observations of conversion. When superscripted with a monitoring period, the conversion observations are taken for leakage analysis.
Source of data	Remote sensing image interpretation or field observations in the reference area.
Value applied:	28,582
Justification of choice of data or description of measurement methods and procedures applied	VM0009, v3.0 section 6.6 onwards. The number of observations of forest state in the reference area were originally quantified as 3120 but some points were removed

	due to complications with forest state interpretation or non-forest at start of historic reference period.
Purpose of Data	Calculation of baseline emissions
Comments	Value was 15,600 in the initial baseline evaluation, and updated to 28,582 at the 10 years baseline reevaluation (Appendix I)

Data / Parameter	M
Data unit	Set
Description	The set of all monitoring periods
Source of data	Monitoring records
Value applied:	27
Justification of choice of data or description of measurement methods and procedures applied	There will be 27 monitoring events over the project crediting period of 30 years. The project proponent has decided on annual monitoring
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	A_{PAA}
Data unit	ha
Description	Area of Project Accounting Area
Source of data	GIS analysis prior to sampling
Value applied:	33, 338
Justification of choice of data or description of measurement methods and procedures applied	See GIS data in Appendix H. BioCarbon Partners, Carbon Accounting Department. Data used to generate this value include the title deed, GIS layers, several tiles from the ASTER Global Digital Elevation Model, Land cover classification undertaken using Landsat imagery - 2013 - Appendix H
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	A_{PX}
Data unit	ha
Description	Area of proxy area

Source of data	GIS analysis and participatory rural appraisal prior to sampling
Value applied:	42,794
Justification of choice of data or description of measurement methods and procedures applied	GIS layers and expert knowledge - BioCarbon Partners Carbon Accounting department - 2013 - Appendix H
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	A_{AS}
Data unit	ha
Description	Area of activity-shifting leakage area
Source of data	GIS analysis
Value applied:	27,805
Justification of choice of data or description of measurement methods and procedures applied	GIS layers and expert knowledge - BioCarbon Partners Carbon Accounting department - 2013 - Appendix H. Fulfils criteria stipulated in VM0009.
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	n_d
Data unit	Set
Description	Number of spatial points in the reference area
Source of data	Remote sensing image interpretation
Value applied:	2,582

Justification of choice of data or description of measurement methods and procedures applied	Number of points defined as per the methodology VM0009 to adequately quantify forest state in the reference area - BioCarbon Partners Carbon Accounting department - 2019 - Appendix H
Purpose of Data	Calculation of baseline emissions
Comments	The points were 2,600 in 2013 but 18 were eliminated during the 2019 baseline reevaluation (Appendix I) due to cloud cover.

Data / Parameter	o_i
Data unit	Binary
Description	State observation for the sample point in the reference area
Source of data	Cumulative Deforestation Model - BioCarbon Partners Carbon Accounting Department - 2019 - Appendix H
Value applied:	0 or 1
Justification of choice of data or description of measurement methods and procedures applied	Data collected as per the methodology.
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	$PLME$
Data unit	Proportion (unitless)
Description	Portion of leakage related to market effects
Source of data	Leakage monitoring data - See Appendix C and Appendix F
Value applied:	0
Justification of choice of data or description of measurement methods and procedures applied	Market effect and activity shifting leakage are the same as the same agents are clearing forest for commodities and for agricultural purposes. They are not separate entities as is often the case in planned deforestation scenarios.
Purpose of Data	Calculation of leakage
Comments	

Data / Parameter	q
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Data unit	Days
Description	Lag between start of degradation and deforestation
Source of data	Consultation with local agents of deforestation – 28 farmers were questioned to determine how long they usually wait after clearing an area before ploughing it.
Value applied:	620
Justification of choice of data or description of measurement methods and procedures applied	Based on observations in the reference area, hence applicable to the project area.
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	r_{RS}
Data unit	Unitless
Description	Expansion factor for above-ground biomass to below-ground biomass (root/shoot ratio)
Source of data	Chidumayo, E. N. 2013. Estimating tree biomass and changes in root biomass following clear-cutting of Brachystegia-Julbernardia (miombo) woodland in central Zambia. Environmental Conservation. 42(1), pp. 54 - 63.
Value applied:	0.54
Justification of choice of data or description of measurement methods and procedures applied	The root-shoot ratio was determined within a study site that overlaps the project reference area
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	r_U
Data unit	Unitless
Description	Onset proportion of deforestation immediately adjacent to project area
Source of data	GIS analysis and image interpretation
Value applied:	0.126

Justification of choice of data or description of measurement methods and procedures applied	Positions the baseline emissions models relative to the instantaneous rate of deforestation. Measurement was undertaken using GIS analyses described elsewhere in the document. BCP Carbon Accounting Department - 2013 - Appendix H
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	t
Data unit	Days
Description	Time since project start date
Source of data	Calendar
Value applied:	4.475
Justification of choice of data or description of measurement methods and procedures applied	Project start date is 1 October 2009 and the current monitoring period ended on the 31st December 2021.
Purpose of Data	Calculation of project emissions
Comments	

Data / Parameter	t_i
Data unit	Days
Description	The point in time of the observation made at point
Source of data	Remote sensing image interpretation
Value applied:	1 – 12,698
Justification of choice of data or description of measurement methods and procedures applied	The initial historic reference period stretched from 1984 to 2009, the reference period was then extend to 2019 during the 10 years baseline reevaluation (Appendix I), thus dates of the first and last images are now 1984-06-29 and 2019-04-05, the time span is thus 12, 698 days in total.
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	t_{PL}
Data unit	Days
Description	Length of project crediting period
Source of data	PDD
Value applied:	10, 957
Justification of choice of data or description of measurement methods and procedures applied	The project crediting period stretches from 1 October 2009 to 1 October 2039. This complies with the minimum project lifespan of AFOLU projects as stipulated by the VCS.
Purpose of Data	Calculation of baseline emissions
Comments	

Data / Parameter	w_i
Data unit	Unitless
Description	weight applied to the sample point in the reference area
Source of data	Remote sensing image interpretation based on 11 time steps in the historic reference period which is related to availability of suitable imagery.
Value applied:	0.000034965
Justification of choice of data or description of measurement methods and procedures applied	GIS layers and expert knowledge - BioCarbon Partners Carbon Accounting department - Appendix H. Calculated as specified in VM0009.
Purpose of Data	Calculation of baseline emissions
Comments	Initially 6 time steps, increased to 11 at the 10 years baseline reevaluation

4.2 Data and Parameters Monitored

MR.85-87

Data / Parameter	$A_{P1}^{[m=0]}$
Data unit	ha

Description	Area of project accounting area stratum 1 prior to first verification event
Source of data	GIS analysis prior to sampling
Description of measurement methods and procedures to be applied	Supervised land cover classification employing the Support Vector Machine algorithm (Landsat 5 TM Image). Classification accuracy was 76.84% with a kappa value of 0.745
Frequency of monitoring/recording	First monitoring period / 10 years
Value monitored	27,322
Monitoring equipment	Landsat TM satellite
QA/QC procedures to be applied	Classification accuracy using training and validation data. Classification error matrix
Purpose of the data	Calculation of baseline emissions
Calculation method	GIS area calculation
Comments	

Data / Parameter	$A_{P2}^{[m=0]}$
Data unit	ha
Description	Area of project accounting area stratum 2 prior to first verification event
Source of data	GIS analysis prior to sampling
Description of measurement methods and procedures to be applied	Supervised land cover classification employing the Support Vector Machine algorithm (Landsat 5 TM Image). Classification accuracy was 76.84% with a kappa value of 0.745
Frequency of monitoring/recording	First monitoring period / 10 years

Value monitored	6.016
Monitoring equipment	Landsat TM satellite
QA/QC procedures to be applied	Classification accuracy using training and validation data. Classification error matrix
Purpose of the data	Calculation of baseline emissions
Calculation method	GIS area calculation
Comments	

Data / Parameter	$c_B^{[m]}$
Data unit	tCO ₂ e/ha
Description	Baseline carbon stocks at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	Proxy area sampling as per the protocol Appendix E.
Frequency of monitoring/recording	20% of plots measured annually.
Value monitored	9.7
Monitoring equipment	See Appendix E. Standard vegetation quantification equipment.
QA/QC procedures to be applied	See Appendix E and description in monitoring report.
Purpose of the data	Calculation of baseline emissions
Calculation method	Using standard vegetation ecology plot sampling techniques and subsequent quantification of biomass using allometric equations.

Comments	The value was updated in the current monitoring report after completion of the 5-years carbon stocks inventory cycle. See Appendix C.
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Data / Parameter	$C_{B\ BGB}^{[m]}$
Data unit	tCO ₂ e
Description	Carbon not decayed in BGB at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	Ongoing forest monitoring as per Appendix E
Frequency of monitoring/recording	Every monitoring period
Value monitored	10
Monitoring equipment	See Appendix E
QA/QC procedures to be applied	See Appendix E
Purpose of the data	Calculation of baseline emissions
Calculation method	Applied equation F.29 in VM0009, v3.0
Comments	

Data / Parameter	$C_{B\ SOC}^{[m]}$
Data unit	tCO ₂ e
Description	Carbon not decayed in SOC at the end of the current monitoring period
Source of data	Proxy area sampling

Description of measurement methods and procedures to be applied	Proxy area sampling as per the protocol in Appendix E and application of equation F.32, VM0009, v3.0
Frequency of monitoring/recording	Fixed once off sampling, monitored every monitoring period
Value monitored	-386,973
Monitoring equipment	See Appendix E standard soil sampling procedures and equipment.
QA/QC procedures to be applied	See Appendix E. The soils were analysed at a reputable laboratory – The Institute of Soil, Water and Climate in South Africa.
Purpose of the data	Calculation of baseline emissions
Calculation method	Application of equation F.32 VM0009, v3.0 using SOC values
from the project accounting area.	

Data / Parameter	$C_{Bb}^{[m]}$
Data unit	tCO ₂ e / ha
Description	Baseline scenario average carbon stock in selected carbon pools
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	Proxy area sampling as per the protocol in Appendix E

Frequency of monitoring/recording	Every time measured (≤ 5 yrs)
Value monitored	9.7
Monitoring equipment	See Appendix E
QA/QC procedures to be applied	Review of monitoring records and re-sampling of 20% of plots
Purpose of the data	Calculation of baseline emissions
Calculation method	Using standard vegetation ecology plot sampling techniques and subsequent quantification of biomass using allometric equations.
Comments	The value was updated in the current monitoring report after completion of the 5-years carbon stocks inventory cycle. See Appendix C.

Data / Parameter	$C_{B\ BM}^{[m]}$
Data unit	tCO ₂ e / ha
Description	Baseline carbon stocks in biomass at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	Proxy area sampling as per the protocol in Appendix E
Frequency of monitoring/recording	At first verification and baseline revision
Value monitored	9.7
Monitoring equipment	See Appendix E
QA/QC procedures to be applied	Review of monitoring records as described in Appendix E and re-sampling of 20% of plots

Purpose of the data	Calculation of baseline emissions
Calculation method	Using standard vegetation ecology plot sampling techniques and subsequent quantification of biomass using allometric equations. Averages calculated as per equation B.9 VM0009, v3.0
Comments	The value was updated in the current monitoring report after completion of the 5-years carbon stocks inventory cycle. See Appendix C.

Data / Parameter	$c_{B SOC}^{[m]}$
Data unit	tCO ₂ e / ha
Description	Baseline soil carbon stocks at the end of the current monitoring period
Source of data	Proxy area sampling
Description of measurement methods and procedures to be applied	Proxy area sampling as per the protocol in Appendix E
Frequency of monitoring/recording	Once off measurement as per VM0009, v3.0
Value monitored	131.7
Monitoring equipment	See Appendix E, standard soil sampling equipment
QA/QC procedures to be applied	Review of monitoring records at next baseline re-evaluation
Purpose of the data	Calculation of baseline emissions
Calculation method	Quantification of SOC done according to Annex B, VM0009, v3.0
Comments	

Data / Parameter	$C_P^{[m]}$
Data unit	tCO2e / ha
Description	Project carbon stocks at the end of the current monitoring period
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	Appendix E describes the plot based monitoring procedure.
Frequency of monitoring/recording	20% of plots monitored annually. Inventory revised during this monitoring period.
Value monitored	179.5 Dense Tree Stratum, 168.4 Light Tree Stratum
Monitoring equipment	See Appendix E, standard vegetation sampling equipment
QA/QC procedures to be applied	Review of monitoring records, see Appendix C.
Purpose of the data	Calculation of baseline emissions
Calculation method	Standard plot sampling techniques to quantify vegetation and application of allometric equations. Averages calculated using equation B.9 VM0009, v3.0
Comments	See Appendix C.

Data / Parameter	$C_P^{[m-1]}$
Data unit	tCO2e / ha
Description	Project carbon stocks at the beginning of the current monitoring period
Source of data	Project accounting area sampling
Description of measurement methods	See Appendix E, standard vegetation sampling equipment.

and procedures to be applied	
Frequency of monitoring/recording	Prior monitoring period
Value monitored	179.5 Dense Tree Stratum, 168.4 Light Tree Stratum
Monitoring equipment	Review of monitoring records, see Appendix C.
QA/QC procedures to be applied	Review of monitoring records, re-sampling of 20% of plots
Purpose of the data	Calculation of baseline emissions
Calculation method	Standard plot sampling techniques to quantify vegetation and application of allometric equations. Averages calculated using equation B.9 VM0009, v3.0
Comments	

Data / Parameter	$C_P^{[m=0]}$
Data unit	tCO ₂ e / ha
Description	Project carbon stocks prior to first verification event
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	Appendix E describes the plot based monitoring procedure.
Frequency of monitoring/recording	First monitoring period
Value monitored	233.8 Dense Tree Stratum, 225 Light Tree Stratum
Monitoring equipment	See Appendix E, standard vegetation sampling equipment
QA/QC procedures to be applied	Review of monitoring records, see Appendix C.
Purpose of the data	Calculation of baseline emissions

Calculation method	Standard plot sampling techniques to quantify vegetation and application of allometric equations. Averages calculated using equation B.9 VM0009, v3.0
Comments	

Data / Parameter	$C_{P1BM}^{[m=0]}$
Data unit	tCO ₂ e / ha
Description	Project carbon stocks in stratum 1 prior to first verification event
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	Appendix E describes the plot based monitoring procedure.
Frequency of monitoring/recording	First monitoring period
Value monitored	225
Monitoring equipment	See Appendix E, standard vegetation sampling equipment
QA/QC procedures to be applied	Review of monitoring records, see Appendix C.
Purpose of the data	Calculation of baseline emissions
Calculation method	Standard plot sampling techniques to quantify vegetation and application of allometric equations. Averages calculated using equation B.9 VM0009, v3.0
Comments	

Data / Parameter	$C_{P2BM}^{[m=0]}$
Data unit	tCO ₂ e / ha

Description	Project carbon stocks in stratum 2 prior to first verification event
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	Appendix E describes the plot based monitoring procedure.
Frequency of monitoring/recording	First monitoring period
Value monitored	233.8
Monitoring equipment	See Appendix E, standard vegetation sampling equipment
QA/QC procedures to be applied	Review of monitoring records, see Appendix C.
Purpose of the data	Calculation of baseline emissions
Calculation method	Standard plot sampling techniques to quantify vegetation and application of allometric equations. Averages calculated using equation B.9 VM0009, v3.0
Comments	

Data / Parameter	$C_{PBM}^{[m=0]}$
Data unit	tCO ₂ e
Description	Project carbon stocks in biomass prior to first verification event
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	Appendix E describes the plot based monitoring procedure.

Frequency of monitoring/recording	First monitoring period
Value monitored	7,554,258
Monitoring equipment	See Appendix E, standard vegetation sampling equipment
QA/QC procedures to be applied	Review of monitoring records, see Appendix C
Purpose of the data	Calculation of baseline emissions
Calculation method	Standard plot sampling techniques to quantify vegetation and application of allometric equations. Averages calculated using equation B.9 VM0009, v3.0.
Comments	

Data / Parameter	$C_{Pb}^{[m]}$
Data unit	tCO ₂ e / ha
Description	Average carbon in biomass in the project accounting area
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	Appendix E describes the plot based monitoring procedure.
Frequency of monitoring/recording	20% of all plots sampled annually, revised in 3rd monitoring period
Value monitored	168.4 in Stratum 1 and 179.5 in Stratum 2
Monitoring equipment	See Appendix E, standard vegetation sampling equipment
QA/QC procedures to be applied	Review of monitoring records, see Appendix C and Appendix E
Purpose of the data	Calculation of baseline emissions

Calculation method	Standard plot sampling techniques to quantify vegetation and application of allometric equations. Averages calculated using 1 equation B.9 VM0009, v3.0 multiplied by area of each stratum.
Comments	The value was updated in the current monitoring report after completion of the 5-years carbon stocks inventory cycle. See Appendix C.

Data / Parameter	$C_{P\ SOC}^{[m=0]}$
Data unit	tCO ₂ e / ha
Description	Project soil carbon stocks prior to first verification event
Source of data	Project accounting area sampling
Description of measurement methods and procedures to be applied	See Appendix E
Frequency of monitoring/recording	First monitoring period
Value monitored	192.6
Monitoring equipment	See Appendix E, standard soil sampling equipment
QA/QC procedures to be applied	Soil analysed at a reputable laboratory – Institute for Soil, Water and Climate in South Africa.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Standard soil sampling techniques. Averages calculated using equation B.9 VM0009, v3.0
Comments	

Data / Parameter	$E_{\Delta GER}^{[m]}$
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Data unit	tCO ₂ e
Description	GERs for the current monitoring period
Source of data	Area measurements
Description of measurement methods and procedures to be applied	See Appendix E
Frequency of monitoring/recording	Every monitoring period
Value monitored	221,813
Monitoring equipment	See Appendix E, standard plot sampling equipment
QA/QC procedures to be applied	Review of GER calculations
Purpose of the data	Calculation of project emissions
Calculation method	Calculated with equation F.53 as per section 8.4.1 of VM0009, v3.0.
Comments	

Data / Parameter	$E_{\Delta GER}^{[i]}$
Data unit	tCO ₂ e
Description	GERs for monitoring period
Source of data	Area measurements
Description of measurement methods and procedures to be applied	Accounting area plots monitoring as per Appendix E.
Frequency of monitoring/recording	Every monitoring period

Value monitored	1,953,003
Monitoring equipment	See Appendix E, standard plot sampling equipment
QA/QC procedures to be applied	Review of GER calculations
Purpose of the data	Calculation of baseline emissions
Calculation method	Calculated with equation F.53 as per section 8.4.1 of VM0009, v3.0.
Comments	

Data / Parameter	$E_{\Delta NER}^{(i)}$
Data unit	tCO ₂ e
Description	NERs for monitoring period
Source of data	Area measurements
Description of measurement methods and procedures to be applied	Accounting area plots monitoring as per Appendix E
Frequency of monitoring/recording	Every monitoring period
Value monitored	1,714,662
Monitoring equipment	See Appendix E, standard plot sampling equipment
QA/QC procedures to be applied	Review of NER calculations and non-permanence risk assessment
Purpose of the data	Calculation of baseline emissions
Calculation method	Calculated with VCS AFOLU Non-Permanence Risk Tool and equation F.55 as per section 8.4.3 of VM0009, v3.0
Comments	

Data / Parameter	$E_B^{[m]}$
Data unit	tCO2e
Description	Cumulative baseline emissions at the end of the current monitoring period
Source of data	Proxy area measurements
Description of measurement methods and procedures to be applied	Proxy area plots monitoring as per Appendix E and equation F.16
Frequency of monitoring/recording	Every monitoring period - annually
Value monitored	1,934,812
Monitoring equipment	Standard vegetation and soil sampling equipment, see Appendix E
QA/QC procedures to be applied	Annual monitoring of proxy area, see Appendix E for error correction procedures.
Purpose of the data	Calculation of baseline emissions
Calculation method	Equation F.16 from VM0009, v3.0
Comments	

Data / Parameter	$E_B^{[m-1]}$
Data unit	tCO2e
Description	Cumulative baseline emissions at the beginning of the current monitoring period
Source of data	Proxy area measurements
Description of measurement methods	Proxy area plots monitoring as per Appendix E and equation F.16

and procedures to be applied	
Frequency of monitoring/recording	Prior monitoring period
Value monitored	1,731,190
Monitoring equipment	Standard vegetation and soil sampling equipment, see Appendix E
QA/QC procedures to be applied	Annual monitoring of proxy area, see Appendix E for error correction procedures.
Purpose of the data	Calculation of baseline emissions
Calculation method	Equation F.16 from VM0009, v3.0
Comments	

Data / Parameter	$E_{B\Delta}^{[m]}$
Data unit	tCO ₂ e
Description	Change in baseline emissions
Source of data	Proxy area measurements
Description of measurement methods and procedures to be applied	Proxy area plots monitoring as per Appendix E and equation F.15
Frequency of monitoring/recording	Every monitoring period - annually
Value monitored	221,813
Monitoring equipment	Standard vegetation and soil sampling equipment, see Appendix E
QA/QC procedures to be applied	Annual monitoring of proxy area, see Appendix E for error correction procedures.

Purpose of the data	Calculation of baseline emissions
Calculation method	Equation F.15 from VM0009, v3.0
Comments	

Data / Parameter	$E_{B\Delta BGB}^{[i]}$
Data unit	tCO ₂ e
Description	Change in baseline emissions from below-ground biomass during monitoring period i
Source of data	Monitoring the proxy area
Description of measurement methods and procedures to be applied	See Appendix E
Frequency of monitoring/recording	Every monitoring period
Value monitored	1,610,191
Monitoring equipment	See Appendix E
QA/QC procedures to be applied	See Appendix E
Purpose of the data	Calculation of baseline emissions
Calculation method	Calculation of above ground biomass using standard vegetation sampling techniques and application of an acceptable root:shoot ratio and application of equation F.29 of VM0009, v3.0, the decay emissions model
Comments	

Data / Parameter	$E_{B\Delta SOC}^{[m]}$
Data unit	tCO ₂ e

Description	Baseline change in emissions from soil carbon
Source of data	Measurement in the project area
Description of measurement methods and procedures to be applied	See Appendix E
Frequency of monitoring/recording	Once off measurement
Value monitored	71,488
Monitoring equipment	See Appendix E
QA/QC procedures to be applied	See Appendix E
Purpose of the data	Calculation of baseline emissions
Calculation method	Calculation of SOC using standard soil sampling techniques and application of equation F.26 of VM0009, v3.0, the SOC decay emissions model
Comments	

Data / Parameter	$E_{BASOC}^{(i)}$
Data unit	tCO ₂ e
Description	Baseline emissions from soil carbon in monitoring period i
Source of data	Measurement in the project area
Description of measurement methods and procedures to be applied	See Appendix E
Frequency of monitoring/recording	Once off measurement

Value monitored	1,730,828
Monitoring equipment	See Appendix E
QA/QC procedures to be applied	See Appendix E
Purpose of the data	Calculation of baseline emissions
Calculation method	Calculation of SOC using standard soil sampling techniques and application of equation F26 of VM0009, v3.0, the SOC decay emissions model
Comments	

Data / Parameter	$E_{BBGB}^{[m]}$
Data unit	tCO ₂ e
Description	Cumulative baseline emissions from below-ground biomass at the end of the current monitoring period
Source of data	Measurement in the proxy area
Description of measurement methods and procedures to be applied	Standard vegetation sampling techniques to quantify above ground biomass, application of a root-shoot ratio and a decay emissions model.
Frequency of monitoring/recording	Every monitoring period
Value monitored	602,587
Monitoring equipment	See Appendix E
QA/QC procedures to be applied	See Appendix E
Purpose of the data	Calculation of baseline emissions
Calculation method	Calculation of above ground biomass using standard vegetation sampling techniques and application of an

	acceptable root:shoot ratio and application of equation F.29 of VM0009, v3.0, the decay emissions model
Comments	

Data / Parameter	$E_{BBGB}^{(m-1)}$
Data unit	tCO ₂ e
Description	Cumulative baseline emissions from below-ground biomass at the beginning of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	Standard vegetation sampling techniques to quantify above ground biomass, application of a root-shoot ratio and a decay emissions model.
Frequency of monitoring/recording	Prior monitoring period
Value monitored	536,985
Monitoring equipment	See Appendix E
QA/QC procedures to be applied	See Appendix E
Purpose of the data	Calculation of baseline emissions
Calculation method	Calculation of above ground biomass using standard vegetation sampling techniques and application of an acceptable root:shoot ratio and application of equation F.29 of VM0009, v3.0, the decay emissions model
Comments	

Data / Parameter	$E_{BBM}^{(m)}$
Data unit	tCO ₂ e

Description	Cumulative baseline emissions from biomass at the end of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	See Appendix E
Frequency of monitoring/recording	Every monitoring period
Value monitored	1,718,495
Monitoring equipment	See Appendix E
QA/QC procedures to be applied	See Appendix E
Purpose of the data	Calculation of baseline emissions
Calculation method	Standard vegetation sampling techniques, quantification of deforestation in the reference area and application of equation F.4 and F.21, VM0009, v3.0
Comments	

Data / Parameter	$E_{BSOC}^{[m]}$
Data unit	tCO ₂ e
Description	Cumulative baseline emissions from soil carbon at the end of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods	Standard soil sampling techniques in the proxy area, laboratory analysis and application of the soil decay model.

and procedures to be applied	
Frequency of monitoring/recording	Soil carbon is only quantified once at the first verification event as per VM0009.
Value monitored	621,481
Monitoring equipment	Standard soil sampling equipment, see Appendix E
QA/QC procedures to be applied	Soil analysed at a reputable laboratory – Institute of Soil, Climate and Water in South Africa.
Purpose of the data	Calculation of baseline emissions
Calculation method	Quantification of soil carbon and application of equation F.7 and F.28, VM0009, v3.0
Comments	

Data / Parameter	$E_{BSOC}^{[m-1]}$
Data unit	tCO ₂ e
Description	Cumulative baseline emissions from soil carbon at the beginning of the current monitoring period
Source of data	Measurements in the proxy area
Description of measurement methods and procedures to be applied	Standard soil sampling techniques in the proxy area, laboratory analysis and application of the soil decay model.
Frequency of monitoring/recording	Soil carbon is only quantified once at the first verification event as per VM0009.
Value monitored	549,993
Monitoring equipment	Standard soil sampling equipment, see Appendix E

QA/QC procedures to be applied	Soil analysed at a reputable laboratory – Institute of Soil, Climate and Water in South Africa.
Purpose of the data	Calculation of baseline emissions
Calculation method	Quantification of soil carbon and application of equation F.7 and F.28, VM0009, v3.0
Comments	

Data / Parameter	$E_{BA}^{[m]}$
Data unit	tCO ₂ e
Description	Cumulative emissions allocated to the buffer account at the end of the current monitoring period
Source of data	VCS Non-Permanence Risk Report, See Appendix G
Description of measurement methods and procedures to be applied	See Appendix G – standard VCS procedure used
Frequency of monitoring/recording	Non-permanence risk revised at every baseline re-assessment.
Value monitored	-220,146
Monitoring equipment	None
QA/QC procedures to be applied	Annual review of risk criteria and disturbance monitoring
Purpose of the data	Calculation of emissions submitted to VCS buffer account
Calculation method	Procedure followed in VCS non-permanence risk tool and emissions allocated to buffer account subtracted from GERs.
Comments	

Data / Parameter	$E_L^{[m]}$
Data unit	tCO2e
Description	Cumulative emissions from leakage at the end of the current monitoring period
Source of data	Measurements in the leakage area(s)
Description of measurement methods and procedures to be applied	Plot based sampling of leakage area and estimation of degradation.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	See Appendix F, standard vegetation sampling equipment
QA/QC procedures to be applied	See Appendix F, all evidence of tree-felling by humans are geo-referenced and plots photographed
Purpose of the data	Calculation of activity shifting leakage
Calculation method	Application of equation F.44 and F.45 to field data collected.
Comments	Leakage in this monitoring period is considered insignificant. No significant deforestation has taken place in the leakage area, only minor degradation.

Data / Parameter	$E_L^{[m-1]}$
Data unit	tCO2e
Description	Cumulative emissions from leakage at the beginning of the current monitoring period
Source of data	Measurements in the leakage area(s)

Description of measurement methods and procedures to be applied	Plot based sampling of leakage area and estimation of degradation.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	See Appendix F, standard vegetation sampling equipment
QA/QC procedures to be applied	See Appendix F, all evidence of tree-felling by humans are geo-referenced and plots photographed
Purpose of the data	Calculation of project emissions
Calculation method	Application of equation F.44 and F.45 to field data collected.
Comments	Leakage in this monitoring period is considered insignificant. No significant deforestation has taken place in the leakage area, only minor degradation.

Data / Parameter	$E_{L\Delta}^{(m)}$
Data unit	tCO ₂ e
Description	Change in emissions due to leakage
Source of data	See Appendix F
Description of measurement methods and procedures to be applied	Plot based sampling of leakage area and estimation of degradation.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	See Appendix F, standard vegetation sampling equipment

QA/QC procedures to be applied	See Appendix F, all evidence of tree-felling by humans are geo-referenced and plots photographed
Purpose of the data	Calculation of leakage
Calculation method	Application of equation F.44 and F.45 to field data collected.
Comments	Leakage in this monitoring period is considered insignificant. No significant deforestation has taken place in the leakage area, only minor degradation.

Data / Parameter	$E_{L\ ASF}^{[m]}$
Data unit	tCO ₂ e
Description	Cumulative emissions from activity-shifting leakage in forested strata at the end of the current monitoring period
Source of data	Measurements in the activity-shifting leakage area
Description of measurement methods and procedures to be applied	Plot based sampling of leakage area and estimation of degradation.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	See Appendix F, standard vegetation sampling equipment
QA/QC procedures to be applied	See Appendix F, all evidence of tree-felling by humans are geo-referenced and plots photographed
Purpose of the data	Calculation of leakage
Calculation method	Application of equation F.44 and F.45 to field data collected.
Comments	Leakage in this monitoring period is considered insignificant. No significant deforestation has taken place in the leakage area, only minor degradation.

Data / Parameter	$E_{LME}^{(m)}$
Data unit	tCO ₂ e
Description	Cumulative emissions from market effects leakage at the end of the current monitoring period
Source of data	Measurements in the market-effects leakage area
Description of measurement methods and procedures to be applied	Market and activity shifting leakage are the same for the LZRP
Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	See Appendix F
QA/QC procedures to be applied	See Appendix F
Purpose of the data	Calculation of leakage
Calculation method	See calculations for activity-shifting leakage above
Comments	

Data / Parameter	$E_{LME}^{(m)}$
Data unit	tCO ₂ e
Description	Cumulative emissions from market effects leakage at the end of the current monitoring period
Source of data	Measurements in the market-effects leakage area
Description of measurement methods and procedures to be applied	Market and activity shifting leakage are the same for the LZRP

Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	See Appendix F
QA/QC procedures to be applied	See Appendix F
Purpose of the data	Calculation of leakage
Calculation method	See calculations for activity-shifting leakage above
Comments	

Data / Parameter	$E_{P\Delta}^{[m]}$
Data unit	tCO ₂ e
Description	Change in project emissions
Source of data	Monitoring records for Forest Fire, Burning, logging, wood products, and natural disturbance events
Description of measurement methods and procedures to be applied	Standard vegetation sampling techniques and remote sensing to determine the extent of fires.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	Standard vegetation sampling equipment and satellite imagery.
QA/QC procedures to be applied	Remote sensing, patrols and field measurements
Purpose of the data	Calculation of project emissions

Calculation method	Monitoring of burnt wood in the project accounting area and equation F.41 VM0009, v3.0.
Comments	

Data / Parameter	$E_{P\Delta BRN}^{[m]}$
Data unit	tCO ₂ e
Description	Cumulative project emissions due to burning at the end of the current monitoring period
Source of data	Monitoring plots in the project accounting area
Description of measurement methods and procedures to be applied	Standard vegetation sampling techniques and remote sensing to determine the extent of fires.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	Standard vegetation sampling equipment and satellite imagery.
QA/QC procedures to be applied	Review of monitoring records
Purpose of the data	Calculation of baseline emissions
Calculation method	Calculation of project emissions
Comments	

Data / Parameter	$E_U^{[m]}$
Data unit	tCO ₂ e
Description	Cumulative confidence deduction at the end of the current monitoring period

Source of data	Biomass and soil carbon inventory data, Appendix C
Description of measurement methods and procedures to be applied	Calculation of the standard error of the total of the baseline emissions model, proxy area carbon stocks and accounting area carbon stocks
Frequency of monitoring/recording	Every monitoring period
Value monitored	0
Monitoring equipment	See Appendix C
QA/QC procedures to be applied	See Appendix C
Purpose of the data	Calculation of baseline emissions Calculation of project emissions Calculation of leakage
Calculation of project emissions	Equation F.57 from VM0009. v3.0
Calculation of leakage	There were no confidence deductions as the uncertainty was insignificant.

Data / Parameter	$P_{L\ DEG}^{[m]}$
Data unit	Proportion (unitless)
Description	Portion of leakage due to degradation at the end of the current monitoring period
Source of data	Monitoring in the leakage area
Description of measurement methods and procedures to be applied	Plot based sampling of leakage area and estimation of degradation.
Frequency of monitoring/recording	Every monitoring period
Value monitored	0.073

Monitoring equipment	See Appendix F, standard vegetation sampling equipment
QA/QC procedures to be applied	See Appendix F, all evidence of tree-felling by humans are geo-referenced and plots photographed
Purpose of the data	Calculation of leakage
Calculation method	Calculated using equation B.9, VM0009, v3.0. Minimum sample size determined using equation B.31, VM0009, v3.0
Comments	Leakage in this monitoring period is considered insignificant. No significant deforestation has taken place in the leakage area, only minor degradation.

Data / Parameter	$P_{L\ DEG}^{[m=0]}$
Data unit	Proportion (unitless)
Description	Portion of leakage due to degradation prior to first verification event
Source of data	Monitoring in the leakage area
Description of measurement methods and procedures to be applied	Plot based sampling of leakage area and estimation of degradation.
Frequency of monitoring/recording	First monitoring period
Value monitored	0.087
Monitoring equipment	See Appendix F, standard vegetation sampling equipment
QA/QC procedures to be applied	See Appendix F, all evidence of tree-felling by humans are geo-referenced and plots photographed
Purpose of the data	Calculation of leakage
Calculation method	Calculated using equation B.9, VM0009, v3.0. Minimum sample size determined using equation B.31, VM0009, v3.0

Comments	
Data / Parameter	$t^{[i-1]}$
Data unit	Days
Description	Time from the project start date to beginning of monitoring period i
Source of data	Monitoring records
Description of measurement methods and procedures to be applied	NA
Frequency of monitoring/recording	NA
Value monitored	0
Monitoring equipment	NA
QA/QC procedures to be applied	NA
Purpose of the data	Calculation of baseline emissions
Calculation method	Count of days in project crediting period
Comments	

Data / Parameter	$t^{[m]}$
Data unit	Days
Description	Time from project start date to end of current monitoring period
Source of data	Monitoring records
Description of measurement methods	NA

and procedures to be applied	
Frequency of monitoring/recording	Every monitoring period
Value monitored	4,475
Monitoring equipment	NA
QA/QC procedures to be applied	Monitoring records
Purpose of the data	Calculation of baseline emissions
Calculation method	Deduct project start date from end of date of current monitoring period.
Comments	

Data / Parameter	$t^{[m-1]}$
Data unit	Days
Description	Time from project start date to beginning of current monitoring period
Source of data	Monitoring records
Description of measurement methods and procedures to be applied	NA
Frequency of monitoring/recording	Prior monitoring period
Value monitored	4,110
Monitoring equipment	NA
QA/QC procedures to be applied	Monitoring records, Appendix C

Purpose of the data	Calculation of baseline emissions and compliance with VM0009, v3.0 minimum monitoring intervals.
Calculation method	NA
Comments	

Data / Parameter	$U_B^{[m]}$
Data unit	tCO2e
Description	Total uncertainty in proxy area carbon stock estimate
Source of data	Biomass and soil carbon inventory data
Description of measurement methods and procedures to be applied	Calculation of the standard error of the total of the baseline emissions model, proxy area carbon stocks and accounting area carbon stocks
Frequency of monitoring/recording	Every monitoring period
Value monitored	60,520
Monitoring equipment	NA
QA/QC procedures to be applied	NA
Purpose of the data	Calculation of baseline emissions
Calculation method	Equation B.10, VM0009, v3.0.
Comments	

Data / Parameter	$U_{EM}^{[M]}$
Data unit	tCO2e
Description	Total uncertainty in Baseline Emissions Models

Source of data	Forest State Interpretation
Description of measurement methods and procedures to be applied	Calculation of the standard error of the total of the baseline emissions model, proxy area carbon stocks and accounting area carbon stocks
Frequency of monitoring/recording	Every baseline revision
Value monitored	5,542
Monitoring equipment	Appendix H
QA/QC procedures to be applied	Appendix H
Purpose of the data	Calculation of baseline emissions
Calculation method	Equation B.14, VM0009, 3.0
Comments	

Data / Parameter	$U_P^{[m]}$
Data unit	tCO ₂ e
Description	Total uncertainty in project accounting area carbon stock estimate
Source of data	Forest State Interpretation
Description of measurement methods and procedures to be applied	Calculation of the standard error of the total of the baseline emissions model, proxy area carbon stocks and accounting area carbon stocks
Frequency of monitoring/recording	Every monitoring period
Value monitored	877,833
Monitoring equipment	Appendix E

QA/QC procedures to be applied	Appendix E
Purpose of the data	Calculation of baseline emissions
Calculation method	Equation B.10, VM0009, v3.0
Comments	

4.3 Monitoring Plan

Table 3. Summary of monitoring activities.

Monitoring Activity	Timing	Methods
Conservancy trespassing and boundary transgressions	Monthly patrols	Scouts patrol the conservancy on an ongoing basis, it is their core duty
Leakage monitoring	Annually	Forest Inventory team following VM0009
Plot measurements	Annually	Forest Inventory Team following VM0009, re-sample 20% of plots in project accounting.
Disturbance monitoring	Monthly in the fire season and otherwise as BCP becomes aware of disturbances.	Remote sensing (Visible Infrared Imaging Radiometer Suite (VIIRS) fire hotspots), followed by ground-based inspections, bi-monthly aerial surveys.

Charcoal production	Monthly	Charcoal operations managers record all charcoal production on an ongoing basis.
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PDR.122

The principle means of monitoring project emissions is with inventory plots in project accounting areas where above ground biomass is measured by recording tree's diameter at breast height (DBH). Allometric equations are used to convert the measures to above and below ground biomass. Soil samples are also collected during the first monitoring period to establish the soil carbon stocks for the project accounting area. VM0009 requires that all such plots must be measured during the first monitoring period and then 20% measured during each subsequent monitoring period.

MR.91

The monitoring strategy for the LZRP followed a stratified random approach for the accounting area. The vegetation in the project accounting area is fairly homogeneous Miombo woodland, but two different strata, namely light and dense tree covers were distinguished using remote sensing techniques (Figure 2).

A total of 186 circular, permanent inventory plots are located in Rufunsa Conservancy, and soil was sampled at 59 of these plots during M1. 26 plots fell within the dense tree stratum; the remainder were in the light tree stratum which incidentally covers the majority of the accounting area.

Twenty percent of plots are re-measured every year. Two of the 160 plots in the light tree stratum could not be located due to a GPS waypoint transcription error during the first inventory and they were thus not re-sampled and excluded from calculations. Therefore, LZRP has a total of 184 plots (158 –Light tree stratum and 26 plots in the dense tree stratum)

MR.92

GPS coordinates for all of the accounting area, proxy, and leakage plots can be found in Appendix H.

MR.93

Biomass monitoring is conducted according to the BCP field sampling manual (copy provided to VVB, Appendix E). Optimum plot size and minimum tree diameter were determined during a trial sampling run in February 2012. Circular plots (12m radius) were used due to their simplicity, ease of layout and reduced measurement error. A randomly

generated plot location was navigated-to using a handheld GPS unit or Android Smartphone. When the plot location was reached, the centre was permanently marked with a steel rebar driven into the ground. If, for some reason, a plot could not be reached due to terrain, the location was moved following a predetermined deviation that led to the location of another plot. Very few plots could not be reached. The plot layout is shown in Figure 4.

Trees were identified to species level as far as possible, noting that there are several miombo species (some common) that require taxonomic revision (M. Bingham. Pers Comm¹). The use of a generic allometric equation to calculate AGOT mass fortunately negated mistakes or uncertainties with tree species identification. As explained above, plots are re-measured on a rotating basis, with 20% re-measured per year, however stock estimates are only updated every 5 years when all plots would have been re-measured.

In addition to the inventory plots, human and natural disturbances in the project accounting area are mapped using visual interpretation of Sentinel-2 and if needed Landsat data. This is done once a year using the most cloud-free imagery from April-May. This represents the end of the rainy season and the beginning of the dry season. This is generally the best time of the year for mapping woodlands in Zambia as there is less cloud cover, trees generally still have leaves, and the understory grass has started to dry out providing better contrast between grassy and wooded areas. The woodlands in the project area are fire-adapted and fires generally don't cause a massive disturbance. April-May imagery helps avoid mistakenly mapping fire scars as a disturbance when the fire likely only burned the understory grass. With April-May imagery, only permanently damaging fires will be mapped as a disturbance.

¹ Mike Bingham, Zambian Miombo Ecosystem Authority.

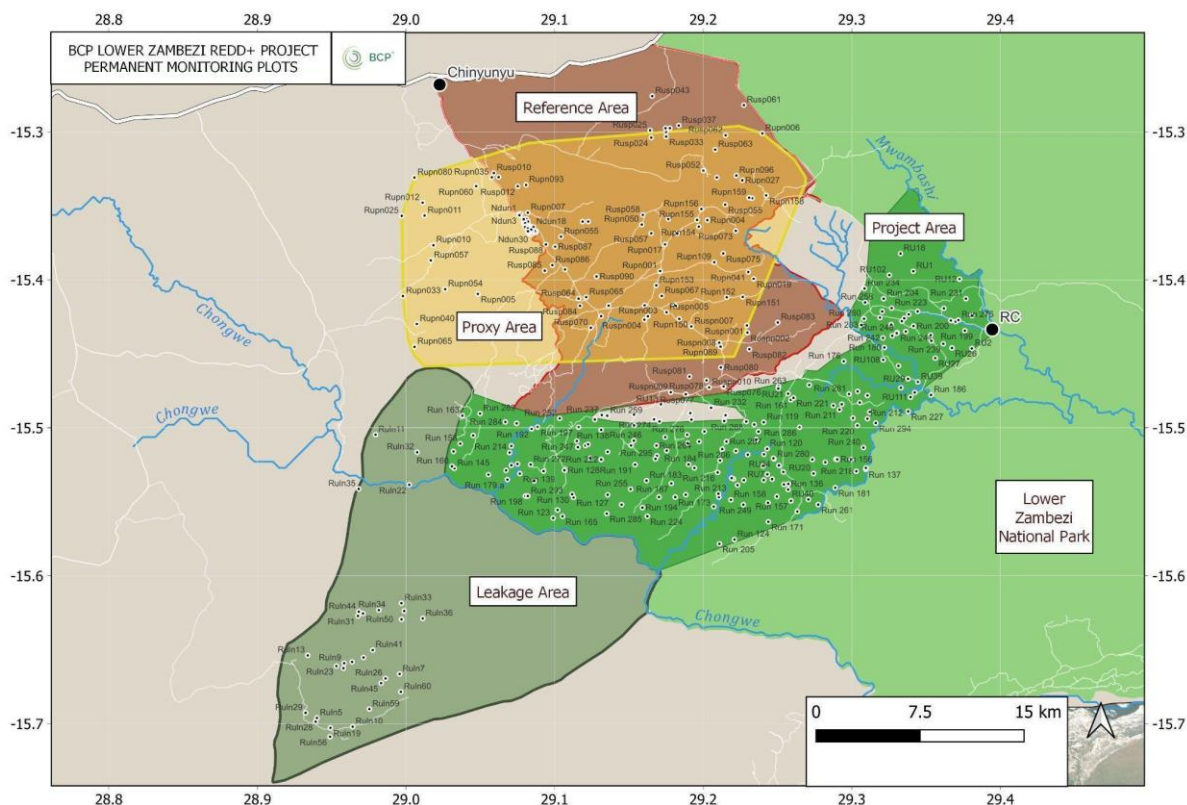


Figure 4. Permanent carbon stock monitoring plots for the Lower Zambezi REDD+ Project.

PDR.123

Proxy plots are used to estimate residual biomass after conversion and the end point for soil carbon decay. For estimating residual biomass, after mapping the proxy areas as described in the project design document, the project generated a random sample of 46 points within the proxy areas. One plot was inaccessible, therefore, only 45 are monitored.

Since proxy soil carbon is only measured once, it is important to select samples from areas that represent the end point of conversion. Soil data was collected from 16 soil in the proxy area. The same biomass and soil sampling protocols used for accounting areas (Appendix E) were used for proxy areas as well.

PDR.124

Leakage plots in the leakage area are used to estimate activity-shifting leakage from the project accounting areas. The project generated a random sample of 30 points within the leakage area where 1 ha leakage plots could be established. Equation B.31 as per VM0009,

suggested the minimum number of plots required was 23. The leakage plot protocol is described in Appendix F.

MR.98

All accounting area, proxy, and leakage plots were measured during monitoring period 1. The project verifies on an annual basis therefore measures all leakage plots each year and 20 % of accounting area and proxy plots each year.

Organizational Structure, responsibilities and competencies

BioCarbon Partners has a team of experts responsible for the carbon inventory and standards compliance. There is a dedicated carbon accounting department that oversees all inventory data collection, processing, storage, GIS and remote sensing and electronic data capture systems (Figure 5).

Both the carbon accounting manager and remote sensing and GIS specialist have post graduate degrees with a strong focus on ecology and collectively have more than 20 years' experience in biological inventories, remote sensing and GIS.

A field team consisting of local residents from neighboring communities have been trained in forest monitoring (see below) in line with BCP's policy of local capacity building and investment. The team has intimate knowledge of local flora and fauna and their knowledge of the area enables them to locate inventory plots with limited difficulty.

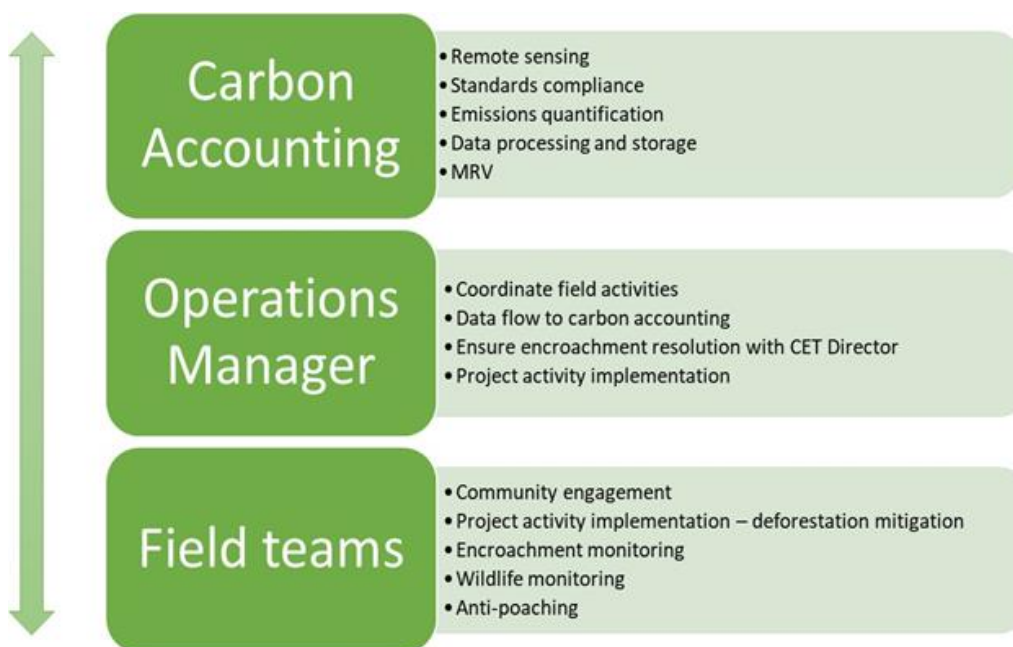


Figure 5. BioCarbon Partners carbon monitoring organisational structure.

The inventory team's day-to-day activities are monitored by the Rufunsa Conservancy Operations Manager who is based on site at the conservation centre. The operations manager sees to the logistical needs of the plot team, ensures that deadlines are adhered to, assists with any equipment failures and transfers data to the carbon accounting department.

Data Management

The initial inventory data for the project accounting area was collected using pen and paper, transferred to BCP HQ for copying, storage and entry. The data was entered by an experienced data capturer with specific experience in collating and capturing ecological data. Data was captured in spreadsheets and original data sheets are kept in a safe place at the BCP HQ. The data was then error checked by the carbon accounting manager to identify any obvious errors. Following this process, an intensive error checking was conducted with the data capturer and two of the senior inventory team members.

Subsequently, BCP developed a digital data capturing system using Android Smartphones. The advantage of this system is that it dramatically reduces errors and adds a significant element of quality control to data collection as start and end times plus location are recorded for all plots. Furthermore, the digital system allows for restrictions in data collection by using drop down menus and upper and lower bounds for figures. It also guides the data collector through the process with a series of text prompts and diagrams.

The process followed for data collection is outlined in Figure 6 and a spot error check SOP can be found in Appendix E. It is a feedback system that relies heavily on training, review and good communication. All training is followed by trial runs of the sampling procedure and then actual data collection under supervision. Data is continuously submitted from the field to the carbon accounting department, and feedback is provided if any corrective actions are required. Furthermore, plots are visited in the field periodically and subjected to an internal audit process.

Once data has been error checked and cleaned it is safely stored online using Google Drive and then transferred to an online relational database that is currently being developed.

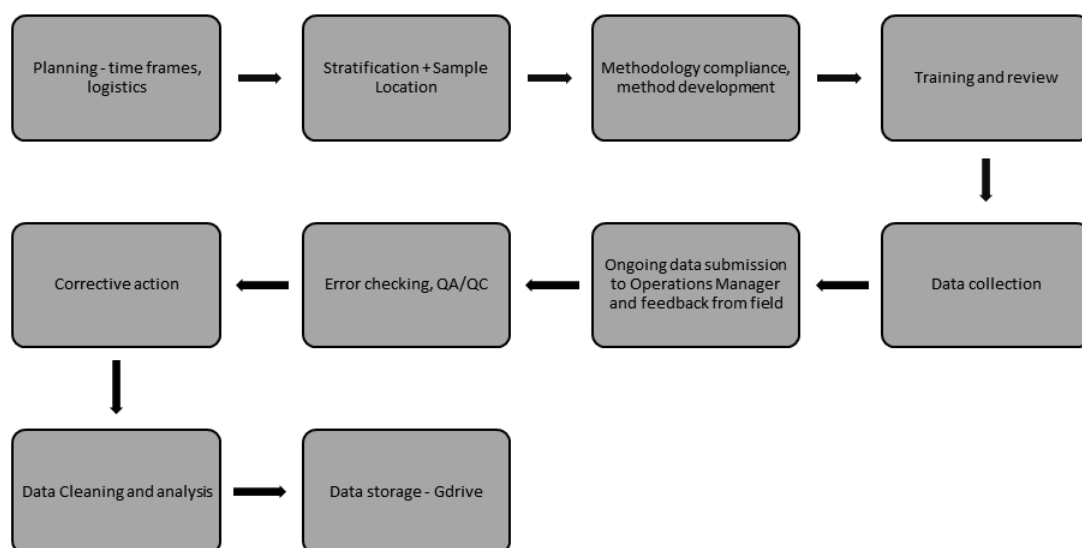


Figure 6. BioCarbon Partners data collection, QA/QC and storage process.

MR.90

Quality Assurance and Quality Control

A set of Standard Operating Procedures and Field Manuals have been developed for all the various aspects of the carbon inventory. As indicated above, BCP has strong systems in place to ensure all carbon-related data is collected according to the required quality standards. Quality Control is embedded in the organizational structure of the Carbon Accounting department (Figure 6).

Continuous feedback from the field, coupled with field visits from senior staff, ensure that errors are identified in a timely fashion and corrected (Figure 6). Spot checks and internal audits are conducted to make sure all data collected is of the highest standard. The new digital data capture system furthermore ensures that errors are identified and rectified immediately, unlike paper based systems where data often takes weeks to enter and error-check. Spot errors are dealt with as per Appendix E. During the current monitoring period a senior person was on site for the enumeration of all plots re-sampled. Corrections were done in the field.

With regards to GIS and RS, similar procedures are followed although this role resides mainly within the senior management's responsibility. The Remote Sensing aspect of the Cumulative Deforestation Model was undertaken independently by two associates from a

South African tertiary institution. The CDM point interpretation was then submitted to a rigorous third party audit by BCP staff.

MR.88

Local capacity building and employment creation is one of the core focus points of BioCarbon Partners and this is clearly reflected in our approach to field based carbon accounting practices. Table 4 is a summary of all forest inventory training undertaken for the first monitoring period. BCP initially trained a group of 19 local residents consisting of neighboring villagers, officials from the Department of Forestry and local post graduate ecology students in basic forest enumeration techniques followed by hands-on sampling and data collection according to our carbon stock assessment field manual (Appendix E).

Table 4. Summary of field based carbon accounting training for the LZRP

Date	Training course	Number of trainees	Duration of training (days)	Venue	Trainers
Feb 2012	Biomass Inventory	19	8	Rufunsa Conservancy	L. Theron & H. Sachedina
Sep 2012	Biomass Inventory Advanced Training	5	4	Rufunsa Conservancy	L. Theron, W. Roberts & M. Bingham
Dec 2012	Biomass Inventory refresher course including use of improved bulk density corer	4	2	Rufunsa Conservancy	L. Theron
Jan 2013	Charcoal Inventory and Soil Proxy Sampling and electronic data capture	4	4	LRZP Eco-Charcoal Forest	L. Theron, W. Roberts, E. Chidumayo
Apr 2013	Tree allometry equation development	3	1 and 5 sampling under supervision	LRZP Eco-Charcoal Forest	L. Theron, W. Roberts
Jun 2013	NT and DW allometry development, Residual Biomass Sampling, Leakage Monitoring	4	3 and 4 sampling	Rufunsa Conservancy and Leakage Area	L. Theron
June 2014	Biomass Inventory refresher course	5	2	Rufunsa Conservancy	L. Theron
May 2016	Biomass Inventory refresher course	6	2	Rufunsa Conservancy	L. Theron

June 2016	Biodiversity Monitoring Course	15	6	Rufunsa Conservancy	A. Cotterill and L. McDonald
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Following the viability phase of the project, five people were selected from the 19 originally trained, to undertake the required monitoring in preparation for the verification under the VCS of the project and one additional member selected from a local village. The forest inventory team members were:

- Pythias Sebente
- Collins Jere Kaoma
- Andrew Tembo
- Christopher Wanga
- Elvin Muchimba

The inventory team then underwent refresher and advanced training during September 2012 (Figure 7). The training particularly focused on correct data capture and measurement techniques, use of clinometers, GPS use and advanced tree identification presented by local Zambian expert Mike Bingham. Plots were then enumerated under supervision until a satisfactory level of proficiency was achieved.

Pythias Sebente resigned in November 2013 due to the physical nature of the work and was replaced as team leader by Andrew Tembo. The team were by that time well versed in the sampling method and did not need five people to complete the inventory.

BCP in the interim developed an electronic data capture system using Android smartphones and the Open Data Kit (ODK) software. This software allows for the design of custom data capture forms, capturing geographic data and images. It allows for the introduction of stringent data quality control features. A trial version was developed and in January 2013 the team was trained on it and it was piloted in the eco-charcoal forest to quantify the biomass available for charcoal. Since then all new data has been captured using this system.

The soil sampling procedure was also revised during this time; it included training in collecting metadata required for collecting data on residual soil carbon stocks and soil decay rates.

A refresher training course was again held in June 2014. It included a review of the upcoming leakage monitoring and planning for leakage monitoring.



Figure

7. Copy of certificate issued to Forest Monitoring Team members after completion of the advanced training course.

The current Forest Monitoring Team comprise Elvin Muchimba (Team Leader), Lawrence Msoni, Liason Chiyakamba, and Nchimunya Simwendengwe.

MR.89

During the *M5* monitoring period biomass available for charcoal production was estimated following the BCP carbon stock assessment field manual in the eco-charcoal forest located to the North of the project accounting area, the Ndubalula eco-charcoal forest. The Ndubalula eco-charcoal area is approximately 93 ha in size and would have been deforested in the baseline scenario. The area was identified by local community leaders and charcoal producers who agreed to harvest it in a sustainable manner. Biomass was enumerated in 30 plots. There is currently 484 ha under eco-charcoal management. Charcoal is harvested using a coup & shelter belt system (eco-charcoal harvesting and production system documents have been made available to the VVB), on a rotational basis, returning to the first strip after approximately 18 years. Charcoal production and sales are carefully monitored by BCP staff and project participants. Charcoal production figures per month for the year 2021 are listed in Table 5 below.

Table 5. Summary of Eco-charcoal production for the LZRP during 2021.

Month	Total (t)
January	0
February	0
March	1.3
April	2.27
May	2.65
June	4.27
July	2.59
August	2.31
September	10.49
October	Not available
November	Not available
December	Not available
TOTAL	25.81

MR.99

A generic miombo equation developed by Chidumayo (2013) at a study site very close to the reference area was used: Wood Biomass (kg) = $0.0446 \times \text{DBH}^{2.765}$

The Diameter at Breast Height (DBH) range for the model was 2-39cm and it was developed from a sample size of 113 destructively sampled trees covering 19 species, including the common species in this project.

BCP has the original data from the author and has made it available to the VVB. BCP destructively sampled another seven trees of various species to extend the diameter range of the equation to 55cm (Table 6). The procedures followed for destructive harvesting are described in Annex F and was developed under the guidance of Professor Chidumayo.

Table 6. Results of allometry validation and diameter range expansion.

Species	DBH (cm)	Total dry mass (kg)	Mass Predicted by equation (kg) (Chidumayo 2013)	Latitude	Longitude
<i>Brachystegia boehmii</i>	49	2,750	2,143	-15.3672	29.08735
<i>Brachystegia boehmii</i>	48	2,838	1,957	-15.3654	29.08534
<i>Brachystegia boehmii</i>	42	1,236	1,346	-15.3627	29.08307
<i>Brachystegia spiciformis</i>	41	1,141	1,318	-15.3678	29.08696
<i>Brachystegia utilis</i>	43	2,212	1,462	-15.3627	29.08266

<i>Brachystegia utilis</i>	48	2,006	2,030	-15.3635	29.08613
<i>Parinari curatellifolia</i>	55	3,823	2,950	-15.3654	29.08537
Total Mass		16,006	13,206		

MR.100

The equation is generic and predicts biomass at a stand level. It is applied to all the species in the inventory and predicts 100% of the biomass.

MR.101

The equation was applied to the first monitoring event for which physical measurements spanned 2012-2013.

MR.102

The cumulative biomass of all felled trees both in the original data set of Chidumayo and sampled by BCP are 10% greater than that predicted by the equation (Table 6). The equation is thus conservative. In addition, the equation was capped at 55cm DBH, although there were very few trees in the inventory that had a DBH greater than 55cm.

MR.103

Chidumayo (2013) developed the equation through destructive harvesting of study plots located between latitudes 15.2167° and 15.2833°S and longitudes 29.1500° and 29.2333°E, which was miombo woodland in Lusaka province. The sample consisted of 113 trees spanning 19 species, all of which occur in the project and proxy areas.

The seven additional specimens harvested to expand the diameter range were located in the proxy area in the Eco-Charcoal forest (Table 6).

MR.104

See MR.99 above.

MR.105

The location of the 7 trees destructively sampled to expand the range is listed in Table 6 and they were located in the proxy area in the Eco-Charcoal forest.

MR.106

The field protocol was made available to the VVB when the equations were validated in the *M1* monitoring period. See the *M1* monitoring report on the Verra projects website.

MR.107

The field protocol was based on the methods used by Chidumayo (2013) to develop the original equation. It is a methodical and robust approach that is conservative. The same wet-dry mass ratio as used by Chidumayo (2013) was applied.

MR.108

The results of actual vs. predicted mass are summarized in Table 6 and the data from the 113 original trees and seven additional trees harvested to develop the equation was provided to the VVB at the M1 verification.

Disturbance Monitoring

In addition to the inventory plots, human and natural disturbances in the project accounting area are mapped using visual interpretation of Sentinel-2 and if needed Landsat data. This is done once a year using the most cloud free imagery from April-May. This represents the end of the rainy season and beginning of the dry season. This is generally the best time of year for mapping woodlands in Zambia as there is less cloud cover, trees generally still have leaves, and the under story grass has started to dry out providing better contrast between grassy and wooded areas. The woodlands in the project area are fire adapted and fires generally don't cause massive disturbance. April-May imagery helps avoid mistakenly mapping fire scars as disturbance, when the fire likely only burned the under story grass. With April-May imagery, only permanently damaging fires will be mapped as disturbance.

When significant disturbances are detected in an area not covered by an inventory plot, a polygon is drawn around the area and the per hectare emissions factors determined from the plot inventory work will be applied to the area to calculate project emissions.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

MR.95

Table 7. Estimated carbon stock, standard error of the total for each stock, and the sample size for each stratum in the areas selected.

Parameter	Project Accounting Area			Proxy Area	
	Dense Tree OT	Light Tree OT	Soil (Dense + Light)	Proxy Area OT	Proxy Area Soil
Plots (P)	26	158	48	46	16
Total Possible plots ($N_{p,k}$)	132,986	603,954	736,941	945,964	945,964
C	1,079,962	4,602,162	6,420,888	414,678	5,634,230
U (B.10) per stratum	104,703	226,616	841,589	132,690	283,500

MR.10

Baseline emissions ($E_{(B\Delta)}^{[m]}$) for the current monitoring period (January 1st, 2021 to December 31st, 2021) are summarized in Table 8. Equation F.15 was used to calculate these baseline emissions. 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.

Table 8. Baseline emissions summary for the ninth monitoring period (see Appendix D for calculations).

Monitoring Period	Carbon Pool	Baseline Emissions (tCO ₂ e)
M9	AGOT	121,474
M9	BGOT	65,602
M9	SOC	34,738
Total		221,813

MR.11

Cumulative baseline emissions $E_{B\Delta}^{[m-1]}$ from prior monitoring periods were calculated using equation F.16 of VM0009, v3. 0. Refer to Appendix D for calculations.

$$1,731,190 \text{ tCO}_2\text{e}$$

MR.12

Cumulative baseline emissions for each selected pool ($E_{B\text{BM}}^{[m]}$ and $E_{B\text{SOC}}^{[m]}$) and undecayed carbon ($C_{B\text{BGB}}^{[m]}$, $C_{B\text{SOC}}^{[m]}$) as of the current monitoring period are summarized below.

See Appendix D for calculations.

$$E_{B\text{BM}}^{[m]} = 1,953,003 \text{ tCO}_2\text{e}$$

$$E_{B\text{SOC}}^{[m]} = 621,481 \text{ tCO}_2\text{e}$$

$$C_{B\text{BGB}}^{[m]} = -4 \text{ tCO}_2\text{e}$$

$$C_{B\text{SOC}}^{[m]} = -386,973 \text{ tCO}_2\text{e}$$

MR.15-17

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 and F.18 for the proxy area. The light tree carbon stratum has a carbon stock of 168.4 tCO₂e while the dense tree stratum has a stock of 179.5 tCO₂e. The proxy area (baseline scenario) carbon stocks are 9.7 tCO₂e. The value was updated in the previous monitoring report after completion of the 5-years carbon stocks inventory cycle. See Appendix C. The proxy area carbon stocks increased mainly because of inventory mistakes made in the previous cycle, which were corrected in the current 5-years cycle.

Cumulative baseline emissions from biomass $E_{B\text{BM}}^{[m]}$ for the current monitoring period were 1,718,495 tCO₂e

See Appendix D for calculations.

Current baseline emissions from SOC ($E_{(B\Delta\text{SOC})}^{[m]}$) as of the current monitoring period were 71,488 tCO₂e

See Appendix D for calculations.

Cumulative baseline emissions from SOC ($E_{(B\ SOC)}^{[m]}$) for the current monitoring period were 621,481 tCO₂e

See Appendix D for calculations

Cumulative baseline emissions from biomass $E_{BBM}^{[m]}$ for prior monitoring periods were 1,531,420 tCO₂e

See Appendix D for calculations.

MR.26

Carbon stored in non-decayed BGB ($C_{B\ BGB}^{[m]}$) for the current monitoring period was 6 tCO₂e

See Appendix D for calculations

MR.27

Cumulative baseline emissions from BGB for the current monitoring period ($E_{B\ BGB}^{[m]}$) were 602,587 tCO₂e

See Appendix D for calculations.

MR.28

Cumulative baseline emissions from BGB ($E_{B\ BGB}^{[m]}$) for all prior monitoring periods were 536,985 tCO₂e

See Appendix D for calculations.

MR.29

Carbon stored in non-decayed SOC for the current monitoring period ($C_{B\ SOC}^{[m]}$) was -36,750 tCO₂e

See Appendix D for calculations.

5.2 Project Emissions

MR.32-33

The Remote Sensing/GIS analysis explained in section 3.2 and 4.3 above showed that there were no project emissions in the current monitoring period.

5.3 Leakage

MR.44

The primary leakage mitigation strategies of the project are improving agricultural techniques with conservation farming and agroforestry, and promoting alternative livelihoods that don't depend on forest clearing such as beekeeping. See section 3.1 of this report for a detailed description of the leakage mitigation activities employed by this project. The leakage monitoring results for the current monitoring period are presented in Table 9.

See section 3.1 for a summary of project leakage mitigation activities and a detailed description of how these projects will achieve leakage mitigation can be found in the Project Design Document.

During the ninth monitoring period, a total of 30 plots were sampled using a predefined leakage monitoring strategy. Observed degradation was calculated from these plots as being 0.073 using equation B.9 VM0009, v3.0 (see Appendix C for calculations). This value is slightly lower than what was recorded (0.087) for the eighth monitoring period.

Table 9. Monitoring results for the activity shifting leakage area for the 9th monitoring period.

Plot no	Stump count	Leakage score	Degradation Factor
Ruln11	2	0.34%	0.2
Ruln13	2	0.34%	0.2
Ruln22	2	0.34%	0.2
Ruln23	0	0.00%	0
Ruln26	0	0.00%	0
Ruln31	0	0.00%	0
Ruln35	10	1.71%	0.2
Ruln48	9	1.54%	0.2
Ruln60	2	0.34%	0.2
Ruln9	1	0.17%	0.2
Ruln8	0	0.00%	0
Ruln6	0	0.00%	0
Ruln41	1	0.17%	0.2

Ruln12	0	0.00%	0
Ruln33	2	0.34%	0.2
Ruln36	0	0.00%	0
Ruln38	0	0.00%	0
Ruln34	0	0.00%	0
Ruln50	7	1.20%	0.2
Ruln44	0	0.00%	0
Ruln7	0	0.00%	0
Ruln45	0	0.00%	0
Ruln59	0	0.00%	0
Ruln10	0	0.00%	0
Ruln56	0	0.00%	0
Ruln19	0	0.00%	0
Ruln28	0	0.00%	0
Ruln5	0	0.00%	0
Ruln29	0	0.00%	0
Ruln32	1	0.17%	0.2
Pldeg	39		0.073

MR.48

Under VM0009, v3.0, cumulative emissions from activity-shifting leakage ($E_{(L\ ASF)}^{[m]}$) for the current monitoring period are 0.

MR.49

Cumulative emissions from activity-shifting ($E_{(L\ AS)}^{[m]}$) for the prior monitoring periods are 0.

MR.56

The parameter ($p_{(L\ DEG)}^{[m]}$) for the current monitoring period (M9) was estimated using equation B.9. The calculations can be found in Appendix C.

$$p_{(L\ DEG)}^{[m]} = 0.073$$

MR.57

For the first monitoring period, $p_{(L\ DEG)}^{[m=0]} = 0.087$

MR.63

BCP doesn't own any land but is a project proponent representing the private land-owner in this project. The management plans and land-use of land in that REDD+ project have not changed as a result of this project.

5.4 Net GHG Emission Reductions and Removals

MR.65

GERs (Net GHG emissions or removals in Table 10) were calculated with equation F.53 as per section 8.4.1 of VM0009, v3.0 (see Appendix D).

MR.66

GERs (Net GHG emissions or removals) for the prior monitoring period were calculated with equation F.53 as per section 8.4.1 of VM0009, v3.0 (see Appendix D).

210 737tCO₂e

MR.67

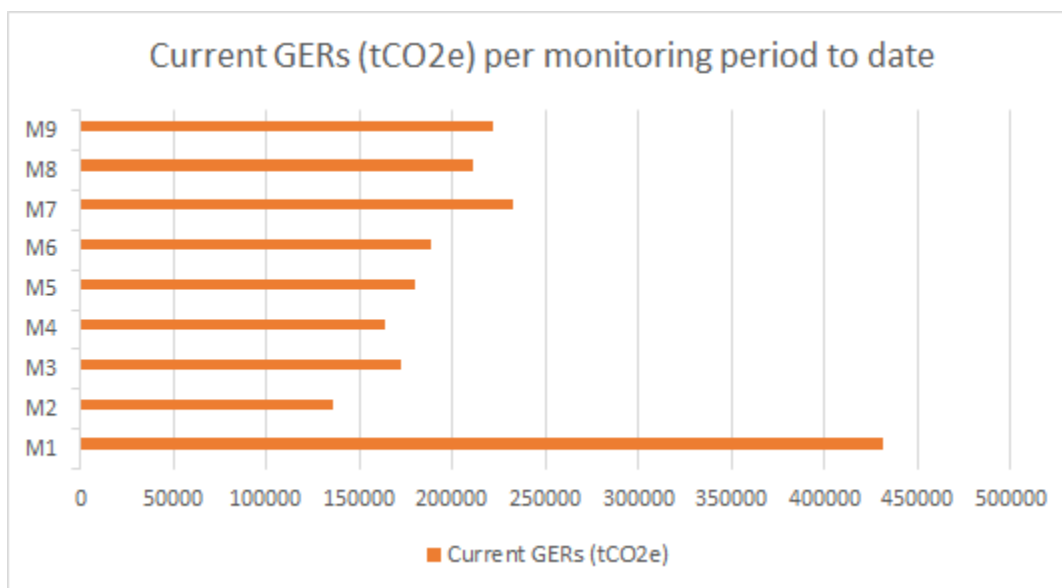


Figure 8. Current GERs by monitoring period for the LZRP.

Table 10: Net GHG emissions reductions or removals for the current monitoring period

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals	Leakage emissions	Net GHG emission reductions	Buffer pool allocation	VCUs eligible for issuance
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		als (tCO ₂ e)	ons (tCO ₂ e)	or removals (tCO ₂ e)		
2021	221,813	0	0	221,813	22,181	199,631
Total	221,813	0	0	221,813	22,181	199,631

MR.68

$U_B^{[m]}$ – Total uncertainty in proxy area carbon stock estimate = 60,520 tCO₂e

$U_{EM}^{[m]}$ – Total uncertainty in Baseline Emissions Models = 5,542 tCO₂e

$U_P^{[m]}$ – Total uncertainty in project accounting area carbon stock estimate = 877,833 tCO₂e

E_u – Total uncertainty = -41,379 tCO₂e = 0

There were no confidence deductions as the uncertainty was insignificant

MR.69

$U_B^{[m]}$ was calculated with equation B.10 VM0009, v3.0

$U_{EM}^{[m]}$ was calculated with equation F.14 VM0009, v3.0

$U_P^{[m]}$ was calculated with equation B.10 VM0009, v3.0

$E_u^{[m]}$ was calculated with equation F.57 VM0009, v3.0

Please see Appendix C for calculations.

MR.74

NERs (VCUs as per VCS) generated for the current monitoring period were calculated with equation F.55 from VM0009, v3.0 and are reported in Table 10. For calculations please see Appendix D.

MR.75

NERs for the prior (M8) monitoring period are 189,663 tCO₂e (Appendix D).

MR.76

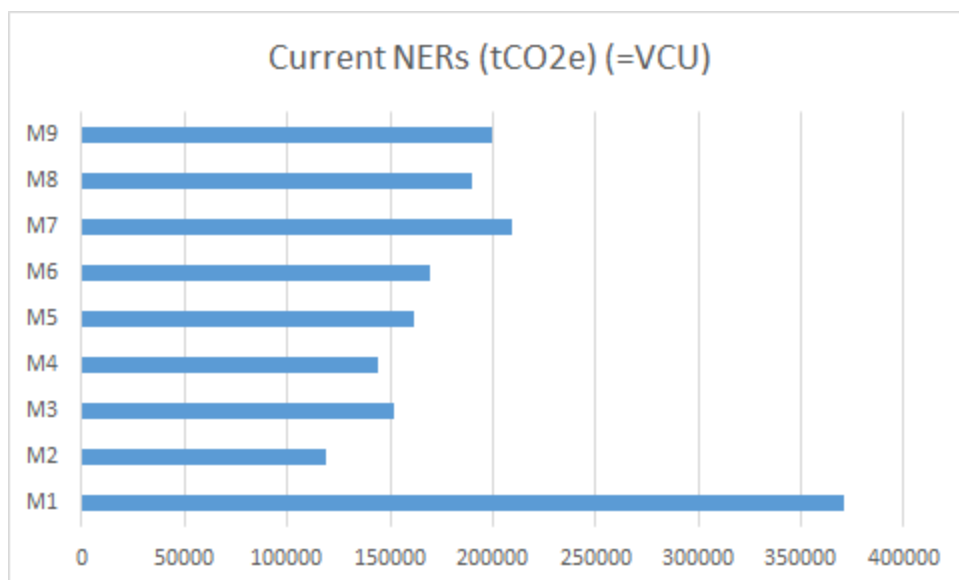


Figure 9. Graph of NERs by monitoring period for the LZRP.

MR.77

VCS Non-Permanence Risk Assessment Tool V4.0 (Appendix G) was used to calculate buffer account release / allocation, calculated as GERs x Non Permanence Risk score (10%) = -22,181 tCO₂e.

MR.78

Please see Appendix G for non-permanence risk calculations using the VCS Non-Permanence Risk Assessment Tool V4.0.

MR.82

See Table 10 for quantified NERs by vintage year for the current monitoring period. See Appendix D for calculations.

MR.83

The ex-ante estimated NERs for this monitoring period were 199,631 tCO₂e compared to an ex-post estimate of 199,631 tCO₂e.

MR.84

There was no difference between the ex-ante and ex-post NERs for this monitoring period due to zero project emissions and zero leakage recorded during this monitoring period.

6 REFERENCES

Chidumayo, E. N. 2013. Forest degradation and recovery in a miombo woodland landscape in Zambia: 22 years of observations on permanent sample plots. *Forest Ecology and Management* 291 (2013), pp. 154 - 161

Chidumayo, E. N. 2013. Estimating tree biomass and changes in root biomass following clear-cutting of *Brachystegia-Julbernardia* (miombo) woodland in central Zambia. *Environmental Conservation*. 42(1), pp. 54 - 63.:154-161.

Verplanke, E. and Zahabu, E. (2009) 'A field guide for assessing and monitoring reduced forest degradation and carbon sequestration by local communities', Kyoto: Think Global, Act Local Project report, Enschede, The Netherlands. Available at [Http://www.communitycarbonforestry.org](http://www.communitycarbonforestry.org).

7 APPENDICES

Appendix A Environmental Management Plan. Confidential

Appendix B BCP Community Engagement SOPs and Monitoring Systems. Confidential

Appendix C Carbon Inventory. Confidential

Appendix D Emissions Reductions Calculations. Confidential

Appendix E Biomass and soil monitoring protocol. Confidential

Appendix F Leakage monitoring protocol. Confidential

Appendix G VCS Non-permanence risk assessment. Public

Appendix H Spatial Data. Confidential

Appendix J project Implementation Status Support Documents. Confidential

Appendix K Other Project Support Documents. Confidential

Appendix L Title Deed. Confidential

Appendix M Social Economic Surveys. Public

8 ANNEX 1: LIST OF MONITORING REQUIREMENTS APPLICABLE TO F-U3 BASELINE TYPE (VM0009, V3.0)

MR#	Category	Applicable to Project
MR.1	Spatial Project Boundaries	Yes
MR.2	Temporal Project Boundaries	Yes
MR.3	Temporal Project Boundaries	Yes
MR.4	Grouped Projects	No. This is not a grouped project
MR.5	Grouped Projects	No. This is not a grouped project
MR.6	Project Accounting Areas	Yes
MR.7	Determining t_{PAI}	No. This is not a grouped project
MR.8	Determining t_{PAI}	No. This is not a grouped project
MR.9	Determining x_{PAI}	No. This is not a grouped project
MR.10	Baseline Emissions	Yes
MR.11	Baseline Emissions	Yes
MR.12	Baseline Emissions	Yes
MR.15	Applying the Spatial Algorithm	Yes
MR.16	Applying the Spatial Algorithm	Yes
MR.17	Applying the Spatial Algorithm	Yes
MR.21	Carbon Not Decayed in DW	No. All biomass is burned in baseline scenarios
MR.22	Carbon Not Decayed in DW	No. All biomass is burned in baseline scenarios
MR.23	Carbon Not Decayed in DW	No. All biomass is burned in baseline scenarios
MR.24	Carbon Not Decayed in DW	No. All biomass is burned in baseline scenarios
MR.25	Carbon Not Decayed in DW	No. All biomass is burned in baseline scenarios
MR.26	Carbon Not Decayed in BGB	Yes
MR.27	Carbon Not Decayed in BGB	Yes
MR.28	Carbon Not Decayed in BGB	Yes
MR.29	Carbon Not Decayed in SOC	Yes
MR.30	Carbon Stored in Wood Products	No. No timber harvesting in baseline
MR.31	Carbon Stored in Wood Products	No. No timber harvesting in baseline
MR.32	Emissions Events in Project Area	Yes
MR.33	Emissions Events in Project Area	Yes
MR.34	Emissions from Burning from Project Activities	No. No biomass burning in project activities
MR.35	Carbon Stored in Wood Products from Project Activities	No. Timber harvesting is not a project activity
MR.36	Carbon Stored in Wood Products from Project Activities	No. Timber harvesting is not a project activity
MR.37	Carbon Stored in Wood Products from Project Activities	No. Timber harvesting is not a project activity

MR.38	Livestock Grazed in the Project Area	No. Livestock grazing is not permitted in the project area and unpermitted grazing was determined to be de minimus.
MR.39	Livestock Grazed in the Project Area	No. Livestock grazing is not permitted in the project area and unpermitted grazing was determined to be de minimus.
MR.40	Livestock Grazed in the Project Area	No. Livestock grazing is not permitted in the project area and unpermitted grazing was determined to be insignificant.
MR.41	Synthetic Fertilizer in the Project Area	No. Project activities do not include the use of synthetic fertilizers.
MR.42	Synthetic Fertilizer in the Project Area	No. Project activities do not include the use of synthetic fertilizers.
MR.43	Synthetic Fertilizer in the Project Area	No. Project activities do not include the use of synthetic fertilizers.
MR.44	Leakage Mitigation Strategies	Yes
MR.45	Commodity Production for Leakage Mitigation	No. The baseline scenario is subsistence
MR.46	Commodity Production for Leakage Mitigation	No. The baseline scenario is subsistence
MR.47	Commodity Production for Leakage Mitigation	No. The baseline scenario is subsistence
MR.48	Estimating Emissions from Activity-Shifting Leakage	Yes
MR.49	Estimating Emissions from Activity-Shifting Leakage	Yes
MR.50	Change to the Activity-Shifting Leakage Area	No. No change to activity-shifting leakage area
MR.51	Change to the Activity-Shifting Leakage Area	No. No change to activity-shifting leakage area
MR.52	Change to the Activity-Shifting Leakage Area	No. No change to activity-shifting leakage area
MR.53	Change to the Activity-Shifting Leakage Area	No. No change to activity-shifting leakage area
MR.54	Change to the Activity-Shifting Leakage Area	No. No change to activity-shifting leakage area
MR.55	Change to the Activity-Shifting Leakage Area	No. No change to activity-shifting leakage area
MR.56	Estimating $\rho_{L\text{DEG}}$	Yes
MR.57	Estimating $\rho_{L\text{DEG}}$	Yes
MR.58	Estimating $\rho_{L\text{CONG}}$	No. No grassland in project area
MR.59	Estimating $\rho_{L\text{CONG}}$	No. No grassland in project area
MR.60	Determining Emissions from Market Leakage	No. The baseline scenario is subsistence
MR.61	Determining Emissions from Market Leakage	No. The baseline scenario is subsistence
MR.62	Determining Emissions from Market Leakage	No. The baseline scenario is subsistence
MR.63	Ensuring No Leakage Within Project Proponent's Ownership	Yes
MR.65	Quantification of GERs	Yes

MR.66	Quantification of GERs	Yes
MR.67	Quantification of GERs	Yes
MR.68	Confidence Deduction	Yes
MR.69	Confidence Deduction	Yes
MR.70	Quantification of GERs	No. A linear model was not used in this project
MR.71	Quantification of GERs	No. A linear model was not used in this project
MR.72	Reversal Event	No. No reversal occurred
MR.73	Reversal Event as a Result of Baseline Reevaluation	No. No baseline reevaluation occurred
MR.74	Quantification of NERs for a PAA	Yes
MR.75	Quantification of NERs for a PAA	Yes
MR.76	Quantification of NERs for a PAA	Yes
MR.77	Buffer Account	Yes
MR.78	Buffer Account	Yes
MR.79	Quantification of NERs across PAAs	No. There is currently only 1 PAA
MR.80	Quantification of NERs across PAAs	No. There is currently only 1 PAA
MR.81	Quantification of NERs across PAAs	No. There is currently only 1 PAA
MR.82	Vintages	Yes
MR.83	Evaluating Project Performance	Yes
MR.84	Evaluating Project Performance	Yes
MR.85	Data and Parameters Monitored	Yes
MR.86	Data and Parameters Monitored	Yes
MR.87	Data and Parameters Monitored	Yes
MR.88	Description of the Monitoring Plan	Yes
MR.89	Description of the Monitoring Plan	Yes
MR.90	Description of the Monitoring Plan	Yes
MR.91	Description of the Monitoring Plan	Yes
MR.92	Description of the Monitoring Plan	Yes
MR.93	Description of the Monitoring Plan	Yes
MR.94	Description of the Monitoring Plan	No. No new equations were developed
MR.95	Description of the Monitoring Plan	Yes
MR.96	Description of the Monitoring Plan	No. Timber harvesting is not a project activity
MR.97	Description of the Monitoring Plan	Yes
MR.98	Description of the Monitoring Plan	Yes
MR.99	Sources of Allometry	Yes
MR.100	Sources of Allometry	Yes
MR.101	Sources of Allometry	Yes
MR.102	Sources of Allometry	Yes
MR.103	Sources of Allometry	Yes
MR.104	Validating Previously Developed Allometry	Yes
MR.105	Validating Previously Developed Allometry	Yes
MR.106	Validating Previously Developed Allometry	Yes
MR.107	Validating Previously Developed Allometry	Yes

MR.108	Validating Previously Developed Allometry	Yes
MR.109	Validating Newly Developed Allometry	No. No new allometric equations were developed.
MR.110	Validating Newly Developed Allometry	No. No new allometric equations were developed.
MR.111	Validating Newly Developed Allometry	No. No new allometric equations were developed.
MR.112	Validating Newly Developed Allometry	No. No new allometric equations were developed.
MR.113	Validating Newly Developed Allometry	No. No new allometric equations were developed.