



KASAMANDA WARD - MAMBWE DISTRICT

PARTICIPATORY LAND USE PLAN (PLUP)



Prepared by: **MAMBWE DMT in Collaboration with TSP Land Alliance Consortium**

Date: 24th January, 2022

Preface

This Participatory Land Use Plan (PLUP) for Kasamanda Ward is a document that has been developed with a view of managing and mitigating unsustainable natural resource use. The aim of this document is to help communities in making sound decisions pertaining to land uses. This PLUP process has been supported by the Zambia Integrated Forests and Landscape Project (ZIFLP), an initiative of the Government of the Republic of Zambia with funding support from World Bank through the Bio-carbon Fund, Global Environmental Facility (GEF) and International Development Association (IDA).

PLUP activity falls under component one: This first component is meant to create conditions that will allow the livelihood investments of Component 2 to be successfully implemented and that will prepare the country for emission reductions purchases. This component includes support for two subcomponents under which PLUP falls that is, (a) District and local level planning, which is supporting integrated district development and local planning including land use and action planning through participatory processes.

The process for the creation of this PLUP was participatory in nature taking into account Social Biodiversity Assessment (SBIA), and various stakeholders were consulted and engaged such as Her Royal Highness Chieftainess Msoro of Msoro Chiefdom, Mambwe District Multi-sectoral Team (DMT), and Eastern Province Planning Authority, Kasamanda Ward Community Members and ZIFLP team were fully involved at every stage of the process. Thus, this PLUP will help guide Kasamanda Ward residents in implementing a sustainable and participatory land use practices in their ward, and also help in addressing the key issues identified, which have so far led to the unsustainable resource usage. This PLUP will help residents find alternative livelihood sources which will make them refrain from unsustainable land use practices such as unsustainable agriculture expansion, unplanned human settlement, environmental degradation and deforestation. Thereby, contributing to the realisation of ZIFLP Vision which is to improve rural livelihoods in Eastern Province by Reducing Deforestation and Forest Degradation using low emission pathways through local participation by 2030.

It is further hoped that the local people in the community will appreciate the benefits of having the Land Use Plan (LUP), bearing in mind that land is a scarce resource with competing uses which

are mutually exclusive. Additionally, population growth, erosion, effects of climate change and other factors have contributed to the increasing scarcity of fertile land in rural areas despite people deriving their livelihoods from there. Thus, this PLUP is a way of balancing up competing and, in some cases, conflicting land uses.

Table of Contents

Preface	i
Table of Contents	ii
List of Figures	v
List of Tables	vi
Acknowledgements	vii
Acronyms and Abbreviations	viii
1. Introduction	1
1.1 Background	1
1.2 Approach and Methodology	2
1.3 Location of Kasamanda Ward	5
1.4 Environmental Management Assessment	5
1.5 Legal Framework Context	7
2. Lead Concepts	9
2.1 Natural Resources	9
2.1.1 Vegetation	9
2.1.2 Soils	9
2.1.3 Topography	9
2.1.4 Water	10
2.2 Climate	10
2.2.1 Rainfall	10
2.2.2 Temperature	11
2.3 Land Use Planning	11
2.4 Participatory Land Use Planning	11
2.5 Livelihood	11

3. Characteristics of the Management Area	12
3.1 Climatic Conditions	12
3.1.1 Temperature	12
3.1.2 Rainfall	13
3.1.3 Ecological Zone	14
3.1.4 Soil Types	14
3.2 Socio-Economic Environment	15
3.3 Source of Livelihood	16
3.4 Livelihood Security	16
3.5 Livelihood and Natural Resource Utilisation	17
3.6 Livelihood Constraints and opportunities	17
3.7 Ecology	18
3.7.1 Biodiversity Hotspots	18
3.7.2 Ecosystem Function	18
4. Current Land Use Patterns	19
4.1 Overall Land Use	19
4.2 Land Use Suitability Analysis	20
4.2.1 Soil Types	20
4.3 Land Resource and Administrative Boundaries	21
4.4 Current Land Use Plan	22
4.5 Land Use and Agriculture	23
4.6 Land Use and Forest	25
4.7 Land Use and Wildlife	26
4.8 Land Use and Mining	27
4.9 Land Use and Tourism	27

4.10 Land Use and Physical Development	27
5. Community Participation	28
5.1 Community Engagement Process	28
5.2 Agreed Local Rules for Land use and Resource Management	29
6. Core Issues affecting Land use and the Environment	29
6.1 Shortage of water	30
6.2 Soil Degradation	30
6.3 Long Distances to Schools and Health Facilities	30
6.4 Poor State of Roads and Related Infrastructure	31
6.5 Problem Causes and Possible Solutions	31
6.6 Zoning: Land use planning	32
7. Implementation Strategy	33
8. Institutional Arrangement for PLUP Implementation	35
9. Conclusion	35
10. References	36
Annexes	38
Annex 1: Msoro Chiefdom By-Laws on Land Use and Management of Natural Resources	39
Annex 2: Proposed future land use maps	43
Annex 3: Kasamanda Final Output PLUP Map	46

List of Figures

Figure 1: Location Map for Kasamanda Ward	5
Figure 2: Monthly Temperature Conditions for Kasamanda Ward	13
Figure 3: Annual Rainfall Pattern for Kasamanda Ward	13
Figure 4: Agro-Ecological Zones	14
Figure 5: Soil Types in Kasamanda Ward	15

Figure 6: Current land uses in Kasamanda	20
Figure 7: Land use Suitability analysis using soils	21
Figure 8: Land Resource and Administrative Boundary Map	22
Figure 9: Current Land Use Plan	23
Figure 10: Land Use and Agriculture Map	24
Figure 11: Land Use and Forest	25
Figure 12: Land Use and Physical Development	28
Figure 13: Kamuwawa VAG Map	43
Figure 14: Hambizi VAG Map	44
Figure 15: Kasamanda VAG Map	45
Figure 16: Kabila VAG Map	46
Figure 17: Kasimbo VAG Map	47
Figure 18: Wazaza VAG Map	48

List of Tables

Table 1: Stages of PLUP Activity	4
Table 2: Environmental Management Plan	6
Table 3: Monthly Temperature Conditions for Kasamanda Ward	12
Table 4: Kasamanda Ward Population	16
Table 5: Constraints and Opportunities	18
Table 6: Land Use Reservation	19
Table 7: Facilities in the ward	30
Table 8: Causes of Problems and Suggested Solutions	31
Table 9: Land reservation per VAG	32
Table 10: Implementation Strategy	33

Acknowledgements

We the Consortium of Land Alliance comprising of Chipata District Land Alliance, Petauke District Land Alliance and Zambia Land Alliance Nyimba would like to express our gratitude to the Republic of Zambia for sourcing funding from the World Bank for the Zambia Integrated Forest Landscape Project (ZIFLP) through the Project Manager Dr Tasila Banda, Eastern Province Department of Physical Planning, Ministry of Local Government through the District Multi Sectoral Teams (DMTs), the Her Royal Highnesses Chieftainess Msoro, Msoro Community Resource Board and the community in Kasamanda Ward.

Acronyms and Abbreviations

CRB - Community Resource Board
DMT - District Multi-Sectoral Team
EP - Eastern Province
EMP - Environmental Management Plans
FPIC - Free Prior Informed Consent
GMP - Game Management Plan
GPS - Global Positioning System
IDP – Integrated Development Plan
JICA - Japanese International Corporation Agency
LAP - Local Area Plan
LULC - Land Use Land Cover
LGMA - Lupande Game Management Area
LUP - Land Use Planning
NDP - National Development Plan
NRM - Natural Resource Management
ODK - Open Data Kit
PAD - Project Appraisal Document
PLUP - Participatory Land Use Planning
URP - Urban and Regional Planning
VAG - Village Action Group
WDC - Ward Development Committee
ZIFLP - Zambia Integrated Forests and Landscape Project

1. Introduction

Participatory Land Use Planning (PLUP) is an interactive process in which local communities can discuss and determine how to manage the land and other natural resources in their locality. Land Use Planning (LUP) can be defined as a process in which land is allocated for different uses ranging from residential, commercial, agriculture, etc. (PLUP manual, 2019). PLUP is an important decision-making tool for natural resource management because it helps in defining suitable land uses which best balance ecological, economic and social objectives, thereby preventing land use and social conflicts. Thus, PLUP is of great importance if natural resources are to be effectively managed. Currently, rural areas in Zambia are faced with challenges ranging from food insecurity, land conflicts, biodiversity protection while initiating economic growth, adapting to climate change as well as protecting people from natural disasters (JICA, 2011). Thus, PLUP is envisioned to be a great tool capable of mitigating the above challenges by focusing on conducting discussions with relevant stakeholders on future land and resource use as well as management by allocating specific areas for different human activities to. This land use allocation is important, owing to the fact that land is a scarce resource with a fixed supply despite demand increasing on a daily basis (thereby bringing about land related conflicts). Therefore, it is hoped that PLUP would tackle land-related conflicts and other natural resource issues in their early stages by facilitating consensual negotiations and eventual regulations on land uses by all interested parties. The resulting PLUP document can be approved by relevant authorities (i.e., traditional authorities and government) so that it becomes legal.

1.1 Background

Zambia Integrated Forest Landscape Project (ZIFLP) has supported the implementation of Participatory Land Use Planning (PLUP) in all the 14 districts of Eastern Province (EP), focusing on community land use mapping and planning. This was the basis for the identification of primary Sub-District level activities, including issues of identification, prioritisation and sub-project identification (PLUP Manual, 2019). ZIFLP took into consideration and followed the present government direction on land use aimed at optimizing the use of land, helping with resolution of conflicts which arise between competing land uses and needs of various interest groups, choosing sustainable options that best meet identified needs, rehabilitating and conserving natural resources,

supporting the general development process and raising awareness concerning environmental problems among the populations and authorities (ZIFLP- PAD).

Additionally, this PLUP has consolidated information on the current status of land use and land information within a project area, which provided information on land use options that are sustainable, socially and environmentally compatible, and socially desirable and economically sound. This PLUP initiative is based on the current social, economic and environmental challenges and opportunities facing Zambia's customary areas in terms of land and resource governance. Besides, traditional authorities, that is Chiefs have a large amount of autonomy in terms of land management in their chiefdoms, while at the same time depend on government for a range of services such as schools, clinics, etc. The development process of this PLUP recognizes the fact that Zambia's rural landscape is vast and viable for various investments. Thus, rural landscapes have the potential to provide multiple revenue sources ranging from small-scale farming, wildlife management and game ranching, forest timber extraction, tourism, and mining.

It is important to note that certain land uses, such as mining, have legal backing which places their management at a higher priority than others. For example, mining rights override any other customary right to land. Customary rights are in general seen as compliant to rights administered by the state. Land Use Planning could form the basis for navigating these overlapping rights and desires to use the rural landscape. The Land Use Plan is a plan of action that clarifies and, attempts to guide land uses and land management regimes in rural areas which are largely customary areas.

1.2. Approach and Methodology

The participatory approach was used in the development of the Kasamanda Ward PLUP where various relevant stakeholders were fully involved in the process. Planning was done with the community stakeholders together with their leaders (indunas and headpersons) in consultation with Chieftainess Msoro. PLUP sensitization meetings were held with the Indunas, Headpersons and community members in all the 6 Village Action Groups (VAGs) namely; Kamuwawa, Hambizi, Wazaza, Kabila, Kasimbo and Kasamanda. Community members in all the 6 VAGs took a leading role in identifying shared resources, problem analysis, developing sketch maps and validation of the maps.

The spatial and attribute data used was collected using mobile-based Open Data Kit (ODK) Collect forms, Android tablets and GLO Garmins while QGIS 3.8.1, Google Earth Engine and ArcGIS 10.5 were used for data analysis. Further, socio-economic and environmental data such as livelihood sources and security were collected through several community focus group meetings that were conducted in Kasamanda ward.

No	Activity	Objective	Strategy	Output	Target	Indicator
1	Village Identification	Know the total number of villages in the ward	Physical Data Collection in all villages	Villages Identified	All Villages in Kasamanda Ward	Percentage of Villages Identified
2	Sensitization to Indunas and head persons	Get the by ins from the community leaders on PLUP	Indunas and head persons meeting	Indunas Sensitised	All the Indunas in the Ward	Total number of Indunas and Head persons
3	Community Sensitization	Sensitise communities on PLUP	Community meetings	Communities sensitised	Community members in all the 6 VAGs	Number of community members attending meetings
4	Shared Resource Mapping	Collect geographical locations of the resources present in the community	Physical Spatial data collection	Shared Resource Maps developed	Kasamanda ward	Number of shared resource maps developed

5	Kasamanda ward resource Map validation	Show the current shared resources, land uses and have the communities confirm the boundaries	Community engagement meetings for validation purposes.	Kasamanda ward resource map validated	All the 6 VAGs	Number of shared resource maps validated.
---	--	--	--	---------------------------------------	----------------	---

6	Future land use planning	Develop maps of how communities envisage to sustainably use their natural resources.	Community meetings	Land use plan developed	Kasamanda ward land use plan	Number of land use plans developed
7	PLUP approval	Have the plan approved by all relevant authorities in order to be implemented	Submit map copies to both traditional and local authorities	PLUP approved	Kasamanda ward PLUP	Number of PLUP approved
8	Identification of mini projects	To provide alternative livelihood sources to local communities in the target ward	Community engagement by stakeholders to provide Technical support on mini project proposal formulation and submission	Community projects identified	All the 6 VAGs	Number of project proposals approved for funding

Table 1: Stages of PLUP Activity

1.3 Location of Kasamanda Ward

Kasamanda ward is one of the 15 wards in Mambwe District and it is located in Msoro chiefdom. It borders Msoro ward on the East, Mdima ward on the North in Mambwe District, Matunga, Chilongamabwe and Lukweta on the South in Katete District and Chisangu ward on the west in Lusangazi District.

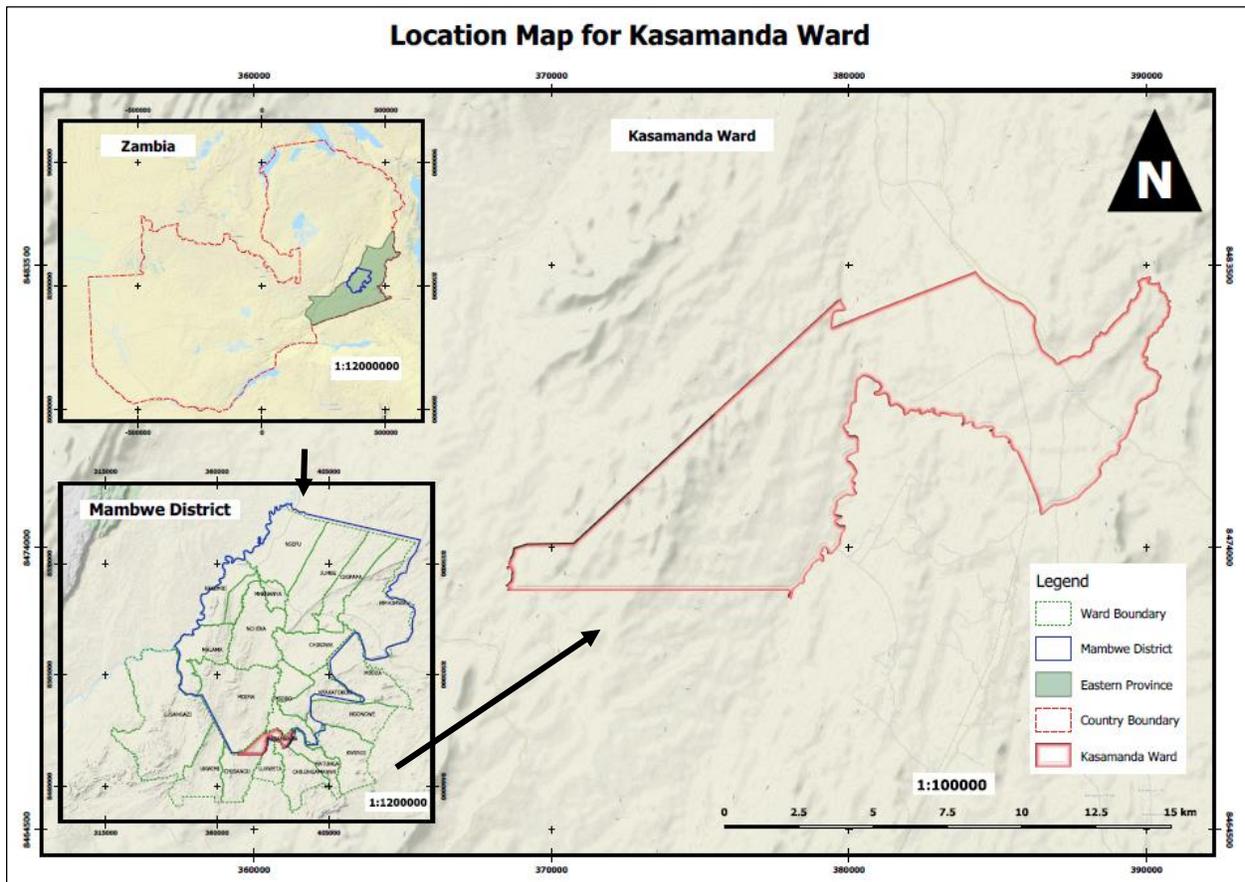


Figure 1: Location Map for Kasamanda Ward

1.4 Environmental Management Assessment

The environmental assessment of Kasamanda Ward highlighted the environmental and Social issues in the area caused by development trends and environmental requirements of the area. Based on that, the PLUP Environmental Management Framework was compiled with the aim of guiding future developmental planning and decision-making processes. However, the potential and social impacts of this PLUP activity are numerous, but mainly positive. However, much of the negative impacts may be experienced during implementation of the identified sub-projects (based on the

identified core issues within the ward) aiming to provide alternative livelihood sources and help in mitigating unsustainable natural resource usage and management. The specific impacts will be evaluated and distinguished during the preparation of the specific Environmental Management Plans (EMP) based on the identified sub-project investments. Therefore, this PLUP Environmental Management Plan was made with guidance originating from the current land uses and the proposed future land use analysis.

No.	Aspect	Impact	Description	Mitigation Measure
1	Soil Erosion and Degradation	loss of fertile soil due to exposure and land degradation due to selective cutting of trees for agriculture and home use	Clearing of land for agricultural expansion, settlements, etc. increases the soil erosive potential. Crop cultivation methods have an impact on the soil quantity and quality leading to soil degradation.	-revegetate cleared and abandoned areas -adoption of climate smart agriculture -reduce land clearing to avoid unnecessary exposure of bare ground to the elements of the weather
2	Habitat Destruction	Clearing of land for agricultural use around water bodies, which leads to drying of streams. Cutting of trees for charcoal production.	Cutting of trees and clearing of vegetation for agriculture and other uses	-Enhance community sensitization -restrict activities in sensitive habitats -avoid unnecessary exposure -restrict cutting down of trees
3	Loss of Fauna	Loss of biodiversity and siltation in the rivers	Destruction of wild fauna habitat due to unsustainable resource management. Potential investments are likely to break ecosystems, isolate species and cut off movements. For example, dams may block the upstream and downstream passage of migrating aquatic animals.	-Enhance community sensitization -prohibit hunting -restrict bush fires -minimise cutting down of trees -forest conservation -restrict locations of dams

4	Air Pollution	Decreased Air Quality	Dust is anticipated during the construction phase of the identified investments as well as from vehicle movements and vehicle emissions is likely to cause air pollution.	<ul style="list-style-type: none"> -revegetate bare areas -minimize vehicle movements and speed -water down cleared areas to reduce dust emissions
5	Resource Use Conflicts	sabotage to investment and lack of ownership	Dam construction investments may cause conflict between those with different water needs such as farmers and pastoralists, fishery, household use, etc.	<ul style="list-style-type: none"> -formulation of by-laws -PLUP development -Land use decisions must be inclusive of all users and groups, including women, youths and differently abled people in the area.
6	Loss of Land	displacement of communities or households and reduced grazing land which can cause conflict	There may be loss of farm and grazing land among others by the local communities owning land to investments projects and forest conservation.	<ul style="list-style-type: none"> -Communities must identify project areas in consultation with their leaders. -Communities must use Free Prior Informed Consent (FPIC)

Table 2: Environmental Management Plan

1.5 Legal Framework Context

The Kasamanda Ward PLUP has been developed in accordance with the provisions of the Urban and Regional Planning (URP) Act No. 3 of 2015 of the Laws of Zambia. The URP Act is the main legislation that guides planning and related activities in the country. The Act also provides for the preparation of Local Area Plans (LAPs) which are actually Land Use Plans for sections of a settlement, sub-areas, sub-districts or wards within a Local Authority's area.

Further, it provides guidance on the development of areas within land falling under customary tenure with the provision of developing planning agreements between traditional authority and relevant government authorities. However, there are other laws and policies that govern Land Use Planning in Zambia which were adhered to during the preparation of Kasamanda Ward PLUP such as the Mines and Minerals Act No. 11 Of 2015, Villages Act of 1972, Chiefs Act.Cap.287, Agriculture Act, National Decentralisation Policy (NDP) of 2013, Forest Act No. 4 of 2015 and Zambia Wildlife Act No. 14 of 2015

2. Lead Concepts

2.1 Natural Resources

One of the essential and prerequisite activities when embarking on participatory land use planning is understanding the quality and quantity of the land resources. Besides, participatory land use planning forms a basis for obtaining optimum level of production and also helps in introducing appropriate land management practices for better and/or improved livelihoods (Schwedes and Werne, 2010). Therefore, natural resources must be understood as conditions and elements of the land that can be exploited, developed or managed without causing negative impacts that risk the fragile environmental relationships (Negash. 2012). The following are some of the natural resources:

2.1.1 Vegetation

In the context of PLUP, vegetation refers to all plant species that are unsustainably managed and used by communities for any of their land uses. The vegetation is used to mainly fulfill community needs such as gathering firewood, fruits, medicine, poles and also serves as habitats for wild animals. On the other hand, vegetation provides cover for the soil, allows the rainwater to percolate into the ground, and protects the soil from erosion.

2.1.2 Soils

This is one of the key elements across the globe that determines what land can be used for, taking into consideration the physical and chemical properties (FAO, 2017). The soils exert influence in determining the feasibility of land uses and composition of natural communities such as plants, animals, etc of an area. Thus, land use planning may demand a study on physical and chemical conditions, composition, and overall characteristics of soils (GIZ, 2012; Negash, 2012, FAO, 2006). This is due to the fact that knowing the soil characteristics helps in understanding the past and present land uses and helps in predicting future land use potentials.

2.1.3 Topography

This can be defined as the physical features of a landscape or terrain (JICA, 2011). Topography has an impact on land uses for it influences accessibility, drainage and rate of erosion. Thus,

analysing the slope aspect is key when assessing the impact topography has on land uses (Negash, 2012).

2.1.4 Water

This is an essential resource which is required for use by human beings and Wildlife. It is also used for irrigation and navigation by person and by plants to perpetuate, grow and produce (Mitchell et al, 2004). Besides, the quantity of available water determines the type of land use options and land utilisation types. Thus, the availability and accessibility of water resources in an area determine sustainability and the types of land uses that can be implemented (GIZ, 2012).

2.2 Climate

Climate is one of the factors that affects land use as it is the major agent that determines water balance and dictates the nature and type of natural vegetation in a specific area (Malcom et al, 2006). Interactions among climate, relief and soils are important in determining socially acceptable, economically viable and environmentally sound land use types (FAO, 1993). The main climatic elements which directly govern land use types to be considered for a certain area are the rainfall amount and distribution and the air temperature level (Negash. 2012). Thus, data on these elements is so important for sustainable local level land use planning processes. The following climatic elements are important factors in determining the land use options of a certain locality or planning area;

2.2.1 Rainfall

The term precipitation includes rainfall, snow and dew. The availability of water through precipitation or rather the lack of it is often the most limiting physical factor in crop and livestock production in areas where water is scarce for irrigation. It's of great importance to know the rainfall patterns of a given area when undertaking any level of land use planning. Besides, the seasonal distribution of rains governs the choice of major land uses, crops and the optimal planting time, harvesting and other farming operations such as land preparation, weeding and threshing (Negash. 2012).

2.2.2 Temperature

This is the measure of hotness or coldness expressed in either Degrees Celsius or Fahrenheit. The average, minimum and maximum monthly temperature data is very essential in land use planning.

2.3 Land Use Planning

According to Liversage and Mangiafico (2014), land-use planning is the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the best land-use options. It's a process of decision making on the use of the resources of a certain unit of land for options of more productivity, environmentally sound and sustainable economic uses (JICA, 2011). However, Negash (2012) argued that decisions on land use options are based on the analysis of potentials and constraints of the land resources as guided by the competing needs of the communities.

2.4 Participatory Land Use Planning

This is an interactive process in which local communities could discuss and determine how to manage the land and other natural resources in their locality (JICA, 2011). It is based on dialogue among all stakeholders with an aim of making sustainable land use decisions through negotiation (GIZ, 2012). The intention is to form comprehensive land use options based on the quality and quantity of the resources and the needs of the community (PLUP Manual, 2019). The land use plan aims at improving the livelihoods of the existing community and meeting the resources development and administration needs of the future generation (Negash. 2012).

2.5 Livelihood

This can be defined as means and ways of making a living. It encompasses people's capabilities, assets, income and activities required to secure the necessities of life (Mutea et al, 2019). According to Kassa (2018) livelihood is said to be sustainable if it enables people to cope with and recover from shocks and stresses (such as natural disasters and economic or social upheavals) and enhance their well-being and that of future generations without undermining the natural environment or resource base.

Presently, natural resources are overexploited exceeding the rate at which they are replenished due to the increase in the demands because of high population increase and unsustainable usage (Abu

and Soom, 2016). Hence, land use planning is the tool that can well be utilised in order to improve and maximise the usage and management of resources in order to better improve the livelihoods of people. This is because LUP bases its processes on the quantity and quality of resources available that can improve livelihoods and the environment (GIZ, 2012). Thus, decisions are made based on the knowledge of resources by all stakeholders.

3. Characteristics of the Management Area

3.1 Climatic Conditions

Kasamanda Ward is characterised by Tropical Savanna climate which is associated with the tropical wet and dry climate type. The summers are much rainier than the winters in Kasamanda with the average annual temperature of 23.0 °C and annual rainfall of 951 mm (Met).

3.1.1 Temperature

The temperatures are highest on average in October, at around 27.2 °C and lowest in July, with temperature recording of around 19.2 °C.

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Ave. Temperature (°C)	23.1	23	22	22.1	21.3	19.6	19.2	21.7	24.9	27.2	26.9	24.2
Min. Temperature (°C)	19.9	19.6	19.2	17.9	16.4	14.6	13.9	15.5	18	20.7	21.6	20.5
Max. Temperature (°C)	27	27.1	26.9	26.7	26.7	25.2	25	28	31.5	33.5	32.6	28.8

Table 3: Monthly Temperature Conditions for Kasamanda Ward

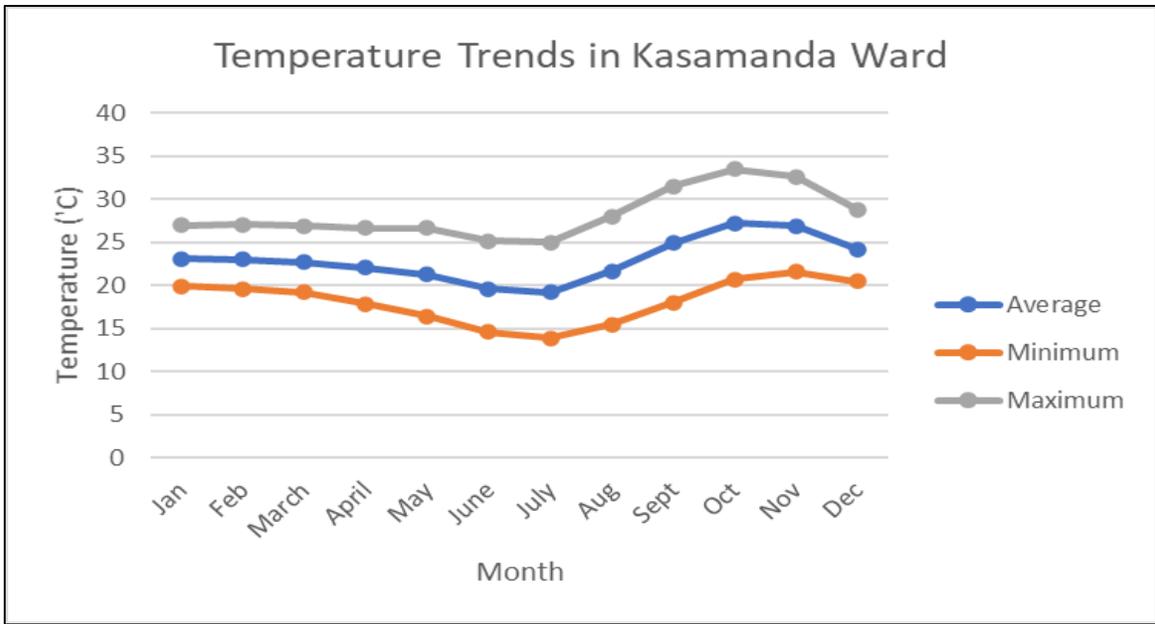


Figure 2: Monthly Temperature Conditions for Kasamanda Ward

3.1.2 Rainfall

Kasamanda Ward receives a total annual rainfall of about 951 mm. There is high rainfall recorded during the wet season from November to March with average rainfall between 68-265 mm. The variation in the precipitation between the driest and wettest months is 265 mm.

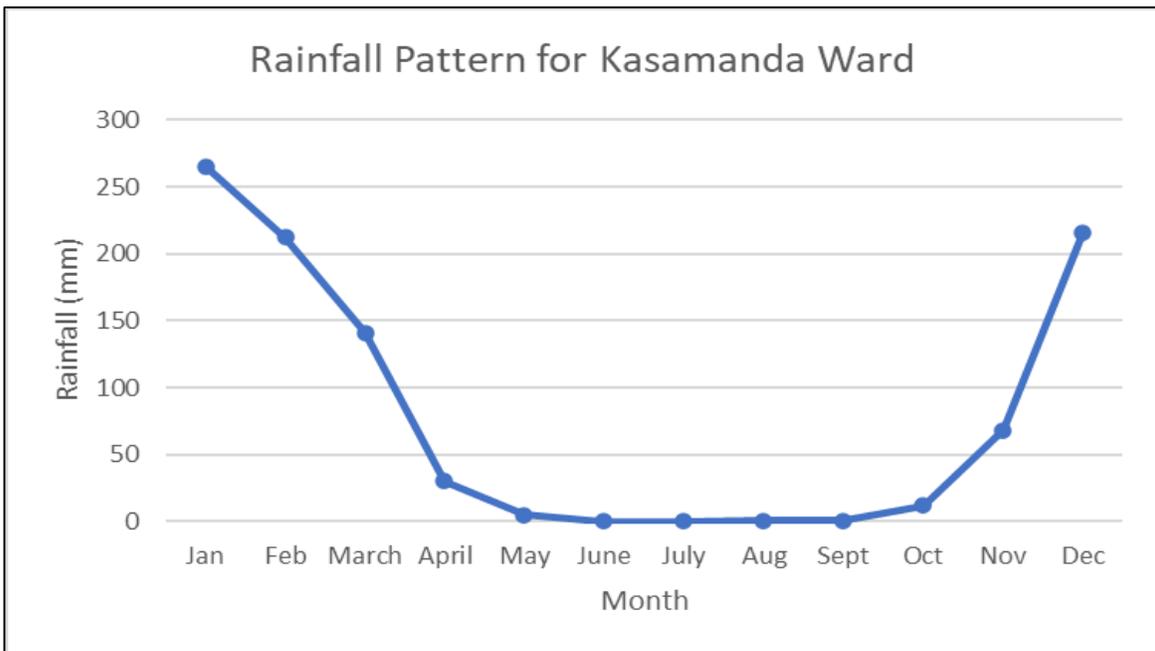


Figure 3: Annual Rainfall Pattern for Kasamanda Ward

3.1.3 Ecological Zone

Zambia as a country is divided into three main Ecological Zones which are Zone I, II and III. Two ecological regions are found in Mambwe District which are Zone I and Zone IIa. However, our interest is the area of the District where Kasamanda Ward lies, which falls under zone IIa. This means that Kasamanda Ward, being in Ecological Zone IIa, is characterised by annual rainfall between 800-1000 mm, and has a 120-160 days growing season, which supports growth of medium and long-term crop varieties such as soya beans, groundnuts and maize.

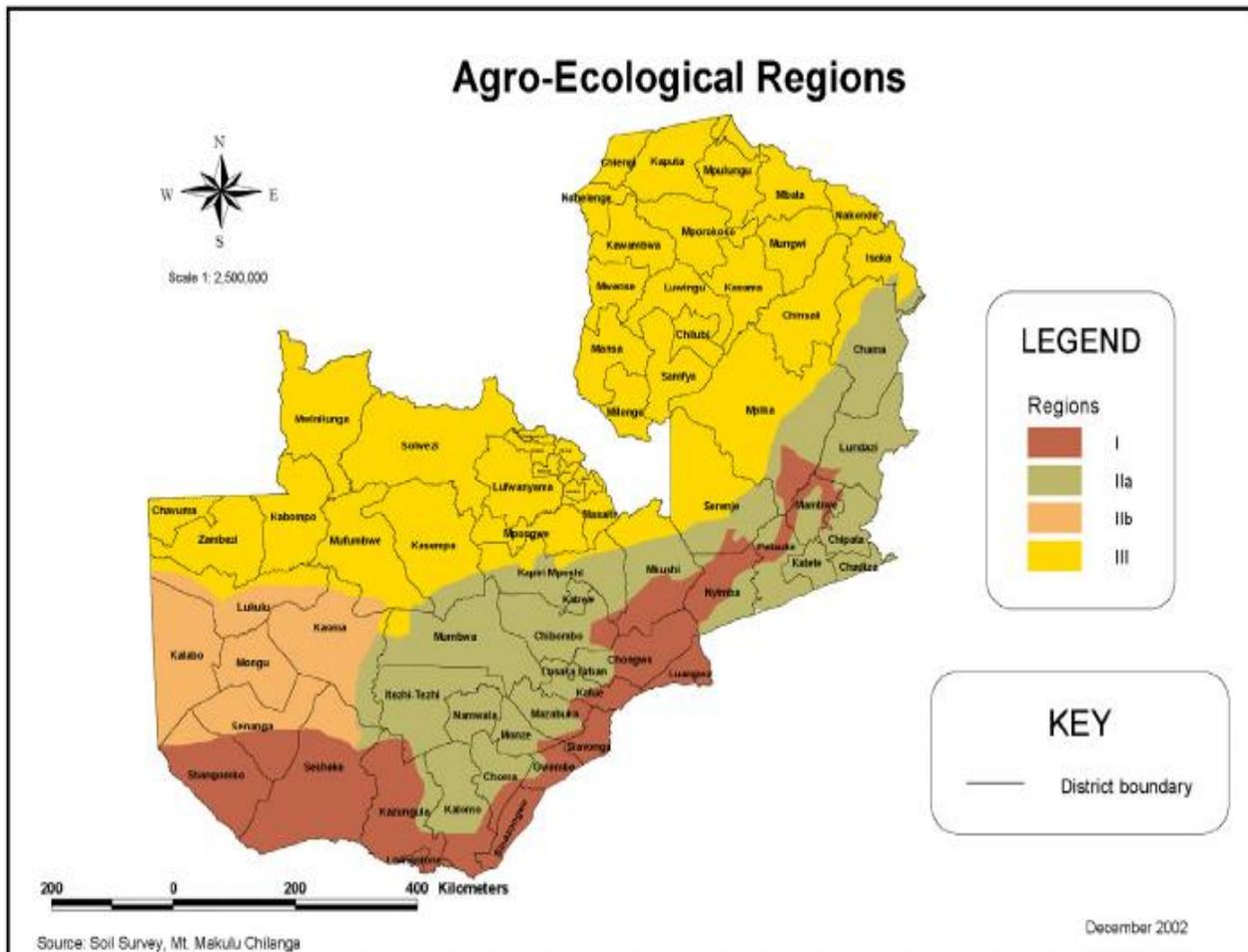


Figure 4: Agro-Ecological Zones

3.1.4 Soil Types

The ward is dominated by lithosols and Luvisol soil zones. The Lithosols soil zones are characterised by rocky soils which are very shallow soils developed from various non-carbonated

hard rocks and sandy soils which are well aerated but do not hold much water and they have poor nutrients, making them unfavourable for agricultural practices.

On the other hand, Luvisols soil zone is characterised by sandy clay soil types. Sandy clay soils are fertile soils with high nutrient retention, good water holding capacity and drainage making them suitable for a wide range of agriculture (Ersek, 2020).

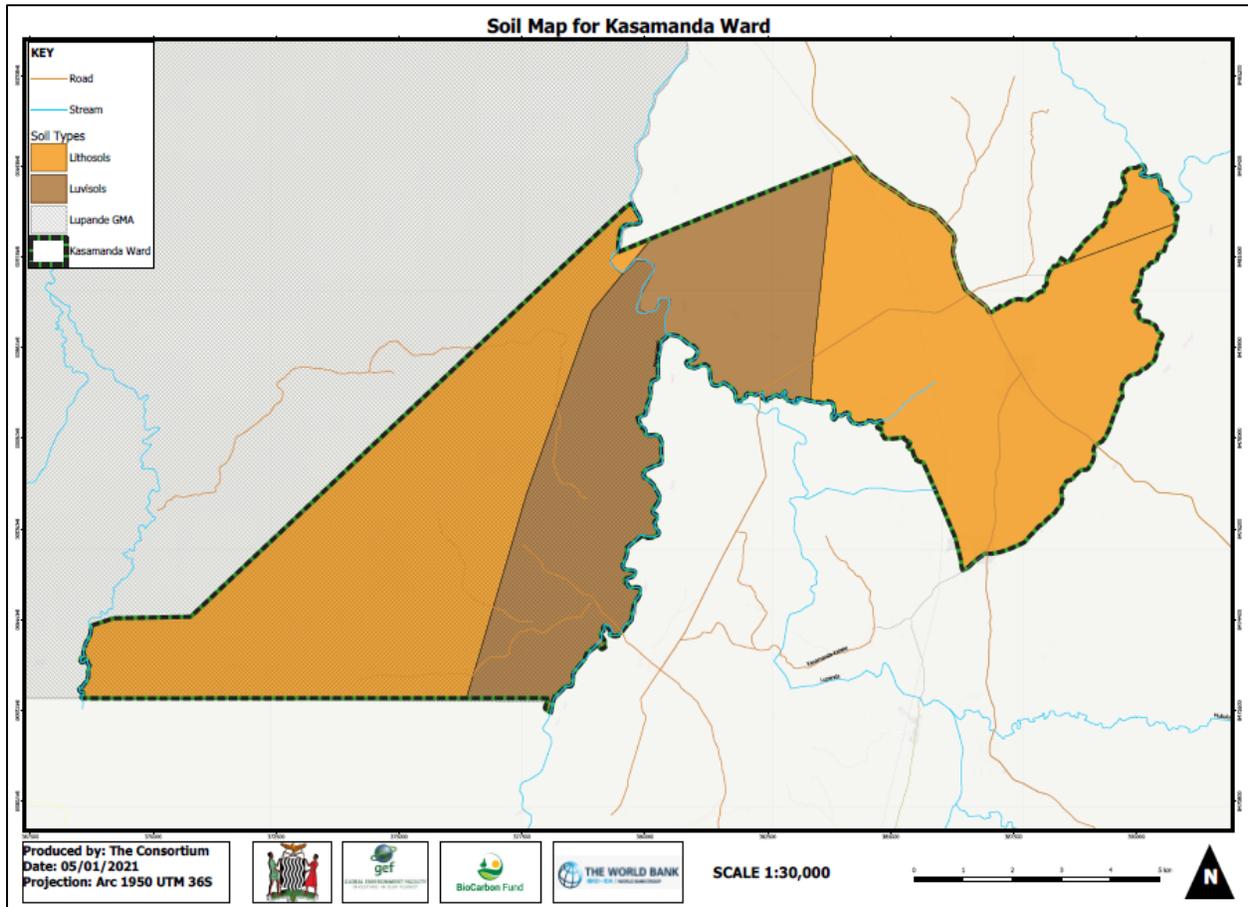


Figure 5: Soil Types in Kasamanda Ward

3.2 Socio-Economic Environment

Kasamanda ward covers a total area of 10,115 hectares of which 55% of the total area falls under the Lupande Game Management Area (GMA). Settlements in the ward are dispersed with poor road networks, especially during the rainy season, as the areas become inaccessible because streams flood and there are no bridge/culverts (Mambwe IDP, 2021). The ward has a total of 59

villages although some of these villages fall outside the Kasamanda Ward boundary. The ward has an estimated total population as shown in the table;

Ward	Population		
	Male	Female	Total
Kasamanda	1411	1435	2846
Source: Mambwe IDP, 2021			

Table 4: Kasamanda Ward Population

Kasamanda ward has a total of seven (7) schools and only one (1) is a secondary school. The Ward also has three health facilities of which two are health posts but only one is operational and one Rural Health Centre which is 86 KM from the Mambwe District Health Office. Kasamanda Ward also has one Agricultural Camp which is being managed by one camp officer (Mambwe IDP, 2021).

3.3 Source of Livelihood

Livestock keeping and subsistence farming are the predominant livelihood activities in Kasamanda Ward, with soya beans, maize, sweet potatoes, sun flower, tobacco, cotton and groundnuts being the crops grown. Animals reared by the local residents of Kasamanda include cattle, pigs, goats, sheep, chickens, ducks. The products are either sold to the Food Reserve Agency (FRA) or in urban centres of Katete or Chipata.

3.4 Livelihood Security

Livelihood security is the secure adequate access to resources as well as income generating activities to meet basic needs (shaped by the changing natural environment) (Kassa, 2018). Securing the livelihoods of Kasamanda Ward residents is closely associated with the limited development of economic opportunities in the area because most, if not all, residents depend on undiversified livelihood which is based on rain-fed agriculture. Livelihood security is often influenced by possibilities to diversify livelihood sources. This means if there are diversified livelihood sources, chances of attaining livelihood security are high. The over dependence on agriculture as a livelihood source has contributed to the soil degradation thereby calling for

opening up of new fields by cutting down of trees. At the same time, poor rainfall patterns affect productivity thereby endangering the livelihood of the local people of Kasamanda Ward.

3.5 Livelihood and Natural Resource Utilisation

Sustainable Livelihood refers to a livelihood that can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Ayantoye et al, 2017). The overdependence of Kasamanda Ward residents on agriculture for survival has led to increased pressure on the natural resources, especially land being the means to production for Agricultural-based source of livelihood. This unsustainable natural resource utilisation for survival, such as cutting down of trees for field expansion, leaves the farmlands bare, thereby resulting in climate change, which, in return, affects productivity.

On the other hand, farming practises adopted by the locals contribute to soil degradation, which forces them to abandon old fields and open new ones with a view of increasing yields. Thus, adopting conservation farming is advised in that one field can be used over and over without affecting the yields. This, in return, will reduce the rate at which new agricultural fields are being opened, thereby conserving trees.

Increase in population has equally contributed to unsustainable natural resource usage in that community members clear land for the purposes of settlements, thereby encroaching into the natural vegetation land and because all they can afford to do is farming, they clear more land for agriculture. Trees (forest) serve as natural habitats for various wild animals, birds and insects which get affected when their home is cleared. These animals, birds, and bees have the capability to serve as alternative livelihood sources through careful management. For example, the locals can venture into beekeeping as a business. However, the continuous clearing of trees has contributed to the disappearance of biodiversity in the area. The demand for firewood and charcoal production trees has contributed to the increasing levels of deforestation.

3.6 Livelihood Constraints and opportunities

Agriculture is the major livelihood activity in Kasamanda ward but due to climate change the area has been experiencing late onset of rains, occasional dry spells and floods which affect yields, thereby hampering the livelihood of the local people. However, there are opportunities of improving the yields through practising climate smart agriculture which ZIFLP, through the Ministry of Agriculture, has been implementing in the ward. Additionally, communities can be

encouraged to form groups which various stakeholders can support to venture into environmentally-friendly value addition projects to process raw products and sell them as finished products. Thus, in order to minimise the livelihood constraints, sustainable investment in agro-industries to enhance value addition and the establishment of market infrastructures are of great importance. These can, in turn, improve food security and enhance poverty reduction through exploration of alternative livelihood sources.

Constraints	Opportunities
-Low agricultural yields due to changing climate -Lack of initial start up capital -Poor road network to access some villages	-switching to climate smart agriculture -venturing into value-addition activities -establishment of market infrastructure to enable easier trade

Table 5: Constraints and Opportunities

3.7 Ecology

3.7.1 Biodiversity Hotspots

The sustainable use and protection of biodiversity is an integral component of successful Land Use Planning. There is a need to identify the existing biodiversity together with the local population. Any conflicts of interest must be brought out and resolved leading to greater social acceptance. LUP is one of the tools utilised in biodiversity protection for it helps in identifying existing biodiversity and also creates a broad consensus on the sustainable use of natural resources leading to the conservation of biodiversity. Kasamanda Ward has various biodiversity hotspots and the following hotspots were identified during the PLUP preparation process;

- Streams and a Dam
- Forests
- Wildlife Habitat

3.7.2 Ecosystem Function

Ecosystem function is the capacity of natural processes and components to provide goods and services that satisfy human needs, either directly or indirectly (de Groot et al 2002). Although unsustainable agricultural practices and charcoal production in the ward are the main factors transforming the natural resource base (which in turn affects the biodiversity due to habitat loss),

unplanned settlements, forest reserve encroachment and soil degradation have also led to disturbance of the ecosystem. Further, poor livestock and grazing area management have continued to cause a decline in the ecosystem. However, it is hoped that this PLUP will be instrumental in influencing ecosystem restoration and aiding in the conservation of biodiversity.

4. Current Land Use Patterns

4.1 Overall Land Use

The ward is mainly hilly and the main land uses are as shown in table 4 below where agriculture is leading followed by land utilised for free range grazing, then farms followed by hills, then built up areas and finally the forest reserve which is being managed by the community. However, it is worth noting that some shared resources overlap the ward boundaries meaning that communities share these resources. Shared resources need to be considered in relation to existing key stakeholders who live adjacent to them. Thus, aside from the hectares shown in the table below, about 594 ha of land used for agriculture is a shared resource overlapping the existing ward boundaries, according to local people of Kasamanda Ward.

No.	Land Use	Hectares	Comment
1.	Agriculture	8638.339	Out of the 8638.39 ha, 1796.499ha is used for various farming activities while 6841.840ha under Cultivation.
2.	Forest	4760.829	469.5ha is a Community Forest which is already identified
3.	Settlement	177.489	This includes; Villages and other built up areas such as; Schools, Health Facilities, Cemetery, Agricultural Camps, Markets etc.

Table 6: Land Use Reservation

Kasamanda Current Land Uses by Area

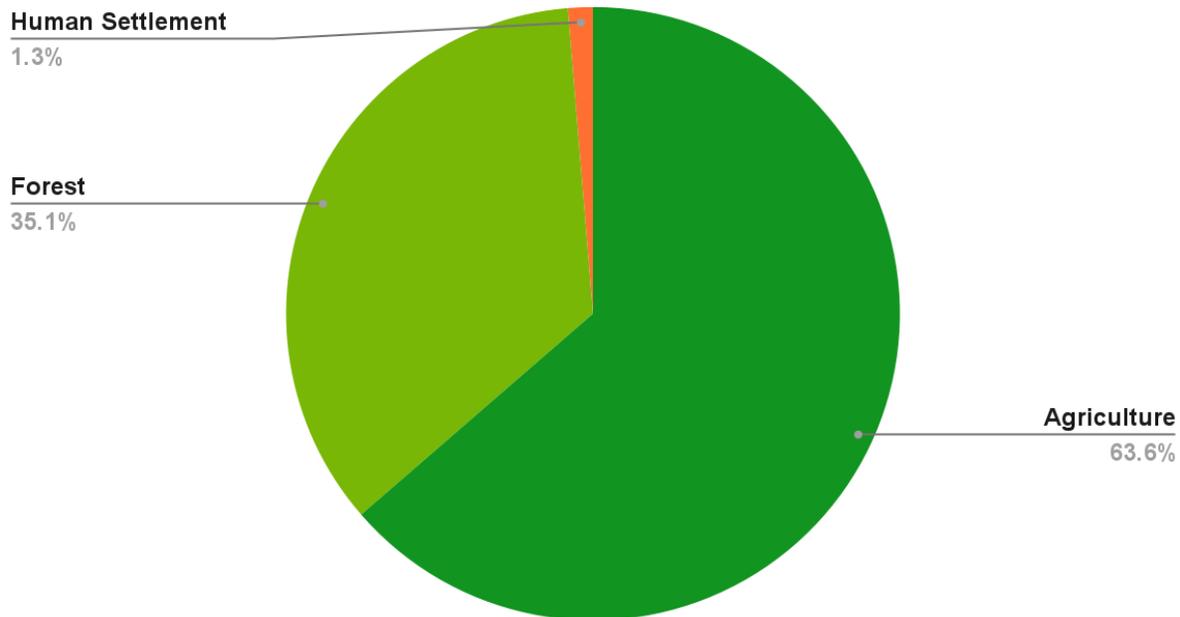


Figure 6: Current land uses in Kasamanda

4.2 Land Use Suitability Analysis

This is an evaluation that was done to identify the suitability of Kasamanda Ward for agriculture as a land use. The analysis focused on agriculture as a whole and not necessarily evaluating the individual crops grown in the Ward and it was based on the soil types.

4.2.1 Soil Types

There are quite a number of soil types across Mambwe District, but sandy, clay and rocky soils are what exist in Kasamanda ward. The rocky soils have low nutrient reserves and water retention capacity making the areas prone to leaching of nutrients after heavy rainfall and water stress during dry spells (Shitumbanuma, 2014). Sandy clay soils are more fertile than rocky soils because of the combination of two types of soils (sandy and clay). The clay particles improve moisture retention while the sand minimises compaction and improves drainage making the soil suitable for agriculture.

From the map below, it is clearly shown that the middle part of the ward is covered by sandy clay soils while the far left and the far right ends are composed of rocky soils. Much of the agricultural

activities in Kasamanda Ward are done in the rocky soil zones as shown in the map below (figure 6). Of these, the worst-case scenarios are where local people cultivate on top of the hills which is very unsustainable and affects their productivity.

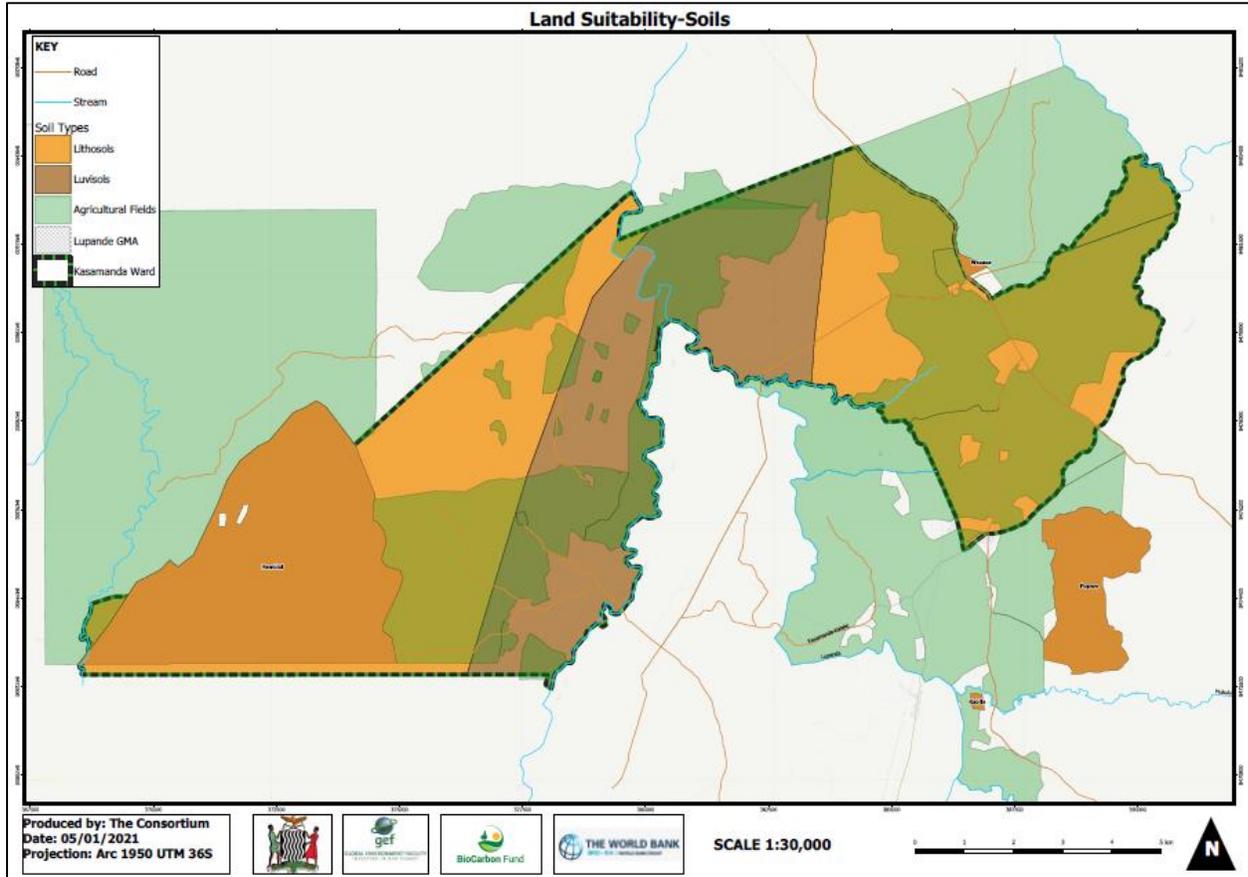


Figure 7: Land use Suitability analysis using soils

4.3 Land Resource and Administrative Boundaries

The land resources captured during the PLUP process are under Msoro Chiefdom although some shared resources such as hills, agricultural fields and forests spill across ward boundaries. However, despite the overlapping of these shared resources between wards, local people in these areas around Kasamanda Ward acquire their services from Kasamanda Ward.

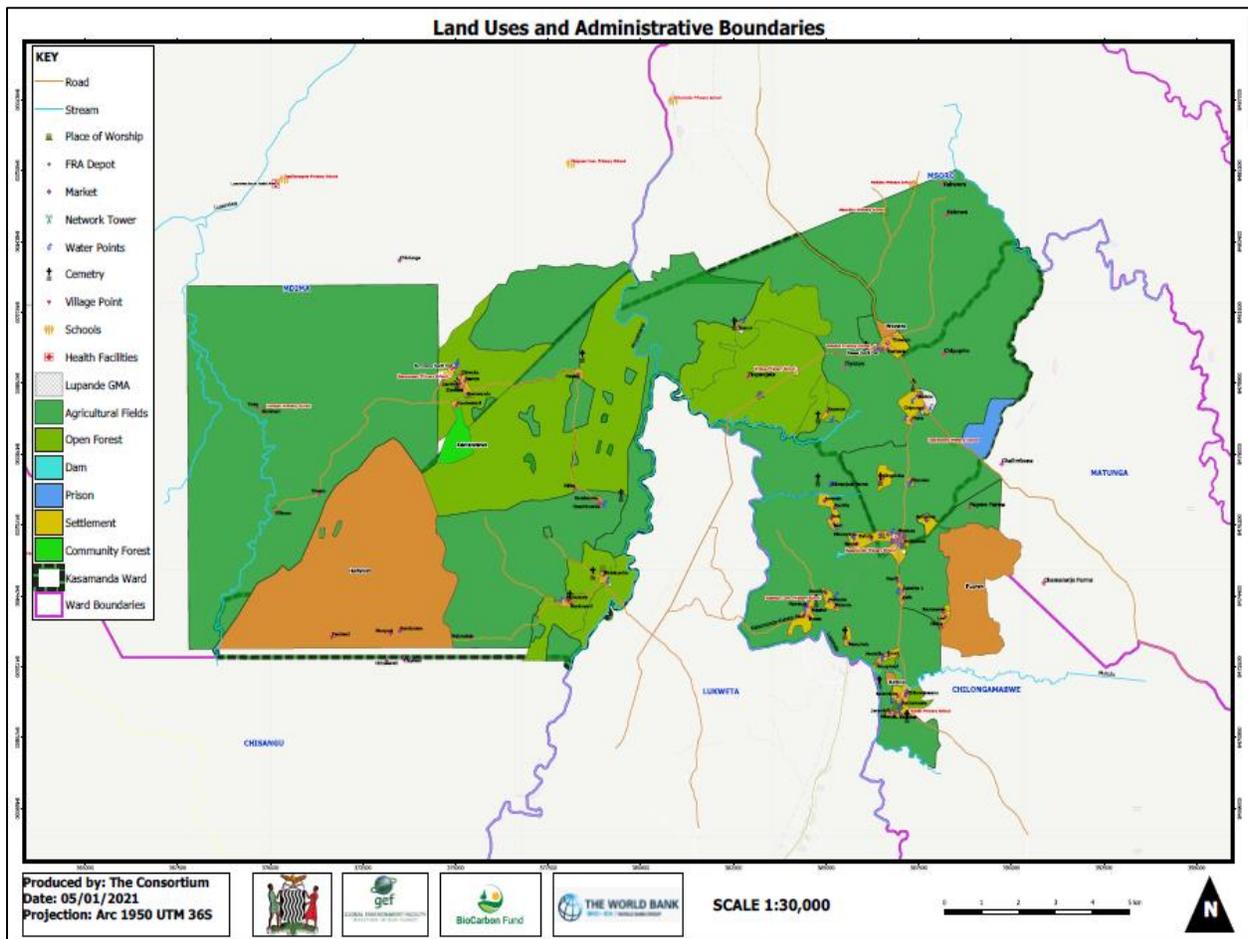


Figure 8: Land Resource and Administrative Boundary Map

4.4 Current Land Use Plan

In terms of land use activities, Kasamanda Ward is mainly covered in settlements (villages) and agricultural fields while areas for social services such as schools, clinics, places of worship and other public services such as water points, roads, telecommunication masts and football pitches are scattered within the Ward covering negligible areas.

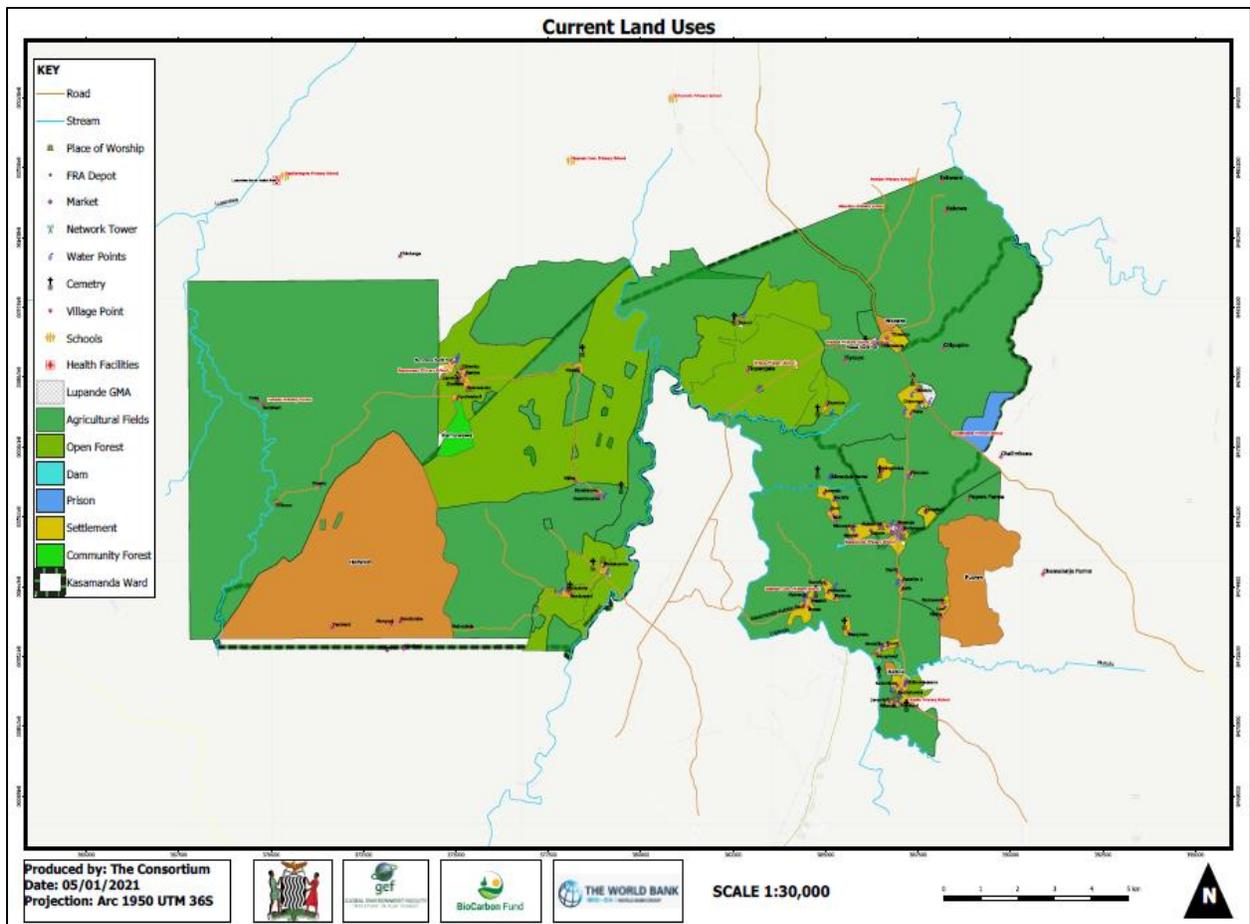


Figure 9: Current Land Use Plan

4.5 Land Use and Agriculture

Agriculture land in Kasamanda Ward covers about 8638.39 ha. Out of the total agricultural area, 1796.499 ha is utilised for various farming activities while 6841.840 ha is under Cultivation. Furthermore, from the hectorage of agriculture land under cultivation, about 1407.63 is under Climate Smart Agriculture (CSA) system.

Kasamanda Agriculture Land Uses

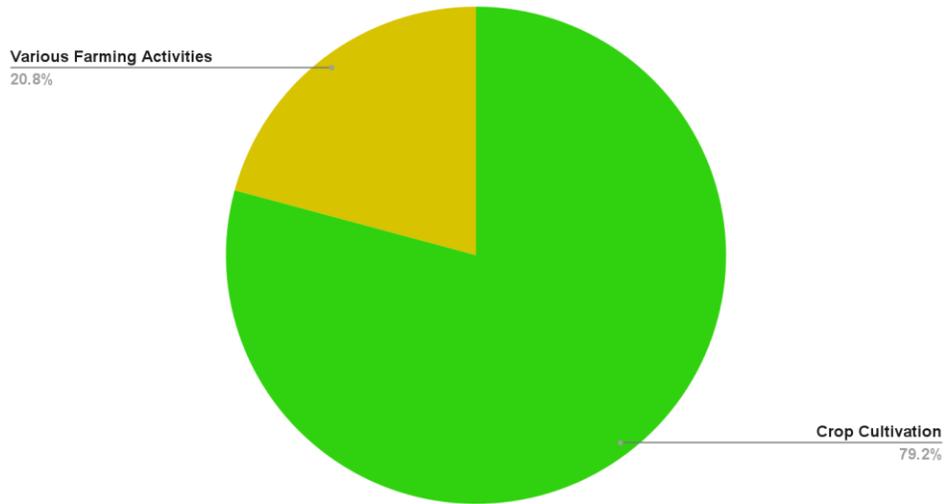


Figure 9: Agriculture land uses in Kasamanda

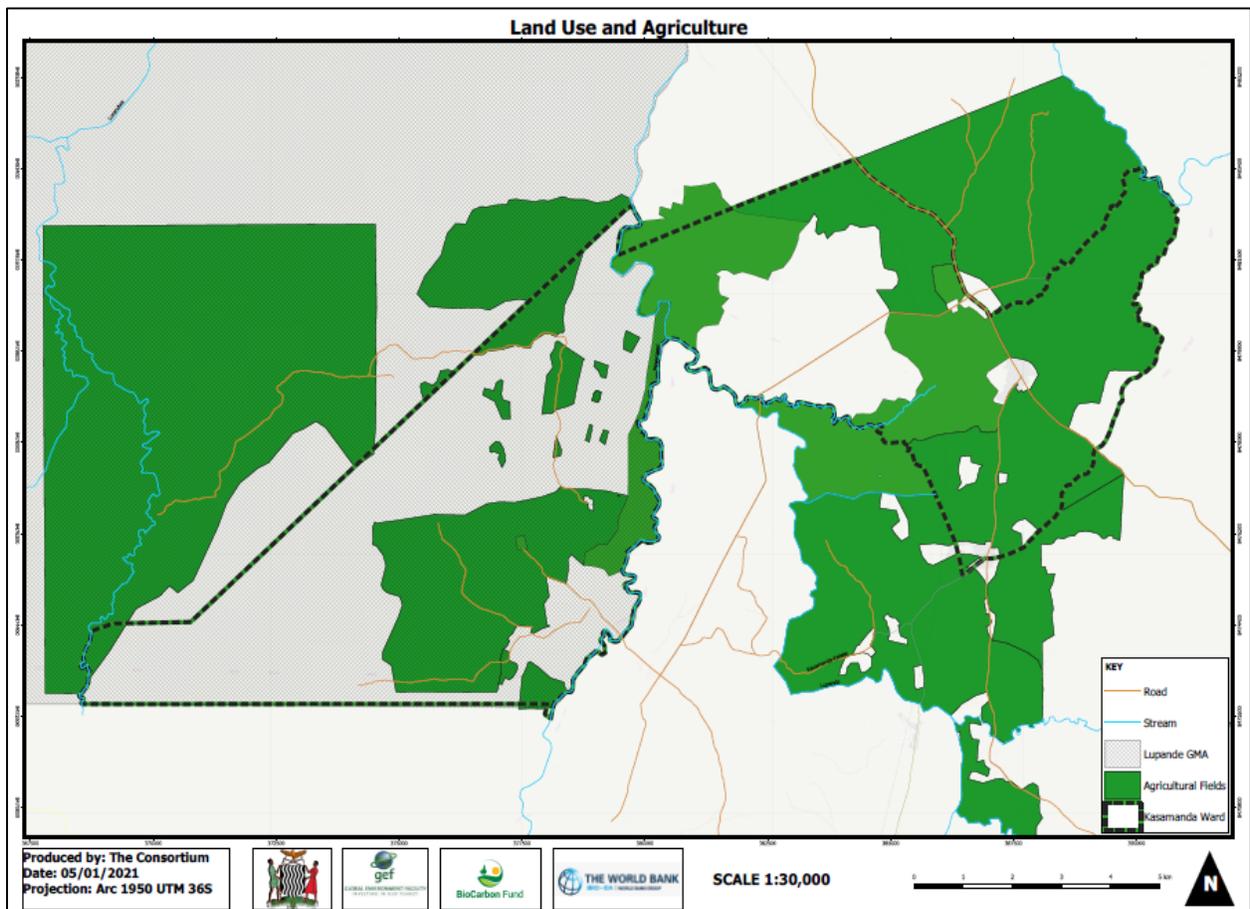


Figure 10: Land Use and Agriculture Map

4.6 Land Use and Forest

The purpose is to provide for conservation and development of forest with a view to securing supplies of timber and other forest produce, protection against floods, erosion and desiccation, withering and maintaining the flow of rivers. Currently, the sustainable utilisation of forest land in Kasamanda ward is the beekeeping that is being promoted by COMACO through their Producer Group Members or Farmer Groups. Secondly, there is an open forest being utilised for free range grazing and a community forest which is 469.5 ha supported by ZIFLP through Community Forest Management. There are also unsustainable forest activities happening in Kasamanda ward such as logging, rampant cutting down of trees for houses construction, opening of unplanned agricultural fields, and unplanned late bush fires.

During the community engagement exercise in the Kasamanda ward, the majority of community members proposed Hambizi and Pupwe hills to be community forests adding to the already existing 469.5 ha of land under Community Forest Management. Further, there is a need to enhance the community awareness on the effects of rampant cutting down of trees along the water bodies where there is Riverine vegetation. This will mitigate the current erosion situation (siltation) that will help the water bodies in the area to restore and hold water for a longer period.

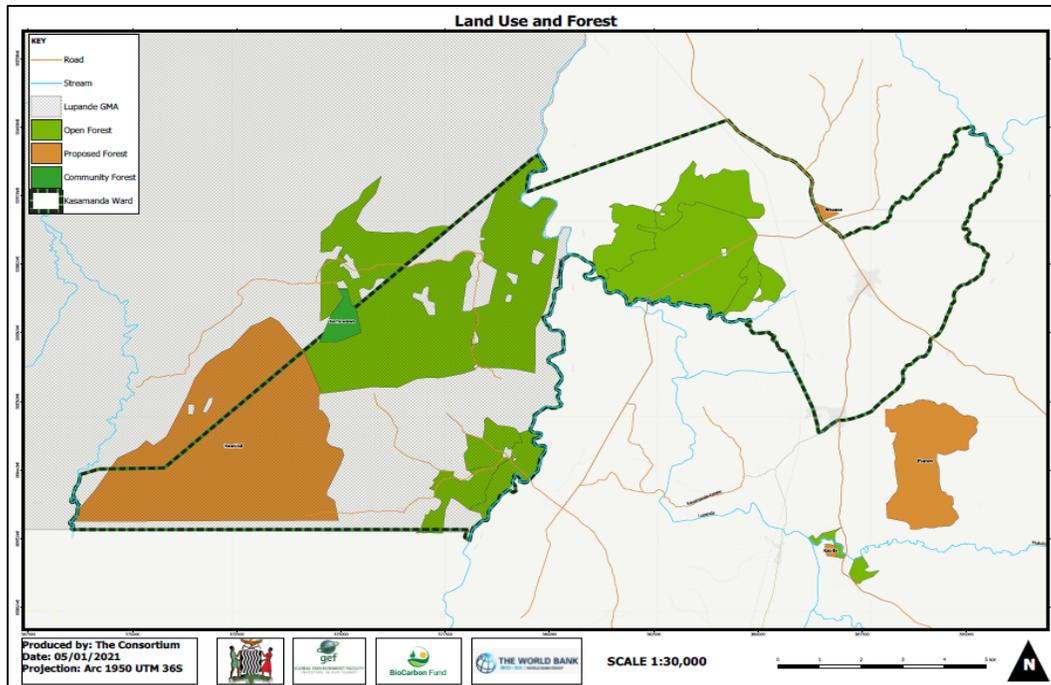


Figure 11: Land Use and Forest

4.7 Land Use and Wildlife

One of the objectives of PLUP in Kasamanda Ward is to create an enabling environment for conservation and development of wildlife with a view to increasing economic activities leading to improved livelihood in the area. Historically, there were a lot of animal sightings and presences of wildlife in Kasamanda Ward, this was attributed to an enabling vegetation cover, lower human population, smaller agricultural fields and respect for nature by the local people through traditional authority. Currently, large mammals are rarely sighted in the area. However, the commonly sighted small game range from rabbit, common duiker and protected species (pangolin - which is believed to be used for medicinal and ritual purposes). During the community engagement activity, it was suggested that one way to restore wildlife in the area is by enhancing forest conservation, engaging in sustainable agricultural practises, enhancing conservation meetings on coexistence with wildlife, enhancing mitigation measures on human-wildlife conflict, and introducing exchange programs. Further, there is a need to promote and establish a Community Partnership Park. For all the mitigation measures highlighted to work effectively, human mind-set change towards wildlife conservation is cardinal. The Community Partnership Park or Community Game Ranch suits better in the area considering the fact that part of Kasamanda Ward falls in the open area. This can help

expedite the process of establishing the Community Partnership Park or Game Ranch since open areas have fewer legal processes unlike the Game Management Areas (GMAs).

4.8 Land Use and Mining

There are no mining activities currently going on in Kasamanda ward.

4.9 Land Use and Tourism

There are no tourist attraction sites or activities in Kasamanda Ward. However, the creation of a Community Partnership Park or Game Ranch establishment has potential for tourism attraction.

4.10 Land Use and Physical Development

Kasamanda Ward is characterised by various physical developments that have taken place in the past years. It is important to note that some of these developments are both private and public. Some of the structures are old and in a dilapidated state. These physical developments range from schools, health facilities, churches, settlements, and markets.

Kasamanda has three (3) health facilities namely Kasamanda Rural Health Centre, Kamuwawa Health Post and Wazaza Health Post (which is under construction). The remaining works for Wazaza Health Post are construction of staff houses, ablution blocks and an incinerator.

Kasamanda has nine (9) schools out of which one is a secondary school namely Kasamanda Day Secondary, Kasamanda Primary, Kabila Primary, Wazaza Primary, Kasimbo Primary, Chalimbana Primary, Mkonkha Primary, Nyawa Primary, and Muluwa Primary.

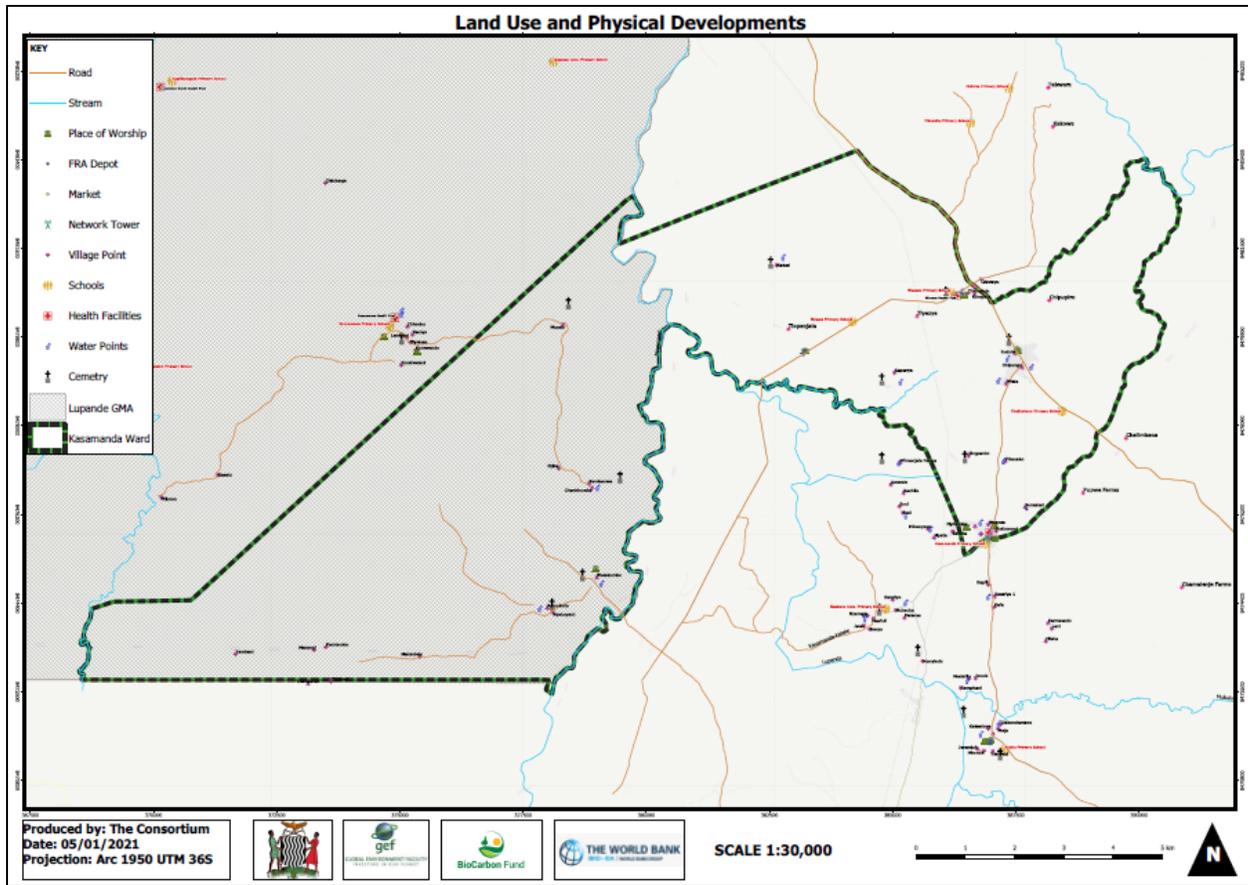


Figure 12: Land Use and Physical Development

5. Community Participation

5.1 Community Engagement Process

Community engagement and participation is cardinal to the success of every community project, as it inculcates project ownership and sustainability. PLUP in Kasamanda Ward was embarked on through a series of community engagement meetings which involved meetings the Chieftainess, Indunas, Headpersons and eventually the community at large in sharing the PLUP concept so that Free Prior Informed Consent (FPIC) could be achieved.

Since Kasamanda ward has 6 Village Action Groups (VAGs) which are far stretched apart, community engagement meetings were held in designated VAGs so as to ensure that many members of each specific community VAG attend in large numbers for the purpose of getting acquainted with the PLUP concept with first-hand information for a better decision making.

Community engagement meetings were held in three phases: first, second and third. During first phase meetings, community members were exposed to the concept of PLUP which involved community identification of shared resources, problems affecting the management of resources and sketch mapping of these resources and other spatial features.

Second phase community engagement meetings involved the verification of the digitised Shared Resource Maps in all the VAGs. This presented an opportunity for the community members to make corrections and additions on the earlier submitted resource information.

Third phase community engagement meetings involved zoning activities in all the VAGS. This involved zoning of areas for future land uses. Members of the community were involved in the mapping of the proposed future land use areas.

5.2 Agreed Local Rules for Land Use and Resource Management

The local rules for land use and resource management were arrived at through a consultative process with Chieftainess Msoro and her subjects through validation meetings held in Kasamanda. See the Annex 1 for more details.

6. Core Issues Affecting Land Use and the Environment

The issues affecting land use were captured during the clustered community meetings which were conducted in Kasamanda Ward. A number of issues were raised, what causes these issues and possible solutions were also identified. Below is the summary of all the issues the communities raised;

- Shortage of water
- Unsustainable agricultural practises
- Lack of a marketplace
- Long distances to clinics and schools
- Bush fire
- Poor road network
- Soil degradation
- Charcoal production
- Late onset of the rains
- Lack of bridges/culverts
- Indiscriminate cutting down of trees

Further, pairwise ranking was conducted for the identified problems in order to identify the core issues that this PLUP intends to address and the following were the prominent ones:

6.1 Shortage of Water

Residents of Kasamanda Ward mainly depend on boreholes for water, although most of the boreholes are limited to areas around schools and health facilities. As a result, those living far from such services have challenges in accessing water, especially since all the streams in the Ward are seasonal.

6.2 Soil Degradation

This is mainly caused by unsustainable agricultural practises, bush fires and cutting down of trees for either charcoal production, field expansion or by animal grazing. This has, in turn, affected their productivity, leading to food insecurity and livelihood challenges.

6.3 Long Distances to Schools and Health Facilities

Kasamanda ward has 3 health facilities, one of which is not operational. The two working health centres service not only Kasamanda Ward residents, but also those in the neighbouring wards. Some residents have difficulties accessing health care services because of long distances to health facilities coupled with poor conditions of roads.

The entire Kasamanda ward only has 1 secondary school servicing the residents and it is squatting at a primary school. Meaning, already one school is not enough to meet the growing demands of the people in the ward coupled with inadequate infrastructures. Children walk long distances to school, which discourages them and leads to some opting to drop out of school.

Facility	Number of Facilities
Primary Schools	8
Secondary Schools	1
Colleges	0
Health Facilities	3

Table 7: Facilities in the ward

6.4 Poor State of Roads and Related Infrastructure

Inadequate transport system and lack of proper road network hampers development in Kasamanda Ward in that the movement of goods and services (required for such development) depends on transportation. Roads in Kasamanda Ward are in poor condition and require rehabilitation. The Ward also lacks road related infrastructure such as bridges/culverts making certain areas inaccessible especially during the rainy season. This makes access to essential services such as health facilities and schools very difficult for residents in places far away from such facilities.

6.5 Problem Causes and Possible Solutions

There many challenges the rural communities face and Kasamanda residents are not an exception. Some of the prominent challenges are synonymous to lack of tenure security due to undocumented tenure rights, marginalization of the vulnerable groups such as women and youths due to matrilinear practices in Msoro chiefdom. The problem causes and suggested solutions to the problems faced by residents of Kasamanda Ward are outlined in the table below:

Causes	Possible Solutions
<ul style="list-style-type: none"> ● Poverty ● Ignorance ● Lack of by-laws ● Seasonal streams and late onset of rains ● Lack of alternative livelihood sources ● Unsustainable agricultural practices 	<ul style="list-style-type: none"> ● Adopting conservation farming practices ● Operationalizing of the health post under construction ● Adopting climate smart agriculture practices ● Skills in mushroom conservation and bee keeping ● Drilling of boreholes and Dam construction ● Rehabilitation/construction of roads and related infrastructure

Table 8: Causes of Problems and Suggested Solutions

6.6 Zoning: Land Use Planning

The proposed future land use plan was developed through consultative meetings that were conducted in six VAGs of Kasamanda Ward. The proposed land uses are based on the problems that were identified during the first village meetings. The table below shows the core problems and proposals made in each VAG (Maps attached in the Annex);

VAG	Core Problems	Proposed Future Developments	Area
Kamuwawa	<ul style="list-style-type: none"> - Shortage of water - Bad road network - Lack of a market - Soil Infertility 	- Dam Construction	8.8 ha
		- Fish Farming project	1.6 ha
		- Trading Area	1.1 ha
		- Grazing land which will also be used for beekeeping	906 ha
Hambizi	<ul style="list-style-type: none"> - Shortage of water - Soil degradation 	- Community Forest Conservation (Hambizi Hill)	419 ha
		- Climate Smart Agriculture fields	3251.9 ha
		- School expansion	17 ha
Kabila	<ul style="list-style-type: none"> - Shortage of Water - Soil Degradation - Food Insecurity 	- Construction of Health facility.	4 ha
		- Market	0.6 ha
		- Grain shed construction	-
		- Community Forest Conversation (Pupwe Hill)	481 ha
Kasamanda Central	<ul style="list-style-type: none"> - Shortage of water - Overgrazing 	- Chicken Rearing	-
		- Beekeeping	-
		- Goat Rearing	-
		- Construction of a health facility	1.6 ha
Kasimbo	- Shortage of Water	- Construction of a health facility	1.6 ha

	- Soil Degradation - Food Insecurity	- School expansion	2.8 ha
		- Grain shed construction	-
Wazaza	- Inadequate health and education facilities - Shortage of water - Lack of a market place	- Dam construction	0.7 ha
		- Construction of Market, Police Post and Grain Shed	1.7 ha
		- Community Forest Conservation (Wazaza Hill)	13 ha

Table 9: Land Reservation per VAG

7. Implementation Strategy

The table below outlines the PLUP Implementation Strategy.

No.	Objective	Proposed Activities	Management Structure	Output	Learning and Innovation
1	To enhance agriculture productivity	<p>Strengthen preparedness through early warning systems</p> <p>Efficient crop forecasting and maintenance of strategic food reserves</p> <p>Increase number of farmers and strengthen synergies among players in the agriculture sector</p> <p>Establishment of a one stop registration centre for agro investment</p> <p>To provide adequate infrastructure to support livestock production in the ward</p>	<p>Reinforcement of early warning systems</p> <p>Increasing local storage capacity</p> <p>Empowerment of local cooperatives</p> <p>Facilitate provision of land</p> <p>Upgrading existing livestock infrastructure</p>	<p>Construction of agriculture research centres</p> <p>Construction of storage sheds</p> <p>Establishment of market zones</p> <p>Establishment agro processing plants</p> <p>Construction of new dip tanks</p>	<p>DMT to provide capacity building to the local communities especially in CSA using farmer field school model</p> <p>Provide technology that would enhance early warning systems</p>
2	To promote spatial growth and improve transport system	<p>Prepare local area plans for expansion of settlements especially in development hotspots</p> <p>Improving existing and opening up new feeder roads</p>	<p>Improving quality of settlements</p> <p>Improve quality of road network especially access roads</p>	<p>Re-planning and upgrade of existing settlements</p> <p>Construction of new feeder roads</p>	<p>DMT to provide technical expertise whilst local community provides labour</p>

			Improve quality of existing settlements		
--	--	--	---	--	--

3	To Promote Environmental Protection and Conservation of Natural Resources	Establish centres of excellence which will provide among other services nurseries for tree planting, knowledge exchange Support establishment of community forest management groups	Improve yield of existing tree species and introduction of other varieties including drought resistant varieties Increased community participation in natural resources management	Over 10,000 trees to be planted in 2022 Establish atleast 2 CFMGs by 2023	Local community to set aside parcel of land to be used as a nursery Communities identify community forests
4	To Improve Access to Clean and Safe Water Supply and Sanitation	Sink more boreholes and water wells	Establish central water access points Provide chlorine	Drill boreholes and water wells in villages which are so many kilometres away from water source	Equip boreholes with solar power to reduce on time for women and children drawing water
5	To enhance Human Development through Skills training and Empowerment programs	To empower women and youths with skills and crafts to better their livelihoods	Establishment of a Skills training center	Establish one skills training centre	Integrate skills development in food preservation, packaging and marketing

Table 10: Implementation Strategy

8. Institutional Arrangement for PLUP Implementation

Kasamanda Ward PLUP is envisaged to be implemented in line with Mambwe District IDP which is running for a period of 10-years from 2020-2030. Being a local plan, the Traditional Authority will work hand in hand with the DMT team in the implementation process since the plan is part of the Integrated Development Planning framework.

The Local Authority will be responsible for providing guidance so that everything will be done in line with the provisions in the URP Act No.3 of 2015. The Forestry Department, Department of National Parks and Wildlife and Ministry of Agriculture will be the main implementers of the PLUP while the Ministry of Health, Ministry of Education and other line ministries will be monitoring adherence to the zoning of the land use plan with regards to schools, health facilities and other developmental and social land reserves.

At chiefdom level, the traditional authority with guidance from the DMT team will choose community representatives who will be overseeing and executing PLUP activities and will intermittently rehearse with both the DMT and the Chief on the implementation process.

The mandate to carry out minor (pilot) measures may in some cases need to be transferred to the civil society (i.e. self-help groups, cooperatives, farmers' organisations or local NGOs). It is also possible that private sector companies or individual consultants take over this part so that Government through DMT only concentrate on the supervision and monitoring of the process.

9. Conclusion

The PLUP for Kasamanda Ward was developed through a consultative and participatory process, and technically analysed by the Land Alliance Consortium - the TSP hired by ZIFL Project - in consultation with the Mambwe DMT team. Additionally, the PLUP analysed the current situation in Kasamanda ward, issues pertaining to Land Use Planning were identified, with lack of alternative source of livelihood being one of the key drivers of unsustainable natural resources management. At the same time there has been haphazard and unsustainable use of land and other natural resources by residents of Kasamanda Ward and those residing in surrounding areas largely due to lack of written down rules and regulations governing the use of resources in communities within and areas surrounding the ward. Therefore, it is hoped this PLUP will be used for the purpose for which it was developed.

10. References

1. Mambwe District Integrated Development Plan (IDP) 2021.
2. JICA 2011. Participatory Land Use Planning: Community Based Natural Resource Management. Available: <https://www.jica.go.jp/project/english/easttimor/003/index.html>
3. Subakanya M, Tembo G and Richardson B.R. 2018. Land Use Planning and Wildlife-Inflicted Crop Damage in Zambia.
4. Food and Agriculture Organization (FAO). Guidelines for Land-Use Planning; FAO: Rome, Italy, 1993.
5. Liversage, H and Mangiafico, M.E. 2014. How to do Participatory land-use planning: Land tenure toolkit.
6. Tasneem C & Weele G. 2013. Environmental Management Framework for the iLembe District Municipality. EMF and Strategic Environmental Management Plan. KwaZulu-Natal.
7. Alexander, S., et al. 2016. The relationship between ecological restoration and the ecosystem services concept. *Ecology and Society*, 21(1).
8. GIZ. 2012. Land Use Planning: Concept, Tools and Applications. Federal Ministry for Economic Cooperation and Development (BMZ): Eschborn, Germany. p. 268.
9. Moti J, Mekonnen Y, Adugna T, Mitiku H, Ansha Y, Kindeya G, Kelemework T, Yemane, G, and Mekonnen T. 2011. Impact of Resettlement on the Livelihood, Food Security and Natural Resource Utilization in Ethiopia.
10. Ayantoye K, Amao J. O. and Fanifosi G. E. 2017. Determinants of livelihood diversification among rural households in Kwara State, Nigeria. *International Journal of Advance Agricultural Research*. ISSN 2053-1265 pg. 82-88.
11. Malcolm, J. R., Liu, C., Neilson, R. P., Hansen, L. & Hannah, L. 2006. Global Warming and Extinctions of Endemic Species from Biodiversity Hotspots. *Conserv. Biol.* 20, 538–548
12. Bezabih M, Mannberg A Siba E. 2014. The Land Certification Program and Off-Farm Employment in Ethiopia. Environment for Development Discussion Paper Series December
13. Lemi A. 2009. Determinants Of Income Diversification in Rural Ethiopia: Evidence From Panel Data. *Ethiopian Journal of Economics* 18:1.

14. Weldegebriel Z, Prowse M. 2013. Climate change adaptation in Ethiopia: to what extent does social protection influence livelihood diversification? *Development Policy Review*.
15. Kassa W.A. 2018. Determinants and challenges of rural livelihood diversification in Ethiopia: Qualitative review. *Journal of Agricultural Extension and Rural Development*.
16. Naab, F.Z.; Dinye, R.D.; Kasanga, R.K. 2013. Urbanisation and its impact on agricultural lands in growing cities in developing countries: A case study of Tamale, Ghana
17. Kameri-Mbote, P. 2005. Land Tenure, Land Use and Sustainability in Kenya: Towards Innovative Use of Property Rights in Wildlife Management
18. Muruthi, P. 2005. Human Wildlife Conflict: Lessons Learned from AWF's African Heartlands; AWF Working Papers; African Wildlife Foundation: Nairobi, Kenya.
19. Mitchell D, Buxton M and Budge T. 2004. Assessing the Role of Land Use Planning in Natural Resource Management. *Spatial Planning for Sustainable Development*.
20. Schwedes, S and Werne, W. 2010. Manual for participatory land use planning facilitators or Ministry of Lands and Resettlement and German Technical Cooperation in the context of the Modelling Land Use Planning Project.
21. Mengistu Negash. 2012. Local Level Participatory Land Use Planning Manual: Concepts and steps in LLPLUP. Ministry of Agriculture Rural Land Administration and Use Directorate.
22. Mutea. E, Bottazzi. P, Jacobi. J, Kiteme. B, Speranza. C.I and Rist. S. 2019. Livelihoods and Food Security Among Rural Households in the North-Western Mount Kenya Region
23. Abu, G. A., and Soom, A. (2016). Analysis of factors affecting food security in rural and urban farming households of Benue State, Nigeria.
24. Barrett, C. B. (2010). Measuring food insecurity.
25. Shitumbanuma. V, Simfukwe. P, Kalala. D, Kaninga. B, Gondwe. B, Nambala. M, Kabwe. S, Siulemba. G, Kapulu. N, Lungu. O and Mutegi. J. 2014. Integrated Soil Fertility Management in Zambia.
26. FAO (2006). Food security. Policy Brief 2, 1–4.
27. Falcucci. A, Maiorano. L & Boitani. L. 2007. Changes in land-use/land-cover patterns in Italy and their implications for biodiversity conservation

Annexes

Annex 1

MSORO CHIEFDOM BY-LAWS ON LAND USE AND MANAGEMENT OF NATURAL RESOURCES

Preamble

This document shall be used as a guide in managing Msoro chiefdom natural resources and shall be implemented across the chiefdom once reviewed and signed by HRH Chieftainess Msoro. The document is solely the property of Msoro Chiefdom. The document outlines how Msoro Chiefdom wants to address issues of natural resource management for sustainable development. These bylaws shall be implemented by the Chief's council, Village Headpersons.

STRUCTURES

CHIEFS COUNCIL

- ❖ Members of the council are recommended by the community.
- ❖ The council shall consist of 11 members with at least a representation of women.
- ❖ The council shall submit reports to the chief once in a week on all activities such as child marriages, GBV e.t.c.
- ❖ If a member of the council is absent in more than two (2) meetings without any reason, he/she shall be removed from the chief's council.

CRITERIA FOR HEADPERSON SUCCESSION

- ❖ In an event that the Headperson becomes insubordination or death, the successor, whether female or male must come from the deceased family. AND for new appointments, the members of the family shall choose the Headperson regardless of gender and introduce him or her to the chief for installation. For gross misconduct, the chief has the right to deregister the village.
- ❖ Headperson MUST be above 18 years of age.
- ❖ The headperson MUST be born and bred of Msoro chiefdom. For all those who come from some chiefdoms, no one is allowed to establish a village but be part of already existing villages.

COMMUNITY RESOURCE BOARDS

- ❖ All manner of natural resource management shall be handled by the community resource board.

- ❖ The composition of the CRB shall at all times adhere to the chiefdom call WHERE resource management is concerned.
- ❖ Elected by the community following guidelines in the wildlife act.
- ❖ The term for the CRB shall be 3 years.

LAND USE AND GENDER

- ❖ A widow will have rights to use her deceased husband's field and enjoy the rights to natural resources unless she decides on her own to leave the field due to remarry or relocation.
- ❖ Land use is regardless of gender.

LAND USE AND POLLUTION

- ❖ No child should be found playing near the water bodies.
- ❖ No Woman or Man should be found washing at the borehole.
- ❖ No one either Female or Male should be found poisoning water bodies.
- ❖ Anyone having a water well should NOT allow children below 5 years to draw water.
- ❖ All households should have toilets or latrines.
- ❖ All households should have a rubbish pit.
- ❖ There should be 20m space from the borehole to the place where animals drink water from.
- ❖ All cases related to water and sanitation should be reported.

LANDUSE AND BOUNDARIES/DISPUTE RESOLUTION

- ❖ Anyone who is putting his/her field on rent, he/she should first inform the Village person, Induna for the village and Induna for the zone together with his/her family.
- ❖ Anyone who decides to relocate the chiefdom, should return land ownership to the chief.
- ❖ Strong Animal kraals and fences should be built by the owners.
- ❖ There should be 400 m space from the Village to the fields.
- ❖ If the livestock have destroyed someone's crops, the parties involved together with the owner of the livestock should come to an agreement with help from the agriculture extension officer and Headperson, if they fail to reach an agreement, the issue should be taken to the chief's council for further resolution.
- ❖ There should be 5m space between the boundaries of two Fields.

- ❖ All Villages should have a reserved land for development where they can build shops, Churches and schools.
- ❖ All cattle, Goats and Sheep they should be with a caretaker at all times when grazing, Whilst for pigs they should be kept in a piggery at all times.

LAND USE AND FOREST

- ❖ No cutting down of trees to make planks and Burn charcoal without permission. Anyone doing so MUST be taken to the chief's for penalties.
- ❖ Consent to trade in timber shall be given only by HRH Msoro.
- ❖ Anyone who wants to extend his field, he/she should inform the Headperson and the chief.
- ❖ No extension of fields into the areas set aside for community forests.
- ❖ All hills should be protected by traditional leaders so that trees are maintained.
- ❖ No cutting down of trees within 15m away from any stream on both sides.
- ❖ No late bush burning is allowed in Msoro chiefdom.
- ❖ Anyone who wishes to get herbs from the community land shall first pay courtesy to the Headperson.

LANDUSE AND WILDLIFE

- ❖ Illegal hunting shall not be allowed in Msoro Chiefdom
- ❖ No Headperson shall be allowed to allocate land in the area where there is wildlife.

LAND USE AND AGRICULTURE

- ❖ No one will be allowed to use chitemene system of agriculture in Msoro Chiefdom.
- ❖ Any farmers should practice Climate Smart Agriculture in Msoro Chiefdom.
- ❖ No one should be found cultivating in the hill.
- ❖ There should be a buffer of 300 m around the hills, no one should farm in the buffer zone.

LAND USE AND GENERAL DEVELOPMENT

- ❖ The chief should be notified every time a property is sold in the chiefdom e.g. when selling a shop, the land is not part of the transaction. Only the building is part of the sale.
- ❖ The chieftaincy will receive 8% building (school, house etc.) sale
- ❖ A residential plot will be developed within 18 months of being allocated. Failure to do so will incur penalties.
- ❖ A farm will be developed within 18 months, failure to which penalties will be meted out.

- ❖ The chieftaincy has the authority to repossess a plot or piece of land in the event regulations are not adhered to.
- ❖ A farm once allocated by the chief will not be sold.

Annex 2: Proposed Future Land Use Maps

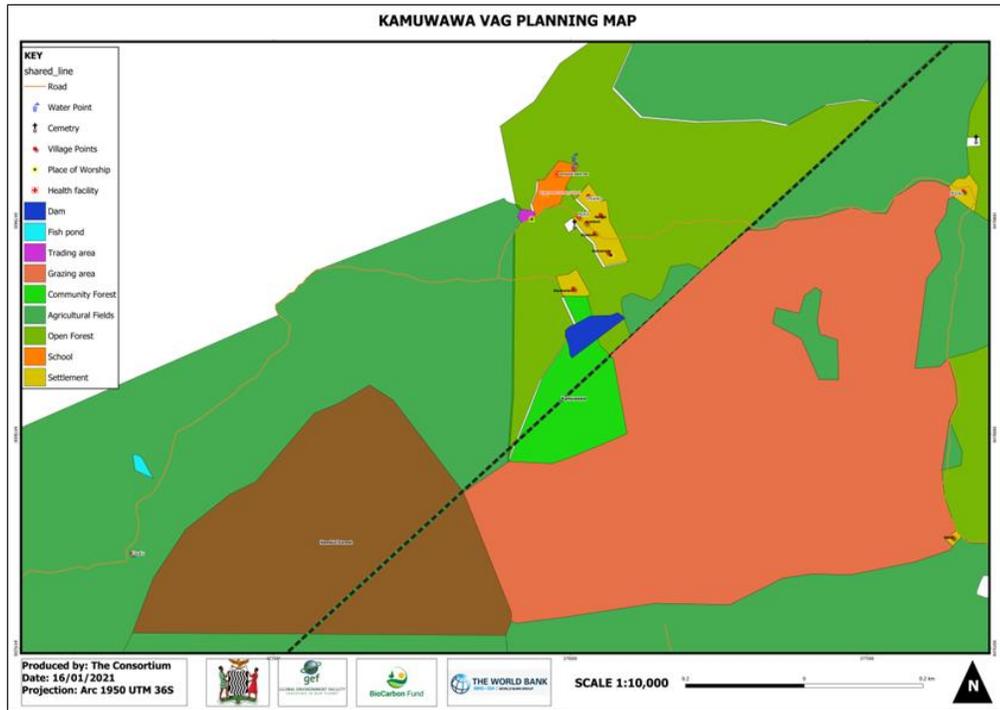


Figure 13: Kamuwawa VAG Map

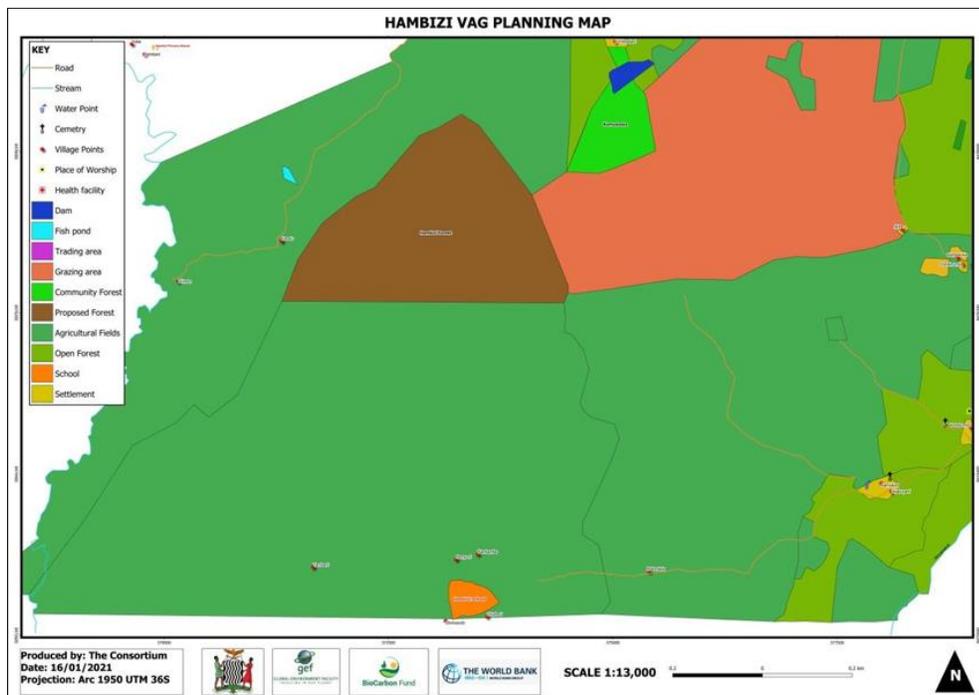


Figure 14: Hambizi VAG Map

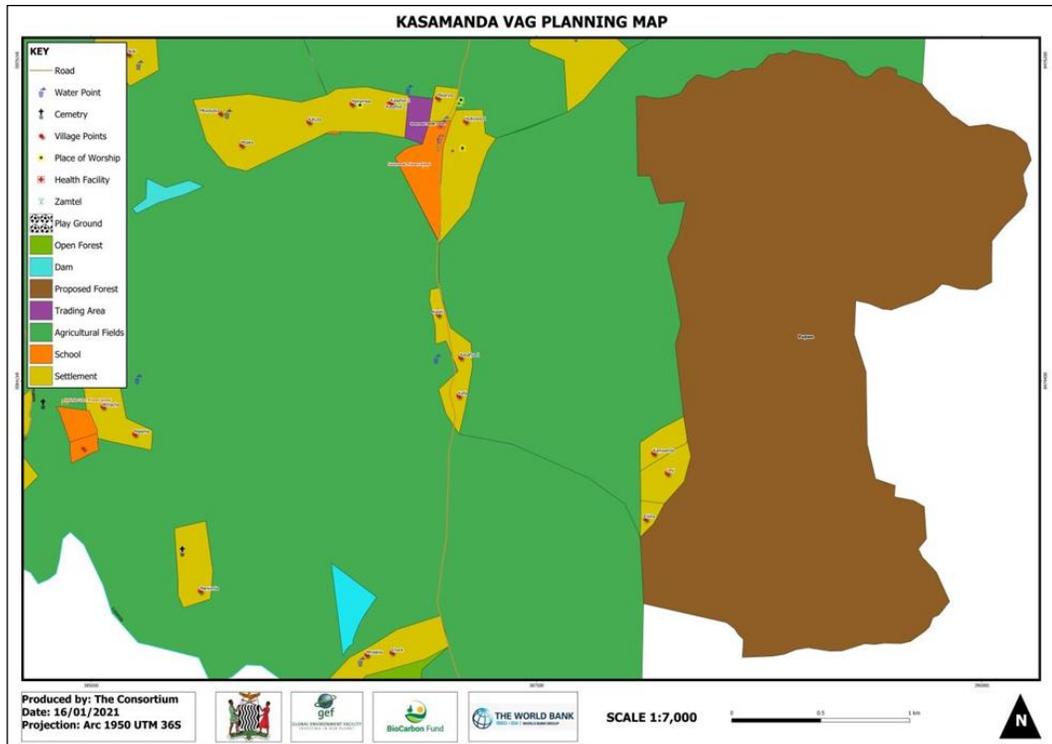


Figure 15: Kasamanda VAG Map

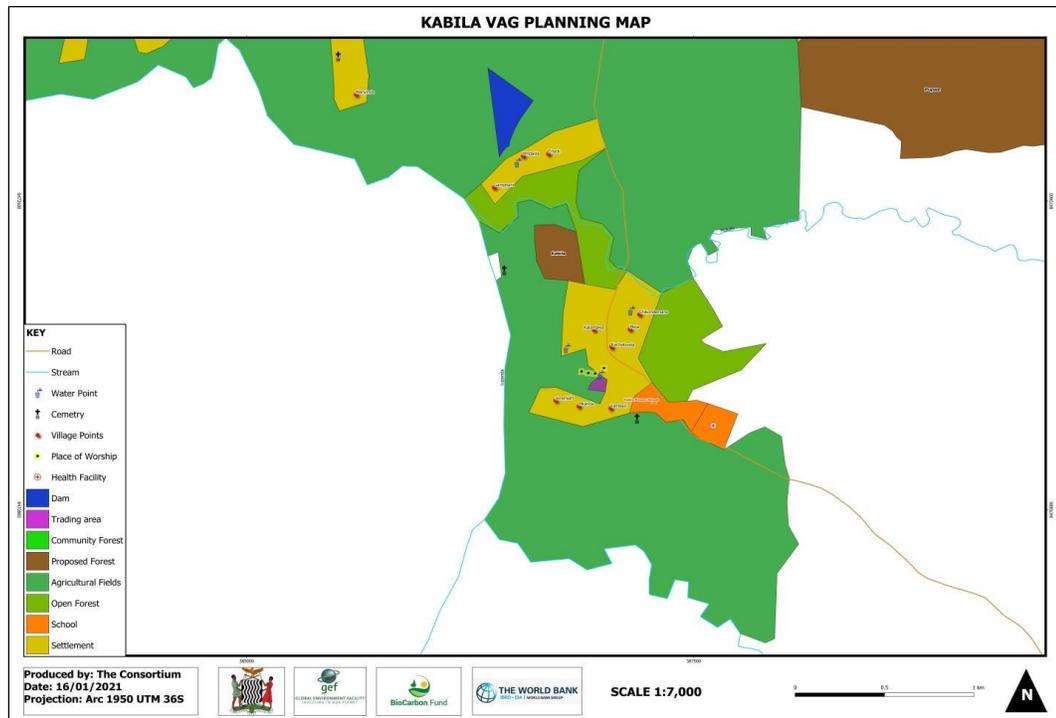


Figure 16: Kabila VAG Map

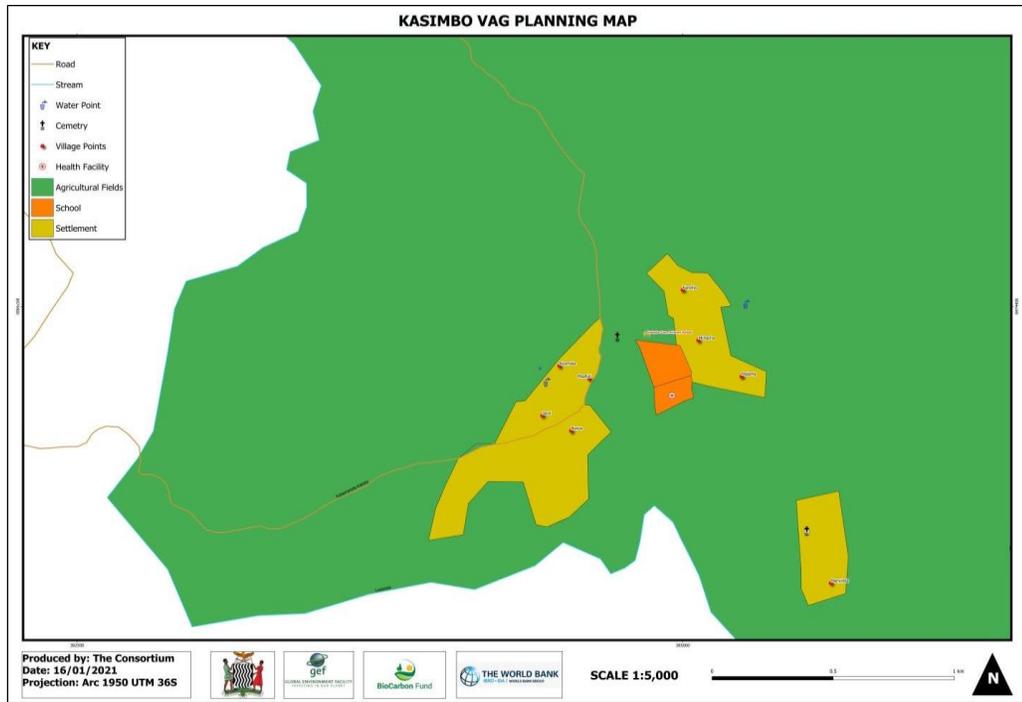


Figure 17: Kasimbo VAG Map

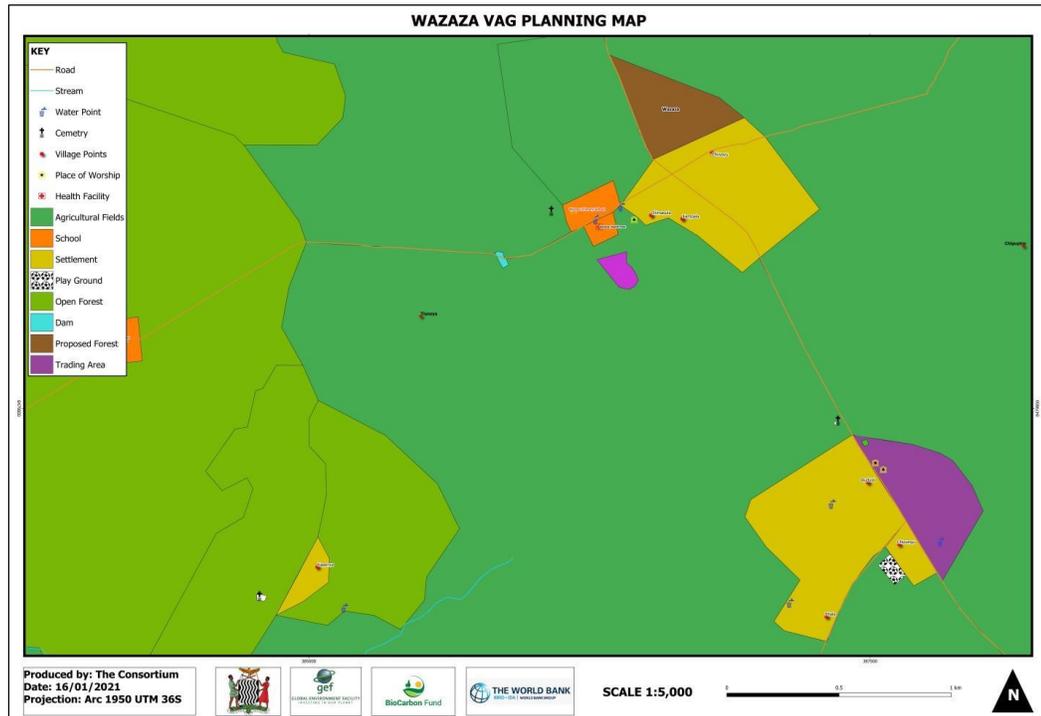


Figure 18: Wazaza VAG Map

