GUIDELINES FOR INTEGRATED AND PARTICIPATORY VILLAGE LAND USE PLANNING, MANAGEMENT AND ADMINISTRATION IN TANZANIA

Third Edition

National Land Use Planning Commission
P.O. Box 1208, DODOMA

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Notes on the Third Edition

This edition is based on the Second Edition (2013) of PLUM Guidelines, policies and legal frameworks in Tanzania including; The National Land Policy (1995); The National Human Settlements Policy (2000); The National Environmental Policy (1997); The Land Act Cap. 113 (1999); the Village Land Act Cap. 114 (1999); the Environmental Management Act Cap. 191 (2004) and the Land Use Planning Act Cap. 116 (2007).

It is also aimed at improving the guidelines on a regular basis to keep pace with new experiences and the ever-changing conditions, including policies and legislation.

Anybody or institutions should feel free to use and apply this document if it serves the purpose of disseminating and applying the IPLUM guidelines for the benefit of Tanzania or elsewhere. Copies of these guidelines are available at NLUPC offices and website.

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FOREWORD

Land is among the basic resources for livelihood of the majority of the Tanzanians. Given the importance of land, appropriate strategies are required more than ever to counteract the consequences of the increasing pressure on land resources, such as increased land conflicts and degradation which hampers rural development and may further marginalise rural population.

As a result, village land use planning, management and administration has been identified as an important tool for natural resource management and sustainable rural development. There is increasing evidence that the use and management of land resources are well addressed through a participatory and integrated approach.

The first edition of Guidelines for Participatory Village Land Use Planning, Administration and Management in Tanzania were prepared in 1998 by the National Land Use Planning Commission (NLUPC) which is a government institution functioning under the auspices of the Ministry of Lands, Housing and Human Settlements Development.

However, the Guidelines for Participatory Village Land Use Planning and Management of 1998 came into operation even before the enactment of the Land Act Cap. 113 and the Village Land Act Cap. 114 among many other Laws which are the basis of Land Administration and Management. Also, the Government of Tanzania has put in place two legislation namely the Environmental Management Act Cap. 191 (2004) and the Land Use Planning Act Cap. 116 (2007) both of which acknowledge the critical role for a harmonized strategy for effective planning and management of land and its natural resources.

Henceforth there was a need to revise the 1998 PLUM guidelines in order to effect implementation of legislations and emanating regulations concerning rural land use planning, administration and management. The experience accrued from different actors at various levels on opportunities and challenges of using the 1st Edition of PLUM Guidelines (1998) was addressed in the Second Edition of 2013.

The 2013 revised guidelines outlined six steps to be followed during participatory village land use planning and management process. In the process of reviewing these guidelines, significant changes entailed to address sectoral land management statutory requirements in agriculture, livestock keeping, forestry, wildlife, settlement, water resources, fisheries, community and infrastructure facilities etc. Also, a reporting format for a Village Land Use Plan Report is included, based on practical application of those Guidelines.

However, implementation of 2nd Edition of the PLUM Guidelines (2013) has experienced different challenges including change of technology, inclusiveness, increasing impacts of climate change and on-going amendment of sectoral laws and policies. These changes have triggered the need of revising the PLUM Guidelines to integrate and take into consideration changes and challenges during implementation of the integrated participatory village land use planning, management and administration in Tanzania.

Therefore, the revised IPLUM guidelines though comprehensive, provide different guides and allow flexibility in the application of different innovations and technologies in undertaking the IPLUM process. These guidelines are aimed to be used by

facilitators/practitioners and all stakeholders to establish and institutionalise the integrated and participatory land use planning, management and administration process in villages. Application of these IPLUM guidelines will enable facilitators to assist communities to use their land and other natural resources for improved and sustainable production, leading to socio-economic development and better living conditions for rural communities.

Considering the need for rural communities to improve their livelihoods through sustainable use of land resources, the new IPLUM guidelines (Third Edition) of 2020 has interchanged the 5th and 6th steps of the IPLUM process. Thus, implementation of village land administration and enhancement of security of land tenure will be preceded with detailed village land use management planning.

Sustainable land management requires an effective system of involving communities in preparation and implementation of village land use plans whereby villagers and their institutions gradually build their capacity to manage their village land. The desired results are obtained when development efforts of all relevant sectors are well integrated; technical and political roles of the institutions concerned are well defined; and opportunities are provided whereby stakeholders come to an agreement which reflect their interests in a balanced way. Meetings of the Village Assembly, Village Council and land user groups are platforms whereby stakeholders at the village and sub-village levels may forward their interests, negotiate and ultimately come to a compromise. Agreements can be formalised through minutes or other written documents attributing to improved land security and a more efficient use and development of land resources.

This document should not be considered as a blue print; it is providing guidelines which have to be applied according to the local agro-ecological, socio-economic and cultural context. The guidelines contained may be revised when necessary to incorporate new experiences and changing needs of rural communities.

I extend my sincere appreciation to all who have put efforts in developing these guidelines. I urge all stakeholders involved in the rural development process; including NGOs, CBOs and Private Sector; to apply these guidelines, which offer an avenue for both men and women to democratically participate in bringing about sustainable rural development.

Hon. William V. Lukuvi (MP)
Minister for Lands, Housing and Human Settlements Development
November, 2020

PREFACE

The revision of guidelines for integrated and participatory village land use planning, management and administration have come at a time when the Government is promoting industrial development with major emphasis on transforming the agricultural sector (crops, livestock & fisheries) towards higher productivity, commercialization, increased income to smallholder farmers for improved livelihood and guarantee food and nutrition security. Special attention is paid to rural areas in recognition of the fact that most people live in rural areas. There is also a growing consensus that problems affecting villagers are better addressed through encouraging their involvement in planning and decision making, also through integration of sectoral efforts in resources management.

These IPLUM guidelines have considered existing sectoral policies which enable participation of stakeholders in natural resources (land, forest, wildlife) use, management and conservation. Such policies include;

- National Land Policy of 1995 which states inter alia, that land use planning should be done in a participatory manner to involve beneficiaries.
- National Environmental Policy of 1997 with the overall objective of community participation in environmental management and raising public awareness of the essential linkages between environment and development.
- Tanzania Forest Policy of 1998 aimed at enabling participation of all stakeholders in forest use, management and conservation.
- The Wildlife Policy of Tanzania of 1998 which emphasises on involving rural communities and other stakeholders in sustainable management of wildlife and other natural resources.
- The National Policy on NGOs of 1998 which calls for establishment of NGOs to promote people's participation in the development process of the country.
- The Local Government Reform Agenda of 2000 which states in particular that the local governments will facilitate the participation of people and foster partnerships with civic groups in planning and executing development programmes.
- The Tanzania Development Vision 2025 , which promote empowering people in determining their lives and managing their own development, and to promote broad-based grass-root participation in order to build upon the reserves of knowledge and experience at grass-root level and unleash initiatives and creativity.

Also, this revised IPLUM Guidelines have incorporated recent changes made in some policies, laws and regulations such as;

- The National Agriculture Policy of 2013 which promote integrated and sustainable use and management of natural resources, such as land, soil, water and vegetation.
- National Bee-Keeping Policy of 2012 which promotes appropriate beekeeping practices for sustainable development of Tanzania and the conservation and management of her natural resources.
- National Energy Policy of 2015 which promotes sustainable development and utilization of energy resources to ensure optimal

benefits to Tanzanians and contribute towards transformation of the national economy.

- Rangeland and Animal Feed Act of 2010 which provides for the management and control of grazing lands, animal feed resources and trade.
- The National Climate Change Strategy of 2012 with objectives of enhancing public awareness on climate change, promoting sectoral measures for adaptation in the wake of climate change hazards and mitigating climate change impacts in Tanzania.
- Wildlife Conservation (Wildlife Management Areas) Regulations of 2012 which provides guidance for establishment and management of WMAs.
- Guidelines for Detailed Management Planning and Regulations for Urban Planning and Space Standards, 2011 which provides guidelines for detailed settlement planning considering housing and its environs such as infrastructure and community facilities.
- Community Based Forest Management Guidelines of 2013 which provides guidance for establishment and management of community-based forest.
- Joint Forest Management Guidelines, 2013 which provides guidance for establishment and management of joint forest.

Generally, all major policies and their related laws, regulations and guidelines of our country are hinged on involving people in the decisions affecting their daily lives.

This document charts out practical guidelines for rural development facilitators (including NGOs and Private Sector) on how to involve stakeholders in the planning and implementation process and to integrate sectoral development efforts for better management of natural resources at district and village levels.

In the participatory approach, local institutions are empowered and given more mandate to play their role in rural development. The guidelines, as presented in this document, are therefore in place and strongly recommend them for the widest possible use.

Fidelis Kashumba Mutakyamilwa
Board Chairman
National Land Use Planning Commission
November, 2020

ACKNOWLEDGEMENT

Development and publication of the Integrated and Participatory Village Land Use Planning, Management and Administration (Third Edition) is the result of comprehensive work undertaken by NLUPC under auspicious of the Ministry of Lands, Housing and Human Settlements Development in collaboration with various stakeholders such as the Land Tenure Support Programme (LTSP) 2016-2019, CARE International in Tanzania, Tanzania Natural Resources Forum (TNRF), Ujamaa Community Resource Team (UCRT), Oxfam Tanzania, PELUM Tanzania, The Nature Conservancy (TNC)–Tanzania, Legal and Research Land Rights Institute (HAKIARDHI), International Union for Conservation of Nature (IUCN), World Wide Fund for Nature (WWF) – Tanzania and Community Research and Development Services (CORDS) – Arusha.

The NLUPC staff together with representatives from above mentioned stakeholders as well as representatives from public and non-public sectors held a series of meetings from 2017 to review the 2nd Edition of PLUM Guidelines by incorporating issues of inclusiveness, climate change and advancement of technology as related to land use planning, administration and management in Tanzania.

Other representatives involved (from public and non-public sectors) were from the President's Office – Regional Administration and Local Government, Ministry of Finance and Economic Planning, Ministry of Agriculture, Ministry of Livestock and Fisheries, Ministry of Natural Resources and Tourism. Other stakeholders incame from Tanzania Wildlife Authority (TAWA), Sokoine University of Agriculture, SOLIDARIDAD, Singida Regional Secretariat, Kilombero District Council, Mvomero District Council, MVIWATA, Tanzania Land Alliance (TALA), PAICODEO and Livestock Association of Tanzania (LAT). Therefore, on behalf of the National Land Use Planning Commission I wish to acknowledge with gratitude all stakeholders who have contributed to the development of this 3rd Edition of the IPLUM Guidelines.

Special gratitude is extended to technical staff of the NLUPC who have been engaged as facilitators in application and dissemination of the PLUM Guidelines. Their experience has been of great resource in coordinating the revision and publication of the 3rd Edition of the IPLUM Guidelines. I also acknowledge the contribution of District PLUM teams of which, in their districts, the PLUM Guidelines have been applied to prepare and implement village land use plans.

I am also thankful to Village Councils and Village Land Use Management Committees (VLUMC) who have been applying PLUM guidelines to prepare and implement village land use plans. Their accrued knowledge and experience have attributed invaluably in the revision of the Guidelines.

I wish to acknowledge the Technical Committee of the NLUPC Board that deliberated upon these Guidelines and recommended their approval to the Commission. I extend sincere gratitude to the Chairman of the National Land Use Planning Commission who accepted these guidelines and approved their publication and application.

Continued support and cooperation of all stakeholders is vital for replication and application of IPLUM Guidelines to enhance and foster sustainable rural development in our country.

Dr. Stephen Justice Nindi
Director General
National Land Use Planning Commission
November, 2020

EXECUTIVE SUMMARY

Participatory village land use planning, administration and management can be achieved in an integrated manner by involving key stakeholders and their institutions. The increasing demand to regulate use of land resources is raising awareness that land use management and administration challenges are well addressed through participatory and integrated approaches. These guidelines present methods and approaches that amends the second edition of guidelines for participatory village land use planning, administration and management (2013) in Tanzania.

The IPLUM Guidelines is presented in three parts:

Part A gives an introduction to the guidelines and presents the basic elements of the methodology. It outlines the concept of the methodology, its relevancy for rural development and the need to integrate varied technical know-how to the existing participatory village land use processes.

Basic elements of the methodology are prescribed on principles of efficiency, equitability and sustainability. These include: stakeholder involvement; gender sensitivity; step-by-step planning and implementation; local level institutional development; land security enhancement; planning according to the bio-physical and socio-economic conditions; systematic planning, monitoring, evaluation and documentation; and integration of the methodology in ongoing development efforts.

Part B details on how these basics are used and combined for implementation through six steps. In each step, package of activities are identified to obtain desired results. Where applicable, more options are given to deal with specific land issues. The guidelines are presented in a way in which they can be adapted to the local context.

Part C are appendices providing reference of procedures, structures and standards during the planning process to ease the application at local levels so as to facilitate sectoral integration and coordination of PLUM field interventions.

Expected outcome of this IPLUM at the village level include:

- Change of perceptions of communities and their institutions, improved capacity to plan and manage land resources by considering interests and strengths of all stakeholders; resolving land conflicts; allocating land; maintaining land security; up-dating land-use plans; and relations with the district;
- Sound land use plan which reflects interests of all parties involved at the village and higher levels in a balanced manner and well respected;
- Natural resources are managed in a more efficient, equitable and sustainable way, leading to higher productivity and improved standards of living.

The IPLUM Guidelines is written primarily for experts, administrators, and politicians working at the district to village levels; to help them in empowering villagers and their institutions to manage land resources optimally. The guidelines will also be of interest to training institutions, private sector, NGOs and development agencies.

PART A

AN INTRODUCTION TO INTEGRATED AND PARTICIPATORY VILLAGE LAND-USE PLANNING, MANAGEMENT AND ADMINISTRATION

"Land is not given to us by our ancestors; it is lent to us by our children (African proverb)"

1. Introduction

1.1 Village Land Use Planning, Management and Administration and its Role in Rural Development

Land is the platform for our living and we make use of it for crop production, livestock keeping, forestry, housing, etc. Important natural resources at the village level are soils, water, sunlight and plants (Figure 1.1). The optimal use of these natural resources depends mainly on: the potential of people to utilise and manage them; their priorities; the socio-economic conditions and; the carrying capacity of the natural resources.

Figure 1: Natural resources at the village level, such as soils, water, plants and sunlight

Majority of Tanzanians depend on land resources for agriculture, livestock keeping and forestry. These resources are under enormous pressure due to the fast-growing population (which has increased from about 7.5 million to about 45 million people between 1948 and 2012), climate change, land degradation and increase in socio-economic activities (i.e agriculture, industries). This has led to the expansion of settlements, agricultural areas, livestock grazing, tree cutting for fuel wood, water demand, etc. The increasing pressure on land for different uses has resulted in:

- Growing number of conflicts between different land users;
- Insecurity of land use and tenure;
- Poor development of land markets;
- Degradation of soil and water resources;
- Deforestation;
- Increasing migrations of people and livestock.

The most recognised land conflict on macro scale is between crop producers and pastoralists. The expansion of agricultural land into grazing lands and vice versa due to population increase and land degradation, forces land users to move into areas with other uses, thus creating new land conflicts in these areas. Other common land use conflicts include: administrative boundaries between contagious villages, districts and regions; agriculture/livestock keeping vs forestry; agriculture/livestock keeping vs wildlife; agriculture/livestock vs land based investors and the proliferation of unplanned settlements particularly township expansions into farm land, wildlife corridors and grazing land. Also, other land conflicts between different socio-economic groups (gender), families and individuals claiming user rights on the same land resources.

Figure 2: Common Land Use Conflicts

These conflicts, whose extent and character differ between various areas of Tanzania, constrain sustainable land use and may undermine rural development. Experience shows that attempts to mobilise small holder farmers to invest in sustainable land use often fail when land conflicts are not sorted out when it is realized that there is no land security. Crop producers are often more willing to invest in their land for higher sustainable production when they are secure to use and benefit from their investment. Village land use planning and management attempts to regulate the use of land resources such as sorting out land conflicts, enhancing security of land tenure and use of improvement land husbandry measures according to the priorities and capacities of the stakeholders. Therefore, land use planning plays a vital role in rural socio-economic development and can be considered one of the most important tools for natural resource management in Tanzania.

The Food and Agricultural Organisation (FAO) of the United Nations has defined land use planning as follows:

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. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future. The driving force in planning is the need for change, the need for improved management or the need for a quite different pattern of land use dictated by changing circumstances.

This definition provides the following basic elements:

<u>Assumptions</u>

- Land use planning is necessary because of the **need for change**, and through planning the utilisation of land resources can be improved.

<u>Approach</u>

- The approach emphasises **systematic assessment** of the physical, ecological and socio-economic conditions with respect to peoples' need now and in future, through stakeholder involvement and integration of the relevant sectors.

<u>Principles</u>

- The basic principles are: **efficiency** (available land resources are used in such a way that they produce maximum benefits), **equitability** (provide benefits to all socio-economic categories of land users including women and youth) and **sustainability** (do not result to degradation of the resource base and are viable in the socio-economic context). Additionally, land use planning should improve rather than constrain **local decision-making**.

Village land use management is the process of designing and implementing measures for the management of land

demarcated/zoned for different uses in the village. This process is more effective when it is carried out in an integrated and participatory way, which means that the principal users of land, the villagers and other stakeholders are fully involved. To ensure full participation it is important to consider different socio-economic groups in a village (including gender) which have different interests and expectations.

1.2 Village Land Use Planning and Management Approaches

1.2.1 Conventional Approach

Most of village land use planning and management approaches which have been applied since colonial period up to late 1980s were sectoral and 'top-down' oriented and therefore hardly consulted communities which are among the key stakeholders. These approaches are referred to as conventional and some of the guidebooks prepared during the period include:

- The *Model Village Layout Planning Handbook* prepared in 1975 which mainly dealt with the residential part of the village.
- The Land Use Planning Handbook prepared by the Tabora Rural Integrated Development Project in 1983 pays more attention to agricultural development, but little to villagers' involvement in the planning process.
- The Village Land Use Planning and Implementation Guidelines for Tanzania prepared by the NLUPC in 1993 encouraged a multi-sectoral approach but overemphasises on plan making by experts rather than guiding local decision-making.

Typical characteristics of these conventional approaches are:

- Outsiders define the villager's needs and local knowledge is seldom used;
- Local decision-making is often constrained rather than improved;
- The methods applied are often rigid, require a lot of data and are expensive;
- The results (reports and maps) often cannot be used at the local level, or are not available and known to the villagers.

These approaches have not yielded the expected results because:

- Most of the plans did not reflect the priorities of villagers (Fig. 3);
- Most of the plans have not been implemented due to lack of local participation and high dependence on external inputs.
- There has been a tendency to focus solely on land allocation, neglecting the other aspects of land use administration and management.

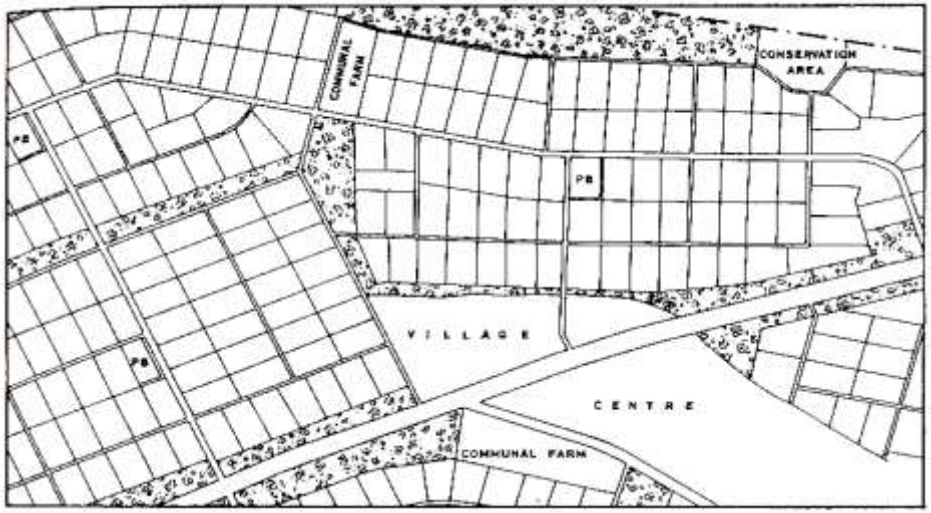


Figure 3: *Detail of the Manyali village land-use plan, 1988 (Dodoma Rural District), which has been prepared in a conventional way. Land has been divided into rectangular plots without considering existing land uses and rights. The plan has not been implemented.*

1.2.2 Participatory Approaches

Weakness observed in the conventional approaches has resulted to adaption of participatory approaches which have become widely spread and accepted in many countries including Tanzania. Participatory land use planning and management approaches have the following outstanding characteristics:

- The needs for land use planning and management are identified by the land users themselves who are directly affected by land conflicts and land degradation, and who are likely to benefit from improved resource management;
- Community participation in agenda setting, resource allocation and controlling the planning process. The capacity of local decision-making is built through mobilisation of local institutions and knowledge;
- The process of information gathering and analysis, priority setting, preparation of community action plan and village land use plan is local-people-centred, flexible and fosters collaboration between disciplines and sectors;
- The major role of district staff (outsiders) is introducing, guiding and facilitating the idea of participatory land use planning and resource management rather than making the plans themselves.

Expected results of this approach are as follows:

- Village land use plans are implemented and, since they are created by the village communities themselves, reflect their needs and are better adapted to local conditions (Figure 4);
- Land disputes are minimised and interests of various stakeholders (social groups, crop producers, pastoralists, etc.) are likely to be balanced and respected, since the plans have been created through dialogue;
- Land productivity will increase and benefit various stakeholders since the plans reflect the stakeholder's interests and are really implemented;
- The plans can be adjusted and maintained with less inputs from outside since the local institutions have been enabled to deal with most of the land use management issues themselves.

The methodology accommodates elements and techniques of the conventional planning approach which remain relevant such as: use of legal and institutional tools to regulate the use of land resources; survey and mapping techniques to document property boundaries, land use agreements; and techniques to assess soils, land suitability and socio-economic conditions.

Likewise, the participatory village land use planning approach remains relevant approach which allows communities and other stakeholders to decide on village land use plans, prepare action plan and developing of bylaws.

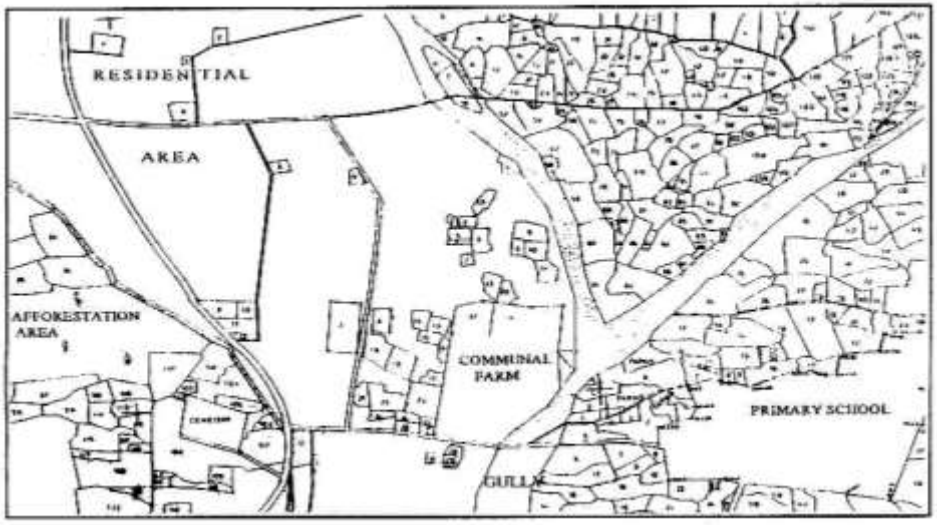


Figure 4: *Detail of the Ilolo village land-use plan (Dodoma Rural District) whereby planning and implementation have been done concurrently with assistance of DLUMP in 1995. In this Ujamaa village priority was given to demarcation of individual farms in order to improve land security and to sort out land conflicts. Through dialogue, existing land uses have been respected, plot boundaries determined and land allocated for community facilities.*

1.2.3 Integrated and Participatory Approaches

Since most villages accommodate various land uses which influence each other, coordinated efforts from different and relevant sectors may have a higher efficacy than when employed autonomously. Settlement planners, foresters, community development workers, agriculturists, livestock and wildlife specialists should therefore not only change their efforts from top-down to participatory, but should also look beyond their professional boundaries and realise the advantages of the integrated concept of natural resource management. Therefore, it is high time, to combine the two approaches both convention and participatory so as to come up with a two-way communication approach (Integrated and participatory approach).

A two-way communication is essential to assure that village land use plans tune with higher level plans, interests and policies, and that planners and decision makers at the District to National level are sufficiently informed about the priorities identified by villagers.

The Integrated and participatory land use management approach has the following outstanding characteristics:

- The needs for land use planning and management are, in the first place, identified by the land users themselves who are directly affected by land conflicts and land degradation, and who are likely to benefit from improved resource management in collaboration of technical personnel such as settlement planners, foresters, community development workers, agriculturists, livestock and wildlife specialists.
- Villagers participate fully in agenda setting, resource allocation and controlling the planning process. The capacity of local decision-making is built through mobilisation of local institutions and knowledge basing on technical knowledge from sectoral and legal framework.
- The process of information gathering and analysis, priority setting and formulation of village plans is local-people-centred, flexible and fosters collaboration between disciplines and sectors;
- The major role of district staff (outsiders) is introducing, guiding and facilitating the idea of participatory land-use planning and resource management rather than making the plans themselves while ensuring technical standard are adhered.
- The needs of other stakeholders who are engaging in sectoral implementation are involved fully in collaboration with both villagers and government sectors
- The planning and decision-making process considers other existing projects in the village.
- The planning and decision-making process considers integration of land use issues such as biodiversity conservation, common resources and climate changes.

1.3 Integration and Participation of Stakeholders

The integration and participatory approach refer to the direct involvement of the stakeholders in various steps of the development activities, and has become a common and widely accepted method to meet the needs of rural population. This approach allows involvement of both stakeholders in planning and decision making.

In this guidebook, the integrated and participatory approach is a central issue throughout the whole process of IPLUM whereby villagers are fully involved in the preparation, implementation and management of village land use plans in collaboration with relevant sectors. In order to ensure involvement of all stakeholders, it is important to consider different socio-economic groups in a village with their various interests, expectations and powers. Various stakeholders involved can be grouped according to their sex (men, women), age (elders, middle-aged, youth and children), land use (pastoralists, crop producers), wealth, etc.

Resource management issues can be investigated, development activities planned and resources mobilised with full stakeholder involvement through a Participatory Rural Appraisal (PRA). This method generates relevant information showing the real conditions of villagers, resulting in development activities which can be easily adopted by local communities. Villagers supply and analyse most of the information for development planning and subsequently prepare a Community Action Plan to address immediate problems and long-term issues in a balanced way. PRA enables a community to become directly involved in and responsible for assessing their own problems and to agree on future actions (See Step 2 of Part B). Sustainable development is more possible if community action plans and village land use plans are:

- Built on the priorities and capacities of all stakeholders involved;
- A result of a dialogue between various stakeholders, i.e. groups and subgroups depending on the land resources concerned;
- Considering local cultural values, institutions and knowledge systems;
- Based on developing and empowerment of a household economy and livelihood as a unit of measure.

The integration and participatory approach create awareness, ensures commitment as people feel the project plan is theirs, and it enables villagers to deal with local problems themselves with less dependency from outside while ensuring the technical aspect from relevant sectors are considered. The Integration and participatory approach also attempt to change the attitudes of experts and development agencies. Extension workers have to be prepared to listen and learn while imposing sectoral (ie land, forestry, agriculture, livestock etc) technical ideas/interest which are important for community development. Outsiders, in the first place, facilitate the planning and implementation process rather than taking decisions.

Integration and Participation should not become a ‘means’ to persuade the intended ‘beneficiaries’ to take part in activities from which the basic contents have already been decided by villagers. The aim of integration and participation is to enable or empower the people, sectoral agency and other stakeholders so that they may obtain greater control over the planning process, resources and their lives. Through integration and participation, rural communities, local institutions, sectoral departments and government agency/ministries may agree on ways to sustainable development, based on their real needs, skills and strengths.

Unlike conventional top-down oriented planning methods, data collection through integrated and participatory techniques concentrates on the data which are most relevant. The integrated and participatory planning process requires more time than conventional planning because of the consultation and negotiation process by the stakeholders involved including technical personnel. However, this assures that stakeholders will feel the plans are their own, and that they are ready to implement and maintain them. Likewise, sectoral

agency will feel the technical requirements and legal requirements are considered in the plans.

Figure 5: Integration and Participation of Stakeholders

1.4 Considering Gender, Youth and Minority Groups

1.4.1 Gender Consideration

According to the National Strategy for Gender Development of 2005, the term gender refers to the culturally and socially determined characteristics, values, norms, roles, attitudes and beliefs attributed to women and men through constructed identity in a society. Relations that exist between women and men and the roles they play in society. It also analyses differences in division of gender roles which are influenced by socialisation, cultural and traditional practices, and their impact in income and resource allocation, opportunities to participate in politics and leadership etc. Henceforth Gender refers to the roles men and women play in a community that is the differences in tasks, responsibilities, constraints and opportunities between both groups. These roles are deeply fixed in people's minds and hearts but can be changed and actually do change over time.

Gender mainstreaming involves the integration of gender concerns into policies, programmes, projects, monitoring and evaluation processes with the objective of reducing inequalities between women and men. Considering gender or applying a gender sensitive development approach in a village, as part of the participatory approach, means that the different roles, interests and expectations of men and women are taken into account.

Traditionally, women are mainly involved in activities such as fetching water, collecting firewood, production of food crops, preparing food and taking care of the children. Meanwhile, men are mainly involved in commercial activities such as cultivating cash crops, livestock herding and charcoal production.

Women in subsistence farming produce between 70% and 80% of their families' food supply. Yet, they usually only have *access* to land (usufructuary right), while men own, control and inherit land. Some practical consequences of this are:

- The husband (or clan leader) usually decides on the management of the land the women cultivate, and on the use of its products;

- In case of divorce, the woman is often forced to return to her parents' family, leaving behind most property, including the land she cultivated;
- In case a woman becomes a widow, the property is inherited by the male children or other male relatives who should take care of her;
- Since women lack control over land, and since they have a high workload compared to their husbands, often times women have limited opportunities to invest in sustainable land use.

Cultural practices, which were once sufficient in the traditional African society in safeguarding the interest of women and their children, have become insufficient and are abused due to the rapid socio-economic changes taking place. As a result, to these changes, many women have become dissatisfied and have begun demanding equal rights.

The rationale of considering gender in development activities is:

- According to the National Constitution and National Land Policy, women have equal rights as men in access and control over land and other natural resources, as well as the benefits from development;
- Most conventional development projects are unconsciously biased towards men against women;
- Insufficient involvement of women in the planning process leads to enormous under-utilisation of a development potential, since their knowledge and roles are ignored.

Development strategies should therefore consider gender and include gender analysis to get a better understanding of the relations between men and women which are required to identify opportunities that will improve the position of women for the benefit of both sexes. Such an analysis should look at three key areas:

a) *The division of labour between men and women.* What are their activities and responsibilities in the reproductive, productive and community management sphere? How are their time and energy divided? What are their respective workloads?

b) *The access to and control over resources.* How much access and control do women and men have over land, information, technology, education, health care, time, labour, income, agricultural products, etc.? Are there taboos? How should they be dealt with?

c) *The participation in decision-making.* How do women and men participate in decision-making at the family, community and other levels?

1.4.2 Youth Involvement

According to population statistics of Tanzania, population of the youth is about two-third of the total population. This implies that, youths are the primary productive human resource of socio-economic development, and thus, any development strategy should involve and recognize roles of the youth and enable them to participate in the planning and decision-making process. It is also important to facilitate the involvement of youth in the IPLUM process so that their potential to contribute to development is better utilised.

1.4.3 Considering Minority Groups

Minority groups include elders, children, ethnic groups, person with mental disorders, drug abusers and persons with disabilities. It is very important to consider these groups so as to allow their participation in

planning and decision-making process. According to Disability Act of 2010, it provides for the realization of the Rights of People with Disabilities. It empowers the Minister responsible for Social Welfare, the Commissioner for Social Welfare and Social Welfare Officers to carry out activities for the realization of the rights of people with disabilities. The Act provides legal requirement of ensuring disability people should be involved in decision making.

Unlike in the conventional approach, the IPLUM approach provides opportunity to include and consider minority groups in planning and decision making.

The rationale of considering minority groups in decision making are: -

a) To ensure their access to and control over resources. How much access and control do minority groups have over land, information, education, health care, time, labour, income, agricultural products, etc.? Are there taboos? How should they be dealt with?
b) The participation in decision-making: How are vulnerable groups involved in decision-making at the family, community and other levels?

Therefore, it is very important to ensure the involvement of minority groups in the IPLUM process so as to safeguard their interest.

1.5 A Step-By-Step Planning and Implementation

The establishment of IPLUM in a village requires a number of activities which should be carried out in the right sequence considering the following elements: -

a) A proper preparation is required at the district level before entering the villages. This involves: establishment of importance and need for IPLUM team; specifying the goals; ensuring institutional support; mobilisation and allocation of human resources, materials and funds, and the preparation of a plan of operation with priority villages.
b) Introduction of IPLUM to relevant villages which includes conducting PRA focused on land use planning, management and administration.
c) The planning process requires local institutional building and may involve many issues such as: land allocation for different communal and private uses; settling land disputes; formulation of by-laws; land registration; and, improvement of land husbandry practices. Therefore, it is not practical to deal with these activities all at the same time. Better results can be expected when planning and implementation are completed in steps.
d) Towards the end of the intervention, emphasis should be made to consolidate IPLUM in the village, in order to assure the village community is able to proceed with the planning and implementation process afterwards.
e) Monitoring and evaluation should be integrated in all steps of the process in order to allow identification of problems and taking of corrective measures in the early stages; ensure participation of village council, village land use management committee, women, special groups (i.e. youths, elder, disabled etc.) and villagers in planning process; and ensure compliance with problem management including impacts of climate change and variability

The aforementioned considerations have led to a methodology of six steps which have been worked out into detailed guidelines in Part B of this guidebook.

1.6 Local Level Institutional Development

Tanzania has created a decentralised framework organised in districts and urban councils, wards and villages. These represent local government system in the country. Measures were taken to strengthen districts and enable them to better perform their functions including development planning and implementation. This is a significant step in the operationalization of the decentralisation policy.

While it is acknowledged that local authorities (districts/municipal, villages) are the primary institutions for integration of land use planning and implementation, their roles were not yet legally stipulated until the enactment of the Land Use Planning Act No.6 of 2007, which in Section 21-22 mandates District and Village Councils as Planning Authorities in their areas of jurisdiction. An effective and functioning structural link between national institutions, districts and villages in land use planning has to be put in place through the Regional Secretariats, which is mandated through Section 20 of the Land Use Planning Act to coordinate preparation and implementation of land use plans by the district councils in the respective region.

Capacity should be put in place to effectively use this linkage between NLUPC and local levels in instituting land use planning, management and administration. Also, the Ministry responsible for Regional Administration and Local Government (RALG) has recently established a land use planning portfolio which is vested with responsibility of coordinating local authorities.

Land use planning is now being appreciated and valued at upper echelons of Government. NLUPC should use this opportunity to bridge the existing gap by establishing strong linkage with RALG in terms of coordination, providing relevant information for land use planning and budgeting with district authorities. However, it has been observed that the capacity at local levels to effective implement programmes is closely tied to the availability of funds and skilled manpower.

Development partners, National and International NGOs, Land Resources Projects and Programmes, Financial institutions, Private Sectors and Media Institutions are implementing agencies which should collaborate with Planning Authorities to implement land use planning, administration and management. NLUPC should identify and coordinate interventions of these stakeholders by collaborating with local level institutions. Experience, knowledge, and innovations from different interventions can thus be linked and adopted in other areas through sensitization, awareness raising, research and documentation.

Integrated and participatory land-use management implies strengthening of local level decision-making through building the capacity of district and village level institutions. After improving the capacity of District Councils, through creation and training of respective IPLUM teams, it is the duty of the IPLUM teams to improve the capacity of village level institutions, enable them to take responsibility, and become better organised to manage land and deal with land use problems which directly affect their lives.

In order to initiate the integrated and participatory land use planning process at the village level, it is important to form and establish a District IPLUM Team consisting multi-sectoral technical personnel from land resource sectors (lands, agriculture, forestry, livestock, wildlife, community development, legal) and/or from the extension staff at the ward or village level. The main task of the IPLUM team is to initiate and facilitate the participatory planning exercise in villages

The IPLUM team needs to involve technical staff from different disciplines in the district when undertaking its task and it should as

much as possible delegate tasks to the extension staff so as to provide technical support for the IPLUM process at the district, Ward and village level. The respective District Council Committee maintains a supervisory role and may occasionally provide technical as well as administrative support to the IPLUM team.

1.6.1 Village Level Institutions and Mandates

a) The **Village Assembly** is the main decision-making and approval institution at the village level and identifies, through participatory ways, issues and problems which are of priority for the village community.
b) The **Village Council** has the executive powers and responsibilities for land-use planning and may have to delegate some of its tasks concerning land matters to the Village Land Use Management (VLUM) committee.
c) The **VLUM Committee** works together with the IPLUM team and receives on-the-job training to become sufficiently experienced to carry out the required tasks during and after the presence of the PLUM team members in the village. The VLUM committee can also be assigned to become the Village Adjudication Committee (Section 53 of the Village Land Act). They can also receive on-the-job training during implementation of IPLUM, particularly in carrying out improved land use management measures and act as Village para-professionals running class farms *(Shamba Darasa)*. The role of the Village para-professionals is to assist their fellow villagers in applying proposed techniques such as soil conservation measures, managing forest resources, managing pastoral lands, development control within the residential area and land registration.

The Village Land Act No. 5 (1999) provides for a Certificate of Village Land (CVL) to be issued by the Commissioner for Lands and giving the respective Village Council the mandate to manage village land. An important tool to manage village land is preparation and implementation of a village land use plan. The Act also provides for a Village Council to register and issue a certificate of customary right of occupancy to land owners and to maintain a village land register.

Section 168 of the Local Government Act No. 7 (1982) RE 2002 empowers the Village Council to prepare village land use management by-laws for ensuring compliance with land use agreements as well as implementation of plans. After a village land use management by-law has been approved by the Village Assembly it should be forwarded to the respective Ward Development Committee where the respective Councillor should be informed about the contents of the by-laws. Subsequently, it should be forwarded to the respective District Council for approval before the by-law can be applied. The IPLUM team should ensure the village land use plans and by-laws are presented to WDC, the presentation should compose land use zoned, by-laws and requirements for management of land uses. The IPLUM team should forward the minutes of WDC meeting to NLUPC, Regional Secretariat and NLUPC. Section 60 of the Village Land Act No. 5 (1999) provides for a Village Council to establish a Village Land Council (*Baraza la Ardhi la Kijiji*) to mediate between and assist disputing parties to arrive at a mutually acceptable solution on any matter concerning village land. In

so doing a Village Land Council acts rather independently from the Village Council, as a court instrument.

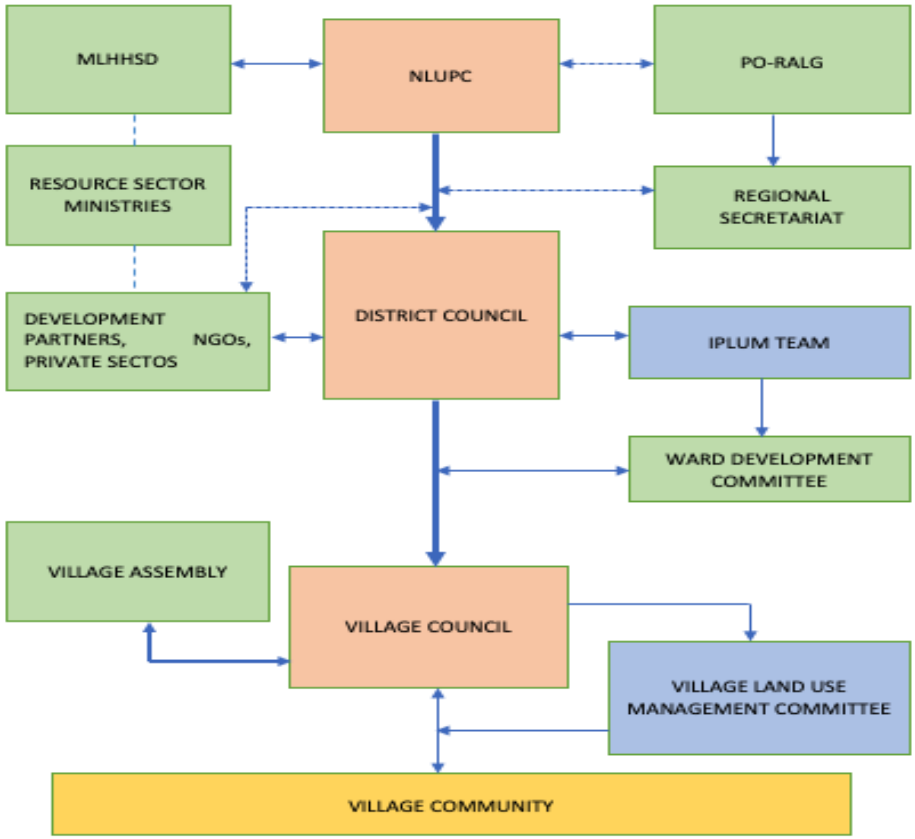


Figure 6: Organization Set-up for IPLUM

1.6.2 Communication between the Village Council, the District Council, Commissioner for Lands and the NLUPC

The Village Council is supposed to brief the respective District Council on its decisions regarding land use planning and land management at least once every two months. On the other hand, District Councils are supposed to give advice and guidance to Village Councils on matters of land use planning, administration and management. That requirement provides a legal mandate for the District Council to introduce an integrated and participatory land use planning, administration and management; and to facilitate its implementation in respective villages, while giving the powers to Village Councils to prepare, implement and revise village land use plans.

The Commissioner for Lands may provide advice and directives to Village Councils on the administration and management of village land, and may intervene when the Village Council does not manage the land according to relevant laws and their regulations. The Commissioner for Lands may, for instance, provide directives regarding the premium and rent for Customary Rights of Occupancy, application of Customary Rights of Occupancy made by non-village organisations, administration of Granted Rights of Occupancy, and granting a lease over a piece of village land which is more than 30 hectares.

The NLUPC has the mandate to provide advice and guidance to District Councils and Village Councils concerning village land use planning, administration and management.

These modes of communication assist Village Councils to plan and manage village land, and reduce the risk that village level decisions contravene District and National level interests.

1.7 Land Tenure Security Enhancement

Land security is usually a precondition for land 'owners' or users to invest in land for an increased and sustainable production. However, land security in rural Tanzania is under threat for reasons such as: increased population pressure on land; climate change; commercialisation of land use; land degradation; governmental procedures for acquiring land which are not adapted to the conditions of most smallholders; and insufficient awareness among land users about their legal rights over the land use.

Figure 7: Registration of Land and Issuing Land Titles (CCROs)

The Village Land Act of No. 5 (1999) provides procedures for registration and issuance of Certificates of Customary Rights of Occupancy (CCROs) as a measure of land security enhancement in rural Tanzania. One of the important procedures is adjudication of parcels of land of applicants. The Law offers methods of adjudication namely Spot or Sporadic adjudication and Village or Systematic Adjudication. Systematic Adjudication is viewed internationally as a simple, more enabling, appropriate and sustainable regulatory tool for socio-economic and ecological development in rural Tanzania. In order to come up with a comprehensive Systematic Adjudication, the MLHHSD prepared a manual to be used as guideline in the process, providing a methodology for more effective and expeditious mean of formalizing land rights in rural areas.

Village Adjudication (Systematic Approach in Adjudication) is provided for under Section 51 of the Village Land Act. Under this section, the Village Council may on its own motion, or shall if requested by at least 50 villagers, recommend to the Village Assembly that a process of village Adjudication be applied to the whole or a defined portion of village land available for grants of Certificate of Customary Rights of Occupancy. If the Village Assembly agrees, then the Village Council shall begin the process of Adjudication as soon as possible. If the Village Assembly does not agree, this does not prevent individuals and groups from requesting Spot Adjudication.

Systematic Adjudication is a community-oriented process whereby the existing land rights in parcels in a defined administrative area are authoritatively ascertained, delineated and recorded. It implies methodological and orderly sequence in which all parcels are brought into the register area by area. The process involves;

- Mobilization and sensitization of the communities to be involved in the exercise,
- Establishing and authoritatively ascertaining the existing land rights, limitations, owners and rights of other interested parties,
- Marking the established boundaries,
- Systematic Recording of the particulars of land parcels in a village or any other area chosen for Systematic Adjudication,

- After adjudication is completed and accepted a CCRO is prepared, registered and issued to the individual land users who have made application for it.

International experience from Thailand, Cambodia, India and Ethiopia demonstrates that Systematic Adjudication is a more effective and expeditious means of formalizing land rights. The economies of scale result in lower overall costs when measured in cost per title, while the involvement of the whole community gives rise to a more open and transparent process.

1.8 Levels of Land Use Planning and Natural Resource Management

There are different levels of land use planning (Section 29 – 34 of Land Use Planning Act No.6 (2007)): national level; zonal and regional level; district level; joint village level; village level; sub-village (sectoral management plan) level; and plot and farm level. Each level deals with different type of decisions and has its own institutions, ways to involve stakeholders and set of planning tools.

A. National Level Land Use Planning

National Level Land Use Planning (Section 29: Land Use Planning Act) is concerned with policies, legislation, directives, guidelines, training and awareness creation as well as the provision for an institutional and administrative set-up to regulate land and natural resources management at the national to the grass-roots levels.

Land use planning at this level may comprise land uses of national concern (national parks, reserves, etc.), and the division of the country into planning or recommendation zones, based on the prevailing agro-ecological and socio-economic conditions. The recommended land-use systems (e.g. farming systems) and related land use management practices provide guidance for planning at the lower levels. The NLUPC has completed preparation of the National Land Use Framework Plan (2013 – 2033) and its implementation programmes (National Land Use Planning Programmes). The framework provides guidance for the determination of land uses of national concerns such as protected areas; wetlands; agricultural, grazing, urban and rural settlements and socio-economic infrastructure.

B. Zonal and Regional Level Land-Use Planning

Zonal and Regional Level Land-Use Planning (Sections 30 - 31 and Second Schedule: Land Use Planning Act) is undertaken when the planning area is located in two or more districts within the same region or a combination of regions. The NLUPC and respective regional authorities are responsible to prepare and coordinate implementation of these land use frame work plans.

C. District Level Land-Use Planning

District Level Land-Use Planning (Section 32 and Second Schedule: Land Use Planning Act) concerns land issues within the district boundaries which cannot be regulated at the village and joint village levels because of its geographic extension or importance for the district in general.

Land-use planning and management issues at this level are for instance: the distribution of roads and social services, protection of major water sources, planning of grazing, forest and water catchment areas which cover various villages. District land use framework plans may distinguish planning zones whereby recommendations on land uses are formulated for each zone. These recommendations support decision-making at the lower levels.

D. Joint Village Land Use Planning

Joint village land use planning (Section 33 (1)(b) of the Land Use Planning Act) is undertaken when resources (such as micro-catchments, grazing land, water points, cattle tracks and forest) are used by people living in more than one village are shared with other villages. In such a way, these resources have to be planned and agreed upon by concerned village communities. Therefore, Village Councils of the respective villages enter into joint village land use agreements on the use and management of such resources.

E. Village Level Land Use Planning

Village level land use planning (Section 33 of the Land Use Planning Act) is carried out at the village level whereby the whole village community is involved. Village community members designate various land uses of the village that will best meet their needs while safeguarding resources for the future. At this level, agreements and by-laws are formulated to regulate better management of village land.

F. Sub-Village Level

Sub-village level (or sectoral management) activities cannot be planned at the plot level because of their effect on neighbouring plots. This level is an intermediate between the farm/plot and the village level. Sub-village planning areas can be defined in various ways:

- Geographically, by physical features such as hills and gullies, resulting in *micro catchments*, comprising of farms which are hydrologically interdependent;
- Administratively, whereby a village is sub-divided in Hamlets (neighbour-hoods) and/or Village Satellites;
- By dominant land use type, such as farming, grazing, forestry, residential and irrigated areas.

Soil and water conservation measures planned at this level are those which protect several farms at the same time, such as: check dams, cut off drains, contour bunds, infiltration ditches and wind breaks.

G. Plot and Farm Level

Plot and farm level activities refer to activities carried out on individual plots and farms that do not interfere much with those of the neighbouring plots. This can involve the plot owner dividing the farm into several land uses (residential, crops, horticulture, forest, livestock keeping and grazing, fish farm etc.) and management measures for each land use. Decisions at this level are usually made by the owner(s) of the land, e.g. individual, family or clan elder.

Land management activities at this level are, for instance, those related to crop production such as land preparation, planting, irrigation, fertiliser application, weeding and harvesting. Typical soil and water conservation measures planned at this level are: cut off drains, contour ridges, mulching and green manures.

1.9 Land Use Management According to Bio-Physical and Socio-Economic Environment

Planning goals are more easily met when stakeholders are fully aware of the effects of the identified land use management options. It is the responsibility of the IPLUM team and other technical staff involved to ensure that the identified land use management options are viable so that decision-making by villagers is based on sufficient knowledge, resulting in village land-use plans which are technically sound. This requires a systematic assessment of bio-physical and socio-economic conditions of the area concerned and sufficient knowledge about the implications of the identified land use management options.

Bio-physical environment refers mainly to the conditions related to natural resources such as climate (rainfall, temperature, wind and

sunshine), landform (highland, lowland and slope), soils (fertility, texture and erosion), hydrology (drainage, flooding), land use/cover (vegetation, bare lands, water bodies and built-up) and fauna.

Socio-economic environment refers to conditions related to living standard, sources of income, expenditure pattern, market for inputs and products, housing, education, health, local institutions, land tenure, land conflicts, agricultural systems etc.
During the IPLUM process, technical staffs from various sectors use their knowledge and experience to advise and provide technical information to villagers to support decision-making process on the use of land. These include socio-economic surveys and bio-physical surveys such as land evaluation; land capability classification; and determination of the carrying capacity. Soil surveys may be carried out as part of land evaluation.

Land evaluation method assesses the suitability of the land in an area for different land uses. It is a method whereby the planning area is subdivided in land units based on the results of a soil survey. Each land unit is defined by a set of characteristics (soil fertility, climate, slope, drainage, etc.) important for various land uses. Various land utilisation types are defined (cultivation, grazing, irrigation, forestry, etc.) whereby each utilisation type has a number of land use requirements.

Characteristics of various defined land units in a planning area are compared with the requirements of all desired land utilisation types. When the characteristics of a land unit do not meet the minimum requirements of a specific land utilisation type, that land unit is considered unsuitable for that use. For instance, wetlands in valleys may be suitable for paddy but moderately suitable for maize which needs well drained land. Hilly land can be suitable for extensive grazing and forest, but moderately suitable for maize because of erosion risks, while it is unsuitable for paddy because of water limitations. Various levels of suitability can be distinguished, and expected economic returns calculated for the different land units in an area and land utilisation types (options) considered. This method supports decision-making on how to use different land units in an area for different uses.

Land capability classification method is much simpler and more general than land evaluation. In this method, land is often classified in eight classes according to its degree of limitation for a number of general land-use categories. These categories may be: annual crops (maize, sorghum, sweet potatoes, etc.); semi-perennial and perennial crops (banana and coffee respectively, etc.); pasture; forestry; and reserved (no significant utilisation recommended). Limitations may refer to: topography (slope and erosion); soils (soil depth, texture, stoniness, nutrient contents, toxicity (alkalinity or acidity), drainage, flooding risks, climate (rainfall, temperature and humidity) as exemplified in Table 1.

Table 1: Land Capability Classes

Land capability class	Degree of limitations (not worked out)	Capability	Example
I	Not significant	For all land uses, with normal land management practices	Flat, well drained and fertile lands
II	Little	For all land uses, but moderate conservation practices in case of annual crops	Gently sloping and slightly eroded lands
III	Moderate	For all land uses, but intensive conservation	Sloping and moderately eroded

		practices in case of annual crops	lands
IV	Moderately severe	For all land uses, but annual crops on occasional basis only and with intensive conservation practices	Moderately steep and moderately eroded lands
VI	Severe	For pasture and (semi-) perennial crops with moderate conservation practices and forestry	moderately steep, stony and eroded lands
VII	Very severe	For forestry only	Steep, stony and eroded lands
VIII	Extremely severe	Very extensive utilisation only (reserve/wildlife)	Very fragile lands

1.10 Land Use Planning, Environmental Management and Climate Change

Land use planning, management and administration process involves identification of key environmental challenges related to different land uses in the village. These problems must be addressed so that the ecosystem is balanced and the community lives in a harmonized way in line with regulatory frameworks. Major national and sectoral policies and legislations which are relevant to environmental and social issues pertaining to land use include National Environmental Policy (1997), The National Land Policy (1995), National Water Policy (2002), National Human Settlements Policy (2000), The Land Act No. 4 (1999), The Environment Management Act No. 20 (2004), The Village Land Act No. 5 (1999) and The Village Land Use Planning Act No. 6 (2007), National Climate Change Strategy of 2012, National Environmental Action Plan III (2020-2025), Guideline for Integrating Climate Change Adaptation into National Sectorial Policies, Plans and Programmes of Tanzania of 2012, and National Climate-Smart Agriculture Programme (2015 – 2025).

At village level, environmental and climate change issues should be identified and documented during land use planning process. Adaptation and mitigation measures for such issues should be reflected in the Community Action Plan (CAP) for implementation and management of the village land use plan. Environmental and climate change issues can vary depending on the nature of the village and various factors such as:-

- Natural resources
- Contiguous to protected areas (wild life, forestry etc.)
- Contiguous to urban development
- Mining activities
- Commercial investment (large and medium scale farming, ranching, industrial development etc.)
- Coastal and marine resources
- Socio-economic infrastructures
- Land management measures and practices.
- Climate
- Landform
- Customs and traditions
- Proximity to hazardous areas
- Livelihood activities

Also, during village land use planning process, occurrences of climatic hazards (such as floods, drought, strong winds and outbreak of pests

and diseases) in terms of frequency (in a decade), intensity and coverage area should be identified together with their related impacts to the environment. Villagers should be assisted and equipped to identify, document, plan and implement practical adaptation and mitigation measures for such climatic hazards. For better planning, it is recommended that, data of at least 30 years back should be collected and documented specifying month(s) of occurrences of such climatic hazards.

1.11 Resources Mobilization and Funding for IPLUM

Recognizing the importance of integrated and participatory land use planning, management and administration in promoting sustainability of the environment and improvement of rural livelihoods, adequate funding of village land use planning is needed. Thus, stakeholders from the Government (MDAs and LGAs), private sectors and civil society organizations should prioritize and allocate adequate funds for land use planning as an important component in socio-economic development as well as environmental and natural resources management. That is, land use planning and management should be integrated into sectorial development plans and programmes being implemented across the country and any investment on land should be preceded with land use planning.

The socio-economic value of land use could well be understood if the following three aspects are strategically integrated:

- **Land use planning** mitigates land use conflicts, and brings peace and harmony through participatory land categorisation, identification and demarcation of sectoral land (agriculture, livestock, forestry, wildlife, settlement, infrastructure etc.
- Provide security and confidence for long term investment for the allocated land use.
- **Land administration** enhances security of tenure, through registration and titling in which user conditions are adopted from the land use plan. The title deeds can be used as collateral for mortgaging and securing capital investment for production implements and land management infrastructure.
- **Land use management** through coordinated sectoral management practices, to improve sustainable optimal production and use of land through extension services, innovations, and appropriate land husbandry. Sustainable optimal production and use of land, provides bases for economic development and livelihood, and empowerment for communities to improve socio facilities and infrastructure.

PART B

GUIDELINES FOR INTERGRATED AND PARTICIPATORY VILLAGE LAND USEPLANNING, MANAGEMENT AND ADMINISTRATION

STEP 1

PREPARATIONS FOR VILLAGE LAND USE PLANNING

The Land Use Planning Act No. 6 of 2007 (Cap 116) mandates District Council as a Land Use Planning Authority in its area of jurisdiction to establish inter-sectoral coordination that facilitates Village Land Use Planning, Management and Administration as well as ensuring establishment of a District PLUM team (As explained in 1.2 of this Step)

1.1 Objectives

A. To enhance the role and responsibility of the Regional Secretariat in land use planning, management and administration.

B. To effect the District Land Use Planning Authority.

C. To establish and build capacity of the District IPLUM team.

D. To enhance coordination and co-operation among sectors and institutions within and outside the district.

E. To update or establish village boundaries.

F. To prepare a base map.

G. To carry out reconnaissance survey.

H. To prepare an action plan for IPLUM

I. To prepare and agree on a plan of operation in priority villages

1.2 Activities

1.2.1 Organise and Conduct a District PLUM Workshop

The initial step should be to build capacity at the Regional level to realize its role as per Section 20 of Cap 116 in relation to co-ordination of the preparation and implementation of land use plans by the district councils in the respective region. The NLUPC in collaboration with the Regional Secretariat should prepare education, information and communication programmes to sensitize the public on land use planning activities.

The NLUPC with the respective Regional Secretariat should organise and conduct a District PLUM workshop in order to sensitize the District Council to effect its mandate as a District Land Use Planning Authority. The workshop should involve District leaders i.e. Councillors DC, Council Management Team, Technical staff and NGOs, CBOs, Projects dealing with land resources. In this workshop, facilitators should be able to assess and determine perceptions, willingness and commitment of the district council to participate in planning and implementation of the plans.

District Land Use Planning Authority (DLUPA): The NLUPC should sensitize and facilitate District Councils to effect their mandatory roles as District Land Use Planning Authorities as per Section 21 of the Land Use Planning Act Cap 116 which among other things mandates the District Council to:

- Prepare a district land use framework plan
- Ensure co-ordination and systematic physical development at the district level;
- Ensure inter-sectoral co-ordination; and
- Co-ordinate village land use plans.

Budgeting and Funding for Land Use Planning and Management: In conducting this workshop, the District Land Use Planning Authority should be facilitated to realise the need of using integrated and participatory land use planning as a tool for designating land for sectoral uses so that respective sectors can embark on land management with assurance. It should guide sectoral projects and programmes in the district [such as WMAs (Wildlife), PFM (Forestry), ASDP (Agriculture, livestock and Fisheries), WSDP (water), GEF, and mining] to budget and fund for integrated participatory land use planning and management as entry point for natural resources management and sustainable socio-economic development (Ref. Part A - Section 1.11).

Similar engagement must be made with private sector, NGOs and CBOs on the increasingly dynamic role of land use planning on socio-economic development. Through these sources, the District can budget for and prepare a District Land Use Framework Plan, showing environmental and socio-economic profiles of the district to be considered during preparation and implementation of village land use plans.

Plan of Operation with Priority Villages: Plans of operation for sectoral, NGOs and private sector projects and programmes in villages should be tabled to enable the District PLUM team in consultation with DLUPA to draw an overall plan of operation indicating the villages that will be approached first and giving a long term vision that covers all stages (1 to 6) covering all villages in the district; and henceforth prepare an intervention action plan. If there are many villages (>10) prioritized by different sectors and programmes, the District PLUM team should be assigned to develop selection criteria and plan of operation in selected villages; and present it later to DLUPA for approval as shown in Table 1.1 of Part B.

Before commencement of fieldwork, the GIS team should acquire relevant data (standard topographical sheets, satellite imageries if available, boundary maps, demographic data/maps, infrastructure maps, district vegetation and land form maps if available) for preparation of base maps (Refer Section 1.2.3 of part B).

At District level, the NLUPC should continue to facilitate and build capacity for districts to establish and maintain District Land Use Management Teams (Ref. Section 1.6 of Part A), which are integrated working instruments for assisting and facilitating districts in preparing district land use framework plans, village land use plans, monitoring and evaluating their implementation.

1.2.2 Establish a District PLUM team

During the PLUM workshop, the DLUPA forms a District PLUM team responsible for carrying out the proposed activities for participatory village land-use planning, administration and management. The DLUPA guides the PLUM team and ensures that the required support in terms of funds, materials and manpower is available throughout implementation. A PLUM team consists of 8 – 10 members of different disciplines and various professionals are temporarily involved when their skills are required. This inter-disciplinary working method improves the efficiency of the available human resources. The profile of a PLUM team should compose of the following qualifications:

- Knowledge of and experience with land-use planning and management;
- Knowledge of and some experience with participatory approaches;
- Good communication skills both oral and written;
- Ability to gather various information, analyse it and present results in a comprehensive manner;
- Gender aware and sensitive;
- Used and prepared to be in the field for most of the time;
- Innovative.

PLUM members should be technical officers from land use related and other cross-cutting sectors i.e. Lands, Agriculture, Livestock, Forestry, Infrastructure (roads), Wildlife, Water resources, Environment, Community Development, Fisheries, Bee-keeping, Finance and Planning and Legal. At least two members should be conversant with GIS applications to support the team with map preparations. The PLUM team selection should consider gender representation and addressing gender inclusiveness at the village level. A village extension officer who is residing in the village or nearby can be included in the PLUM team and/or join the VLUM committee as an advisor (Refer Section 2.3.1 of Step 2). Such a person can easily follow-up after PLUM has been introduced in the village.

The aim of establishing a District PLUM team is to enable integration and coordination of sectors to facilitate land use related interventions in villages. This PLUM team is not a separate and independent unit.

Land use planning, administration and management activities will be under the department responsible for land in the District Council. The District Town Planning Officer will lead and coordinate the PLUM team and be a contact person to the Regional Secretariat and the NLUPC by providing feedback on the status of implementation of land use planning activities in the District.

The roles and responsibilities of the PLUM team will be as per Section 21 and 27 of Cap 116, which are;

- To prepare district land use framework plans,
- To prepare land suitability assessment,
- To ensure coordination and systematic physical development at the district level,
- To ensure inter-sectoral coordination of land use planning activities, and
- To coordinate preparation of village land use plans.

After the members for the PLUM team have been selected, the NLUPC and Region Secretariat facilitators should familiarise them with PLUM tasks ahead for interventions in the villages. This can be accomplished through a 1-2 days working session in which also a Plan of Operation in priority villages should be completed and an Action Plan prepared for PLUM activities interventions in villages.

The facilitators should train the District PLUM team to be able to conduct public awareness to the Village Council and the Village Assembly on the following themes:-

- Land and natural resources policies and legislation, Management and administration of village land,
- Sustainable economic development, environmental conservation and managing climate change (issues related to climate smart agriculture and livestock keeping),
- Production system adjudication of interests in land (spot and systematic adjudication),
- Issuance and management of CCROs,
- Land disputes settlement mechanisms,
- Gender inclusiveness in land use planning, administration and management,
- Importance and process of village land use planning and management,
- Land use rights versus mineral, oil and gas prospecting activities.

N.B. PLUM facilitators should refer and use the Villagers PLUM Guidebook (Kiongozi cha Mwanakijiji), the Education Guide of the Village Land Act and other relevant Sector guidelines..

1.2.3 Prepare a Village Base Map

A village base map is a result of combining the village boundary map with physical features details in the village such as roads, contours, rivers, lakes, oceans, mountains, forests, built up areas (residential, social services, commercial) etc. Physical features details can be obtained by either using Topographical Standard Sheets or Satellite Images. These topographical standard sheet (1:50,000 or 1:250,000) can be obtained from relevant authorities (Surveys and Mapping Division or Geological Survey of Tanzania) with sheet index number for respective villages. The Village Base Map should be prepared using appropriate scale depending on the paper size and size of the village land. (This can range from Scale of 1: 10,000 to 1: 100,000).

N.B. The village base map explained above, though essentially used in Step 3, they should be acquired and prepared in Step 1 (during preparations) by the GIS unit as indicated in 1.2.1.

1.2.4 Completing Plan of Operation in Priority villages

Before commencement of fieldwork, one facilitator (if required) and at least two PLUM members should carry out a reconnaissance survey to selected/targeted and neighbouring villages. The main objective of this survey is to ascertain if there exists village boundary conflicts and availability of village council members to take part in the village land use planning.

Checklist for reconnaissance survey

- Assess the presence of Village Government
- Status of village land use plan
- Status of village boundary
- Identify existence of land use conflicts
- Presence of Village Base Map
- Identify categories of land in the village
- Identify major economic activities in the village
- Identify shared ecological resources and infrastructures between villages
- Willingness of the villagers to participate in planning and implementation of the plan
- Purpose of village land use plan

For a proper prioritisation of villages, selection criteria should be formulated. For that purpose, the following guidelines and their related specific criteria are important:

a) The urgency of integrated and participatory land use management in a village. Specific criteria includes;
   - Pilot implementation of sectoral projects and land based investments;
   - The extent of land-use conflicts (such as conflicts between pastoralists and crop producers; conflict over property boundaries; conflicts over access and utilisation of natural resources like woodland and water resources);
   - Occurrence and intensity of environmental degradation (such as soil erosion, soil mining, and destruction of woodland and depletion of water resources), pollution and climate change impacts.

b) Presence of factors that will limit or facilitate a successful implementation of PLUM in a village. Specific criteria includes;
   - Efficiency of the leadership in a village (conflicts or laxity on the leadership level can frustrate the implementation of PLUM);
   - Activities of other projects in a village (which can be a facilitating as well as limiting factor);
   - Presence of village extension staff residing in or in a nearby village and who can become a member of the PLUM team;
   - Accessibility of the village throughout the year, travel distances and/or possibility for the PLUM team and associated members to stay in or nearby the village;

c) The impact of successful establishment of PLUM system and practice in a village for the district in general.
   - Additional considerations include: Population, land area, its administrative function (as ward or divisional headquarters), its economic significance (its importance as a producer of crops or livestock, etc.) and its environmental significance (as important water catchment).

The way the criterion is formulated depends on the strategy employed. For instance, a strategy could start with pilot villages, which will be used as a source of experience and examples to facilitate the expansion of PLUM to neighbouring villages. In such a case, the selected villages should have characteristics that are typical for a larger area (catchment area, planning zone or division).

The possibility of selecting a group of neighbouring villages with common land use management problems should also be considered. The Village Land Act (1999) provides procedures for joint land use management agreements between villages if they use and share land resources such as forest, grazing land, basin and irrigation infrastructures. One could think about the conservation of a micro-catchment area or the communal use of woodland in hills and grazing areas or water points. The prioritisation process involves matching of the selection criteria with the characteristics of each village; which result into ranking of villages in a systematised way as outlined in Table 1.1.

Table 2: A system for village ranking* by matching the identified selection criteria with the characteristics of each village. The classes for matching are in this example: 0: not favourable, 1: neutral, 2: favourable.

Selection	Village								
Criteria	**V1**	**V2**	**V3**	**V4**	**V5**	**V6**	**V7**	**V8**	**Etc.**
A1	1	0	2	0	2	1	1	1	
A2	2	1	1	0	1	0	0	1	
B1	0	1	2	0	2	1	2	2	
B2	2	2	2	1	2	1	2	2	

B3	2	1	1	1	1	2	1	1	
B4	1	1	2	1	2	1	2	1	
C1	1	2	1	0	2	0	2	2	
C2	1	1	1	0	1	1	1	0	
Score	**10**	**9**	**12**	**3**	**13**	**7**	**11**	**10**	

Villages that have scored highest can be considered as priority villages mean while other villages will be assisted later. This ranking is only a tool to facilitate the prioritisation and is not necessarily decisive.

After selecting the intervention villages, the Action Plan should be prepared (Table 3) and the respective Village Councils should be officially (official letter) informed, date and time set and agreed for Village Council and Village Assembly introductory meetings. Also, the respective Villages land boundary maps should be acquired, scanned and physical features (such as roads, contours and water bodies) digitized to get the village base map ready for use in Step 3.

1.2.5 Mapping of Village Boundaries

Before proceeding with PLUM, the planning area has to be well agreed upon with neighbouring villages and properly documented. In most cases the village boundaries are surveyed by District Council and the Ministry of Lands. It is recommended to initiate VLUP in villages of which their boundaries have been already established, demarcated and surveyed (use this as one of the selection criteria). If not, and it is necessary to continue with VLUP & PLUM, the procedures for establishing village boundaries should be first carried out through DLNRO or such activity can be incorporated in the action plan for interventions in such villages

A village boundaries map (Survey Plan) is obtained from the DLO or MLHHSD as a hard copy and or a soft copy. If it is only a hard copy, it should be scanned to get a soft copy to enable being used in a computer.

Determination, Demarcation and Surveying of Village Boundaries

Section 7 (1) of The Village Land Act provides that Village land shall consist of:- land with the boundaries of a village in accordance with the provisions of Section 22 of the Local Government (District Authorities) Act, 1982 RE 2005; land designated as village land under the Land Tenure (Village Settlements) Act, 1965; land, the boundaries of which have been demarcated as village land under any law or administrative procedure in force at any time before the Village Land Act came into operation whether that administrative procedure based on or conducted in accordance with any statute law or general principles of either received or customary law applying in Tanzania and whether that demarcation has been formally approved or gazetted or not; land, the boundaries of which have been agreed upon between the village council claiming jurisdiction over that land with contiguous neighbours (villages, general land, reserved land).

Agreeing about the village boundaries with contiguous neighbours

The village boundary negotiation team is made up representatives from each village, selected by the respective Village Council. The team and a surveyor visit all corners of the village boundary. Negotiations and agreements are made on the exact location of each corner, whereby the corners are temporarily marked. The agreements are recorded as minutes, indicating a description of the location of the corner points and bearing the names and signatures of the team. Thereafter the DLO/MLHHSD can be involved in surveying the village boundaries

N.B. Where a village claiming or occupying and using land as village land is unable to agree and resolve boundary dispute with contiguous neighbours they should involve the respective District Council. AND if they do not reach an agreement, the Ministry of

Lands should be consulted for procedures prescribed in Section 7(2) of the Village Land Act.

1.2.6 Prepare an Action Plan for Intervention in Villages

In the first 5 days, sensitization at the district level should be undertaken to build awareness to the district leaders and relevant stakeholders on PLUM activities. Also, the District PLUM team should be facilitated to prepare a work plan, which at this stage will cover fieldwork activities 3 – 10 (Refer Table 3).

For a District undertaking land use planning for the first time, it is recommended for the District PLUM team to work under the guidance of experienced PLUM Facilitators (from NLUPC and or RS). For effective and efficient use of resources including time, it is strongly recommended for the PLUM team to be working in 2 villages at one time. This means the District PLUM team should form 2 groups with each group consisting of at least 1 GIS expert.

Furthermore, to start drafting the village land use plan, requires that the existing village land use map (including acreage for each land use) should be completed and available as a basis of discussion for changes and suggestions. However the 3 days' time allocated for this activity is usually enough for the Data Collection and Resource Assessment (DCRA) team to complete details data picking, and usually not enough for the GIS team to complete the village existing land use map. Again, for effective and efficient use of resources, it is recommended for the DCRA teams to start undertaking activity No. 6 (Refer Table 3) while the GIS team is completing the existing land use maps. This can further be applied into the next villages leading into the following Action Plan for intervention in villages.

Table 3: Action Plan for Preparations and Interventions in Villages

No.	Activity	No. of Days	Responsible	Output
1.	Conduct District PLUM Workshop and formulate District PLUM Team	1	District leaders (DC, DED), DAS, MPs, Councillors, HoDs, District Technical Staff, NGOs, CBOs, NLUPC Facilitator, RAS Facilitator	Awareness created and District PLUM team in place
2.	a) Conduct training to PLUM Team, b) Prepare base maps and conduct reconnaissance survey c) Preparation of field action plan	4	PLUM team, NLUPC Facilitators, Ass RAS Facilitator	PLUM Team trained, Base map prepared, reconnaissance survey done and action plan prepared
3.	Conduct public awareness and capacity building to Village Council and VLUMC and initiate preparation of signboards	3	PLUM team, NLUPC Facilitator, Villagers, WEO, Village Land Council, VC and VLUM	Village Sensitization meetings conducted and VLUMC formulated
4.	Data collection and resources assessment (gathering and compiling primary data for analysis, conducting SWOT	4	PLUM team, NLUPC Facilitator, VC and VLUM	Primary data collected and compiled. CAP and SWOT in place. Village resource map prepared

	analysis and preparation of the CAP)			
5.	Detailed data picking for preparation of maps (existing land use, bio-physical, hazardous areas and land form maps) analysis of data collected and preparation of draft VLUP report	3	PLUM team, NLUPC Facilitator and VLUM,	First draft of VLUP report in place with all relevant maps (location map, administrative setup map, drainage map, land cover map, population distribution map, human settlements distribution map, population density map, hazardous areas map, resource map, existing land uses and landform, livestock distribution map and livestock population density maps)
6.	Preparation of proposed Land Use Plans and proposing (enacting) village land use by-laws	2	PLUM team, NLUPC Facilitator, WEO, VC and VLUM	A draft of proposed land use plan and by-laws in place
7.	Surveying of the proposed land uses and preparation of proposed land use plan maps	2	PLUM team, NLUPC Facilitator and VLUM	Proposed land use plan map in place
8.	Compilation of data, information and maps for preparation of a 2nd draft of Village Land Use Plan report	1	PLUM team, NLUPC Facilitator,	Second draft of VLUP report in place,
9.	Presentation and approval of Village LU Plan & By-laws by Village Assembly	1	PLUM team, NLUPC Facilitator, Villagers, WEO, Village land Council, VC and VLUM	Approved village land use plan and By-laws
10.	Erection of VLUP Sign boards and submission of Draft VLUP reports to VEO	1	NLUPC Facilitator, PLUM team, VLUM	Land use signboards erected
11.	Submission of VLUP and by laws to the Ward Development Committee (WDC) and District Council		PLUM team, WEO,	Approved VLUP and by laws by the WDC and District Council
12.	Monitoring and Evaluation of Steps 1 – 4.		District PLUM team, NLUPC Facilitator,	Final field work report reflecting performance or execution of the action plan (Step 1 – 4). Way forward or roadmap for undertaking step 5 and 6

Note 1: Activity 1 in Table 3 above is undertaken only once in a district

2: Activity 2(a) in Table 3 above requires only 2 days but it can be skipped if the PLUM Team has the capacity to undertake PLUM activities.

1.3 Required Inputs and Quantity

From the above action plan, it is expected that resources required for implementation of Step 1 – 4 should be planned for and made available during this Step. This is because; Steps 2 – 4 are implemented concurrently in fieldwork, as shown in the action plan. Table 4 gives required inputs (human, materials and equipment's) and quantities for budgeting in Step 1 – 4.

Table 4: Required Inputs and Quantities for Budget of PLUM

No.	Activity	Inputs Required	Quantity	Days
1.	Conduct District PLUM Workshop	**1.1 Subsistence allowances**		
		NLUPC Facilitators	2	3
		Driver for NLUPC Facilitators	1	3
		Councillors	All	2
		CBOs – land use based	4	2
		RAS Representative – (Infrastructure -Town Planner)	1	2
		Driver for RAS	1	2
		1.2 Conference services		
		Food and refreshments for all participants	All	1
		Stationeries	Lumpsum	
		Workshop materials (PLUM Guideline, Kiongozi cha Mwanakijiji, Policies and Legislations)	Lumpsum	
		1.3 Transport and Vehicle Maintenance		
		Fuel for NLUPC Facilitators vehicle (to and from the DHQ – 1 litre for 7 Km	Depending on distance to the DHQ	2
		Fuel for RAS vehicle (to and from the DHQ – 1 litre for 7 Km	Depending on distance to the DHQ	2
		Transport fare (As per GOT transport rates)	Councillors and CBOs	2
		Vehicle maintenance (depending on distance and vehicle's condition)	Lumpsum	
		1.4 Mass media programmes		
		Programme preparation	Lumpsum	
		Airtime on Tv (1 Tv station)	1	1
		Awareness campaigns on radio stations (2 radio stations)	2	4
2.	Capacity building to the District PLUM team	**2.1 Subsistence allowances**		
		NLUPC Facilitators	2	4
		Driver for NLUPC Facilitators	1	4
		2.2 Conference services		
		Food and refreshments for all participants	All	4
		Stationeries (notebooks and pen)	9	1
		Workshop materials (PLUM Guideline,	9	1

No.	Activity	Inputs Required	Quantity	Days
		Kiongozi cha Mwanakijiji, Policies and Legislations)		
		3.3 Transport and Vehicle Maintenance		
		Fuel for NLUPC Facilitators vehicle (round trips– 1 litre for 7 Km		4
3.	Prepare base maps and conduct reconnaissance survey	**3.1 Per-diems**		
		PLUM Team members	2	5
		Driver	1	5
		3.2 Stationeries		
		Stationeries	Lumpsum	
		3.3 Transport and Vehicle Maintenance		
		Fuel for 1 vehicle (litres per day)	40	5
4.	Conduct public awareness and capacity building to Village Council, village assembly, VLC and VLUMC and initiate preparation of signboards	**4.1 Subsistence allowances**		
		NLUPC Facilitators	2	3
		PLUM Team	9	3
		Driver	2	3
		WEO	1	3
		VLUM team	9	2
		Village Council	26	3
		Village land council	7	2
		4.2 Stationeries		
		Stationeries (masking tap, flip charts, maker pen, ream paper, carbon paper, pencils, notebooks and pen)	Lumpsum	
		4.3 Fuel for field work		
		2 Vehicles – 1 litre for 7 Km	Depending on distance from the DHQ to the village	3
5.	Data collection and resource assessment, compiling primary data for analysis, conducting SWOT analysis and preparation of the CAP)	**5.1 Subsistence allowances**		
		NLUPC Facilitators	2	4
		PLUM Team	9	4
		Driver	2	4
		VLUM team	9	4
		5.2 Fuel for field work		
		2 Vehicles – 1 litre for 7 Km	Depending on distance from the DHQ to the village	3
6.	Detailed data picking for preparation of maps (existing land use, bio-physical, hazardous areas and land form maps) analysis of data collected and preparation of draft VLUP report	**6.1 Per-diems and Allowances**		
		NLUPC Facilitators	2	2
		PLUM Team	9	2
		Driver	2	2
		VLUM team	9	2
		6.2 Fuel for field Trips		
		2 Vehicles – 1 litre for 7 Km	Depending on distance from the DHQ to the village	2
		Fuel for field work	25-30 litres per vehicle	2
7.	Preparation of Proposed	**7.1 Subsistence allowances**		
		NLUPC Facilitators	2	2

No.	Activity	Inputs Required	Quantity	Days
	Land Use Plans and Proposing (enacting) village land use by-laws	PLUM Team	9	2
		Driver	2	2
		VLUM team	9	2
		WEO	1	2
		Village Council	26	4
		7.2 Fuel for field Trips		
		2 Vehicles – 1 litre for 7 Km	Depending on distance from the DHQ to the village	2
		Fuel for field work	25-30 litres per vehicle	2
8.	Surveying of the proposed land uses and preparation of proposed land use plan maps	**8.1 Subsistence allowances**		
		NLUPC Facilitators	2	2
		PLUM Team	9	2
		Driver	2	2
		VLUM team	9	2
		8.2 Fuel for field Trips		
		2 Vehicles – 1 litre for 7 Km	Depending on distance from the DHQ to the village	2
		Fuel for field work	25-30 litres per vehicle	2
9.	Compilation of data, information and maps for preparation of a 2nd draft of Village Land Use Plan report	**9.1 Subsistence allowances**		
		NLUPC Facilitators	2	1
		PLUM Team	9	1
		Drivers	2	1
10.	Presentation and approval of Village LU Plan & By-laws by Village Assembly	**10.1 Subsistence allowances**		
		NLUPC Facilitators	2	1
		PLUM Team	9	1
		Driver	2	1
		WEO	1	1
		Village Council	26	1
		VLUM team	9	1
		10.2 Fuel for field Trips		
		2 Vehicles – 1 litre for 7 Km	Depending on distance from the DHQ to the village	1
11.	Erection of VLUP Sign boards and submission of Draft VLUP reports to VEO	**11.1 Subsistence allowances**		
		NLUPC Facilitators	2	2
		PLUM Team	9	2
		Drivers	2	2
		VLUM team	9	2
		1.2 Fuel for field Trips		
		2 Vehicles – 1 litre for 7 Km	Depending on distance from the DHQ to the village	2
		Fuel for field work	25-30 litres per vehicle	2

Note:

1. Estimated number of days for undertaking different activities can vary depending on the application of

different tools and approaches for village land use planning.

2. Planning authorities should consider involvement of other community members such as traditional leaders and other social groups (other than those specified in Table 4) who have enough knowledge of the village and can be useful in providing inputs during village land use planning process. Also, institutional experts other than those from the district council (such as TFS, TAWIRI etc.) can be involved to offer more expertise in the planning process.

Major outputs of this step are:

- Effective District Land Use Planning Authority;
- An increased awareness among the District Council staff and other stakeholders regarding the benefits of participatory and integrated approaches in land use planning and management;
- Efficient District PLUM team;
- A realistic plan of operation and intervention in priority villages that is supported by the district authorities and related institutions;
- Funds and human resources are allocated as envisaged in the action plan and the plan of operation;
- Village boundary and village base maps are in place and ready for use in Step 3.

1.4 Monitoring and Evaluation (M&E)

M & E is done in each step to assess whether activities are carried out according to the action plan, objectives are reached and if corrective measures have to be taken (see also Section 1.5 of Part A). However, since the action plan outlined in this Section combines conducting activities of Step 1-4 simultaneously, it is recommended to conduct M&E during and at the end of each step (on-the-field monitoring) as well as at the end of step 4 as indicated In Table 3.

STEP 2

DATA COLLECTION AND RESOURCE ASSESSMENT FOR LAND USE PLANNING AND MANAGEMENT

After completion of activities in Step 1, the IPLUM team will visit the selected villages in order to undertake data collection and resource assessment focusing on land use management plans. This should be preceded by sensitization on IPLUM concept and raising awareness of villagers on land, natural resources and environmental policies and legislations.

2.1 Objectives

A. To introduce and raise awareness of villagers on land, natural resources and environmental policies and legislations

B. To introduce PLUM concept and activities to the villagers

C. To form a village land-use management (VLUM) committee

D. To facilitate villagers to analyse and evaluate land uses and environment problems and opportunities

E. To facilitate villagers to prepare a community action plan for land-use planning and management

F. To facilitate villagers to obtain baseline data about the village and its environment

2.2 Conditions to Start

Important conditions which should be met before starting this step are:

- An efficient multi-sectoral District PLUM team formed and operational
- Resources allocated and plan of operation prepared for implementing Step 2-4 in selected villages.
- The Village Council should be officially informed. Date and time set and agreed for Village Council and Village Assembly introductory meetings.

2.3 Activities

2.3.1 Conduct Introductory Meetings with Village Council and Village Assembly

The District PLUM team meet with the Village Council and Village Assembly to introduce PLUM concept and activities to the villagers. Also, the PLUM Team introduces and raises awareness of villagers on land, natural resources and environmental policies and legislations. By following the action plan prepared in Step 1 (Table 3), Village Land Council members, elected and functioning according to the Village Land Act Cap 114 and The Courts (Land Disputes Settlements) Act Cap 216, should be invited in these meetings to build their capacity.

2.3.1.1 Introductory Meeting with the Village Council

Themes of this meeting include:

a) Introduction of the PLUM team;
b) Understanding the Concepts of Participatory land use and management;
c) Awareness creation on Land Policies and Legislations;
d) Understanding importance and process of village land use planning and management including data collection and resource assessment process;
e) Land use rights and other natural resources
f) Sensitization of community on socio-economic development, environmental conservation and climate change adaptation and mitigation;
g) Establishment of Village Land Use Management Committee (VLUMC).
h) Gender inclusiveness in village land use planning process

Establishment of VLUM Committee

Section 107 of the Local Government Act (Cap. 287 R.E. 2002) empowers the Village Council to establish committees as it deems necessary. For success of IPLUM it is important to form an efficient and well balanced VLUM committee of 6-9 members with representation considering gender, hamlets, age groups, land users groups (farmers, livestock keepers etc.). To be efficient, the VLUM committee members need the following qualifications:

- Living in the village, energetic, motivated and responsible;
- Having good relationship with the village community, knowledge of different land uses in the village;
- Some members should have knowledge of village boundaries;
- Able to speak Kiswahili and the local language;
- Ability to read, write and make simple calculations is an advantage;
- Village Land Council members should not be appointed in this committee

The PLUM team should build capacity to the VLUM committee, Village land Council and Village Council about PLUM, the PRA exercise and the role which they will play to facilitate the whole PLUM process (Appendix C). During land registration the VLUMC can be appointed to assume the role of the Village Adjudication Committee

2.3.1.2 Introductory meeting with the Village Assembly

Themes of this meeting include:

a) Introduction of the PLUM team;
b) Understanding the Concepts of Participatory land use and management;
c) Understanding importance and process of village land use planning and management including data collection and resource assessment process;
d) Sensitization of community on socio-economic development, environmental conservation and climate change adaptation and mitigation;
e) Introduction and approval of the Village Land Use Management Committee (VLUMC).

2.3.2 Data Collection and Resource Assessment

After the introductory meetings and capacity building to VC and VLUM committee, the DCRA/PLUM team convene with the Village Council and VLUMC collect data and assess available resources within and surrounding the village. It is recommended to work into groups depending on the number and neighbourness of hamlets (Vitongoji) in the village. For example, if the village has 6 hamlets A,B,C,D,E,F; representatives of hamlets A,B,C should form one group; and representatives of hamlets D,E,F the second group. Facilitators (PLUM team) should also divide themselves to join these groups.

Working in two groups is more convenient and provide an opportunity for each group to report and present its report using selected villagers to the plenary (whole group). This enhances participation and ownership of the planning process and prepares the Village Council for reporting and presentation of the land use plan to the Village Assembly. Working in more than two groups will take more time in presentations resulting into delaying the process.

The main task in these groups is to collect, analyse and document village land uses data, trends and variables using questionnaires (Refer Appendix A of which a soft copy should be available to the PLUM team. Participatory data collection tools such as dialogue, group work, learning café, river of life, focus group discussion and timeline can be used to collect and document data.

Filling and editing of the questionnaire is the basis for the Village Land Use Plan report and thus preparation of the questionnaires should focus and include aspects of the village land use plan as shown in Appendix A of this Guidelines and Part A of Third Schedule of the Land Use Planning Act Cap 116. Gathered data should be presented onto flip-charts or any other available materials during presentations.

Figure 8: Villagers during data collection and resource assessment process

2.3.3 Preparation of a Village Resource Map

During data collection, analysis and assessment of village resources, villagers are guided by the PLUM Team to prepare a village land resource map indicating resources they have identified; to come up with the Village Resource Map within and outside the village boundary, Participatory Landscape resource mapping is a valuable process for better understanding and developing sustainable land scape management within village land use planning. It is a good starting point for discussing important resource and land based issues and it provides space for communities to more strongly contribute to planning and decision making processes. It also helps to introduce and explore the concepts of mapping to communities enabling them to display resource distribution and identify key and important features.

Figure 9*:* Villagers sketching village resource map using satellite images

The resource map provides a visual record of the area and its resources. It can thus be used to identify and understand diverse landscape resource uses, locations, access and resource seasonality including information on market infrastructure, land use boundaries, wildlife and livestock routes. Focused discussions that take place during and after the mapping exercise can identify landscape management problems, challenges and options for solutions for the better and more sustainable management of landscape resources.

Villagers will be assisted to sketch and draw specialized resource maps such as the livestock mobility routes and village hazard map depicting different hazardous areas in the village such as steep slopes, wetlands and eroded areas (Refer Figure 2.3). If there is a Village Resource Map drawn from another programme or project, it can be adopted or updated for use.

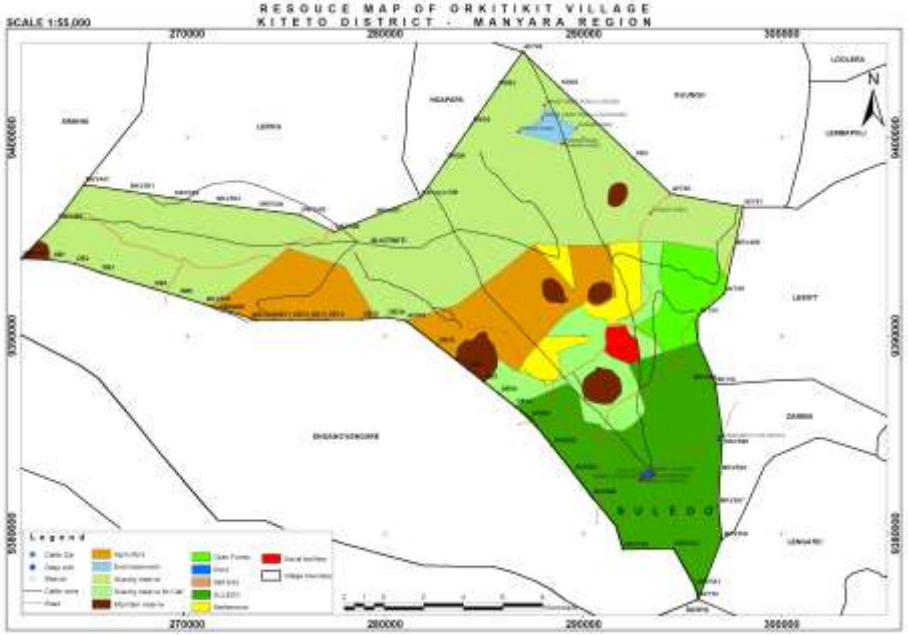


Figure 10: An Example of a Village Resource Map of Orkitikiti Village in Kiteto District as modified by PLUM Team

NB: For more details on participatory tools for data collection and resource assessment/mapping refer to '*Tools and Spatial Technologies for Village Land Use Planning: A Practitioner's Manual for Active Community Engagement, 2019*'

2.3.4 Analysis of PLUM Challenges, Opportunities and Obstacles

Most villages have gone through Obstacles and Opportunities to Development (O&OD) exercise. However, in most cases the resulting list is to deal with social and economic infrastructures and services in health, education, water and transport sectors. In this case, villagers should be facilitated to focus on land use and environmental related challenges/problems that affects livelihoods and prosperity of villagers.

They should be able to relate the existing data/situation they have documented with a problem as exemplified in Table 2.1.

Also villagers should be facilitated to analyse problems/challenges, opportunities and obstacles (SWOC Analysis). For example; Famine and drought can be a result of deforestation and land degradation. Problems can be analysed by relating them with the opportunities available within and outside the village to solve out the problem; and obstacles which are limiting the village to use those opportunities. For example opportunities to solve low crop production can be availability of land, ward extension officer, farm implements fund; whereas obstacles to use these opportunities can be land use conflicts, lack of transport for the extension officer, lack of access, collateral and knowledge to use the farm implements fund. These are analysed by each group and displayed on flipchart or any available material for presentation during plenary in a matrix format as exemplified in Table 2.1.

Table 5: Example of Challenges, Opportunities and Obstacles

No.	Challenges	Opportunities	Obstacles
1.	Low crop and livestock production	Availability of land, Presence of Ward Extension Officer and Farm Implements fund	Land use conflicts, Lack of transport, Low knowledge of improved production Lack of collaterals
2.	Land use conflicts between farmers and pastoralists	Availability of land, Availability of land laws, Presence of District Council and Village Governments	Lack of knowledge on land laws Lack of land use plan Lack of village bylaws
3.	Environmental and water sources destruction	Availability of water sources, forests, Presence of Environment management Law and Water sources management law, Presence of District Council and Village Governments	Lack of knowledge on laws Lack of land use plan Lack of village bylaws
4.	Poor markets for agriculture and livestock products	Availability of agriculture and livestock products, Urban centres	Poor accessibility
5.	Lack of capital for production implements	Availability of land, Presence of farmers and livestock keepers, Presence of financial institutions	Lack of collaterals Lack of SACCOS Lack of communication with banks
6.	Low participation of women and other disadvantaged groups	Availability of land laws, Availability of land and regulations governing land ownership	Traditional beliefs and norms in the society
7.	Climate change impacts (drought and flood and disease outbreak)	Indigenous knowledge, improved crop and livestock varieties and technology	Lack of knowledge on adaptation strategies. Lack of data

After each group has completed compiling land uses data, trends and variables; and problem, opportunities and obstacles; they convene in plenary for presentation and discussion ultimately to come up with a combined report of the village existing situation. Problems which are related to each other should be combined into one key problem e.g. Deforestation, bush fires, water sources encroachment: into **Environmental and water sources destruction**; Famine, poor farming methods, livestock diseases: into **Low crop and livestock production.**

During problem analysis and priority setting, it is important to give enough attention to the cause-effect relations involved. For instance, the cause of low production can be land degradation, which can be a result of land mismanagement. This can be enhanced by land insecurity and conflicts. This sort of analysis is very important and helps villagers to balance between coping with immediate problems and those that require a medium or long term planning. The last ones are often

located in the productive sector and involve land use management. The immediate needs often refer to the service sector, such as schools, dispensaries and water supply. It is important for villagers to be aware that the required improvements for the service sector are generated in the productive manner. The PLUM team should facilitate this kind of analysis and awareness creation, but should also be careful to avoid influencing participants in priority setting in order to assure that the appraisal can focus on land issues without affecting the basic principles of the participatory approach.

2.3.5 Preparations of VLUP Sign boards

At this stage major land uses in the village will have been known. A carpenter/sign writer from the village/district headquarter can be engaged to prepare signboards that will be erected at the end of Step 4 after the approval of the VLUP by the Village Assembly. It is recommended that these signed boards are prepared using durable materials and written by painting. **If preparation of signboards is delayed, it will be difficult to prepare and erect them at the end of Step 4.**

2.3.6 Preparation of a Community Action Plan

The most concrete output of the SWOC analysis is a Community Action Plan (CAP) focused on land use management. It should become part of the village development plan and the basis for the detailed village land use planning and management activities in the succeeding steps of PLUM. The CAP is a road map for implementation of the Village Land Use Management Plan, which should be displayed on the notice board of the Village Government Office for self-assessment.

CAP includes required activities to improve the prioritised natural resource management components, to be worked out in the following steps of PLUM. The CAP should be as specific as possible and cover the following issues:

- Development priorities, proposed actions and requirements;
- Duties and responsibilities for individuals and groups;
- Work schedules;
- Areas where the community needs external assistance.

Generally, the CAP must reflect priorities of different socio-economic groups in the village in a balanced way. Also, it should present short, medium and long term needs and land use matters of the village without contradicting with district, regional and national plans and policies.

Basically for each identified problem a ***goal/objective*** is developed aiming at eradicating the problem. In order to attain the goal, villagers are facilitated to suggest ***actions/activities*** which should be done to attain the goal. Activities can be derived for solving out obstacles that are deterring villagers from using the available opportunities to eradicate the problem, and or contributing factors to the main problem as exemplified in Table 2.1. These are coupled with required ***time*** and ***resources*** for implementation, responsible actors within and outside the village, and the progressive ***results*** during implementation of activities to attain the goal. Actually the progressive results become the performance ***indicators*** during monitoring and evaluation. This is worked out and displayed on flipcharts or any available materials and presented in a matrix as exemplified below in Table 2.2.

2.4 Required Inputs and Expected Outputs

Tables 1.2 and 1.3 (Section 1.2 and 1.3 of Step 1) give a general indication of the required input from the different parties involved for each activity and sub-activity of Steps 1-4. During the whole process, both the district as well as villagers involved, commits themselves to reaching the agreed targets. Both parties are expected to keep their promises and to remind each other about their responsibilities.

Expected outputs from this step (used as indicators for evaluation) are:

- Villagers are aware of the need for PLUM and are mobilised to implement it;
- The village has a well-balanced and efficient VLUM committee dealing with land issues;
- The villagers have increased awareness regarding land related matters;
- Villagers have a better understanding about their problems and opportunities;
- The village community has created a community action plan
- The PLUM team has an understanding about the village which is sufficient to facilitate the next steps towards PLUM;
- The DCRA team has collected sufficient baseline data (including village resource map) about the village to enable an assessment of the impact of PLUM at the later stages.

2.5 Monitoring and Evaluation (M & E)

M & E is done in each step to assess whether activities are carried out according to the action plan, objectives are reached and if corrective measures have to be taken (See section 1.5 of part A). However, since the action plan in Section 1.2 combines conducting simultaneously activities of Step 1-4, it is recommended to conduct M&E during and at the end of each step (on-the-field monitoring) as well as at the end of step 4 as indicated In Table 3.

Table 6: Example of a Community Action Plan based on problems exemplified in Table 5

No.	Goal	Activities	Time Of Implementation	Responsible In The Village	Actors Outside The Village	Required Resources	Expected Results
1.	To maximize crop and livestock production per acreage	-To conduct Education to farmers, livestock keepers and extension workers on improved modern methods -To make study tour in areas implementing improved modern methods of agriculture and livestock keeping -To establish class farms (mashamba darasa) of various crops in each hamlet -To establish land titles (CCROs) to be used as collaterals to acquire capital for production implements -To acquire required agriculture and livestock implements - To build the capacity of farmers in livestock and pastures management practices - To improve livestock breed	To be specified in the village for each activity (e.g. Aug-Dec 2010)	-Village Council -VLUMC -Farmers -Livestock keepers	-District Council -District PLUM team -Extension workers -DADPs & DLDPs (ASDP & LSDP) -NGOs & CBOs	-Transport -Stationary -Funds -Land -Implements	-Farmers, livestock keepers and extension workers with knowledge on improved modern methods -Class farms (mashamba darasa) of various crops established in each hamlet -Villagers having land titles (CCROs) and using them as collaterals to acquire capital for production implements -Required agriculture and livestock implements available
2.	To eradicate land use conflicts in the village	-To prepare and implement a participatory village land use plan and by-laws -To sensitize villagers on land resources policies and legislations -To enhance security of land tenure by granting and registration of land titles (CCROs) -To establish Village Land Registry	-do-	-Village Council -VLUMC -Village Land Council -Village Assembly -Villagers	-District Council -DLUPA -District PLUM team -MLHHSD -NLUPC -NGOs & CBOs	-Transport -Stationary -Funds -Land -Computers & GPSs -Maps -Village Land Registry Equipments	- A participatory village land use plan and by-laws prepared and implemented -Villagers aware of land resources policies and legislations -Security of land tenure enhanced by granting and registration of land titles (CCROs) -Village Land Registry established
3.	To conserve and manage Environmenta	-To prepare and implement a participatory village land use plan and by-laws -To sensitize villagers on land	-do-	-Village Council -VLUMC	-District Council -DLUPA	-Transport -Stationary	- A participatory village land use plan and by-laws prepared and implemented

	l and Water sources	resources policies and legislations -To identify, demarcate and manage forest areas -To identify, demarcate and manage water sources -To establish soil and water conservation measures in farms -To promote and implement afforestation and agroforestry		-Village Land Council -Village Assembly -Villagers	-District PLUM team -Extension Workers -Water, Environment & Natural Resources Sectors -NLUPC -NGOs & CBOs	-Funds -Land -Implements	-Villagers aware of land resources policies and legislations -Forest areas identified, demarcated (sign boards erected) and managed -Water sources identified, demarcated (sign boards erected) and managed -Soil and water conservation measures in farms implemented -Afforestation and agroforestry promoted and implemented
4.	To have reliable markets for agriculture and livestock products	-To establish farmers and livestock keepers societies -To establish crops and livestock markets ***'minada'*** -To establish selling crops using government receipt system -To improve accessibility, transportation and communication	-do-	-Village Council -VLUMC -Farmers -Livestock keepers	-District Council -District PLUM team -Extension workers -DADPs & DLDPs (ASDP & LSDP) -NGOs & CBOs	-Transport -Stationary -Funds -Implements	-Farmers and livestock keepers societies established -Crops and livestock markets ***'minada'*** Established -Selling crops using government receipt system established -Accessibility, transportation and communication system improved
5.	To enable acquiring of capital for production implements	-To establish SACCOs -To establish communication with financial institutions to access capital loans -To conduct awareness and use of loan funds opportunities (e.g. women, youths, empowerment funds) -To establish land titles (CCROs) to be used as collaterals to acquire capital for production implements	-do-	-Village Council -VLUMC -Village Assembly -Villagers	-District Council -District PLUM team -Extension Workers -MLHHSD -NLUPC -NGOs & CBOs	-Transport -Stationary -Funds -Land -Computers & GPSs -Maps -Village Land Registry Equipments	-SACCOs established -Villagers accessing capital loans from financial institutions -Villagers using loan funds opportunities (e.g. women, youths, empowerment funds) to access capital for production implements --Villagers having and using land titles (CCROs) as collaterals to acquire capital for production implements
6.	To improve participation of women and other	- To conduct awareness on traditions and customs denying tenure rights to women and other disadvantaged groups in the community	-do-	-Village Council -VLUMC -Village Assembly	-District Council -District PLUM team -Extension Workers	-Transport -Stationary -Funds -Land -Computers & GPSs -Maps	-Increased ownership and participation in land use planning, administration and management

	disadvantaged groups in land use planning and management	- To support specific group led activities –example women and people with dis ability - Sensitization of social groups participation on land use planning and management		-Villagers	-MLHHSD -NLUPC -NGOs & CBOs	-Village Land Registry Equipments	
7.	To improve community resilience to climate change impacts	- To raise awareness on climate change impacts and adaptation strategies - To identify and promote indigenous knowledge for adaptation to climate change within the community - To promote adoption of climate change adaptation options/strategy - To obtain and share climate data and information.	-do-	-Village Council -VLUMC -Village Assembly -Villagers	-District Council -District PLUM team -Extension Workers -MLHHSD -NLUPC -NGOs & CBOs	-Transport -Stationary -Funds -Land -Computers & GPSs -Maps -Village Land Registry Equipments	- Improved community awareness on climate change impacts and adaptation - Indigenous knowledge for adaptation to climate change identified and promoted within the community - Appropriate adaptation options/strategy adopted within the community - Climate data/information is available and utilized

STEP 3

MAPPING EXISTING VILLAGE LAND USES

The PLUM team and the VLUMC divide into groups to do field work (on site) using GPS to map boundaries and points of the identified land uses in Step 2. Main land uses include residential areas, social and economic services and infrastructures, agriculture, grazing areas, forestry, water sources, wildlife areas, fishery etc. Collected data (coordinates) are used to produce different maps including the existing village land use map. During field work the PLUM and VLUMC should discuss proposals for expansion of areas required for different land uses.

3.1 Objectives

A. To map the existing land use and management problems including impacts of climate change and variability.

B. To collect and map additional bio-physical information.

C. To prepare socio-economic and bio-physical maps

3.2 Conditions to Start

Important conditions which should be met before starting this step are:

- Resources allocated and plan of operation prepared for implementing Step 2-4 in selected villages;
- Awareness and training have been done to VC, VLUMC and villagers;
- Village boundaries have been established, demarcated and surveyed;
- Materials required to prepare the existing land use map (in terms of manpower, expertise, equipment, software) acquired.
- A Community Action Plan for land use management prepared by the village community;
- An efficient VLUMC formed with good understanding of the village land uses/users, land resources, bio-physical features and village boundaries.

3.3 Activities

3.3.1 Prepare the Existing Village Land Use Map

An existing land use map is a combination of the village base map, with land uses and resources identified in Step 2 with actual observation and details on the ground using available and appropriate technology.

3.3.1.1 Using GPS to Prepare the Existing Village Land Use Map

This fieldwork activity involves the PLUM team and VLUMC that divides into groups each having a GPS (depending on the size of village/task, available resources i.e GPS, Vehicles etc). One group can use the vehicle to pick and record data of land uses away from the village/hamlet centre such as forestry, grazing areas, wildlife areas, hazardous prone areas and water sources; and the second group can walk to pick and record data of land uses around the village/hamlet centre such as residential, farms around residential areas, social services and economic infrastructures.

The GIS team within the PLUM team should use recorded data from the field to update the village base map that will be used to prepare existing village land use map and other relevant maps such as bio-physical and socio-economic maps. These maps should be prepared in accordance to Land Use Planning Regulations (Standard Colours and Shadings) for different land uses, as shown in Appendix B. A first draft of the village existing land use map is printed and presented to the whole team (PLUM team and VLUMC) for sharing, comments and thereafter finalized. It is recommended for field work groups to save data in GPS and recording features using a matrix format (land uses and resources) coordinates data, supported by sketch maps as shown in Figure 11.

The District PLUM Coordinator should make sure that field work teams convene at the end of each day to evaluate the progress, combine data for submission to the GIS team and report writers, and plan tasks for the proceeding day. The District PLUM Coordinator should also consult the GIS team, and report writers to assess progress.

MKONGA HAMLET – LUKENGE VILLAGE IN KIBAHA DISTRICT

NO	LAND USE	EXPLAINATION	COORDINATES NOTHINGS	COORDINATES EASTINGS
1.	RESIDENTIAL/FARMS	• End of residential area in Mkonga along the road to Seregete village • Beginning of farms	9238612	0426226
2.	DISPENSARY (Social Services)	• Dispensary in Mkonge (Lukenge) • About 9 acres	9238600	0426294
3.	RESIDENTIAL (Road Junction)	• Road junction to Maleia and Visakazi along main road to Serengete • Within residential area (Mkonga)	9238772	0426294
4.	RESIDENTIAL/FARMS	• End of residential area in Mkonga near Magesa and Mwinyimkuu residences • Beginning of farms	9238780	0426416
5.	RESIDENTIAL/FARMS	• End of residential area in Mkonga near Mohamed Alfani residences • Beginning of farms	9239034	0426438
6.	WATER SOURCES (Well in Lukenge)	• Lukenge water dam • Surrounded by rice farms owned by Tomasi Mwenegoha	9239988	0426292

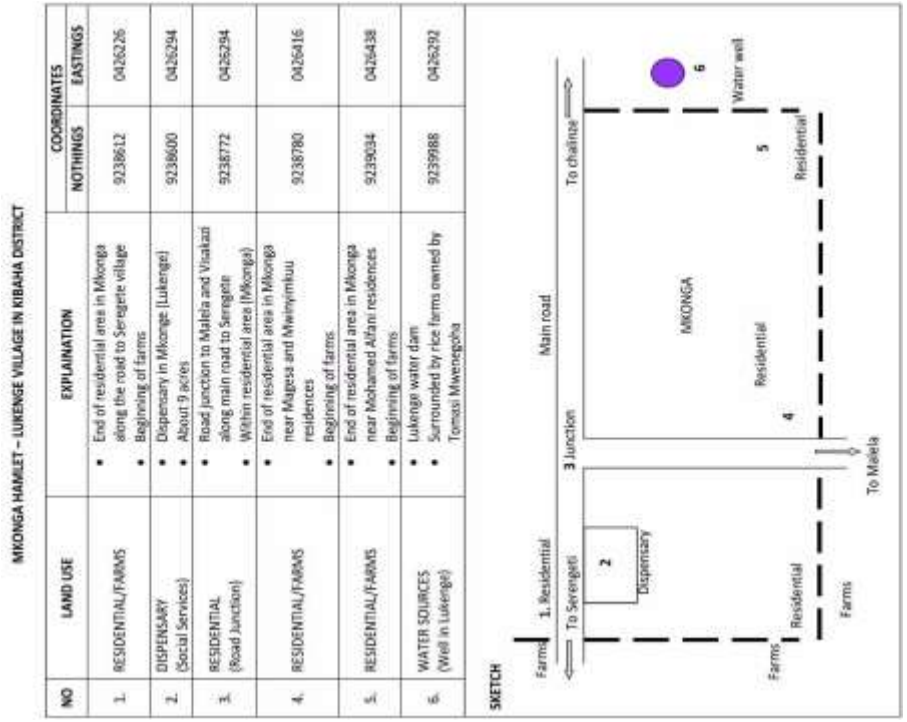


Figure 11: An example of a matrix and sketch for recording field data

During data collection (detailed data picking), field work groups should also make observations, discuss and take notes of the following issues:-

- Type, names and extent of vegetation (trees, grass) in different areas.
- Geology and soil types in different areas.
- Topology and land terrain.

- Emerging problems such as deforestation, encroachment of water sources, land degradation and proposals for management.
- Proposals for possibilities, and direction of allocation and expansion of particular land uses (residential, social services, agriculture, irrigation potential areas, grazing areas, charcoal dam potential areas, forestry, etc.)

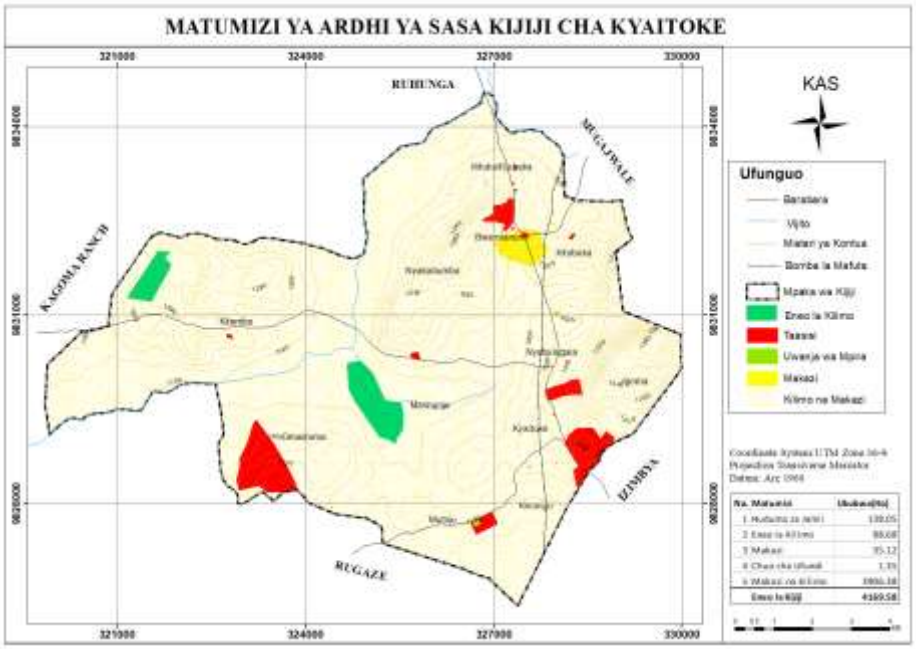


Figure 12: Existing Land Use Map for Kyaitoke Village, Bukoba District, 2019.

3.3.1.2 Using Satellite Images to Prepare the Existing Village Land Use Map

Before commencing fieldwork activities, GIS experts should acquire recent high-resolution satellite image (below 5meters) covering respective village. The acquired satellite image should be processed (including overlaying the village boundary map and contours) and printed in a scale of less than 1:10,000 for clear visibility.

Using the Printed Satellite Images in the Village

a) Familiarize the villagers with the satellite image by training them on how the image is produced and interpretation of different features on the satellite image.
b) Villagers guided by PLUM team traces boundary of land uses basing on features on the satellite image.

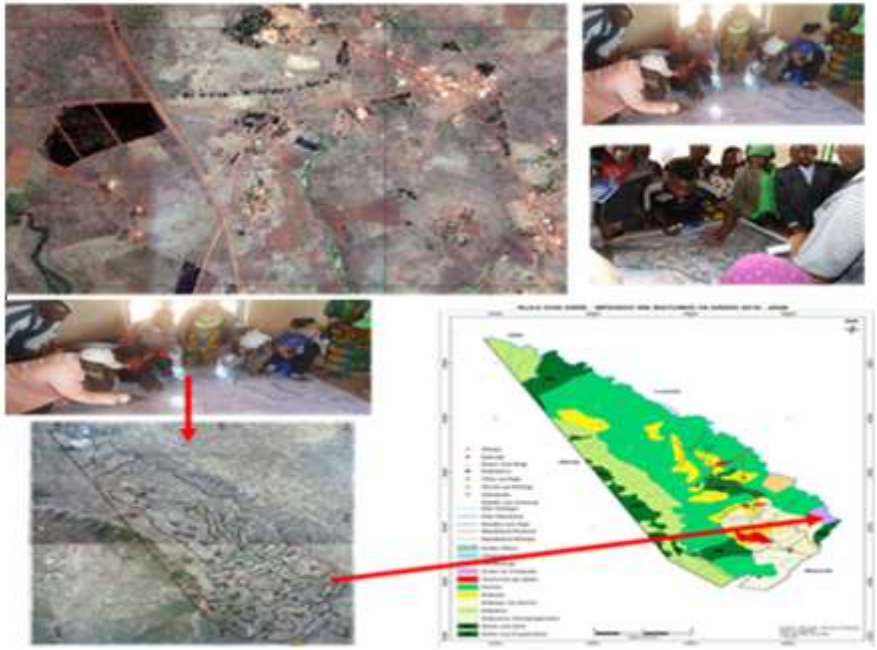


Figure 13: Preparation of the Existing Village Land Use Map Using Satellite Images

c) GPS can be used to confirm the observed feature on the satellite image and other features or boundary of land uses that cannot be clearly identified on satellite image

e.g. Social services (Dispensary, schools, cemetery, village office, churches/mosques etc.)

d) The GIS Expert working with villagers should then put marks on the image with coordinates to guide during geo-referencing.
e) The GIS expert should scan or take a picture of the mapped satellite image using a high-resolution camera for geo-referencing.
f) GIS Expert digitizes features and land uses according to the mapped image by the villagers.

Requirements for the above steps are the transparent plastic paper, transparent tape, whiteboard maker pen, camera, rubber etc.

NB: **For more details on the use of satellite images refer 'Tools and Spatial Technologies for Village Land Use Planning: A Practitioner's Manual for Active Community Engagement, 2019'**

3.3.2 Conducting a Bio-Physical Survey

This activity should be carried out together with data collection and resource assessment to generate enough data to deal properly with important land related problems. The survey should be justifiable in terms of input compared with the expected output (land productivity). The survey should only deal with knowledge gaps that need to be filled for a proper planning. An appropriate technology should be applied to conduct a Bio-physical surveys.

The PLUM team and VLUM committee in consultation with relevant institutions should engage and capacitate the needed expertise for this survey. This survey should be carried out according to the PLUM Action Plan. A bio-physical survey within the setting of PLUM combines the investigation on soil, climate and other land resources, resulting in an assessment of the capacity and potential of the land to fulfil the needs of the village community. It should also result in recommendations that are in accordance with the capacity of villagers to deal with the identified constraints such as land degradation and other causes of low production. Typical issues in such study are:

- Assessment of the land suitability/capability for different uses, i.e. types of agricultural, livestock and forestry uses;
- Options to improve land productivity;
- Availability of water and its quality
- Trends /series of climate data such as rainfall, wind, temperature and humidity.

NB. More details on the parameters for bio-physical survey can be referred in Appendix D.

3.4 Required Inputs and Expected Outputs

Tables 3 and 4 give indication of activities, expected outputs and a general indication of required inputs and quantities for budgeting of each activity and sub-activity of Steps 1-4. Expected outputs from this step are:

- Existing village land use map have been prepared indicating different land uses and resources;
- A first draft of village land use plan report with different maps such as locational, hamlet boundary, land form, vegetation, soil, drainage pattern, hazardous areas, population distribution and density, livestock distribution and density, settlement pattern, social and infrastructure services maps.
- Bio-physical data are gathered, analysed and available to improve the immediate and long-term planning activities.

3.5 Monitoring and Evaluation (M & E)

M & E is done in each step to assess whether activities are carried out according to the action plan, objectives are reached and if corrective measures have to be taken (See section 1.5 of Part A). However, since the action plan in Section 1.2 combines conducting simultaneously activities of Step 1-4, it is recommended to conduct M&E during and at the end of each step (on-the-field monitoring) as well as at the end of step 4 as indicated In Table 3.

STEP 4

PREPARATION OF VILLAGE LAND USE PLAN AND BYLAWS

The community action plan for land use management is further implemented in this step and worked out in detail. Data collection, resource assessment and mapping of different land uses as undertaken in the previous steps enable the planning team to understand better the prevailing village land use problems and possible solutions; including resolving land use conflicts, land reallocation, land use management and land security enhancement. The PLUM team assist the village community to select the most appropriate options for village land uses in consideration of present and future land requirements.

4.1 Objectives

A. To address land use challenges

B. To prepare and approve a village land use plan with villagers considering national, community as well as individual interests

C. To prepare and approve village land use management bylaws for enforcing the land use plan

D. To enhance environmental conservation and climate change adaptation and mitigation measures

E. To initiate preparation and implementation of village land use management measures

4.2 Conditions to Start

Important conditions to be met before starting this step are:

- A CAP for land use management which reflects interests of stakeholders in a balanced way;
- Village boundaries established;
- An up-to-date and informative maps in place
- Potential land uses are identified
- Shared resources are identified
- Villagers are aware of the need for PLUM and well mobilised;
- An efficient and motivated PLUM team and VLUM committee;
- The required resources for this step are made available.

4.3 Activities

4.3.1 Prepare a Proposed Village Land Use Plan

After completing Step 3 and all relevant maps are in place, the PLUM Team facilitates the VLUMC and Village Council to prepare the proposed land use plan (Activity No. 6 in Table 3) in consideration of land use management issues earmarked in the Community Action Plan and field work.

Proposals of a village land use plan prepared by the VLUMC in assistance of the District PLUM team are presented to the Village Council for adoption. At this stage the VLUMC should be prepared to make the presentations while the PLUM team to play the supporting and facilitating roles. If there are any changes made by the Village Council should be incorporated in the draft land use plan report.

At each meeting, the facilitator has to ensure that each member of the VLUMC and Village Council has equal opportunity to contribute to the proposals of the village land use plan to reflect interest of all land users. During the Village Assembly meeting PLUM team should provide more clarifications on raised issues during presentation.

4.3.1.1 Proposals for Different Land Uses

During detailed data picking, field work groups are supposed to have made observations and notes on:

- Emerging environmental problems such as deforestation, encroachment of protected areas and catchment areas, land degradation and management proposals.
- Proposals for possibilities and direction of allocation, expansion and protection of particular land use (residential, social services, agriculture, grazing, forestry, wild life etc.)

These proposals are systematically combined together in consideration of existing land uses, sectoral expertise and standards. Proposals are made in terms of text and sketched on the map.

A. Community Facilities and Infrastructures

This should be considered first, due to its nature of being owned by the whole community, under the guardian of the Village Council. It is easier and less expensive to allocate land for community facilities at present times than in the future when land pressure will have increased. Allocating land for village community facilities and infrastructures should consider the following:-

a) Existing community facilities;
b) Present and future requirements for community facilities.
c) Attracting investment in community facilities and infrastructures (i.e. NGOs, religious institutions, private).
d) Potential areas for investment;
e) Nearness to the existing community facilities (electricity, water, transport, security etc.).
f) Accessibility;
g) Village centre;
h) Space standards for community facilities;
i) Compensations (cash, in kind, alternative land) if applicable.

B. Settlements Areas

Human Settlements are a living phenomenon that grows with time. Usually it combines a homestead, garden and livestock sheds. Field groups should combine notes on requirements and directions for expansion of settlements. This should be based on population and number of households (homesteads) in each hamlet. The projected number of households in the planning period of 10 years multiplied by the average size of settlement area for each homestead gives the required settlement area for

the hamlet/village. Allocating land for settlements areas should consider the following:-

a) Existing settlement areas.
b) Present and future requirements for settlement areas.
c) Direction and extent of growth of settlement areas,
d) Accessibility to community facilities and infrastructure to land users groups,
e) Separating settlements from other land uses particularly agricultural farms, wildlife corridors, protected and grazing areas,
f) Agreeing on the required average settlement area per household,
g) Culture and tradition of the community,
h) Modalities for acquiring settlement land for new households.
i) Management of settlements and community facilities areas as provided for in Step 5,
j) Presence of hazardous areas such as flood prone areas.

Note: Further reference on the space standards for human settlements, community facilities and infrastructures can be referred from the Urban Planning (Planning Space Standards) Regulations of 2018

C. Agricultural Land

These are areas often privately owned for each household, mainly used or designated for crop production. During land allocation they can be differentiated into land for production of food and cash crops; or perennial or semi-perennial crops (coffee, fruit trees, vine etc.), annual crops (maize, sorghum, beans, sweet potato, horticultural crops etc.), irrigated crops (paddy and horticultural crops such as tomatoes, cabbage, cucumbers etc.).

To get planning proposals, fieldwork groups combine notes on requirements and directions for expansion of agricultural areas. Requirements for agricultural land for food and cash crops can be calculated using two basic methods:-

- The Carrying Capacity method (See Appendix D)
- The Sustainable Optimal Development of Agriculture Production method based on the existing situation and projected future requirements.

The Carrying Capacity Method is preferably used when establishing a new Village/Hamlet as was the case during the Villagization Programme. It is not ideal for an existing village, and due to its technical requirements and calculations (e.g. calories requirements) it is not easy for villagers to understand and participate. Moreover, for most villagers, agriculture and livestock production are the means of livelihood and development i.e. food, education, health, better housing, transport, communication, leisure etc.; AND not only meant for food sufficiency and cash for basic needs. Henceforth, for most villages in Tanzania, the Sustainable Optimal Development of Agriculture Production Method is recommended.

<u>Sustainable Optimal Development of Agriculture Production</u>

The average farm size for all crops per household in each hamlet/village is used as a baseline. If areas for expansion of farms are available (refer to field notes from Step 3), it should be deliberated upon suitable planned average farm size taking into consideration of the following:-

- Development of households for better living conditions (livelihood) and poverty eradication i.e. decent housing, food sufficiency, health care costs, education costs, transport, energy, water etc;

- Availability and use of better farming technologies/equipments e.g. power tillers, tractors, ploughs etc.;
- Availability, ability and use of other agriculture implements e.g. fertilizers, pesticides etc.;
- Availability of land for other land uses;
- Ability of the household to manage the planned average farm size and other required activities i.e. planting in time, weeding, harvesting etc.

The planned average farm size is multiplied with the projected household numbers in the planning period of 10 years to get the required total acreage for agriculture in the village/hamlet.

For example, in May 2010 in Lukenge village (Kibaha district); it was planned to expand the average household farm size from 3 to 5 acres in Mzizima and Mkonga hamlets; and in Muyombo (pastoralists) from 1 to 3 acres as shown below:-

No.	Hamlet	Projected total households in 2020	Total land requirements for residential (acres) 0.5 acres @ household	Total land requirements for agriculture (acres) 5.0 acres @ household
1.	Mzizima	134	67.0	670
2.	Mkonga	196	98.0	980
3.	Muyombo (3 acres/household)	363	181.5	1,084
	Total	**693**	**346.5**	**2,734 acres**

Allocating land for agriculture should consider the following:-

a) Existing agriculture areas,
b) Present and future requirements for agriculture areas,
c) Agreeing on the required average farm size per household,
d) Direction and extent of growth/reduction of agriculture areas,
e) Separating main agricultural land from settlements, wildlife corridor, livestock routes, protected and grazing areas,
f) Optimizing utilization of the village irrigation potential areas,
g) To avoid encroachment to water sources, grazing, reserved and protected areas.
h) Modalities for acquiring agricultural land for new households,
i) Livestock keeping systems,
j) Farming systems,
k) Allocating land for large and medium scale farming investment depending on the availability of land,
l) Improving and optimizing crop production and management of agriculture land as provided in Step 5.

D. Livestock Keeping and Grazing Areas

These are areas used or designated for livestock grazing, of which pasture can be improved. Also they need to be facilitated with infrastructures such as cattle routes, charcoal dams, cattle dips, livestock markets etc. To get planning proposals, fieldwork groups combine notes on requirements and areas used for grazing and movements. To calculate the area (acreage) required for livestock grazing in the hamlet/village, livestock data collected are converted into Livestock Units (LU).

In this context, 1LU is an equivalent of one mature Tanzanian short horn zebu cattle, with live body weight of 250 kg. If daily dry matter intake is assumed to be 3% body weight, then it means forage requirement of 7.5 kg per day or 2737.5 kg per annum. In most Tanzania areas (savannah grasslands) this amount of forage (biomass) can be obtained from 2.5 hectares (4.5 acres) annually,

which is a planning unit requirement for 1LU. However, this depends on variation of agro-ecological zones and breeds.

1LU is equivalent to 1 cattle, 2 donkeys, 4 goats, 4 sheep. The total number of livestock units in the hamlet/village is multiplied by the annual grazing unit requirement to get the total required grazing area in the hamlet/village.

For example, in Lukenge village (Kibaha district, requirements for grazing land was calculated as shown below:-

Hamlet	Cattle	Goats	Sheep	LU	Grazing area (ha)
Mkonga	1,550	25	-	1,556.25	3,112.5
Mzizima	-	-	-	-	-
Muyombo	8,000	3,000	2,500	9375	18,750.0
Total	**9,550**	**3,025**	**2,500**	**-**	**-**
LU	**9,550**	**756.25**	**625**	**10,931.25**	**21,862.5**

However, the total village land área is 16,195.8 ha; and the land allocated for grazing is 3494 ha (21.5% of the village land) which is enough for 1747 LU. Henceforth, the rest 9184.25 LU have to be removed from the village or harvested.

Allocating land for livestock keeping and grazing should consider the following:-

a) Existence of livestock keeping and grazing areas,
b) Present and future requirements for livestock keeping and grazing,
c) Direction and extent of growth/reduction for livestock keeping and areas,
d) Separating grazing areas from settlements and farms,
e) Establishing and maintaining livestock infrastructure, cattle routes to water points, pasture and cattle holding grounds,
f) Farming systems in the village,
g) Livestock keeping systems in the village,
h) Existing and projected livestock units kept in the hamlet/village to match with carrying capacity of allocated grazing land (*Note: Facilitators should consult respective district council to obtain standard LU data*).
i) If land is available, to allocate land for large, medium and small scale ranching investment.
j) Improving pastures in grazing lands/ranches; and management of livestock keeping and grazing land as provided in Step 5.

E. Forestry Areas

The village government may set aside, own and manage 'Village Land Forest Reserves' within the village boundaries. Also, individuals (households) and institutions can develop and own woodlots or within farms through agro forestry. Forest areas in villages can be subdivided according to its management related to: production and use of timber, fuel wood, charcoal, honey, herbs, etc.; and protection of natural vegetation, animals and water sources. Fieldwork groups should combine notes and make proposals for forestry areas in the village. Allocating land for forestry areas should consider the following:-

a) Existing forestry areas,
b) Present and future requirements for forestry,
c) Direction and extent of expansion/reduction of forest areas,
d) Identification of village forest reserves and open forests for use (energy source, wood, building materials, medicine etc.),
e) Management of water sources, steep slopes and hilly areas,

f) Environmental conservation and control of climate change impacts,
g) Allocating land for large and medium scale forestry investment depending on the availability of land,
h) Management of forestry areas as provided in Step 5.

Note: Villages neighbouring national/districts forest reserve should consider allocating land with compatible uses.

F. Water Resources, Catchments and Wetlands

The Environment Management Act Cap 191 (Section 57) and the Water Resources Management Act (Section 34) provides for all potential water sources to be protected by leaving a 60 meters buffer zone on both sides of a river and 200 metres for ocean, lakes and dams. Also, the Environmental Management Act provides for identification of environmental sensitive areas to be protected and managed such as wetlands (swamps, marshes, bogs, and fen), catchment areas, highly eroded areas and landslides prone areas. These areas should be identified, demarcated and conserved. This also applies for water sources in private land i.e. farms and forests; whereby owners should be administered to conserve water sources by growing trees, grasses and crops with friendly properties of conserving water sources such as bananas, sugar canes, livestock pastures etc. Management of water sources areas is provided for in Step 5, however, further reference on the types of uses in environmental sensitive areas can be referred from relevant guidelines for management of such areas as provided by relevant authorities.

G. Wildlife Conservation Areas

Villages that are contiguous neighbours to wildlife protected areas (National Parks, Game Reserves, Ngorongoro Conservation Area and Game Controlled Areas) should demarcate 500 metres as buffer zone or identify and demarcate community wildlife management areas (WMAs) within village boundaries. This area is supposed to be a buffer zone of other village land uses with wildlife so as to mitigate destruction to villagers and their activities/assets by wildlife animals; and also destruction to wildlife animals and their environment by human activities. Villagers should participate in management of the WMA in collaboration with the wildlife sector as elaborated in Step 5. Also, villages with wildlife migration routes, corridor and dispersal areas should consider allocating land for such uses.

H. Industrial Areas

Allocating land for industrial uses should consider the following;

a) Existing industrial areas in the village,
b) Present and future requirement for industrial use,
c) Separating industrial areas from settlements, conservation areas and other incompatible land uses,
d) Agreeing on required size for small and medium industries,
e) Adherence to Environmental Management Act and other relevant legislations,
f) Established criteria for acquiring industrial areas.

I. Other Land Uses

There are other land uses which are unique in some villages such as mining, quarrying, fish farming and bee keeping. Such land uses are identified in Step 2 (data collection and resource assessment) and mapped in the Step 3. At this stage, their planning proposals are also considered and included in the village land use plan.

4.3.1.2 Assessing Climate Change Vulnerability and Green House Gases Emission Potentials on Planned Land Uses.

All Land use proposals are analysed to assess the level of vulnerability to climate change impacts and GHG emission potentials as shown in Table 7.

Table 7: Vulnerability and GHG Emission Potentials on Planned Land Uses

Land use type	Vulnerability levels (High, Medium, Low)	GHG emission potential (High, Medium, Low)	Recommendations (No action, re-locate, climate proof (adopt adaptation and mitigation strategies in the management plan))
Agriculture			
Livestock			
Grazing areas			
Community facilities			
Other			

Note: Other limitations that are not linked to climate change (such as gullies, hard rocks and hazardous areas as identified in Step 2) should be assessed and appropriate management measures recommended for action.

4.3.2 Drafting Village Land Use Management Bylaws

Bylaws refer to regulations, which are made by a local authority, which are binding in a particular area, and which cannot be covered easily by national legislations. Bylaws can be created for the district and the village levels and should not contradict with national legislations. For PLUM, bylaws provide the legal basis and are considered as powerful tools to enforce specific local level agreements concerning natural resource management and village land-use plans. They can be created to allocate land for different uses and to give restrictions and directives for the management of the different defined uses, in order to protect various land resources such as water, soil and vegetation (forest). Village bylaws are necessary in areas with serious land conflicts whereby agreements approved by the village assembly are expected to be insufficient to make them respected by all members of the community.

After, the draft land use plan is accepted and adopted by the Village Council, the PLUM Team, in the presence of the VLUMC, should facilitate the Village Council to prepare bylaws (Activity No. 6 in Table 3) for enforcing the prepared land use plan. Minutes (with signed attendance by each participant) of the Village Council meeting that prepared the Village Land Use Plan and Bylaws should be part (appendix) of the report. These minutes should be signed by the Chairperson and Secretary (VEO), and stamped with the Village Council stamp.

Procedures for preparing and executing Village bylaws are provided for in the Local Government Act (District Authorities) R.E. 2002 Sections 163-167; which essentially involves:-

a) Village Council makes draft proposals and contents of bylaws to effect implementation of the Village Land Use Plan.
b) Village Council convene a meeting of the Village Assembly and present the proposed village bylaws for approval with or without amendments.
c) Village Council submits bylaws together with the minutes of the meeting of the Village Assembly that deliberated

upon approved bylaws to the respective District Council for adoption.

d) Adopted Village bylaws shall come into operation on a date signed by the District Authorities.

Village Land Use Management Bylaws are composed of the following main features:-

- Introduction and reference to the main Act (Sections) which provides for their making;
- Interpretations;
- Powers and responsibilities of institutions/organs to be involved in executing the bylaws;
- Description and management measures of land uses as provided for in the Village Land Use Plan;
- Adjudication, demarcation, indication and registration of land uses and land parcels;
- Revision and changes in the Village Land Use Plan;
- Penalties for breach of the village bylaws
- Approval and operational of the bylaws;

At the end, agreements are made on when the village council will call for village assembly meeting, date, time and presentation modalities. **An example of Village Land Use Management ByLaws is attached as Appendix E.**

4.3.3 Surveying of the Proposed Land Uses and Compilation of Data

After completing activity No. 6 in Table 3 as explained in Section 4.3.1, the PLUM Team and VLUMC convene surveying of the proposed land uses as agreed by the Village Council. It is expected that, the second draft of village land use plan with all required and relevant maps will be in place before presentation to the Village Assembly.

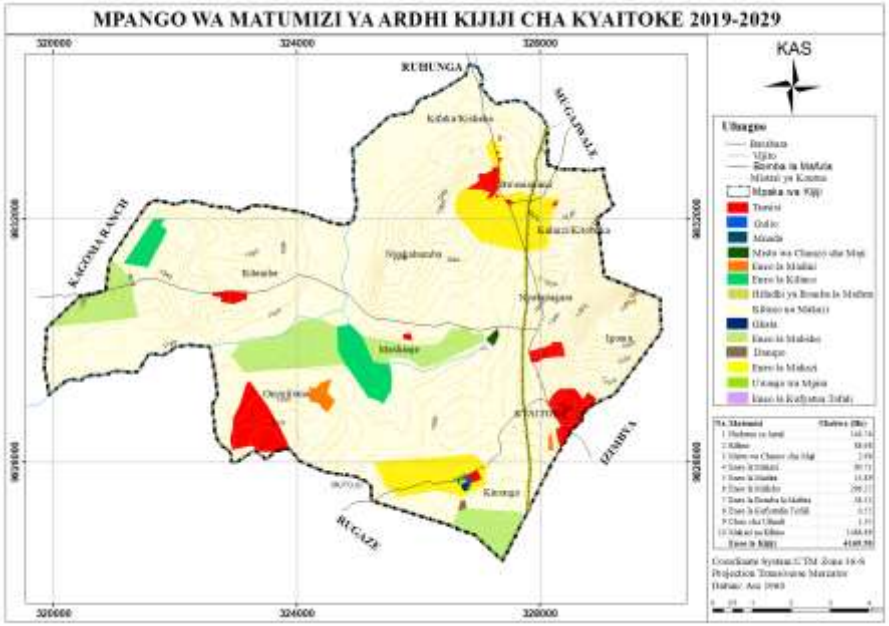


Figure 14: An example of Kyaitoke Village Land Use Plan, Bukoba

4.3.4 Presentation of the Village Land Use Plan and Bylaws to the Village Assembly

A Village Assembly meeting is conducted whereby the Village Council with support of VLUMC and the District PLUM team presents the proposed village land use plan and bylaws. All items (proposed land uses and bylaws) are presented, discussed, and explained to reach agreements. If there are any changes made they should be done on both texts and maps resulting into the final version of the Village Land Use Plan and Bylaws, and approved by this meeting. Minutes (with signed attendance by

each participant) of the Village Assembly that approved the Village Land Use Plan and Bylaws should be part (appendix) of the report. These minutes should be signed by the Chairperson and Secretary (VEO) and stamped with the Village Council stamp. Presentation to the Village Assembly meeting should cover the following items:-

a) Introduction and an overview of importance, process and outcome of a village land use plan and bylaws. ***(PLUM team)***
b) Major existing situation report data; analysed land use problems and existing village land use map. ***(VLUMC or VC)***
c) Community Action Plan. ***(VLUMC or VC)***
d) Village Land Use Plan (Text and Map). ***(VLUMC or VC)***
e) Village Land Use Management bylaws. (***VLUMC or VC***).

The PLUM team should discuss with the Village Council on possible ways of making the Village Assembly meeting a success in terms of attendance, communication, timing, and participation of different community groups. Date set for the Village Assembly meeting should give enough time (about 2 days) for the GIS and report teams to complete and print the land use plan map and report. While this is being done, PLUM team will be working with subsequent villages. The PLUM team should also initiate M&E (See 4.5)

4.3.5 Erect VLUP Sign boards

After approval of village land use plan and by laws, the District PLUM team facilitate the VLUMC, to erect VLUP sign boards (preparations started during Step 2), by reading coordinates of boundaries of planned land uses from the map and translating them on the ground using a GPS. Signboards (showing the type of land use and management measures identified in the Bylaws) are usually erected on the ground. Land use signboards are meant to show/translate on ground the boundaries of agreed land uses as documented in the village land plan. These signboards help to show and inform villagers on the permitted and restricted uses (See Figure 15) in that area, thus they should be erected near roads/tracks/ways or at any point that can be easily seen by villagers.

Figure 15: An Example of Signboard for Planned Land Use

The size of the Sign board should be 1X1 m with a stand of 1 meter and should be erected on the ground. The background of the signboard should be white while words should be in black with solid line fonts. The minimum number should be two signboards per one type of land use)

4.4 Joint Village Land Use Planning and Management

Joint Village land use plans (JVLUP) can be developed between two or more villages particularly where sharing of resources across the villages is significant. Joint village land use planning

provides an opportunity for formalizing and protecting the sharing of resources across village boundaries.

The Land Acts provide the opportunity for the process to take place. The Village Land Act No 5 of 1999 Section 11, and its Regulation 2002 No. 26-35 empowers the village council to enter into a joint village land use agreement with other villages for the land resources traditionally so used by any those groups and land that is partly under one village jurisdiction and partly within the other village jurisdiction.

The Land Use Planning Act No 6 of 2007 section 18 provides for the formation of the joint village land use planning authority and in section 33 (1) (b provides for preparation of the joint resource management sector plan where resources are shared between villages. As with individual VPLUPs, village land is zoned by priority use in a Joint land use plan. Resources, which are commonly shared, include grazing areas, forests, water resources and wildlife. The process follows the normal steps indicated in these guidelines, but with modification to suit the need for joint plans or agreements

The JLUP approach has been used in the rangelands since 2014 under the Sustainable Rangeland Management Project in Kiteto district where the process has made it possible to formalize the sharing arrangements of grazing land, water sources, livestock routes and salt licks across the village boundaries of Orkitikiti, Lerug, Enguangare, and Ngapapa villages popularly known as OLENGAPA. Conflicts over resource use (pasture, and water) have been resolved by all villages agreeing to a Joint Land use Agreement.

4.5 Required Inputs and Expected Outputs

Tables 3 and 4 give indication of activities, expected outputs and a general indication of required inputs and quantities for budgeting of each activity and sub-activity of Steps 1-4. Expected outputs from this step are as follows:

- A village land use plan map
- Approved village land use management Bylaws;
- Final report of a village land use plan which includes; management strategies for various land uses; and recommendations for climate change adaptation and mitigation strategies for planned land uses;
- Signboards depicting various land uses prepared and erected;
- Structures for joint management of resources are in place.
- Agreement for management of shared resources in place.

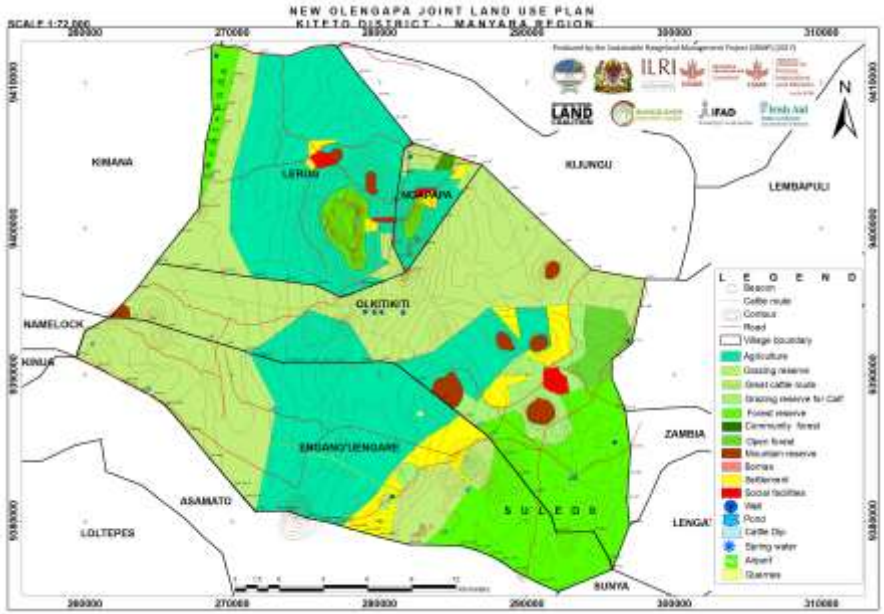


Figure 16: An example of Joint Village Land Use Plan of OLENGAPA in Kiteto District, 2014

4.6 Monitoring and Evaluation (M & E)

At the end of this step, the PLUM team, Village Council and VLUMC should discuss and evaluate activities accomplished based on the action plan using expected outputs and results as indicators. Also, they should discuss and plan for the way forward for implementing other activities in the Community Action Plan which essentially form the forthcoming Steps (5 and 6) of these Guidelines.

For activities of Step 1-4, the following proposals for M & E are made:

a) The PLUM team ensures follow-up of the action plan (Section 1.2) on a daily basis; i.e. if work proceeds according to planning in terms of time, materials and budget leads to the desired results;
b) The PLUM team members and VLUMC make notes during all activities, to be used for discussion, evaluation and preparation of the required reports, maps, etc.;
c) The PLUM team coordinator monitors the cooperation among the district staff and villagers. The attendance and performance of the staff and villagers concerned during the various activities are important indicators;
d) The PLUM team monitors if decision making at the village level is carried out in a participatory manner, and if the village land use plan and other products of these step have the required quality;
e) Expected outputs of these steps (1-4) summarized in each step are key indicators for monitoring and evaluation;
f) After completing field work of Steps 1-4 in the first batch of selected villages, the District PLUM team should meet to review the progress of activities in these steps based on the action plan and other documentation (CAP, maps, and reports) prepared during these steps.

During this meeting the PLUM team should draw a road map for completing the following:-

- Completing, printing and submission of VLUP reports and shape files (To NLUPC, District Council and respective Village Councils),
- Adoption and effecting land use management bylaws,
- Planning for Implementation of Step 5 & 6 (Management measures & Land Administration).

STEP 5
DETAILED VILLAGE LAND USE MANAGEMENT PLANNING

In previous steps, land use management challenges, their related mitigation measures and opportunities have been identified and appropriate land uses demarcated. In this step, villagers are facilitated to adopt and implement the recommended land use management measures in order to mitigate those challenges, optimise land productivity and improve living conditions. Planning and implementation of appropriate land use management measures is a lifetime exercise that depends on evolvement of challenges and management approaches (technologies and innovations).

5.1 Objectives

A. To build the capacity of villagers for planning and implementation of the selected land use management measures.

B. To implement measures for improved land use management in allocated land uses

C. To implement measures for climate change adaptation and mitigation

D. To promote sustainable utilization of natural resources for socio-economic development.

E. To assess the impact of the initiated PLUM process in the village, and implementation of CAP.

F. To assess sectorial integration in implementation of planned land uses.

5.2 Conditions to Start

Important conditions to be met before starting this step are:

- Approved village land use plan is in place.
- Bio-physical surveys for different parameters are undertaken
- Land-use conflicts are resolved/minimised.
- Resource sector management planning and implementation guidelines and regulations are in place.
- Resource sector work plan and budgets for implementation in prioritized villages are in place.
- Management committees for communal land use are in place.

It is not a pre-condition to start Step 5 before implementing Step 6. However, given its importance in improving community livelihoods and promoting sustainability of the environment, it is highly recommended to implement Step 5 before implementing Step 6 for land uses that involves or provides livelihood options for majority of people (eg. farming, livestock keeping etc.).

5.3 Activities

5.3.1 Monitor Implementation and Ensure Compliance with Approved Village Land Use Plan

Before embarking on preparation and implementation of land use management plans, monitoring and evaluation should be conducted to ensure compliance of the approved village land use plan. This should be done at least within 3 months, after approval of the VLUP by the Village Assembly. This is an external auditing process to evaluate villagers' participation and VLUP ownership, VLUP reports and maps versus actual situation on the ground; and to monitor implementation and ensure compliance with approved Village Land Use Plan.

During this exercise, the team should ensure the Village Council has the approved Village Land Use report and conversant with planned land uses. If VLUP Sign boards were not prepared and erected in Step 4, they should also be prepared and erected.

5.3.2 District PLUM Team Preparations for Detailed Land Use Management Planning

The activities involved in the planning and implementation stages of land use management fall into two major categories; general and specific activities. The general activities include all cross-cutting activities which lay foundation for the execution of the planning process for any land use management plan e.g. creating awareness; formation of the planning team; preparatory meetings to mobilise land users, the village government and relevant stake holders.

Specific activities deal with technical aspects of a particular land use; and sector legislations, regulations and guidelines which stipulate procedures for preparing and implementing management plans e.g. The Forest Act (2002), The Wildlife Conservation Act (2009), The Community-Based Forest Management Guidelines (2007) etc.

The PLUM team should arrange a preparatory meeting to work out a work plan and required resources for preparations of detailed land use management plans in particular villages. For a district starting to prepare and implement land use management plans, it is recommended to consult experienced personnel e.g. NLUPC, Academic institutions, Private sector, NGOs etc. Thereafter, PLUM team should consult respective village(s) and arrange a meeting with the Village Council and VLUMC.

5.3.3 Conduct a Preparatory Meeting with the Village Council and VLUMC

Issues to consider in this meeting are:

a) To discuss briefly the achievements of the previous steps, implementation of the Community Action Plan and challenges.
b) To discuss objectives and set activities of this step;
c) To evaluate performance of the VLUM committee, and prepare it for the forth-coming tasks (as village para professionals) in planning and implementation of detailed land use management plans;

d) To identify other village institutions e.g. Village Game Scouts, Water Committee, Natural Resources and Environment Committee, Livestock keepers Committee, CBOs, Extension workers etc; to be involved in planning and implementation of detailed land use management plans;
e) To identify other villagers e.g. prominent farmers, livestock keepers, environmentalist etc; to be involved in planning and implementation of detailed land use management plans;
f) To identify needs of special groups which will be incorporated in the detailed land use management plan;
g) To familiarize with the impacts and effects of climate change and variability as identified in previous steps.

5.3.4 Conduct Village Land Use Management Appraisal

After the preparatory meeting with the village council, the PLUM team should meet the village level resource sector land management committees, VLUMC and other villagers identified in 5.3.3 for training and awareness creation on sustainable land management and procedures for preparation and implementation of resource sector management plans. During this training a general land use management appraisal will also be conducted through review of existing data and literature (collected in step 2 and 3) related to the planning area.

The aim is to ensure awareness on land management is undertaken through a holistic approach so as to appraise problems, review opportunities and activities for improved land use management which were identified during data collection and resource assessment, and presented in the CAP. This applies to all prominent land use categories in the village (See example in Box 5.1). The prioritised problems will be further analysed and possible solutions will be worked out for each particular land use.

Box 5.1: Examples of land management measures which can be applied in step 5 for the different categories of land uses

Farming areas a) Improved land preparation, seed planting, fertiliser use and crop protection measures b) Soil & water conservation measures c) Mulching, composting d) Agroforestry: planting trees, grasses, etc. e) Improved irrigation measures	**Grazing areas** a) Measures to improve grass production b) Conservation of water points and cattle tracks c) Soil & water conservation measures	**Residential areas & areas for community facilities** a) Improved housing, pit latrines, waste pits, drainage, access paths, roads and other infra-structures according to need and affordability b) Spacing of houses, pit latrines, access paths, etc. c) Tree nurseries, planting shade & fruit trees, etc. d) Improved sheds for zero grazing e) Techniques for water harvesting, bio-gas, etc. f) Use of wood saving & solar cookers, etc. g) Improved storage of harvest products
Wildlife areas a) Protection of water points b) Establishment and maintenance of viewpoints, camp sites, etc. c) Acceptable measures to minimise wildlife passing into other village areas	**Forest & fragile areas** a) Tree planting b) Soil & water conservation measures c) Selective tree cutting, pruning, etc.	

5.3.5 Detailed Land Use Management Planning

After executing the above general activities, the PLUM team will be responsible to coordinate and communicate with responsible sector (Forestry, Wildlife, Livestock, Agriculture, Settlements etc) within the district to carry out specific detailed land use

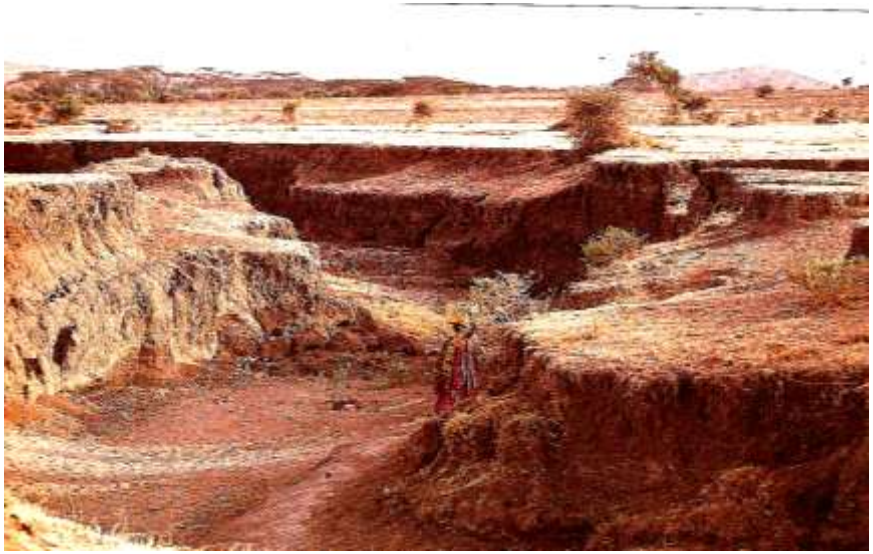
management planning of their respective sector. Moreover, the District Council as Planning Authority should allocate funds for undertaking detailed management planning. It may also collaborate or seek assistance from other stakeholders (Sector Ministries, Development Partners or Non-Governmental Organizations) to support preparation and implementation of land use management plans. Time taken for each sector to come out with draft land use management proposals, will differ from one sector to another depending on the availability of resources (both financial and personnel) technology and nature of the work. The following are procedures for preparing detailed land use management plans for different land uses;

A. Detailed Management Planning for Agricultural Land;

(i) Determine farming status and factors limiting crop production e.g. low fertility, weather variability, poor farming technology, primitive farm implements, insufficient use of improved seeds and fertilizers, inadequate extension services, low crop prices and informal market systems.

Cultivation on steep slopes

Rill erosion in a maize farm



Ultimate severe gully erosion

(ii) Establish 'land use management units'; homogeneous units of land which require similar management measures/techniques; they are more or less alike in physical characteristics based on soil type and landscape;(Map at scale of 1:5,000-1:10,000; mapable units >20 hectares). It is preferable, land use management units to be established basing on crops grown, terrain, soil and water conservation measures etc. Soil survey and land capability assessment should be done based on established land use management units.

(iii) Prepare specific management proposals for each delineated land management unit such as the following:

- Recommend agronomical practices and modalities for extension services.
- Undertake soil surveys to determine soil nutrient and water requirements/shortage for preferred crops.

Contour farming

Check dam to control gully erosion

Bench terraces planted with elephant grass and agroforestry in a farm

- Recommended soil and water conservation measures and make cost estimates. Common measures include:
  - Biological measure e.g. crop rotation, mixed cropping, strip cropping, intercropping, trash lines, grass strips;
  - Traditional measures e.g. contour farming, early planting, tillage practices, ridging, mulching, organic fertilizers;
  - Physical measures e.g. terraces (graded terrace, level terrace, bench terrace, stone terrace, ridge terrace, permeable cross slope barrier;
- Outline fertility status and fertility restoration proposals, manure application rates, use of leguminous plants (species, availability, timing), agro forestry (tree species, planting methods, supply of tree seedlings-introducing seed farms (use species palatable to livestock), fallowing (fallow requirements, periods);
- Identify required on farm water harvesting methods e.g. ridging and tie-ridging, Matengo pits, conservation bench terraces, contour bunds;
- Identify water sources in agricultural land, and determine their management measures.

(iv) Prepare other general management proposals for the agricultural land e.g. weed control methods, vermin, pests and diseases control methods (indicate type of chemicals to control pests, weeds and diseases, rate of application);

(v) Select sites for farm buildings, farm roads (mainly to be located on crests);

(vi) Identify potential areas for irrigation and infrastructures required and estimate its cost.

(vii) Determine the amount of land required to meet family needs in terms of food and cash income; at least for 10 years; carrying capacity of the area set aside for agriculture (farmland);

(viii) Propose other feasible alternative source of supplementary income to farmers;

(ix) Identify and map the remaining land set aside for agriculture (farmland), for medium and large scale investment (land bank)

(x) Propose climate resilience management practices for agricultural land. (Refer Climate Smart Agriculture Strategy)

(xi) Identify and map land for special groups.

Compile the draft report and maps of detailed agriculture land use management plan and its subsequent annual work plan and budgets. The annual work plan and budget will be reflected and implemented through the annual Village and District Council plan and budget

NB: For more details refer to relevant sector guidelines

B. Detailed Management Planning for Rangelands

(i) Establish 'land use management units' in the grazing land and map them. Prepare suitability maps based on the resource qualities and quantity;
(ii) Describe rangeland management unit to include a resource map and information collected through the participatory rangeland resource assessment;
(iii) Identify areas with special conservation features, vegetations and attraction sites that need special measures within the area designated for grazing;
(iv) Identify rangeland management actions including rangeland resources and uses; rights of access and management responsibilities; improvement and development; and rangeland health and condition monitoring;
(v) Prepare and map land use requirements for grazing based on carrying capacities and possible grazing systems;
(vi)
(vii) Prepare Rangeland Management Plan showing areas needing the following:
- Seeding or reseeding: type of seed, rates and manner of which shall be subscribed by the range officer;
- Fertilizers (type, rate)
- Weed, bush and pest control methods – to be prescribed by rangeland management expert;
- Soil erosion control measures (contouring, terracing, tree/vegetation planting);
- Special conservation measures (soil, water, wetlands);

Over grazing resulting into land degradation

(viii) Provision of facilities and infrastructures (water points, livestock handling, fencing, cattle dips, livestock markets, livestock routes);
(ix) Identify and map the remaining land set aside for grazing land for medium and large scale investment (land bank)
(x) Identify modalities for extension services for livestock keepers
(xi) Plans for monitoring and evaluation (M&E) and methods for revision of the plan as part of an adaptive management process
(xii) Establish/develop intensive livestock production system within household farm/plot

Grazing land with improved pastures i.e.rhodes grass mixed with legumes e.g. tropical kudzu and channel terraces planted with elephant grass

A farmer practicing zero grazing

NB*:* For more details refer to relevant sector guidelines and piloted project such as Sustainable Rangeland Management Project, 2017

C. Detailed Management Planning for Settlement Area

(i) Use population distribution and density maps and community facility maps to prepare a detailed base map of the settlement area

(ii) Prepare a detailed base map of the settlement area, showing major settlement blocks and community facilities at a scale of 1:1000 or 1:2,500

(iii) Prepare land use requirements table for various uses basing on population projections and standards and there after prepare a conceptual plan;

(iv) Prepare corresponding infrastructure layout proposals in collaboration with respective agencies; (TARURA, RUWASA, REA, TANESCO, TPDC,TRC) set aside areas showing roads and road reserves, livestock routes, solid waste collection and disposal sites where applicable;

(v) Prepare detailed village settlement management plan at a scale of 1:1000 or 1:2,500

(vi) Negotiate with landowners to acquire land for infrastructure way leaves and community facilities and agree on and demarcate property boundaries where necessary;

(vii) Assess compensation bills/schedules/in-kind/alternatives for settling third party interests and identify area for resettlement of those to be displaced where applicable;

(viii) Finalise detailed settlement plan and its subsequent work plan and budgets; to be reflected and implemented through annual Village and District Council Budget.

NB: For more details refer to relevant sector guidelines

D. Village Natural Resources Management Planning

D 1: Participatory Forest Management (PFM) in rural area

The Forest Act of 2002 incorporates Participatory Forest Management (PFM) as an approach for communities, groups or individuals across mainland Tanzania to own, manage or co-manage forests under a wide range of conditions. The law recognizes two different types of PFM which are Joint forest management (JFM) whereas the co-management is done between Government or Private forest with local communities and Community Based Forest Management (CBFM) whereby management of forest is done by local communities. These two forest management practices should consider establishment of alternative income generating activities such as beekeeping, tree planting, mushroom farming, horticulture and fish farming.

Steps which are involved in establishing village land forest reserve (CBFM)

Steps involved in establishing village land forest reserves (VLFRs) include the following

- Awareness raising through Village council and Village assembly meetings;
- The village assembly elect the Village Natural Resources Committee (VNRC);
- The VNRC together with forest and other technicians undertake data collection and agreed on VLFR boundaries
- Carry out Participatory Forest Resources Assessment (PFRA) to determine forest resources at the proposed VLFR;
- Develop management and utilization measures for each Forest Management Unit (FMU) based on forest and beekeeping guideline 2007 and CBFM regulations of 2004;
- Data analysis and preparation of management plan to be reflected and implemented through village and district council budget, and any other stakeholders;
- Presentation of management plan to the village council and village assembly;
- Presentation of management plan to Ward Development Committee (WDC);
- Presentation of management plan to District Council for approval;
- Registration of the VLFR into District Forests register;
- Implementation of management plan (Community Action Plan);
- Review of management plan after 3 years;

NB: For more details refer to relevant sector guidelines

D 2: Village Water Sources Management Planning

(i) Identify and map all water sources in the village with reference to the existing land use map;
(ii) Determine main utilisation of the water sources e.g. watering points, sites for wells that supply water for domestic use, gardening sites, irrigation etc. Map these sites and their sizes;
(iii) Determine adequacy of water sources (sufficiency); permanent or seasonal, and location of alternative sources of water during dry season;
(iv) Zone water sources area into various management units e.g. Zone A for domestic uses; Zone B for livestock water points; Zone C for construction of fish ponds; Zone D for irrigation; Zone E for conservation etc;
(v) Map appropriate buffer zone for all water sources;

(vi) Develop conservation measures for each water zone; e.g. Zone B conservation measures should aim at reducing trampling, construction of watering troughs, fencing the tracts to the watering points etc

(vii) Identify land use management measures for water sources buffer zones e.g. Conserving/planting environmentally friendly tree species, reseeding requirements, soil conservation measures;

(viii) Initiate water supply for communities within the village basing on National Water Policy 2002 and Water Resource Management Act 2009.

(ix) Develop measures for management of coastlines, beaches and small islands.

NB: For more details refer to relevant sector guidelines.

D3: Wildlife Conservation Area Management Planning

Wildlife Management Area may be formed within an area of more than one village, in this case respective villages shall enter a joint village land use management agreement prepared in accordance with procedures provided for in the WMA regulations 2018. The following are procedures to be followed:

(i) Undertake participatory Wildlife Management Areas Planning as per Wildlife Conservation (Wildlife Management Areas) Regulations 2018

(ii) Wildlife resources assessment of the WMA, including the following:

- Wildlife distribution and density;
- Wildlife migratory routes;
- Area(s) suitable for establishment of wildlife watering point and wildlife facilities and infrastructure required;
- Risk of wildlife being susceptible to wild disease, e.g. presence of tsetse fly, ticks etc and propose mitigation measures;
- Determine and identify wildlife facilities and infrastructure required.

(iii) Prepare WMA management plan showing areas suitable for animal darting, mobilization, hunting, tourism etc

(iv) Conduct a technical workshop comprising of planning team and the Authorized Association (AA) which shall:-

a) Analyse the information data sheet of the prospective Wildlife Management Area;

b) Undertake technical decisions on zoning, based on the Information data sheet;

c) Describe permitted and restricted uses in each zone;

d) Set limits of acceptable use or change in each zone;

e) Describe rationale and management emphasize for resources each zone;

f) Undertake environmental appraisal for proposed actions in each zone.

(v) Prepare a draft report of WMA General Management Plan or Resources Zone Management Plan and submit to relevant wildlife management authorities for approval;

Note:

For Management of WMA, villagers may prepare General Management Planning (GMP) or Resources Management Zone Plan (RMZP) of 5 years as an interim measure for the management of WMA. Also, for more details on the preparation of GMP and RMZP refer to Wildlife Conservation (Wildlife Management Areas) Regulations of 2018.

5.3.6 Completing the Village Land Use Management Plan

The Village Land Use Management Plan is compiled and completed through 3 main stages:-

a) Planning Team Plenary Meeting

Sector land use management proposals are presented for discussions and adoption by the team. If two or more plans are prepared at a time they should be combined into a Draft Village Land Use Management Plan. If necessary, the detailed land use management plan can require revision of the village land use management bylaws to be more focused into specific issues. At the end of the session, a meeting with the Village Council is arranged for presentation of the Draft Village Land Use Management Plan.

b) Presentation of the Draft Village Land Use Management Plan to the Village Council

The Draft Village Land Use Management Plan is presented to the Village Council for discussion and adoption. If there are changes suggested in the Village Land Use Management Bylaws, they are also discussed. At the end of the session, a meeting with the Village Assembly is arranged for presentation and approval of the Village Land Use Management Plan and Bylaws.

c) Presentation of the Draft Village Land Use Management Plan to the Village Assembly

The Village Council presents the Village Land Use Management Plan to the Village Assembly meeting for approval. Following approval by the village assembly meeting, the village land use management plan is ready for implementation.

5.4 Follow-up for IPLUM implementation

The District PLUM team should maintain communication between the village and district level institutions concerned on the implementation of the Village land use management plan. This task is carried out by sectoral PLUM team members or extension officers involved. A village agricultural, forestry or other extension officer who is residing in the village or nearby and being involved in the PLUM process, can conduct this task more cost effectively and frequently.

In order to make follow-up visits more efficient it is important to inform the Village Council, VLUM committee well in advance. During such a visit, the officer discusses emerging issues about changes in land use and land rights occurring land related problems, the initiated improved land management measures in the village etc. The officer can give advice and if necessary forward the issue to the district authority.

Most importantly, the District PLUM team and Village Councils should make sure the Village Land Use Management Plans are reflected in the Village and District Council annual planning and budgeting for implementation.

5.5 Joint Resource Management Planning

The Land Use Planning Act No.6 of 2007 Section 33 (1)(b) require that in respect of resources shared with other villages, the villages concerned should jointly prepare a resource sector management plan. The need for such plans was raised in step 2—4 where shared resources with other villages were identified and entered in the joint land use plans.

Once adjudication of land in respect of the shared resources (e.g. grazing land, wildlife, community forest) and Certificates of Customary Right of Occupancy (CCROs) for these parcels of land falling within individual villages have been issued, the group (owners, association, CBOs) is responsible for developing a

management plan for that land. This can be one with technical and financial support from relevant District Council, MDAs, NGOs and Donors. Procedures for preparation of joint resource sector management plans will follow the guidelines stipulated in Section 5.3.5. However, participants are derived from all villages concerned and decisions are made jointly. The management plan will be presented and submitted to the concerned village councils in a joint meeting and later to the Village Assemblies (VAs) in a joint meeting for their approval.

For grazing area (rangelands), WMA and Village Land Forest Reserve, the approved plan will be submitted to the respective Ministries for gazettement.

Expected outputs of this step are:

- Appropriate land use management measures have been adopted as identified and prioritised by the village for the different land uses.
- Capacity has been built through VLUMC in planning and implementing the identified land use management measures.
- The Village Land Use Management Plan is reflected in the District Council annual planning and budgeting for implementation.
- The impact of the introducing PLUM in the village is known in terms of,
  - The change in natural resource use and management leading to better living conditions,
  - The capacity of the village community to continue with PLUM more independently.
- Villagers and their institutions are mobilised and able to proceed with the initiated PLUM activities whereby tasks of the parties involved are well understood and agreed upon.

5.6 Coordination and Plan Implementation

Section 19 (2) (f) and (g) of Cap 116 requires the NLUPC to establish machinery for inter sectoral coordination among land use agencies and coordinate land use management activities undertaken by them. That is, sector ministries, local government authorities, agencies and institutions whose activities are directly linked to investments, economic development and exploitation of resources have the responsibility of integrating into their plans, programmes and projects land use management activities aimed at achieving sustainable and optimal production and use of land for economic development and improving livelihood.

Also, as per Section 21 (2) (b), (c) and (d) of Cap 116, District Councils as Planning Authorities have the responsibility of ensuring inter-sectoral coordination, systematic physical development, preparation and implementation of land use and management plans at the district level. It is therefore **mandatory** for District Councils to allocate budget and implement detailed village land use management plans in their areas of jurisdiction.

All Planning Authorities, in accordance to Section 45 (2) and 46 (c) of Cap 116, shall ensure proper execution and implementation of approved plans and make sure that no development takes place on land unless it is in conformity with the approved land use plan.

NB: Sector Ministries are required to undertake policy, technical and legal responsibilities in the process of preparation, implementation and management of land use plans.

5.7 Monitoring and Evaluation (M&E)

M&E should be a continuous process and most important part in the implementation of LUP to ensure sustainable land uses that meets diverse society needs and conserves fragile ecosystems in the village. Important aspects of M & E in this step are to assess impacts of PLUM activities carried out in previous steps, and required support from the district, region and national levels. For activities of this step and whole PLUM process, M & E interventions are recommended as follows:

a) Each sector to prepare a matrix or logic framework for monitoring and evaluation (fisheries, agriculture, livestock, WMA, forest) as a guide to the PLUM team
b) Each sector to educate and train the M&E team on data collection, storage and analysis
c) PLUM and VLUM team should monitor and report implementation of land use plans.
d) Each sector to set and allocate fund for preparation of regulations and details management plans in their respective areas to easy M&E of LUP.
e) The PLUM team ensures the preparation and follow-up of the work-plans on a monthly and quarterly basis, i.e. if work proceeds according to planning in terms of time, materials, budget, and leads to the desired results. This includes the activities of the PLUM team members, associated extension workers, VLUMC, VC, and villagers. This M & E activity is preferably carried out by the PLUM team, together with the VLUM committee;
f) The PLUM team members and associated staff make notes during all activities which will be used for discussion, evaluation and reporting purposes;
g) The PLUM team monitors the cooperation with the villagers, whereby the attendance and performance of the parties involved during the various activities are important indicators;
h) The PLUM team monitors if decision making at the village level is carried out in a participatory manner, and if the roles to be played by the village and district institutions in future are realistic;
i) The DLUPA (see Section 1.2 of Step 1) follows the progress of the activities in this step, based on the work-plans and other documentation (minutes, field progress reports) prepared during this step;
j) The DLUPA ensures that in future the PLUM team or other assigned staff keeps record of all communication between the village and district institutions concerning land issues, including the follow-up visits;
k) The DLUPA through the District PLUM team maintains communication with NLUPC to monitor progress in PLUM application villages, and seek support if required.

STEP 6

VILLAGE LAND ADMINISTRATION AND TENURE SECURITY

Community action plan which was prepared by villagers in step 3 is further implemented in this step and worked out in detail by enhancing security of tenure through land adjudication, registration and issuance of Certificates of Customary Right of Occupancy (CCRO).

6.1 Objectives

A. To monitor implementation and ensure compliance with approved Village Land Use Plan;

B. To build capacity to village council, village land council and village adjudication committee to administer the village land;

C. To strengthen District Land Registry;

D. To establish Village Land Registry;

E. To establish and authoritatively ascertain the existing land rights, boundaries, owners and rights of other interested parties;

F. To adjudicate land parcels and record particulars of land parcels in a village;

G. To prepare, register and issue Certificates of Customary Right of Occupancy (CCRO) to land owners in the village;

H. To adjudicate areas designated for Joint Land Use Management.

6.2 Conditions to Start

Important conditions to be met before starting this step are:

- Village boundaries established;
- Approved Village Land Certificate;
- Approved Village Land Use Plan;
- District and Village land registry established and strengthened;
- Approved Village Land Use Management Bylaws;

- Village Land Council and Village Adjudication Committee (VAC) established;
- Villagers are aware of the process, need and use of CCRO and well mobilised;
- An efficient and motivated PLUM team and VAC;
- Availability of required resources for this step.

6.3 Activities

6.3.1 Public Education on Village Land Administration

It is expected that, sufficient public education has been conducted in steps 1-5. However, before implementation of step 6, it is suggested that public education to be undertaken for the purpose of building capacity of villagers and their leaders on Village Land Administration and Security of Land Tenure. This can be achieved through meetings, mass media (such as television, radio, newspapers etc.) and publications (such as brochures, banners, poster and leaflets).

Education and public awareness programs should be continuous putting emphasis on the following areas;-

- Joint land ownerships, its importance and benefits (WMAs, grazing land, agriculture etc.);
- Types of land ownerships in the village (private, institutions, groups, communal etc.);
- Gender sensitization in land ownership;
- Procedures for application, adjudication and issuance of CCROs;
- Conflict management and procedures for resolving land conflicts;
- Awareness on the use and compliance to the approved village land use plan (agriculture, grazing, water catchment, WMAs etc.);
- Investment opportunities, benefits and challenges in their land;
- Policies and legislations governing or related to land use planning, administration and management in Tanzania;
- Legal requirement and importance of establishing district and village land registries in registration and issuance of land titles.

Note: Education and public awareness programs should ensure participation of all stakeholders at all levels. For village land adjudication purposes, awareness programs should include stakeholders living in and outside the village.

6.3.2 Strengthening District Land Registry

The Village Land Act No. 5 of 1999 Section 21(3) provides for each District Council to establish a District Land Registry, which should be under jurisdiction, supervision and direction of the Registrar of Land Titles. Essentially this requires office space, registry equipments and staff; under supervision of an Authorized Land Officer, who also work as a District Land Registrar.

The PLUM team should ensure that the (cadastral) data generated from PLUM activities, in the respective villages should form part of the data for the village land registry as well as for the district land registry. Maps and land registration forms used in the process of establishing and demarcating property boundaries should be structured in such a way that the data can be used in building up the district land registry.

This ensures that, the generated cadastral information is stored, managed and updated by the district land office. This enables to use the cadastral database to facilitate issuing title deeds or any other type of documents, and to play its role if land disputes cannot be solved at the village level only.

Districts which are equipped with computers and having conducive environment (including well trained staff) for smooth operation of computers may use a computerised cadastral database to supplement the conventional filing system. A computerised database facilitates the compilation, storage, analysis and reporting of cadastral data and

herewith facilitates issuing of land registration documents during and after the introduction of PLUM in a village**.**

6.3.3 Establishment of Village Land Registry

The presence of Village Land Registry is necessary for registering CCROs and resulting transactions at the village level. Register of the village land is kept by Village Executive Officer as per section 21 of the Village Land Act. This requires an office which should be of permanent building standard.

This will enable the cadastral data generated during PLUM activities, to be stored in a safe and easily manageable way in the village, in order to facilitate the process of issuing land registration documents. If possible, depending with the capacity of the village or facilitating agencies, it is advised that the use of computer is vital for storage, backup and retrieval of information once needed. The village land registry should be periodically up-dated to accommodate changes in land use and rights (through inheritance, selling, etc.). This requires good communication between village and district level registries involving:-

- Keeping record of all changes in land tenure and use;
- Reporting of the changes to the District Council in order to enable updating of the district land register;
- To avail information on land use and tenure in case of land disputes, etc.

6.3.4 Adjudication of Land Parcels

Adjudication of land parcels is a field based process, with wide publicity and done in the presence of all stakeholders according to well defined rules. More than often land parcels adjudication is conducted in privately owned land parcels, leaving communal land parcels in the process. This practice has made such land parcels vulnerable to encroachment and misuse. Adjudication of communal land parcels (grazing areas, Community facilities, communal and forest reserves, WMAs, water sources, roads and livestock routes) should also be conducted and boundaries marked with concrete beacons immediately after the land use plan is approved. The district councils and other actors of land use plans should facilitate and coordinate this process. Adjudication of land parcels should consider allocating access roads to ensure connectivity to each adjudicated land parcel.

The Village Land Act Cap 114 provides for two types of village land adjudication as follows:-

(i) Spot Adjudication

Adjudication and survey of land for Certificates of Customary Right of Occupancy (CCRO) is undertaken in response to demand from an individual CCRO applicant. The adjudication team, together with the CCRO applicant and contiguous neighbours will visit the applicant land parcel and make record of coordinates (corners of plot boundary).

(ii) Systematic Village Adjudication

Adjudication and survey for CCROs is undertaken covering massive landholdings in a village (whole or part of the village).

6.3.5 Processing, Registration and Issuance of CCROs

The Village Land Act requires applications for CCRO to be made by any person claiming an interest in land in an adjudicated area. These applications are processed simultaneously with the adjudication exercise. After completing adjudication of land parcels, three copies of CCROs are prepared and registered. These copies should be signed by owners, Village Chairperson, Village Executive Officer and Authorised District Land Officer before issuance to land owners.

Note: Detailed requirements and procedures for adjudication of land parcels, processing, registration and issuance of CCROs should be

referred from the Village Land Act Cap 114 (Section 51-55) and relevant regulation and guidelines issued by the Ministry of Lands.

Expected Outputs of this step are:

- Strengthened District Land Registry;
- Village Land Registries established;
- Land parcels adjudicated and documented in the District and Village Land Registries(database);
- CCROs are processed, registered and issued to land owners;
- Land tenure security enhanced;

6.3.6 Monitoring and Evaluation (M&E)

For activities of this step, the following proposals for M & E are made:

a) The PLUM team ensures the preparation and follow-up of the work-plans on a daily and weekly basis, i.e. if work proceeds according to planning in terms of time, materials, budget, and leads to the desired results. This includes the activities and performance of systematic adjudication team (PLUM and VAC), GIS team, and other experts involved in this step. The PLUM team members and associated staff involved make notes during all activities which are used for discussion, evaluation and reporting purposes;
b) Assess work progress based on expected outputs of this step;
c) The PLUM team should prepare monthly and quarterly reports, and present them to DLUPA, through routine meetings of the District Council (Council Management Team, Standing Committees and Full Council).

PART C

APPENDICES

APPENDIX A: VILLAGE LAND USE PLAN REPORT FORMAT

Note: Standard Font type - Times New Roman or Calibri, Font size - 12, Line Spacing - 1.5

FRONT PAGE

JAMHURI YA MUUNGANO WA TANZANIA

MPANGO WA MATUMIZI YA ARDHI
KIJIJI CHA MUSASA, KATA YA MAKURUGUSI, TARAFA YA BUSERESERE,
WILAYA YA CHATO, MKOA WA GEITA
(2019-2029)

UMEWEZESHWA NA

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Umetayarishwa na:
Halmashauri ya Kijiji cha Musasa,
S.L.P 116
CHATO

Juni, 2019

APPROVAL PAGE

Kupitishwa na Kusainiwa kwa Mpango wa Matumizi ya Ardhi ya Kijiji

Mpango huu wa matumizi ya ardhi ya kijiji cha **Musasa** umepitishwa na kuidhinishwa na Mkutano Mkuu wa kijiji cha **Musasa** tarehe **17** ya mwezi **Sita** mwaka **2019.**

Sahihi: ..... Sahihi: .....

Jina: ..... Jina: .....

MWENYEKITI WA KIJIJI **AFISA MTENDAJI WA KIJIJI**

(Muhuri wa Halmashauri ya Kijiji cha Musasa)

ACKNOWLEDGEMENT
EXECUTIVE SUMMARY (*Summary of the report not more than 2 pages*)
ABBREVIATIONS AND ACRONYMS
TABLE OF CONTENTS
LIST OF TABLES
LIST OF MAPS
LIST OF FIGURES

CHAPTER ONE
1.0 INTRODUCTION
1.1 Justification
The Land use Planning Act No. 6 of 2007 and implementation of the Village Land Act No. 5 of 1999 require all villages in Tanzania mainland to prepare and implement Village Land Use Plans

1.2 Objectives of preparing a land use plan
1.3 Methods and tools used to prepare the village land use plan

CHAPTER TWO

2.0 VILLAGE BASELINE INFORMATION

2.1 LOCATION AND HISTORICAL BACKGROUND

2.1.1 Geographical Location

Its name, ward, division, district and region
The total number of villages in the district
Contiguous Neighbours/boundaries
Distance and bearing of the village from District Headquarters
Location coordinates and standard sheet number
Total area of the village (ha)

Insert district map showing location of the village (National setting, Regional setting and District setting)

Insert Hamlet boundary map

2.1.2 Historical Background

Meaning of the village name, date of establishment and registration (number)
Historical events related to land use,
Its origin, tribes
Norms and culture

2.2 DEMOGRAPHY AND ADMINISTRATION

2.2.1 Population

Total number of people
Population distribution by hamlets in terms of men and women, age etc
Household size, age and sex ratio and dependency ratio
(Use matrix as exemplified below)

Table No.1: Population classification by age and sex

No.	Hamlet	Year 0- 17		Year 18 - 60		Above 60		Total		Total	Number of Households
		F	M	F	M	F	M	F	M		
1											
2											
Total											

Source: Village Government; Month, Year

Also, insert graphs or charts

Insert map of population density and distribution

2.2.3 Migration and Immigration (*Trends)*

2.2.4 Population Projection for the Planning Period of 10 years

Use average anual growth rate e.g. 3.4%, from national population census. Use projection formula Pf= Pn [1.034][10]

Use matrix as exemplified below

Table No. 2 : Population Projections (10 years from the Base year)

No.	Hamlet Name	Population *(Current Year eg 2017)*	Population *(Projected Year eg. 2027)*	Households 2017	Households 2027
1					
2					
3					
	Total				

Source: Village Government; Month, Year

Insert graph or charts

2.2.5 Administration

Village Administration: Village Assembly, Village Council, Village Committees, Village Land Councils status (structure, composition, existence, roles and deliverance Status of the Village Government Office. Its suitability to accommodate the Village Land Registry

2.3 BIO-PHYSICAL FEATURES

2.3.1 Physiography and Drainage System

Physiographic appearance e.g. mountains/uplands, valleys, wetlands

Insert all relevant maps (drainage, landform, etc.)

Existing rivers (seasonal or annual). Sources of such rivers and where do they drain their water?

2.3.2 Soil Type and Condition

Dominant soil types, their distribution and fertility status (by field observations with VLUMC, literature and other technology related to soil analysis)

Insert map to show soil classification and distribution

2.3.3 Vegetation Cover

Types of vegetation and distribution (e.g. forests, savanna, miombo, grassland etc)

Insert map to show vegetation cover and distribution

2.4 Climate Condition

2.4.1 Climate condition (Rainfall in mm/year, rainfall calendar, Temperature – average Temperature, cold and warm months)

Also insert the following Tables to show further details on climate condition

a) Decadal changes in rainfall and temperature

Parameter	Observed climate change			
	Increasing	Decreasing	Fluctuating	Stable
Temperature				
Rainfall				
Extreme events (floods, drought, etc)				

b) Changes in rainfall onset and cessation (indicate month)

Rainfall parameter	Past decade	Recent decades
Onset		
Cessation		

c) Changes in wet and dry spells (tick appropriate)

Rainfall parameter	Expanding	Shrinking	Stable	Fluctuating
Wet spells				
Dry spell				

d) Frequency and intensity of climate hazards (tick appropriate)

Climatic hazard	Frequency			Intensity		
	More frequent	Somewhat frequent	Less frequent	High	Medium	Low
Drought						
Floods						
Other						

e) Vulnerability to climate change (list vulnerable community groups, sectors and ecosystems)

Hazard	Vulnerable groups		
	Community groups	Socio-economic sectors	Ecosystems
Drought			
Floods			
Other			

2.4.2 Climate change impacts and Greenhouse Gas Emissions

a) Climate change impacts

S/N	Sector	Climate change impacts

b) Sources of climate variability

S/N	Sector	Sources climate variability

2.4.3 Adaptation and mitigation options: (See Appendix F for reference)

a) Climate Change Adaptation and Mitigation Strategies

Hazard	Impact	Important adaptation strategies	Important mitigation strategies

Also, insert any available graphs or charts

2.4.4 Hazardous areas in the village

Explanations of hazardous areas in the village

Insert map to show hazardous areas in the village

2.5 LAND TENURE

Existing land categories in the village (village land, general land and reserved land) Existence of general land within village boundary e.g individual farms with title deeds, investors, estates, national forest etc

2.5.1 Land Ownership and Administration

Use matrix as exemplified below

Table No. 3 : Land ownership

Hamlet	Households owning land	Landless households	Land owners		Landless		Total
			Male	Female	Male	Female	
Total							

Source: Village Goverment; Month, Year

Note: This table should be suppoerted by text to show relavance of the data to the land use planning process (shortage of land, land accessibility vs main economic activities eg. farming).

Insert graph or pie chart to show land ownership by percentage

2.5.2 Access to Land

Available means for accessing land in the village/hamlets (buying, inheritance etc.)

Use matrix as exemplified below

Table No. 4: Access to land

Hamlet	Allocation	Inheritance	Buying	Others e.g. lending, invading	Total

Total					

Source: Village Government; Month, Year

Insert graph or pie chart to show land ownership by percentage

2.6 MAIN ECONOMIC ACTIVITIES

Main economic activities in the village and distribution per hamlet e.g. agriculture, livestock keeping, fishery, forestry, mining, commerce, beekeping etc.

Use matrix as exemplified below

Table No.5: Main economic activities

Hamlet	Agriculture	Livestock keeping %	Forestry (charcoal, lumbering)	Others (Commercial, Employees etc.)	Total
Total					

Source: Village Government; Month, Year

Insert graph or pie chart to show land ownership by percentage

CHAPTER THREE

3.0 EXISTING LANDUSES AND LAND RESOURCES

3.1 SETTLEMENTS

3.1.1 Main Settlement Areas

Location and acreage
Village settlement centre
Settlements in hamlets
Settlements pattern
Average settlement area (plot) per household
Access of land (plots) for new households/settlements

3.1.2 Housing

Types of houses
Construction materials and availability
Toilet facilities

Insert Table No. 6

3.2 COMMUNITY FACILITIES AND INFRASTRUCTURE

(Comparison to National Standards)

3.2.1 Education

Nursery, Primary, Secondary schools etc.

Location, acreage and level of service

Table No. 7: Number of students and it's attendency

Class	Registered			Attendees		
	Boys	Girls	Total	Boys	Girls	Total
Kindergaten						
I						
II						
III						
IV						
V						
VI						
VII						
Total						

Source: Village Government; Month, Year

Table No.8: Teachers requirements, facilities and school environment

Na	Lists	Number available		Requrements		Deficiency/Extra	
1	Classrooms						
2	Desks						
3	Toiletreties	**Ma**	**Fe**	**Ma**	**Fe**	**Ma**	**Fe**
4	Teachers						
5	Teachers houses						
6	Students						

Source: Village Government; Month, Year

Insert graph or charts

Table 9: Number of pass candidates at school

Year	Candidates			Pass			Failed		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total

Source: Village Government; Month, Year

Insert graph or charts

3.2.2 Health

Dispensary, Clinics, Health centre
Location, acreage and level of service
Major diseases, Status of HIV/AIDS

Table No 10: Health facilities at the Village

No.	Hamlet	Health facilities

Add any other available and relevant Tables

3.2.3 Communication and Transportation

Type and condition e.g. road, railway, water etc.
Availability of telephone services and networks
Location and level of service

Insert Table - Table No. 11

3.2.4 Energy

Energy sources e.g. wood, charcoal, gas, electricity, bio gas, solar etc.
Accessibility and costs (affordability)

3.2 5 Water Services

(Comparison to National Standards)

Water sources (Permanent or seasonal)
Location and Use, capacities and ownership
Management measures of water sources
Water supply and distribution

3.2.6 Other Community Facilities

Religious, Play grounds, Recreation, Cemetery, Commercial, Industrial, Judiciary etc.
Location, acreage and level of service

Table No 11: Community facilities at the Village

No.	Hamlet	Community facilities

Source: Village Government; Month, Year

Insert map and graph or charts for community facilities and infrastructures

3.3 AGRICULTURE

3.3.1 Main Agriculture Crops

List main agricultural crops in the village (food and cash crops)
Average farm size per household

3.3.2 Agriculture Areas and Acreage Estimates

Location, names and areas for agriculture (under cultivation cycle) **Identify them during data picking in step 3**

3.3.3 Farming System

Mixed cropping (e.g maize/mtama)
Types of crops that are mixed and not mixed **(***Refer to "Mwongozo wa Uzalishaji Mazao Kulingana na Kanda za Kilimo za Kiikolojia)*

Technology used

3.3.4 Agricultural Calendar

Which and when agriculture seasons and crops grown in each season

Use matrix as exemplified below

Table No.12 : Agricultural Calendar ***- Major crops per Village***

No	Activity	Months											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Farming preparation	√								√			√
2	Ploughing	√	√							√			
3	Planting		√	√							√	√	
4	Weeding			√	√							√	
5	Controlling vermin animals		√	√	√	√	√					√	√
6	Harvesting	√	√					√	√	√			
7	Crops storage		√					√	√	√			
8	Usage and selling	√	√	√	√	√	√	√	√	√	√	√	√

Source: Village Government; Month, Year

NB: *Refer to "Mwongozo wa Uzalishaji Mazao Kulingana na Kanda za Kilimo za Kiikolojia*

3.3.5 Use of Agricultural Inputs

Type of agricultural inputs (fertilizers – organic and inorganic, crop seeds, pesticides) - average rate used per acre (rates used)
Price and availability for agricultural inputs

3.3.6 Farm Implements and Technology

Extent of use of hand hoe, draught animals, tractors, power tillers and other modern farm implements
Percentage of households that use farm implements
Which farm activities are done using different types of farm implements? (e.g. tractors used for tilling only, hand hoe used for all farm activities)
Price and accessibility of farm implements (hand hoes and modern farm implements)
Farming (production) cost estimates per acre (major crops)

Table 13: Agricultural inputs and services (Refer from ARDS (Agricultural Routine Data Systems)

Inputs	Crops		

Source: Village Government; Month, Year

Insert graph or charts

3.3.7 Extension Services
Availability of Extension Officers
(Comparison to National Standards
Access to and availability of Agricultural Learning Centre
3.3.8 Agriculture Crops Production
Use matrix as exemplified below

Table No.14: Agriculture crops production (Refer from ARDS (Agricultural Routine Data Systems**)**

Hamlet	Crops	Acreage/household	Crops yields/ acre	No. of households	Total acreage	Total Crops yields
Magindu Mjini	Maize	2	Sacks 5	255	510	Sacks 2550
	Millet	1	Sacks 7	180	180	Sacks 1260
	Casava	1	Sacks 25	10	10	Sacks 250
	Simsim	1	Sacks 1	150	150	Sacks 150
	Rice	½	Sacks 1	10	2.5	Sacks 2.5
	Cow peas	½	Kilo 40	255	127.5	Kilo 5100

Source: Village Government; Month, Year

N.B. Total crops production for the whole village can be summed up for each crop. Also, the analysis should consider production of cash crops

3.3.9 Agricultural infrastructure
Storage facilities for farm produce/ type of storage facility
Pest control for stored crops, irrigation facilities, access roads, warehouses etc

3.3.10 Market and Marketing system
Main buyers (for every crop)
Internal and external markets
Use of ICT in marketing
Presence of Farmers Cooperatives

3.4 LIVESTOCK KEEPING

3.4.1 Types and Number of Livestock
(L.Us) present in the village
Indigenous and Exotic breeds

Use matrix as exemplified below

Table No. 15: Types and number of Livestocks

Hamlet	Cattle	Goats	Sheep	L.U
Magindu	0	0	0	-
Mnyonge	2819	400	420	3014
Lukalasi	1588	682	428	1875.5
Total	4,407	1,082	848	
LU	4,407	270.5	212	4889.5

Source: Village Government; Month, Year

Insert maps to show livestock distribution and density of according to hamlets

3.4.2 Livestock Projections
Project the number of livestock after ten years (*consider conversión factor*)

3.4.3 Livestock keeping System
Existing grazing system
Grazing areas
During rainy and dry season
Source of water for livestock and its areas

3.4.5 Livestock diseases
Common Livestock diseases and treatment
Seasonal Livestock diseases and treatment

3.4.6 Livestock Extension Services and Infrastructure
Availability of Veterinary shops and medicine prices
Livestock extension workers/advisors

Livestock routes
Cattle dips and troughs etc.
Livestock market/auctions
Availability of livestock treatments

3.4.7 Livestock products and markets

Explanations on livestock products (such as meat, milk, skin, hide etc.), their rate of production per animal, markets, and prices for animal products

3.5 FORESTRY

3.5.1 Types of Forests

Natural forest and their acreage (Species and names)
Planted forests and their acreage (Species and names)
Reserved Forests (Species and names)
N.B. Indicate Location and distribution

3.5.2 Ownership and Uses of Forests

Village government or individual ownership etc
Beekeeping
Wood, lumbering
Firewood, Charcoal
Building materials
Conservation,
Rituals

3.5.3 Harvesting of Forest Products

Types of forest products (timber and non timber products)
Harvestors from within (households) the village
Harvestors from outside the village
Amount of forest products (firewood, timber, charcoal etc.) harvested
Forest production capacity (potentiality/survival/adaptation to climatic change)
Market and prices for forest products

3.6 BEEKEEPING

Number and location of bee-hives, beekeeping and harvesting methods, challenges, markets
(If applicable)

3.7 FISHING and AQUACULTURE

(*N.B. If applicable)*

Fishing and fish processing areas
Location and acreage (Map them on existing land use)
Type of fishing (fishing gear) e.g. fishing nets, fish hook (net size and type of fish hooks)
Types and harvest size of fishes
Number of households engaged in fishing
Fish markets and prices
Challenges

3.8 MINING

(N.B. If applicable)

Mineral types and areas/sites (Map them on existing land use) e.g. Sands, stone quarries , pebbles/gravel, gold etc.
Number of households engaged in mining activities.
Ownership and management of mining blocks.
Market and prices
Use of minerals (within and outside the village)
Challenges

3.9 WILDLIFE

(N.B. If applicable)

These may include WMA'S, Wildlife corridors, migrating routes and dispersal areas as may be identified during the process of land use planning.

Types and species
Distribution of animals
Wildlife management challenges

3.10 TOURISM *(N.B. If applicable)*

Tourism attraction sites within the village
Business related to tourism
Revenue from tourism activities
Environmental, social and cultural effects due to tourism

3.11 JOINT LAND USE RESOURCE

(N.B. If applicable)

e.g grazing, agriculture, water resources, mining, forest, wildlife

3.12 SUMMARY OF EXISTING LAND USES

Insert Village Resource Map

Summary of existing land uses in matrix format and map

Table No. 16: Summary of existing land uses

No.	Type of land use	Area (ha)	% of total village land area	Spatial description
1.	Residential			
2.	Community facilities			
3.	Agriculture			

4.	Other			
	Total			

Source: Village Government; Month, Year

Insert Existing Land Use Map

CHAPTER FOUR

4.0 VILLAGE LAND USE CHALLENGE AND COMMUNITY ACTION PLAN

4.1 CHALLENGES/PROBLEMS, OPPORTUNITIES AND OBSTACLES

Present in a matrix format

Table No. 17: Challenges, Opportunities and Obstacles

4.2 COMMUNITY ACTION PLAN (CAP)

Present in a matrix format

Table No. 18: Community Action Plan

CHAPTER FIVE

5.0 VILLAGE LAND USE PLAN

5.1 INTRODUCTION

Explain briefly step reached within the PLUM guidelines

Village land use plan as a tool of implementation of CAP

Formation of Village Land Use Management Committee

5.2 LAND USE REQUIREMENTS (PLANNING PROPOSALS)

5.2.1 Community Facilities and Infrastructures

5.2.2 Settlement Areas

5.2.3 Agriculture Land

5.2.4 Livestock keeping and Grazing Areas

5.2.5 Forestry Areas

5.2.6 Water Sources

5.2.7 Wildlife

5.2.8 Other Land Uses

5.3 THE LAND USE PLAN

5.3.1 Summary of Allocated Land Uses

(As deliberated upon by the Village Council and approved by the Village Assembly)

N.B. Present in a Matrix as shown below

Table No.17: Summary of planned land uses

No.	Type of land use	Planned Land Use (ha)	% of total village land area	Spatial Description
1.	Residential			
2.	Community facilities			
3.	Other			
	Total			

N.B.Coordinates of all use should be annexed

Table No. 18: Planned and projected land use requirement for ten years

No	Use	Planned Area (Ha.)	Current Land Requirement (Ha)	Surplus/ Deficit (Ha)	Projected Requirement (Ha.)	Surplus/ Deficit (Ha)	Technical recommendation for efficient use
1							

Source: Village Government; May, 2010

Insert Village Land Use Plan Map

5.3.2 Climate Change Vulnelability and GHG Emmission Potentials on Planned Village Land Use

Explanations on vulnelability levels for planned land uses and their related adaptation and mitigation measures

Explanations on GHG Emmission potentials for planned land uses their related mitigation measures

Insert vulnerability Table for planned land uses

5.3.3 Village Land Use Management By-Laws

Attached in the report as Appendix 1

5.3.4 Approval of Village Land Use Plan and By-Laws

State date of village assembly and number of participants

CHAPTER SIX

EMERGING ISSUES

THE WAY FORWARD

Implementation of Step 5 and 6 according to the plan proposel

(N.B. Refer to Part B: Section 4.5)

CHAPTER SEVEN

MONITORING AND EVALUATION PLAN

6.1. MONITORING PLAN

6.2 EVALUATION PLAN

Implementation of CAP

APPENDIX 1: VILLAGE LAND USE MANAGEMENT BY-LAWS

APPENDIX 2: MINUTES OF VILLAGE COUNCIL AND VILLAGE ASSEMBLY TO INTRODUCE THE PLAN (2)

APPENDIX 3: MINUTES OF VILLAGE COUNCIL AND VILLAGE ASSEMBLY TO APPROVE THE PLAN (2)

APPENDIX 4: MINUTES OR AGREEMENT OF VILLAGE BOUNDARY (IF APPLICABLE)

APPENDIX 5: COORDINATES FOR EXISTING AND PLANNED LAND USES IN THE VILLAGE.

APPENDIX B: STANDARD COLOURS AND LEGEND FOR LAND USE MAPS

Type of Map	Colour	Colour Name/Code and Uses/Type
Soil Map		Loam Soil - Orange Bright
		Sand Soil • Foreground R-230, G-152, B-0 • Background R-255, G-211, B-127
		Clay soil - Gray 20%
		Sand loam soil - Brown Light to Dark (Display 50%)
Vegetation map		Scattered Trees
		Grasslands
		Grassland (Background R-114, G-137, B-68)
		Pori na Vichaka - (R-112, G-168, B-0)-
		(R-0, G-117, B-37)-Msitu
		Cropland • Foreground R-76 G-115 B-0, • Background R-211, G-255, B-190)
Population/Livestock distribution map		Brown Light to Dark
Population/Livestock density map		Red Light to Dark
Village hamlets map		• Beige (R-255, G-234, B-190) • Green (R-211, G-255, B-190) • Rose (R-255, G-190, B-190) • Tan (R-239, G-228, B-190)
Land use maps (Existing or Planned)		

APPENDIX C: ESTABLISHMENT AND DUTIES OF THE VILLAGE LAND USE MANAGEMENT COMMITTEE

Introduction

The Village Land Use Management (VLUM) committee members are appointed by the Village Council (VC) and approved by Village Assembly in Step 2. The committee subsequently work closely with the District PLUM team throughout the various steps of planning and implementation.

Qualifications of VLUM committee members

- Living in the village, energetic, motivated and responsible;
- Having good relationship with the village community, knowledge of different land uses in the village;
- Some members should have knowledge of village boundaries;
- Able to speak Kiswahili and the local language;
- Ability to read, write and make simple calculations is an advantage;
- Village Land Council members should not be appointed in this committee

Composition of the VLUM committee

a) The VLUM committee should have 6-9 members representing different socio-economic groups in the village with at least 3 women as members. It is therefore essential to have a balanced committee in terms of gender (males and females), age (young, middle age and respectable/influential elders), sub-village areas (hamlets) and land use (such as crop producers and pastoralists).

b) To facilitate good coordination and communication, it is recommended that about two VLUMC members should be members of the Village Council.

c) The VLUM committee should have a chairperson and a secretary to organise their tasks efficiently.

Tasks of VLUM committee members

a) To assist in mapping and preparation of VLUP, land use management by-laws and if need arises, their revisions.

b) To identify and assist in solving occurring land related problems (such as land conflicts and land degradation) through communication and negotiation with the villagers involved and the Village Council, Ward, Division and District concerned authorities.

c) To ensure that the land allocated for communal use is not encroached by individual users.

d) To ensure that rights and interests of women and other vulnerable groups are respected in land-use management, particularly land rights.

e) To request assistance from the concerned authorities for land-use management issues, whenever required.

f) To assist the concerned authorities in any additional surveys related to land use management.

g) To keep record of all major land management issues, such as changes in user rights and application of land-use management measures.

h) The committee should meet once a month with all of its members. If necessary, the village chairperson and village executive officer, a PLUM-team member and/or the village extension worker can be

invited. The meeting aims at discussing issues concerning the above mentioned land management tasks. Minutes should be prepared, and a copy should be forwarded to the District Lands Office.

i) To identify and report to the Village Council, District Lands Office (through a PLUM team member or the village extension officer) all significant changes: in land use, land rights (due to selling, heritage, etc.), plot boundaries and requests for improvement of land security.

Working conditions of VLUM committee members

a) The VLUM committee members can receive stationery from the district up to step 6 of PLUM (consolidation) in order to facilitate their work. Replenishment of the stationery will then be the responsibility of the VLUM committee and the Village Council.

b) The VLUM committee will receive assistance from the district whenever required.

c) The VLUM committee receives these terms of reference as guidelines to facilitate continuity of their activities.

Recognition of VLUM committee members

a) VLUMC members should be introduced to the Village Assembly during a meeting just after their election in step 2 (Participatory Rural Appraisal). Herewith they became officially recognised to perform the tasks in cooperation with the PLUM team as required during the different steps of PLUM.

b) VLUM committee members can become also Village Land Adjudication Committee members during Step 5 (implementation of land administration measures); and also pioneers of farmer field school during Step 6 (land management measures).

APPENDIX D: PARAMETERS FOR BIO-PHYSICAL SURVEY

D1: WATER REQUIREMENTS

Domestic Water Supply

The preliminary surveys for domestic water supply include among other things counting the inhabitants and their domestic animals like cattle, goats, pigs etc. and the annual growth rate for both people and livestock. The current design standards for the required daily consumption for the water schemes is 30 litres per person per day and 22.5 litres per livestock unit (Livestock Unit - 1 cow, four sheep - four goats or four pigs). The needed design capacity of the scheme is calculated for human and livestock population in 20 years' time. The design criteria are restricted to piped water schemes. Distribution of tapes for such schemes depends on the maximum number of people that can be served by one tape and the distance of the tape from the furthest person served. Currently one tape should serve about 2000 people and the maximum distance should not exceed 400 meters. If shallow wells are to be used the criteria should be based on:-

- The number of villagers, at present and in future.
- The distance between the houses and the well-distance should not exceed 2 kms.
- The maximum number of people that can be served per well (Approx. 250 persons/per well).

Chemical and Physical Standards:

Water intended for drinking purposes should not contain toxic chemicals exceeding the limits which were set. It is unlikely that any one of the substance can occur in large quantity so as to cause an

acute health problem. This can only happen if here is a massive dose of that particulars substance in the water supply system. The following table shows the standard of **chemical limits for selected** elements that a**pplies in Tanzania as compared to the WHO guideline values.**
From the table the measured values can be compared with the standard limits to ascertain health effects for human health. **If for example** the difference is **higher than the standard limits necessary corrective measures must be taken to** improve the quality of water in this respect.

Table-- The Standards of Chemical Limits for Selected Elements

1. Substances which may be toxic	**Unit**	**Tanzania Temporary limit**	**WHO guideline value**
Lead	mg/1	0.10	0.05
Cadmium	mg/1	0.05	0.005
Arsenic	mg/1	0.05	0.05
Chromium IV	mg/1	0.05	0.05
Cyanide	mg/1	0.02	
Silver	mg/1	Non mentioned	
2. Substances which affect human health		**Tanzania Temporary limit**	**WHO guideline value**
Fluoride Nitrate	mg/1	0.8	1.5
Nitrate	mg/1	100	10
3. Substances which may affect palatability of drinking water		**Tanzania Temporary limit**	**WHO guideline value**
Total hardness	mg/1	600	500
Sulphate	mg/1	600	400
Chlorite	mg/1	800	250
Colour	mgp t/1	50	15 true color units (TCU) 5NTU
Turbidity		30 mg SIO/2	no offensive to
Taste		no objection	most consumer
Odor		no objection	
Iron	mg/1	1.0	0.3
Manganese	mg/1	0.5	0.1
Copper	mg/1	3.0	1.0
Zinc	mg/1	15.0	5.0

D2: SOIL SURVEY

a) Soil Analysis

Most of the major soil types in the country in terms of their spatial distribution, their physical, chemical and biological properties, as well as their respective management requirements have been analysed and documented by the Agricultural Research Institutes whose locations are tailored to address specific parameters for each of the major agro-ecological zone. Details of the documented soil reports are available/at the disposal of the public domain/users or as may be determined by application of appropriate technology.

However to enable some people who are doing field work, a guideline on survey is given. It must be mentioned that geology, hydrology, climate, vegetation and topography do affect soils productivity very much and determine the kind of land use in that particular area. Therefore, they are usually included in any soil survey. Likewise the following are some of key soil properties which must be considered in

order to achieve optimal productivity of the land; these include soil structure, soil texture, soil depth, permeability, water holding capacity and parent material (stoniness).

1.1 Texture

It is recommended that 3 main classes of soil texture be used in the survey.

a) Coarse texture soils (S): This includes sand, loamy sand, sandy loam (with less that 18% clay, more than 65% sand).
b) Medium Texture Soils (M): This includes Sandy loam, Sandy clay loam, Silt loam, Silt, Silty clay loam and Clay loam (with more than 35% clay)
c) Fine Textured (Heavy soils) (H): This class includes Clay, Silty clay, Clay loam and Silty clay loam (with more than 35% clay)

1.2 Soil Depth

The depth of the soil has a major influence on the land suitability, classification and selection of **related crop groups**. In planning for improved and sustained field a minimum of **50 - 60cm should** be the **limit for available short term seasonal crops.** For tree crops not less than 80 - 100 cm deep soils should be selected. Shallow soils may however be used for grazing lands, under good management and with a dense and permanent plant cover.

1.3 Ironstones and other hard pans

Special attention has to be paid to the occurrence of ironstones. These are impermeable levers of iron oxides which may be situated on the soil surface or at a depth or 0.5 m and more below the surface. They may be patchy small areas or large continuous stretches. They can be observed by the sudden change in vegetation to low grasses and generally without, or very few low woody plants. After rains, water accumulates on the surface without any recognizable infiltration. Ironstones are very difficult to reclaim and in most cases should not be considered for crop production.

1.4 Stoniness

The amount of gravel, stone and rocks can be assessed by visual inspection of gravel consisting of 7.5 cm diameter. Stones are fragments of 7.5 cm - 25 cm diameter. Boulders are fragments of larger than 25 cm Rock outcrop is the rocky material on the soil surface. Stoniness and rockiness can be described as follows:-

Code	Description
1	Less than 20% gravel, few stones, less than 2% rock outcrop, not interfering with cultivation.
2	20 - 30% gravel and stones, less than 10% rock outcrop, not suitable for cultivation, could be used for reseeded improved pastures.
3	Less that 50% gravel and stones or 25% rock outcrop on surface, could be used for improved range grazing land.
4	More than 50% gravel and stones of less that 50% rock outcrop on the surface could be used for forest.
5	More than 90% bedrock wasteland.

b) Slope

Slope has a major implication on land use as it influences the productive potential of the land and also the choice of land use operations aimed at optimizing production and sustainability. For instance, a fairly level or slightly undulating soils tend to be located mostly in low lying areas and generally have deep and medium to heavy soils which pose less limitation for cultivation and are generally easy to irrigate, but may have a drainage problem. On the other hand, steep slopes generally tend to be well drained, but cultivation is more restricted. The degree of slope sets limits on land use on annual crops, plantations and even land reclamation depending on soil depth,

stones etc. on steep slopes soils tend to be shallow and erosion becomes more severe.

Slopes can be divided into 5 major groups:

Flat to almost flat	0 - 2%
Undulating	2 - 6%
Undulating to rolling slope	6 - 25%
Steep	25 - 55%
Very steep	over - 55%

However, these major groups may often be too wide for decisions on soil conservation practices, levelling for surface irrigation, land reclamations, bench terracing or for classification of suitability. Considering the major impact of slope on land use the following groups and subgroups are established;

Land	**Code major slope group**	**Subgroups cods -% Slope**
Level and Lowland	L O - 2	L 1 L 0.25 L 2 0.25 - 0.5 L3 0.5 - 1.0 L4 1.0- 1.5 L5 1.5- 2.0
Uplands	U 2 - 25	U1 2- 6 U2 6- 10 U3 10- 15 U4 15- 20 U5 20- 25
Very Steep Lands	UV 25-55	UV1 25-55 UV2 55

It has to be clearly understood that slope is not connected with altitude. Fairly level land can often be found at high elevations where slopes of less than 2% cover wide areas. The selection of land suitability and crop groups adapted to such conditions are mainly influenced by the agro-ecological zones relevant to the altitude of the area.

c) Soil Erosion

Soil erosion can be described as a process involving detachment, transportation and deposition of soil particles. Detachment occurs through the splash of raindrop impact or spinning wind currents on the ground and transported through the rainwater/surface runoff or wind to the point of deposition. Soil erosion is a major limiting factor in both crop and livestock production.

Soil erosion which appears in three major types (sheet, rill and gully) is caused mainly by erosive forces of rainwater/runoff, wind and irresponsible human-related activities such as inappropriate tillage, overgrazing and deforestation. There is coding system **for** soil erosion appraisal in the field as follows:-

Code	**Indications**
0	No exposure of tree roots, no surface crusting, no splash pedestals: over 70% plant cover ground and canopy.
1/2	Slight exposure of tree roots, slight crusting of surface, no splash pedestals: soil level slightly higher on upslope or windward sides of plants and boulders: 30-70% plant cover.
1	Exposure of tree roots: formation of splash pedestals: soil mounds protected by vegetation, all to depths 1 - 10 mm: slight surface crusting: 30 - 70% plant cover.
2	Tree root exposure: splash pedestals and soil mounds to depths of 1 - 5 cm: crusting of surface: 30 - 70% plant cover
3	Tree root exposure: splash pedestals and soil mounds to depths of 5 - 10 cm: 2 - 5 mm thickness of surface

	crust: grass muddied by wash and turned downslope: splays of coarse material due to wash or wind, less than 30% plant cover.
4	Tree root exposure, splash pedestals and soil mounds depths of 5 - 10 cm: splays of coarse. Material, rills up to depths of eight cm deep: bare soil
5	Gullies, rills over 8 cm deep: blowouts and dunes: bare soil.

d) Permeability - Internal Drainage

Permeability is conditioned to a large extent by the texture of the soil. Coarse texture soils may exhibit excessive permeability which may be important for decision on possibilities of irrigation systems. Fine texture heavy soils generally have low permeability. The soil pH influences crop types to be grown as well as management requirements on agrochemicals to be applied for optimal growth and performance of cultivated plants. Some plants are very sensitive to pH and this fact must be kept in mind in the selection crops to be grown.

The major groupings of soil pH values and their descriptions are as follows:-

Code	Description
0	Very poor
1	Poorly drained
2	Imperfectly drained
3	Moderately well drained
4	Well drained
5	Somewhat excessive drained
6	Excessive drained

The standard permeability classes for soil are as follows:-

Class	Code	Percolation rate in mm p/ hour through saturated undisturbed overs under 12.5 mm. head of water
Very slow	1	Less than 1.25
Slow	2	1.25 - 5.0
Moderately slow	3	5.0 - 20.0
Moderate	4	20.0 - 62.5
Moderate rapid	5	62.5 - 125.0
Rapid	6	125.0 - 250.0

e) Soil Reaction (pH)

Soil acidity-alkalinity is expressed in pH. The pH values vary between 0 to 14.

pH Values	Description
Less than 4.5	Extremely acidic
4.6 - 5.2	Very strongly acidic
5.2 - 6.0	Strong to medium acidic
6.0 - 6.5	Slightly acidic
6.5 - 7.5	Neutral
7.5 - 8.2	Slightly to medium alkalinic
8.2 - 9.0	Strongly alkalinic
Greater than 9.0	Very strongly alkalinic

f) Salinity

Salty soils can be detected by the vegetation or by thin white layer on the soil surface during the day and dark muddy spots early in the morning which is caused by the absorption of condensed water by the highly hygroscopic salt during cool night. The following classes of salinity are recognized as follows:-

Code	Class	Conductivity of Saturation extract mm per cm

1	No salinity	0 - 2
2	Very slightly	2 - 4
3	Slightly Saline	4 - 8
4	Moderately saline	8 - 15
5	Strong salinity	More than 15

g) Structure and Colour

These are also important in determining the type of soil and its capability and how the soil would behave when subjected to different uses.

D3: PARAMETERS TO BE USED IN DETERMING CARRYING CAPACITY OF A GIVEN AREA

In order to arrive at an equitable capacity that will be sustainable, some basic factors ought to be looked into quite carefully. Such factors are those which are directly related to biomass production in a given locality as follows:-

a) Rainfall

This is the most important factor in pasture production. Any change to its amount significantly affects the amount of biomass produced in given time and space. It is important therefore, to have reliable rainfall data of a given place in terms of amount and seasonal distribution. (Extrapolated data can be employed in case of missing data of the target area).

b) Available water capacity (AWC):

This is derived from soil texture. A given land unit's soil texture should be known in order to calculate its amount of AWC, which is in turn is used in a formula to calculate biomass production of a given area. A soil map (or any other available knowledge, literature or technology) can be used in this respect.

c) Potential evaporation - (monthly/annually)

This is calculated from the mean monthly/annual rainfall; as it will be shown in the steps followed to compute Total Dry Matter production (TDM) per hectare of land. It estimates the amount of water stored in the soil that is available for transpiration. Briefly these are the climatic factors which will affect pasture production in Rangelands.

d) Computation of Total Dry Matter (TDM):

There are series of steps to be followed in the computation of TDM in a given area.

Step one

Calculate the effective mean (monthly/annual) rainfall. This is calculated from the equation:-

$$R' = \frac{R \times 1600}{PE}$$

Where:

R = Mean (monthly/annual) rainfall (mm)
R' = Effective Rainfall (monthly /annual) (mm)
PE = Annual Potential Evaporation (mm)

N.B. 100 mm - Mean annual PE for dry tropics in higher altitudes (Virman etal, 1981). This allows for transpiration and direct evaporation.

Step two

Calculation of water loss (surface run-off and deep drainage). This is calculated from monthly/annual effective rainfall and available water capacity of the soil as:-

RO = (15. 2482/K 0.8) R'/100 3 mm)
RO = Water Loss
K= Available water Capacity
R' = Effective Rainfall (monthly/annual) from step one above.

Step three

Calculation of actual evapotranspiration (AE). This is derived from step one and two above.

$$AE = R - RO \text{ (mm)}$$

Step four

Calculation of TDM is calculated using the Actual Evapotranspiration values from step three above. TDM therefore can be expressed as a function of actual Evapotranspiration as:-

If $AE \leq 29$ mm: then $TDM = O$

If $29mm \leq AE \leq 263$ mm, then

$$TDM = (3.32 (AE - 29) (1.613 + 0.613) \left(\frac{F - 1}{125}\right)^{0.5}$$

If $AE > 263$ mm: then

$$TDM = (777 + 6.26 (AE - 263 + 0.613 \left(\frac{F - 1}{125}\right)))^{05}$$

The above equation converts actual available water into dry matter production. Having deliberated on the above calculations (assumed to be the total dry matter production of a kg/ha/year) then the figure obtained is multiplied by the number of hectares found within the range areas. The above TDM production is not wholly available to livestock consumption, it has got to be reduced in respect of density of bush cover (%) and percentage of utilization, (the former can result in competition for water and sunlight, hence have a large effect on pasture production. The latter takes into account of propagation materials which should be left by the grazing animal so that there is a continued growth in subsequent years). This assertion is treated further by another assumption below.

Livestock Unit (LU): LU as applied in this context means the equivalent of one mature Tanzania short Horn Zebu (TSZ) with live body weight of 250 Kg. If dry matter intake is assumed to be 2.5% of its body weight daily, then this translates into forage requirement of 6.25kg/day, or 2281.25kg per annum (2.3tonne/year). To achieve a sustainable carrying capacity, potential biomass production is equated to livestock units.

$$\frac{\text{Biomass production (Kg)}}{\text{Livestock Units (Kg)}}$$

In livestock production planning, where there is special differences in prices, there is always the problem of metabolic weights, which give close estimate of feed requirements as follows:-

- Cattle and donkeys = 0.8 L.U.
- Sheep and goats = 0.15 L.U.

The units taken into account age differences of the stocks in question.

NB: In assessing Biomass production levels, factors such as soils slope, soil nutrient availability should also be included in such studies. The limitation here could be the availability of such data to work with. This outline has ignored it as being beyond the intended scope.

e) Calculating Land required for farming using Carrying Capacity Method

(An example from Kaloleni Village Land Use Plan, Bagamoyo District)

(i) Land required for farming before improvements

Land requirements for food crops

The main food crops in the village are Maize and Millet. These crops provide calorific requirements needed per person and used to determine a piece of land in which the crops can be grown.

Food compositions and calorific values

Crops	Composition (%)	Calorific value (cal/kg)	Present Yield per acre(bags)
Maize	60	3600	3
Millet	20	3500	4

Source: Field survey, January 2005 and Tanzania Food and Nutrition Commission (TFNC) 1999. (**Note**: 1bag = 100Kg)

Household calorific requirement

Household member	Calorific requirement per day (calories)
Father	2500
Mother	3000
Children	2000

Source: Tanzania Food Nutrition and Commission 1999.

Daily calories required per household
The village average household size 4 i.e. 2 adults and 2 children
The total calorific per household per day at the village is thus

2500 + 3000 + (2000×2) = 9500cal/day per household.

Annual calorific requirement per household will be 9500cal/day/HH × 365days = 3467500cal/HH.

- **Land required for Maize**

$$\left[\text{Annual amount of Maize required for food per HH} = \frac{\text{Annual calories required per HH} \times \%\ \text{composition}}{\text{Calories per kg (calories of Maize/kg)}}\right]$$

$$\text{Annual amount of Maize required for food per HH} = \frac{3467500\ Cal \times 60\%}{3600\ Cal/kg} \approx 577.9kg/HH$$

Storage loss

Due to poor storage of food crops facing most of villagers in Tanzania, storage loss of crops is taken to be 30% of the required amount.

Therefore, storage loss = 577.9kg×30% = 173.4kg
The lost Maize on storage = 173.4kg

Seeds required

Amount of seed required after that season is taken as 1% of the annual amount of Maize required, hence seeds required 577.9kg × 1% = 5.8kg.

Amount of seeds required is 5.8kg

Annual amount of Maize required per HH is = Maize for food + storage loss + seeds

577.9 + 173.4+ 5.8 = 757.1kg/HH

Therefore, amount of land required to produce 757.1kg of Maize, will be

$$\text{Amount of land required for Maize} = \frac{\text{Amount of Maize required in kg}}{\text{Actual yield in kg/acre}}$$

Actual yield for Maize is 300kg/acre i.e. 3bags/acre (Source: Field survey, January 2005)

$$\text{Amount of land required for Maize} = \frac{757.1kg/HH}{300kg/acre} \approx 2.5acre/HH$$

- **Land required for Millet**

$$\text{Amount of Millet required for food per HH} = \frac{3467500cal/HH \times 20\%}{3500cal/kg} \approx 198.1kg/HH$$

Storage loss = 198.1kg × 30% = 59.4kg
Seed requirement per household = 198.1kg × 1% = 1.9kg
Total annual amount of Millet required per HH = 198.1 + 59.4 + 1.9 = 259.4kg
Actual yield of Millet = 4bags/acre = 400kg/ace (Source: Field survey, January 2005)

$$\text{Amount of land required for Millet} = \frac{259.4kg/HH}{400kg/acre} \approx 0.6acre/HH$$

Therefore the total land required for food crops = land for Maize + land for Millet

= 2.5 + 0.6 = 3.1acres/HH

Then whole village,

604HH × 3.1acre/HH = 1872.4acres = 758.1ha.

Land required for cash crop production

Land required for cash crop production is calculated basing on cash crop grown in the village, which is Simsim and target income. The target income is the income that the household requires to meet their basic needs such as clothing, medicine and domestic requirement. Hence, the target income is 727,765Tshs. (Source: Field survey, January 2005).

Cash crop prices

Crop	Composition %	Price (TShs per kg)	Actual yield (kg/acre)
Simsim	60	300	300

Source: Field survey, January 2005.

- **Land required for Simsim (per household)**

$$Annual\ \ amount\ of\ Simsim\ required\ per\ HH = \frac{Annual\ \ target\ \ income\ \ required\ per\ HH \times \%\ composition}{Produce\ \ price\ \ in\ TShs/bag}$$

$$Annual\ \ amount\ \ of\ \ Simsim\ required\ \ per\ \ HH = \frac{727765\ TShs \times 60\%}{30000\ \ TShs/bag} \approx 14.6bags$$

But 1 bag of Simsim has 100kg

Hence 14.6bag × 100kg/bag = 1460kg

$$Annual\ \ amount\ \ of\ \ land\ \ required\ \ for\ \ Simsim\ \ per\ \ HH = \frac{Annual\ amount\ \ of\ \ Simsim\ in\ kg}{Production\ \ per\ \ acre}$$

Land required for Simsim = 4.9 acres/HH

Total land required for cash crops

Total land required for cash crop in the village

= Total land required per household × total number of household

= 4.9acre/HH × 604HH = 2959.6acres (1198.2ha)

Land required for farming at present

Land required for food crops plus cash crops production (758.1ha + 1198.2ha) = 1956.3ha

Land required for farming for future (Eg. 20 years)

The estimated number of household in 20 years' time will be 974 households, these will require;

Land for cash crops (4.9acres/HH × 974HH) = 4772.6acres (1932.23ha)

Land for food crops (3.1acres × 974HH) = 3019.4acres (1222.43ha)

Total land 1932.32ha + 1222.43ha = 3155ha

(ii) The future land required after improvements

If the following assumptions will be applied in farming sector in the village, the product will change from low to high production.

Assumptions

- The hand hoe is replaced by modern agriculture tools such as tractors and plough.
- Agro chemicals such as pesticides, insecticides and fertilizers are used.
- Improved seeds are used.
- Rate of storage loss reduced from 30% to 5%.
- Farms being prepared and weeding done at right time

By applying the above assumptions production will increase from 300kg to 1500kg per acre, 400kg to 1500kg per acre, 300kg to 1000kg per acre for Maize, Millet and Simsim respectively (Source: WAEO, January 2005).

Therefore the storage loss for Maize is 577.9kg x 5% = 28.9kg, for Millet is 198.1kg x 5% = 9.9kg.

Land required for food crops

- **Land required for Maize**

$$Amount\ of\ land\ required\ for\ Maize = \frac{Amount\ of\ Maize\ required\ in\ kg}{Actual\ yield\ in\ kg/acre}$$

Actual yield in kg/bag is 15bags, which is 1500kg. (Source: WAEO, January 2005)

Annual amount of Maize required in kg is 577.9kg + 28.9kg + 5.8kg = 612.6kg

Therefore amount of land required to produce 612.6kg of Maize will be;

$$\frac{612.6\ kg}{1500\ kg/acre} = 0.4 acre/HH$$

- **Land required for Millet**

Total amount of Millet required per HH (198.1kg + 9.9kg + 1.9kg = 209.9kg)

Actual yield of Millet is 15bags/acre, which is1500kg/acre (Source: WAEO, January 2005)

Amount of land required to produce 209.9kg of Millet will be;

$$\frac{209.9\ kg}{1500\ kg/acre} = 0.1 acre/HH$$

Therefore total future land required for food crops per HH is 0.4acres + 0.1acres = 0.5acre /HH. The village will have 974HH, hence the amount of land required for food crops will be 974HH x 0.5acres = 487acres (197.2ha)

Land required for cash crops

- **Land required for Simsim**

$$Annual\ amount\ of\ land\ required\ for\ Simsim\ per\ HH = \frac{Annual\ amount\ of\ Simsim\ in\ kg}{Production\ per\ acre}$$

NB. Production per acre is 1000kg/acre. (Source: WAEO, January 2005)

Land required for simsim is 1.5acre/HH.

Land required for cash crops is 1.5acres x 974HH = 1461acres (591.5ha)

APPENDIX E: AN EXAMPLE OF VILLAGE LAND USE MANAGEMENT BYLAWS

LOCAL GOVERNMENT (DISTRICT AUTHORITIES) ACT. No. 7

(1982) CAP 287 (R.E.2002)

VILLAGE BY- LAWS

(Made under sections 168 - 172)

VILLAGE LAND USE MANAGEMENT BYLAWS

FOR..... VILLAGE..... DISTRICT

No.	Marginal Notes	Provision
1.	Citation	These By- laws may be cited as the By-laws for ……. Village for the Management of the …….. Village land use plan of the year 2018 and shall come into operation after being approved by the …… District Council.
2.	Application	These By- laws shall apply throughout the area of jurisdiction of …… village, as being registered under the Village Registration Act of 1975 with registration No. **……**
3.	Interpretation Cap.287	In these By- laws, unless the context otherwise requires: "Agriculture (farms)" Means an area where production of commercial and food crops is practiced. In this area there are no residential houses, public or cemetery. An average area of a farm per household is two (2) acres. "Cemetery" Means an area set for burial purposes. "Committee of natural resources and environment" Means a Committee made under the Village Council to assist in the supervision of forests, natural reserves and water sources of the Village. "Committee of Pastoralists" means committee made under the Village Council to assist in the supervision of livestock management, grazing areas, and other activities concerning livestock keeping. "Community services" Means an area where social services which are offered to the public are located such as educational, health, religious, roads and other social services that are available. "Fishing area" Means an area in the dams and rivers where fishing activities are conducted. "Forest" Means an area with a collection of grasses, thickets, naturally grown and planted trees; and may be reserved for environmental conservation. "Government" means .....Village government. "Grazing area" Means an area with trees and grasses where livestock such as cows, goats, sheep and donkeys feed for pastures and water.

		"Settlement" Means the area inhabited by people. In this area there may be few crop plants, trees, livestock sheds and zero grazing may be practiced. "Village Council" means Village Council of ..... made under Local Government (District Authority) Act, No.287 [R.E.2002] "Village Assembly" means the meeting of residents of..... Village a meeting convened according to Local Government (District Authority) Act, No. 287 [R.E.2002] "Village Land Use Planning Committee" means a Committee made under the Village Council to assist in the functions of supervising Village Land Use planning activities. "Water sources" Means rivers, springs, streams, wells and water points. "Worship and sacrificial area" Means an area set especially for traditional worshiping and conducting customary offerings.
4.	Liaison between Village Assembly, Village Council and other different Committees. Cap.287	Village Assembly and Village Council are enacted and operate according to sections 24-26, 55-62 and section 105 -107 of the Local Government (District Authorities) Act. Sections 107 - 110 of the Law give authority for the Village Council to appoint and establish such Committees to assist in the proper functioning of their responsibility as it deem necessary. In fulfilling their responsibilities the committee must be responsible to give information and get approval from the Village Council. In that respect the Committee is responsible to the Village Council and Village Council is responsible to Village Assembly.
5.	Allocated and demarcated areas with their land uses.	There shall be areas which have been planned, demarcated and identified with different land uses with maps to be attached in the land use plan of the village to form a village land use plan.
6.	Erection of sign boards.	There shall be sign boards which will be erected at the field, to show the beginning and the end of each land use demarcated. (1) Each sign board will be made with specified standards and material as may be directed by the PLUM Guidelines. (2) The village council shall ensure that such boards are always in place to fulfil the purpose they are made for. It is prohibited for any person to remove or destroy such boards in whichever way.
7.	Management of different allocated land uses.	Management of areas with allocated land uses in a village shall be through the enforcement of Bylaws made according to demarcated land uses.
8.	Settlement area	Settlement (Residential) areas shall be demarcated, registered, developed according to health regulations among of which are; a) To build a permanent and durable house with a toilet. b) Expansion of residential area will proceed towards the agricultural area with an agreement of purchasing an area from the

		farm owner where a need to do so arise. c) Landholders must be emphasized and encouraged to register their parcels of land to obtain customary right of occupancy. d) Village Land Use Planning Committee (VLUMC) and The Healthy committee will supervise and manage these areas on behalf of the village council.
9.	Agricultural area (farms)	Agricultural area (farms) shall be demarcated, registered, developed as follows; a) Development of this area should consider better farming regulations with adherence to water and land protection. b) Village council should ensure the class farms of various crops are established at every hamlet, whereby the villagers can learn from them to improve production of crops per acreage. c) Farm owners should be emphasized to register their farms and obtain customary rights of occupancy. Village Land Use Planning Committee (VLUMC) will supervise this area on behalf of the village council.
10.	Community facilities	Areas demarcated as Community facilities shall be allocated according to the needs of the Community. Those areas shall be according to the standards set in the PLUM Guidelines and shall be registered, developed and conserved as follows; a) While those facilities in this area are not yet developed it is prohibited for individual persons to plant or cultivate any permanent crops or erect permanent houses in this area. b) Either when this area is developed, there will not be any compensation for any person, except the village council may permit those persons with temporary crops to harvest them. Village Land Use Planning Committee (VLUMC) will supervise the progress of this area on behalf of the village council.
11.	Village forest reserve	Forest areas allocated as Village Forest Reserve shall be demarcated, registered, developed and conserved as follows; a) It is prohibited to mow, set fire and graze in these areas. b) Harvesting of forestry crops must obtain an authorization or written permit from the village council. Natural Resources and Environmental Committee will supervise this area on behalf of the village council.
12.	Water sources reserve.	Areas allocated as water sources should be demarcated, registered, managed and reserved as follows; a) It is unlawful to mow, set fire, burn charcoal, b) Manage these areas on behalf of the Village Council cultivate or graze livestock in these areas without a written permit from the village council. Natural Resources and Environmental

		Committee will supervise this area on behalf of the village council.
13.	Grazing land.	Bush and areas allocated for livestock grazing should be demarcated, registered and managed as grazing and drinking area for livestock. The following shall be observed; a) it is prohibited to mow, set fire, burn charcoal, cultivate in those areas. b) Pastoralists will build their residential homes and livestock sheds beside the farms under agreement of purchasing pieces of land with an average of half acreage (0.5) per household from the farm owners. c) Village council under technical advice from the District livestock department will maintain a number of livestock which need to be kept in the area. d) Excess number of livestock shall be harvested and sold for development of pastoralists and the village as a whole. e) Pastoralists should form a committee which will supervise to ensure sustainable pastoralism and keep the records of livestock in order on behalf of the village council. f) It is unlawful to graze and water livestock out of an area set for grazing purposes. g) It is unlawful to burn manure produced from the livestock instead it should be used for agriculture as fertilizer. Until the pastoralists committee is formed the Village Land Use Management Committee

		(VLUMC) will supervise this area on behalf of the village council.
14.	Ritual area.	An area allocated for traditional sacrifices will be demarcated and used for tradition and customary purposes. a) It is unlawful to cultivate, set fire, graze livestock, walk randomly, and build residential houses in this area. This area will be supervised by the village council.
15.	Fishing area.	Fishing activities will be conducted in the allocated rivers, swamps, lakes in adherence to the following; a) These areas will be supervised by the District fishing department. b) Fishing activities will be conducted according to the available Fishery rules and regulations. It is unlawful to conduct any form of illegal fishing such as trawling and netting method, dynamite method and poisonous fishing.
16.	Community Wildlife Management Area (WMAs).	Areas allocated for Community Wildlife Management shall be demarcated, registered and managed as areas of block hunting and tourism in adherence to the following; a) It is unlawful to cultivate, mow, and set fires in this area. b) This area shall be protected and used according to wildlife conservation rules and guidelines. c) The Village Council will appoint a committee to supervise this area. While this committee is not in place the VLUMC

		will supervise on behalf of the Village Council.
17.	Cemetery.	Where it is allocated as Cemetery it shall be prohibited and unlawful to conduct any other activity apart from burial.
18.	Change of land uses.	Any changes of land uses in an allocated area will only be done after the village council has reviewed and made corrections to the village land use plan with the approval from the village Assembly.
19.	Penalty.	Any person who is found guilty of violating any of these By-laws will be prosecuted in court of law and if found guilty be punished to a penalty of fine not exceeding fifty thousand shillings (50,000/=) for each offence and be ordered to restore, redress or compensate the wrong done by the person concerned to its original state or situation for the offensive act concerned.
20.	Approval and Signature.	(1) These Bylaws shall be approved by the village Assembly and duly signed by the Village Chairman and the Village Executive Officer on the date, month and year when the Village Assembly was held. (2) Upon approval by the Village Assembly the village land use planning Bylaws shall be presented before the District Council for endorsement with signature by the District Chairman and the District Executive Director.

These by-laws have been enacted by the..... Village Council on .....day of ..... 2018 and been approved by .....Village Assembly on .....day of ....., 2018.

Has been signed

Signature:……. **Signature**:……

Name:……. **Name:**……

VILLAGE EXECUTIVE OFFICER **VILLAGE COUNCIL CHAIRPERSON**

Has been stamped by the official stamp of ..... Village Council. These Bylaws have been approved and signed by the..... District Council on ……day of……year.

To start operating on: ……day of…….year.

Signature:…….	**Signature**:……
Name:…….	**Name**:……
DISTRICT EXECUTIVE DIRECTOR	**CHAIRMAN OF THE DISTRICT COUNCIL**

..... DISTRICT COUNCIL.

Has been stamped by the official Stamp of the..... District Council.

APPENDIX F: CLIMATE CHANGE ADAPTATION AND MITIGATION STRATEGIES

(Extract from National Climate Change Strategy, 2012)

a) Climate Change Adaptation Strategies by Sector

No.	Sector	Strategic interventions
1.	Agriculture and food security	a) Assessing crop vulnerability and suitability (cropping pattern) for different Agro-ecological zones b) Assess trade comparative advantage on traditional export crops with changing climate c) Promoting appropriate irrigation systems d) Promoting use of appropriate for production, processing, storage and distribution e) Strengthening weather forecast information sharing for farmers f) Strengthening postharvest processes and promote value addition g) Addressing soil and land degradation by promoting improved soil and land management practices/ techniques. h) Strengthening integrated pest management techniques i) Promoting use of pest/disease tolerant varieties j) Strengthening early warning systems for pest surveillance
2.	Livestock	a) Promoting climate change resilient traditional and modern knowledge on sustainable pasture and range management systems. b) Promoting development and implementation of land use plans countrywide. c) Enhancing development of livestock infrastructure and services. d) Promoting development of livestock insurance strategy. e) Strengthening weather forecast information sharing for pastoralist f) Promoting livelihood diversification of livestock keepers. g) g) Promoting improved traditional livestock keeping system.
3.	Fisheries	a) Enhancing monitoring of fisheries habitat and species. b) Facilitating enhancement and/ or development of integrated data management system in the fisheries sector in line with the CEIS. c) Promoting aquaculture. d) Enhancing protection and conservation of aquatic ecosystems e) Supporting alternative livelihood initiatives for fisheries community
4.	Forestry	a) Enhancing control of forest fire, disease and pest breakout. b) Enhancing conservation of forests biodiversity and control of invasive species. c) Supporting alternative livelihood initiatives for forest dependent communities. d) Promoting establishment of woodlots. e) Establishing comprehensive monitoring system for forest resources and ecosystem conditions f) Strengthening and up scaling

		g) of community-based forest management best practices h) Promoting use of non-wood construction materials. i) Promoting energy efficient technologies. j) Enhancing decentralization of forest management
5.	Energy	a) Promoting diversification of energy sources including non –traditional. b) Supporting development and utilization of community based off-grids/mini-grids c) Promoting clean coal for energy generation. d) Promoting development and use of energy efficient technologies. e) Promoting application of cogeneration in industrial sector. f) Promoting energy plantations to reduce pressure on catchment natural forests.
6.	Water Resource	a) Protecting and conserving water catchments b) Enhancing exploration and extraction of underground and other water sources c) Facilitating and promoting water recycling and reuse d) Promoting rain water harvesting e) Enhancing coordination of water abstraction and use f) Promoting efficiency in water supply and use to ensure adequate and sustainable water supplies to all sectors. g) Facilitating access to water resources h) Enhancing management of water sources to improve sanitation and hygiene i) Promoting water treatment and storage.
		j) Enhancing decentralization of water sources management. k) Conducting vulnerability assessment in water resources
7.	Wildlife	a) Enhancing protection and conservation of wildlife habitats b) Strengthening wildlife information database and management systems c) Enhancing management of emerging human-wildlife conflicts d) Promoting appropriate methods for conservation of climate change threatened species. e) Enhancing involvement of local communities in wildlife conservation through Wildlife Management Areas (WMA) f) Conducting vulnerability assessment of wildlife g) Enhancing controlled fi re management system in wildlife habitats
8.	Tourism	a) Promoting alternative tourist attractions. b) Restoring the degraded tourist sites. c) Sensitizing and enhance adaptive tourism infrastructural development.
9.	Infrastructure	a) Promoting and enhancing use of building codes and standards adaptive to climate change. b) Promoting integrated planning in infrastructure designing, development and use of appropriate technologies c) Promoting construction and rehabilitation of relevant infrastructure. d) Promoting insurance system for

		infrastructures
10.	Human settlements	a) Promoting building standards to accommodate impacts of climate change. b) Enhancing land use planning. c) Improving settlements of communities in climate change risk prone areas. d) Relocating settlements from high-risk areas. e) Promoting sustainable housing schemes. f) Promoting insurance schemes for human settlements
11.	Land use	a) Reviewing and enforcing land use master plans. b) Exploring and promoting sustainable land management technologies. c) Promoting and supporting effective land use planning at all levels

b) Climate Change Mitigation Strategies by Sector

No.	Sector	Strategic interventions
1.	Agriculture	a) Promoting agro-forestry systems. b) Enhancing management of agricultural wastes. c) Promoting efficient fertilizer utilization. d) Promoting best agronomic practices technologies.
2.	Livestock	a) Promoting manure management practices b) Promoting appropriate technology for animal feed stuff production c) Promoting waste management in abattoir d) Improving rangelands productivity and complementary activities
3.	Forestry	a) Promoting afforestation and reforestation b) Supporting household energy plantations to reduce pressure on natural forests c) Supporting capacity building for community based forest carbon assessment d) Promoting reduction of emission from deforestation e) Promoting reduction of emission from forest degradation f) Promoting sustainable management of forest g) Enhancing and conservation of carbon stocks h) Developing NAMAs in forest management
4.	Energy	a) Enhancing use of renewable energy share in the national grid and off-grid. b) Enhancing off – grid power supply to rural areas. c) Promoting diversification of energy sources. d) Supporting exploitation of geothermal, clean coal and safe nuclear energy. e) Promoting energy efficient technologies and practices. f) Developing NAMAs focusing on energy generation and conservation. g) Promoting green energy related technologies

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