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WASHINGTON DC, MARCH 25-29, 2019



Rural land use planning - The Integration of Shared Resources Mapping for Improved Communal Tenure Security: Experiences from Zambia

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**Paper prepared for presentation at the
“2019 WORLD BANK CONFERENCE ON LAND AND POVERTY”
The World Bank - Washington DC, March 25-29, 2019**

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Abstract

The rural areas in Zambia are characterised by land use planning which has only been conducted on ad hoc basis and only at village level without proper documentation. This has often been a recipe for land disputes and encroachment of important historical sites and natural biodiversity. This paper has explored an empirical qualitative and descriptive comparison case study approach of Nzamane Chiefdom in Chipata based on best practice from four chiefdoms of Maguya, Mkanda, Mnukwa and Mshawa where the TGCC land use planning project was piloted as an effective land administration tool to curb such challenges. This land use planning project is premised on the provisions of The Urban and Regional Planning Act of 2015 and the overwhelming support from a consortium of District Land Alliances and other Civil Society Organisations (CSOs) in Eastern province who have been advocating for uniformity in land use planning of all chiefdoms.

Keywords: Land use planning, land governance, tenure security, land conflicts, communal resources



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1.0 INTRODUCTION

The demand for land which is a key natural resource where all social, political, economic and environmental interactions of any country evolve has been rising especially in developing countries. Land resource is finite and competing demands for land are infinite. Arable land is shrinking because of diversion of agricultural lands to other non-agricultural uses and agriculture related activities are being taken up on marginal lands. Despite its importance, access to land, especially in the remote areas of Africa, has come under profound threat in recent times due to factors such as rapid urbanization, demographic growth and environmental changes (Cotula and Mathieu, 2008; UN-Habitat 2014). Land grabbing is also proving to be a big challenge for African countries because of increased interest by foreign agricultural investors to acquire huge tracts of land especially in rural Africa (Anseeuw et al., 2012; Cotula et al., 2009; de Schutter, 2011; Friis and Reenberg, 2010; Graham et al., 2011; Kachika, 2010; World Bank, 2011). The increased demand for land has exacerbated land conflicts which have invariably exposed a lot of vulnerable groups such as women and ethnic minorities to tenure insecurity especially in rural areas of Zambia. In addition important historical sites and natural biodiversity such as burial sites and natural forests are been encroached in especially by charcoal traders and other businessmen searching for the famous Mukula tree which is a lucrative business venture. This tenure insecurity according to Arko-Adjei (2011) is caused by haphazard and unregulated land development.

The problems mentioned above are just but a few of many problems rural areas are grappling with in Zambia mainly due to lack of co-ordinated land use planning. Although the chiefs act as arbiters of land disputes and have ultimate authority over the management of customary lands in Zambia, the methods they employ are of a curative nature. In most chiefdoms there are few records kept on land allocation to subjects, on land management rules or decrees, or on rulings from land disputes. Due to these numerous problems facing customary land governance structures in resolving land disputes and help in the preservation of historical sites and natural biodiversity, long lasting preventive land administration techniques are inevitable across chiefdoms. Ostrom (1999) notes two factors which are often less noted but they play a significant role: the enabling role played by external actors, government and non-governmental, and the incentives for communities and their members to improve land governance.



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Land use planning has been identified as one of the tools that can be employed to effectively resolve the chiefdom problems identified above. Land use planning in most chiefdoms has only been conducted on ad hoc basis and only at village level without proper documentation due to lack of capacity and technical expertise of the local people. Despite, these challenges five chiefdoms of Maguya, Mkanda, Mnukwa, Mshawa and Nzamane in Chipata Chipata have already benefitted from the Tenure and Global Climate Change (TGCC) project with funding support from United States Agency for International Development (USAID).

The TGCC project has potential of been replicated to other chiefdoms of eastern province of Zambia due to the willingness of a consortium of District Land Alliances and other Civil Society Organisations (CSOs) in the province who have been advocating for uniformity in land use planning of all the chiefdoms. This call resonates with the ongoing national land titling program and land audit spearheaded by Ministry of Lands Natural Resources Environment and Protection (MLNREP) and other intervention measures meant to reduce land conflicts by protecting the natural resources and enhance tenure security for the people of Zambia. These efforts by Government, local chiefs, civil society organizations and international organizations are meant to promote land use planning which is in line with the provisions of the Urban and Regional Planning Act No. 3 of 2015.

This paper is part of an ongoing collaboration project between Tetrattech ARD and the Chipata District Land Alliance (CDLA) with funding support from USAID.

2.0 THEORETICAL AND CONCEPTUAL FRAMEWORK

2.1 PROCESSES OF LAND USE PLANNING

The planning process is a social learning process in which expert knowledge is combined with public attitudes, preferences and beliefs in order to improve understanding of issues of sustainability (Robinson *et al*, 2006). The concept of using the land for suitable utilization lies within the land use planning (LUP) process, which aims at optimizing the use of land while sustaining its potential by avoiding resource degradation (Ramamurthy *et al*, 2018). The World Bank (2010) further emphasises that whatever the objective of land use planning is, the outcome usually involves “allocation and zoning of land for specific uses, regulation of the intensity of use, and formulation of legal and administrative instruments that support the plan.



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Land use planning as a panacea to the many land related problems affecting developing countries is captured as an iterative process in the majority views of the international community (see text box 2 below).

Land use planning, from text box 2 hinges more on allocation of land with clearly defined monitoring

Text Box 1: Views of land use planning by the “International Community”

“It is an iterative process based on the dialogue amongst all stakeholders aiming at the negotiation and decision for a sustainable form of land use in rural and urban areas as well as initiating and monitoring its implementation.” (GTZ, 1999).

“It 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.” (FAO, 1993).

“It is a public policy exercise that designates and regulates the use of land in order to improve a community’s physical, economic, social efficiency and well-being.” (World Bank, 2010).

“It is a systematic and iterative procedure carried out in order to create an enabling environment for sustainable development of land resources which meets people’s needs and demands.” (FAO and UNEP, 1999: 14).

mechanisms at all stages and levels of planning supported by effective legal, institutional and policy frameworks.

Land use planning is not the means to an end, but an iterative process which keeps on learning from experience and adapts itself to any new outcomes. This entails that land use planning is dynamic and is capable of accommodating any amendments and will not permit the abandonment of the plan in case the initial set goals and objectives are not met. Even in instances, where the plan is approved, planning does not end.

The duty of planners, according to Leung (2003) is to match different users of land in the supply of land through proper siting and sizing of land uses. However, for its success this must be done sequentially

following the specified steps of identification, analysis, formulation, approval, implementation and monitoring. Land use planning is depicted as a means to an end where local people co-operate or collaborate with both internally and externally introduced development programs/projects and as an end is seen as a goal of the project. In this regard land use planning is a cyclical process which keeps on learning from past experiences. There are various processes that land use planning should follow before been translated into a map as shown in figure 1 below.

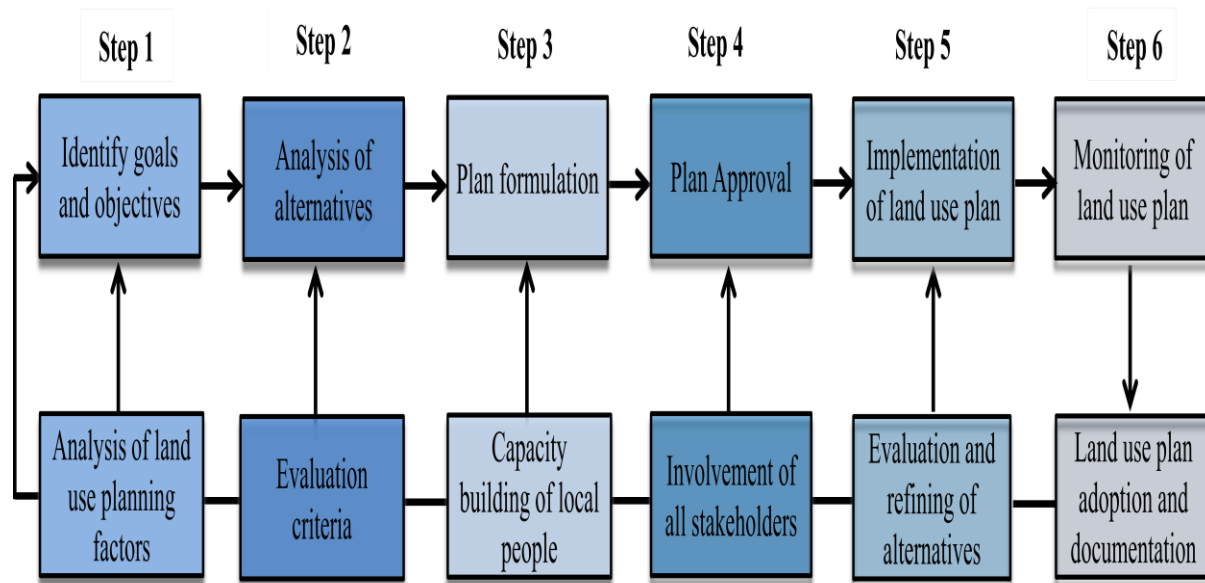


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Figure 1: Processes of land use planning



Source: author

The first step in the planning process in figure 1 (above) begins by the identification of set goals and objectives guided by the analysis of land use planning factors. The second step involves the analysis of alternatives which are evaluated based on the set goals and objectives. Before the plan is formulated in step 3, the local communities are imparted with training skills through capacity building by working hand in hand with the relevant agencies. Step 4 involves the approval of the land use plan by the relevant stakeholders. Before implementation is effected in step 5 the land use plan has to be evaluated and any alternatives incorporated prior to the monitoring exercise which will eventually usher in the approved documented land use plan and the process repeats itself.

This shows a paradigm shift from an output orientation (a land use plan) towards a process orientation, in which different criteria and views of stakeholders are evaluated as a basis for more or less democratic decision making (FAO, 1993). Land use is more a process than an output because more positive outcomes



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maybe achieved even before a plan is made. Therefore, land use is a dynamic concept denoting complex interactions and changes occurring over time.

The process of land use planning should follow a tripartite political, technocractical and social dimension in order to avoid marginalisation or exclusion of certain groups. If only the political and technocractical aspects are considered, elite capture will emerge and the resulting plan will not reflect the wish of the majority local people. It is generally believed that with elite capture sustainability of the land use planning process will not be attained and any plans formulated this way may exist with little or no impact at all especially in developing countries. Land use planning processes are effectively implemented through mass action where the local people are fully involved. However, compromise has to be reached because the more the people in the process, the longer it takes to come up with reasonable conclusions.

From the foregoing, land use planning generally requires clearly outlined partnerships with government through the local authorities, local communities and civil society. The success of these partnerships is dependent upon consensus building and full citizen's participation. The World Bank (1994) defines participation as a process through which stakeholders influence and share control over development initiatives, decisions and resources which affect them. The participation of all stakeholders in land use planning projects is crucial for its success. This helps the democratically elected politicians to approve land use plans after effective public consultation. This scenario depicts that participation is a negotiation process of information sharing involving different stakeholders at all levels with a common goal of consensus building in a land use planning project.

Land use planning involves the designation of space for various land uses for the common good of the community including the marginalized groups who include among others women, the handicapped and children. These marginalised groups should be recognised and incorporated as part of the stakeholders. This helps in promoting public participation because they understand land related and social issues affecting them in great detail than the politicians and technocrats implementing land use planning.

The process of land use planning should bring all stakeholders (international, national, regional, local and village) together and promote capacity building in a collaborative manner. The local communities should be imparted with skills training on how to map their territories, the best farming practices that promote conservation of natural resources in a game management area and other related skills.



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Land use planning as a process is country specific and should be carried out through an array of relevant institutions supported by existing legal and policy frameworks. The quest to attain this scenario has given birth to different typologies of land use planning, which facilitates the allocation of land to the uses that provide the greatest sustainable benefits (Agenda 21, paragraph 10.5, UNCED, 1993).

The process of land use planning and its implementation is a product of land management as it deals with land as a resource possessing different rights and tenure typologies. The process of land use planning should follow a participatory approach. Participatory land use planning (PLUP) approach helps greatly in developing site-specific land resource management options to improve the land productivity and to minimize land degradation. The ‘p’ for participation in PLUP plays a significant role as it moves land use planning from static, state driven, spatially biased planning process to one that is dynamic, people driven and integrative. As Perry (2003: p.151) puts it, ‘‘planning is always remaking itself as it is embedded in and responds to a world that it is always in the process of being remade.’’ The emergence of sustainable development thinking and the associated paradigmatic and practical shifts in LUP are just one manifestation of these dynamic relations. The question that arises is on how to carry it out so that the set goals are achieved.

Participation places the local users at the centre of the planning process in order to foster active participation in them and use resources in a sustainable manner. This entails the fostering of active stakeholder participation and civic engagement mechanisms. UNESCO (2003) looks at empowerment as a fundamental shift that allows local communities from being beneficiaries to becoming actors of their own situations. This implies that they should gain a controlling share over decision-making affecting their lives and the resources upon which they base their livelihood. Capacity building in this regard plays an integral part in land use planning as it advances societal goals more than the unilateral economic development programs of service agencies (Dyckman, 2007). Programs of economic development have almost inevitably favored certain classes whose cooperation is concerned with incentives necessary to realization of the goals, such as high rewards to entrepreneurs, which may have been paid for by relatively disadvantaged groups.



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2.2 MAPPING OF SHARED RESOURCES

Making maps is a central part of the community land protection process. Maps provide powerful documentary evidence of a community's claims to lands and natural resources. Maps are also useful for community management of land and resources: when communities can see and conceptualize their whole territory, they can make better decisions about how to manage their lands and natural resources equitably and sustainably. Maps should not be thought of as only an output; they are also an important tool for communities to use throughout the process and in their discussions about land and resources (Namati, 2016). "properties which are owned by all members of that community in undivided shares, often the larger or remoter pastures, forests, woodlands, swampland and hilltops.... these are Common Properties, defined by virtue of membership to the group, and a group whose composition may change over time" (Alden Wily, 2005).

Shared resources should be mapped defining physical features (natural resources), infrastructure and social factors. Physical features should include among other things major landmarks (roads, rivers, mountains etc.), boundaries of community, boundaries of communal land areas, rivers, lakes, streams, ponds, wells/boreholes, wetlands, swamps, bogs, pasture/grazing areas (used in different seasons), livestock rest areas, planted crops and garden areas, dry areas and wet areas, seasonal use areas, forests, places to gather food, medicinal herbs, building materials, etc. Areas where wildlife gather or migrate.

Shared resources should also be mapped defining infrastructure which include among other things settlement areas, shops and markets, roads/paths/trails, schools, churches, clinics or other, facilities, farm/livestock infrastructure, offices of governments, NGOs or other institutions, Areas given to companies or outsiders for any purpose, (such as mining, tourism, logging).

Shared resources should be mapped defining social factors which include among other things neighboring communities, sacred/religious, cultural, and historical sites, places that are fenced or private land, conflicts: places and resources in dispute, Access routes (including ones used by pastoralists or other migratory groups), movements (can be shown on the same or another map, mark the direction with arrows if decisions are off the map), places where outsiders enter, places where villagers go outside, the boundaries to access land or, natural resources.



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The mapping of these natural resources should be in line with community based natural resources management (CBNRM) which entails the shift from unsustainable to sustainable community-driven forests management and protection in closer collaboration with the Forest Department and Zambia integrated forest landscapes (ZIFL) project in all the villages of Nzamane. Chipata where Nzamane Chiefdom lies boasts of a total of thirty one (31) forest reserves categorized into national and local forests, covering approximately fifty six thousand (56,000) hectares of land equivalent to 21% of the total land area of Chipata district, with the higher percentage of forest area falling on customary land managed by Chiefs. Many of these forest reserves have had no government or community enforcement of their boundaries, and have no existing management plan. There are additional large areas of forest and bush land that are managed to varying degrees. The streams and dambos, within and surrounding these forest areas have no distinct demarcations which makes them vulnerable to extending to agricultural fields.

Forest structure is an important factor regarding future global changes. Specifically, due to the ability of forests to influence the local climate and their importance as a global carbon stock and in providing biodiversity. In addition they provide essential ecosystem services including water provision, erosion control, critical habitats for wildlife, carbon storage and sequestration as well as hosting biodiversity among other uses. Despite this significance, the forest resources suffer from accelerating degradation, which is undermining ecosystem functions and derivative services. This degradation is largely attributed to the growing population, changing economic environment, ongoing and historic deforestation and over exploitation of forest resources. Specifically the major drivers of deforestation in Zambia specifically eastern province include agricultural expansion using conventional ways of farming (slash and burn method), wood extraction for timber and fuel wood, fires, and infrastructure development including settlements. Streams and dambos are also affected by agricultural expansion with cultivation going down into the stream banks hence leading into erosion resulting into siltation. Dambos on the other hand are affected by overgrazing and late fires.

2.3 LEGAL AND INSTITUTIONAL FRAMEWORK FOR LAND USE PLANNING IN ZAMBIA

Land use planning in most chiefdoms has only been conducted on ad hoc basis and only at village level without proper documentation. The government of Zambia realized challenges of land use planning faced not only by urban areas but also in rural areas of most chiefdoms, hence they enacted the Urban and Regional Planning Act No. 3 of 2015. The Urban and Regional Planning Act of 2015 provides for the link



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of different levels of planning e.g. national, provincial, district and village level planning. In addition, the Urban and Regional Planning Act No. 3 of 2015 provides for the establishment of procedures for integrated urban and regional planning in a devolved system of governance so as to ensure multi-sector cooperation, coordination and involvement of different levels of ministries, provincial administration, local authorities, traditional leaders and other stakeholders in urban and regional planning and to ensure uniformity of law and policy with respect to urban and regional planning. In this Act urban refers to urban areas whilst regional planning refer to rural areas and peri-urban areas. Most rural areas in Zambia fall under regional planning and what is practiced is known as land use planning at local level where no master plans are prepared.

In other countries land use planning at a local level employs both comprehensive plans like master plans and detailed development plans are used as tools for public steering of development. But the status of these plans varies. In some countries like Germany, Denmark and Sweden, the municipal authorities are legally obliged to produce both comprehensive plans covering the entire area of the municipality, proposing the main land use, infrastructure, development and recreational possibilities, and detailed development plans whenever major development is needed (Larsson, 2010: p.44). However, the situation is different in some developing countries of the world. For instance, in Zambia local planning is only practiced at municipal level where the local municipality is mandated to introduce master plans in the areas of their jurisdiction and the local people can also produce their own village plans authorized by their local leaders, though not legally recognized but enforceable under traditional or social norms. The above scenario depicts that land use planning recognizes the participation of the local people even at local or village level in rural areas.

Land use planning at local level is affected by policies and actions of other local government departments and agencies who pursue their own mandates, such as public works, parks and recreation, education, public transit, and roads. The uneven distribution of powers and resources among departments and agencies, interagency rivalry, or simply the ignorance of what each other is doing will influence how planning is carried out (Leung, 2003: p.14). This lack of co-ordination explains the haphazard developments that occur in rural areas which are synonymous with local level planning. However, this situation can be reversed by strengthening legal and institutional frameworks governing municipal local areas. These will make the formulated land use plans at local level legally binding.



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Sustainable resource management in Zambia is challenged by overlapping and often ambiguous tenure and management frameworks. For example, customary law dominates land allocation in rural areas for agriculture, but all forest and wildlife resources on the same land are managed by the Forest Department and Department of National Parks and Wildlife, while sub-surface resources are managed by the Ministry of Mines. These overlapping responsibilities have resulted in an environment of distrust where customary authorities and communities experience limited benefits from the resources on their land, and the state is often unable to fulfill its obligations to deliver services to these customary areas. At the same time customary leaders and local communities fear that their customary rights interests may be overpowered by other actors or private investors (Mulenga, 2015).

Although Chiefs have a large amount of autonomy in terms of land management in their chiefdoms, they rely heavily on government for a range of services. Chiefs advocate to government for service delivery, such as schools, clinics, road, agricultural investment and water infrastructure often with limited information. It is only with spatially explicit information on current land use and development patterns that chiefs, government and communities can make rational decisions on government engagement, internal community activities, and outside investment. Land use planning as a process in most cases is likely to reveal many long-standing tensions in development planning, for example between communities and government over resource management, or between communities and leaders over land allocation decisions. Thus there are fundamental connections between the economic imperatives of land use planning and its blended role as a conflict mitigation tool.

There is need for formulation of broader management rules around village land use practices which have to be enforced in tandem with the provisions of the Zambian Urban and Regional Planning Act of 2015. In addition support for the establishment of gender-balanced Village Resources Management Committees (VRMCs) and Forest Management Committees (FMCs) as structures for village and chiefdom-level management of natural resources may be ideal as these are closely related to Joint Forest Management or Community Forest Management based on whether the area is a National Forest or Local Forest.

Land use planning does not operate in isolation but should incorporate various pieces of legislation listed below. The role of each institution tasked with enforceability of these various pieces of legislation should be clearly outlined in order to avoid overlapping mandates.

- Wildlife Act of 2015



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- Resettlement Policy
- Agricultural Policy
- Forest Act of 2015
- Mines and Minerals Act of 2015
- National Decentralization Policy 2013
- Villages Act of 1972

3.0 GOALS AND OBJECTIVES OF LAND USE PLANNING IN NZAMANE CHIEFDOM

The overall goal of the land use plan was to foster the preservation of the natural resources and enhance village development in Nzamane chiefdom by identifying areas all shared resources and potential areas for development. The goals and objectives of this plan are intended to be implemented through the effects of land use amendments on the development of future land use. The evaluation and approval of the land use map and text amendments are based on the overall goal and the following objectives:

- To assure land use compatibility with natural resource preservation.
- To assure land use compatible with adjacent and nearby uses.
- To assure a desirable sequence for implementation of plan recommendations that achieve orderly development.
- To achieve development coordination with any adjacent and interrelated sites.
- To terminate the expansion of undesirable land use patterns. The land use categories proposed in this report are recommended with the intent of being consistent with these objectives.

This plan is limited to an analysis of the spatial pattern of land use in the Chiefdom of Nzamane. The plan comprises two components - a Land Use Plan map and the corresponding Land Use Plan text. The land use plan identifies specific areas or sites of special interests commonly referred to as shared resources where the character of land use should be either protected or improved. Recommendations resulting from this analysis identify specific land use categories for maintaining or achieving desirable land use characteristics. The overall strategies for implementation are described in the plan text while specific site



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recommendations are shown graphically on the plan map. The focus of this plan is primarily on guiding the development of land and provision of public services. This approach concentrates on land use goals that can be achieved through improvements in the control of development through all the villages in the chiefdom of Nzamane.

In general, land use plans are intended to be a means of coordinating long-term and short term actions and integrating independent decisions. The rationale for this plan and all land use planning in Nzamane includes some variation of the following:

1. To preserve existing historical sites and shared resources.
2. To accommodate future needs.
3. To provide for orderly development e.g processing zones, borehole drilling, network towers.
4. To provide a sound basis for short-range decisions.
5. To provide an official position that land owners can count on.

4.0 METHODOLOGY

In undertaking this study an exploratory empirical qualitative and descriptive comparison case study approach based on best practice in some selected chiefdoms in Chipata and how this can be replicated in other chiefdoms has been adopted. Nzamane chiefdom is one of the chiefdoms in Chipata of Eastern Province of Zambia which was selected with funding support from United States Agency for International Development (USAID) under the Tenure and Global Climate Change (TGCC) project. Nzamane chiefdom is home to over 150,000 Ngoni speaking people and covers a land mass of approximately 2,000 square kilometers with about 450+ villages. There are 10 Ngoni chiefs in Chipata. The highest in rank is Paramount Chief Mpezeni, and Senior Chief Nzamane is second. Senior Chief Nzamane is advised by a council of elders, which consists of two head men called Chapitas. He must consult with them before reaching a decision on any matter relating to custom and tradition which may result in any change of the tribal law. Hence, before implementing this land use planning project in his chiefdom several meetings had to be held between Chief Nzamane and his Chapitas with the project implementers CDLA in order to reach consensus.

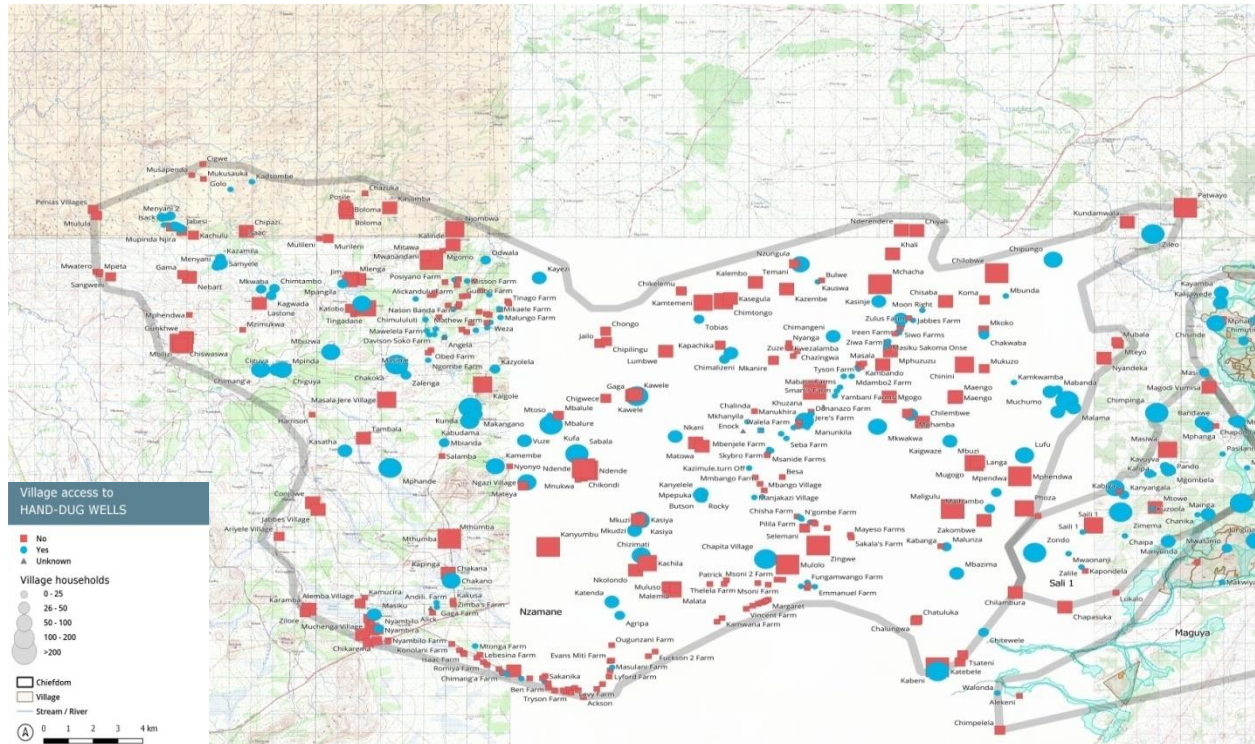


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Map 1: Nzamane village points



Source: TGCC/CDLA Project Documents 2018

The methodology was developed based on past TGCC/USAID land use planning efforts in other four chiefdoms of Maguya, Mnukwa, Mkanda and Mshawa. The purpose was to replicate what was done in the four chiefdoms of Chipata where CDLA had been piloting customary land mapping and demarcations for land use planning. The process involved a rapid assessment of villages, village indicators, and basic development infrastructure within the four chiefdoms. This same process has been replicated in Nzamane Chiefdom through the use simplified Open Data Kit (ODK) and open street maps platform.

A combination of primary and secondary methods of data collection was adopted. Primary data was obtained through field surveys. The field surveys included clustered village focus group discussions (FGDs). In these clustered FGDs various base maps with different typologies of data sets were administered for each village attending the meeting. In addition, key informant interviews and direct observations were also conducted.



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In this project about 400+ villages were identified in Nzamane chiefdom for the land use planning project. These villages were segmented into twenty (20) zones. Since this is an ongoing project only three (3) zone clustered meetings have so far been held at Kasegula, Nzungula and Patwayo villages which are part of the twenty zonal meeting places.

5.0 FINDINGS AND RESULTS

5.1 DEMOGRAPHICS

The land use planning project in Nzamane fostered women, men and youth participation in all the clustered village meetings as depicted by table 1 below. In all the three clustered village meetings 137 women, 79 men and 140 youths were captured. This shows a participatory approach of the land use planning project.

Table 1: Clustered Village Meetings Composition

S/N	Village Name	Villages Present	Women	Youths	Men
1	Kasegula	Kasegula	36	14	38
		Kamtemeni	7	5	7
		Sumba	2	1	2
		Chikelemu	2	1	3
2	Nzungula	Nzungula	6	6	16
		Patukani	4	3	6
		Kazembe	10	5	8
		Chimtengo	5	2	4
		Temani	6	3	5
		Kauswa	4	1	3
3	Patwayo	Patwayo	14	10	16
		Ngundamwala	10	7	5
		Muluso	14	8	12
		Mtizwa	9	6	8
		Zileo	8	7	7
	Total		137	79	140

Source: Field Data



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Figure 3: Kasegula clustered village meeting



Source: Field Data

In these clustered village meetings, each village was required to draw their own land use map in order to supplement the high resolution imagery and topographical maps provided to them for identification and authentication of shared resources within their villages.

5.2 SATELLITE IMAGERY AND SKETCH MAPS

The mapping of shared resources in Nzamane Chiefdom was only possible by following these steps:

- a. Obtaining consent from relevant communities and leaders;
- b. Identification of village names, locations (based on interest and consent above);
- c. Identification of development infrastructure: a. Social infrastructure such as clinics, schools, churches, markets, play areas, etc.



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- d. Identification of physical infrastructure like boreholes, wells, roads, communication towers, bridges;
- e. Identification of boundaries such as chiefdom, community forests, any state land within chiefdom; and
- f. Identification of associations and groups with claims to land, and associated documentation.

In coming up with these maps the villages were assisted by two community facilitators (CFs) and two community surveyors (CS) from Chipata District Land Alliance (CDLA). The next step was for them to identify their drawn shared resources and historical sites within their villages on the high resolution satellite image maps provided to them as a medium for 1) understanding the current land uses and natural resources as the basis of future developments, 2) land use negotiations, and 3) digital representations of the plan maps. The mapping exercises were done in village groups and the negotiations of future land use allocations were conducted around the current land use map allowing the participants to express their opinions in a spatially explicit way. This exercise was conducted in order for them to map correctly all their shared resources so that the final output should capture any shared resources they could have missed out and make necessary corrections on the land use maps.

Figure 4: Women Drawing Sketch Map



Source: Patwayo Village Women Field Data

Figure 5: Men Land Use Sketch Map



Source: Patwayo Village Men Field Data

5.3 SOURCES OF LIVELIHOOD

This land use and development plan process recognizes that Zambia's rural landscape is vast and viability for different investments are varied because dominant livelihoods practiced by a community can greatly impact the structure of the land tenure rights of a community. According to Cotula and Toulmin (2007) pastoralists, sedentary small-scale farmers and hunter-gatherer groups, for example, will necessarily have



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different land claims, land use patterns, and rules governing land use. In certain circumstances and at particular times, one piece of land may be shared by groups practicing varied livelihoods, and thus its administration subject to overlapping customary paradigms. In Nzamane Chiefdom, the local community livelihoods are not fully dependent on a single revenue source, like agriculture. They have got multiple sources of revenue ranging from small-scale farming and agribusiness out grower schemes, to cattle, goat and chicken rearing.

Since these different livelihood patterns entail varied land use patterns and claims, a land use plan is inevitable. The land use plan is in essence a plan of action that clarifies and in some cases attempts to alter land uses and their management regimes in rural, largely customary areas. Inevitably, environmental considerations create limitations in terms of what livelihoods a landscape can support. It has been observed that there are some areas of the chiefdom that are not suitable for agricultural use and at present do not have wildlife or tourism potential. However, a land-use and development plan can be used to decide whether it is worth investing in efforts to improve the land to be able to provide tourism or agricultural services, or whether the option is not viable for the area. Within a customary system, a range of secondary rights may also exist: rights of way, rights of access to use natural resources located on lands shared by more than one village or community, and seasonal access to common areas for pastoralists or hunter gatherers, whose customary rights include yearly passage through, visits to or use of lands and natural resources considered to be within the bounds of another, sedentary community.

5.4 CONCLUSION AND NEXT COURSE OF ACTION

This land use planning project though not complete has identified a lot of challenges in Nzamane Chiefdom which include among others unplanned settlements, unbalanced developments, illegal charcoal burning and land degradation.

The problems identified above will be alleviated by following diligently the various pieces of legislation such as the Urban and Regional Planning Act No. 3 of 2015, the Forest Act of 2015 and Resettlement Policy. Therefore, it presents an opportunity for relevant actors such as the Disaster Management and Mitigation Unit (DMMU), Resettlement Office and Forestry Department, local authorities to be co-opted and work in collaboration with the established village structures in curbing these vices.



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Since land use planning has been identified as a panacea for solving a lot of problems facing shared resources in the chiefdom of Nzamane, the next course of action would be to complete the remaining 17 clustered village meetings so that all the data that can help in coming up with a chiefdom land use map are gathered. This project only covered three clustered village meetings where a total of 15 villages were represented due to time constraint and winding up of the five year TGCC project. As already mentioned the NGOS, CSOs, civic leaders, government and the local chiefs want common land use plans to be developed for each chiefdom in Eastern Province where Nzamane Chiefdom lie. However, this can only be achieved through consented efforts of all stakeholders especially with funding support from the donor community.

Boundary demarcations can be contentious in and special caution has to be taken to communicate the known error of the boundaries. To promote stakeholder buy-in and to help reduce skepticism by communities, community/participatory mapping tools and workshops can be used to develop community perspective boundary demarcations. The community maps will be loaded into a GIS and mapped for review by appropriate state institutions and other interested parties.

Land use planning efforts should use geospatial technologies to allow diverse stakeholders to have input into the planning process. A GIS database for base layers should be developed using best available data with additional layers being created and verified using GPS technology and participatory (community) mapping exercises. All GIS base layers are detailed and described in Table 2.

Table 2 – GIS base data layers for TGCC land use planning

Layer Name	Date	Accuracy	Source	Description
Roads				Road centre lines
Geographical Features				Streams, mountains, as well as forests, which differ from land uses based on being a description of the state of the land not explicitly related to how it is used
Parcel Boundaries				Digitized boundaries of fields/agricultural parcels
Village Centers				Center point of each village in each chiefdom, associated with governance information about that village
Household Demarcations				Center points for fields and land parcels
Land Uses				Shared resource boundaries and associated



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				communities with each resource
Development Infrastructure				Points of interest collected with community members
Village Boundaries			TGCC	Collected via boundary walks
Land Classifications				Government administrative authorities, for example mining, wildlife, forestry, who may have different and overlapping jurisdictions
Administrative Boundaries			Ministry of Lands	Boundaries of Provinces, Districts and Wards
Satellite Imagery	2013-2017		USGS	Imagery covering various areas of Eastern Province at various resolutions
Topographic Maps	1960-1985		Ministry of Lands	1:50,000 topographic maps from Ministry of Lands

Source: TGCC Project Documents, 2012.

GIS base layers will be converted into a digital format that can be viewed, though the main database is housed on a server in the field.

TGCC GIS Layer Sourcing Development

To support decision making for the Zambian land use planning exercise, a comprehensive set of GIS layers are required. Because this exercise occurred through a customary land documentation process, relevant data was collected over time to feed into the land-use plan. The project used a number of methodologies to accomplish these tasks:

Digitizing features from Google Earth - where features are visible on the Google Earth's satellite imagery - digital lines, points or polygons representing features can be captured using tools within the Google Earth application. TGCC typically used Google Earth to identify potential areas of settlements (see Figure 6 above).



Figure 6: Location of village settlement, as identified by Google Earth

In these chiefdoms the land use maps were digitized by one GIS specialist specifically assigned for this task. The digitized maps were then taken back to each village for validation through clustered meetings. All the land use maps from each village were digitized and incorporated into one chiefdom land use map which was presented to the chief in the company of all headmen/women for final validation. After the



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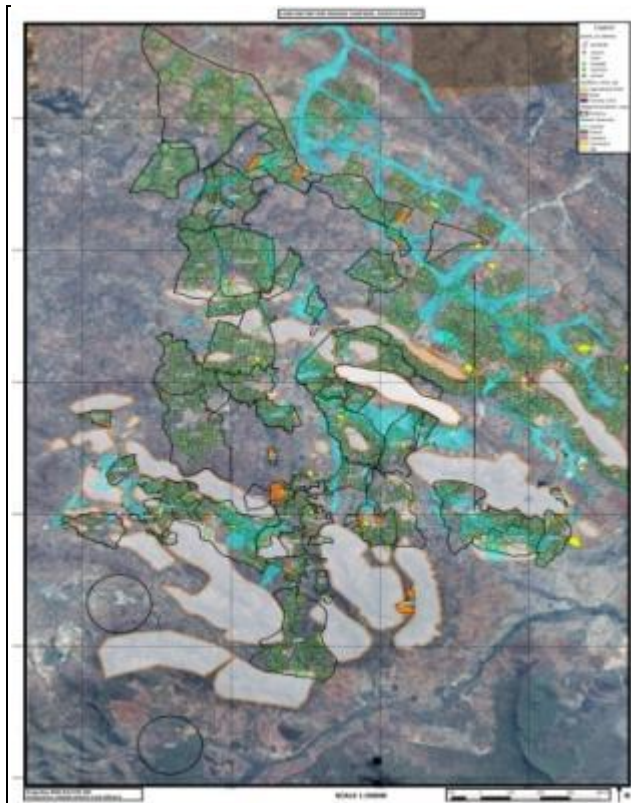
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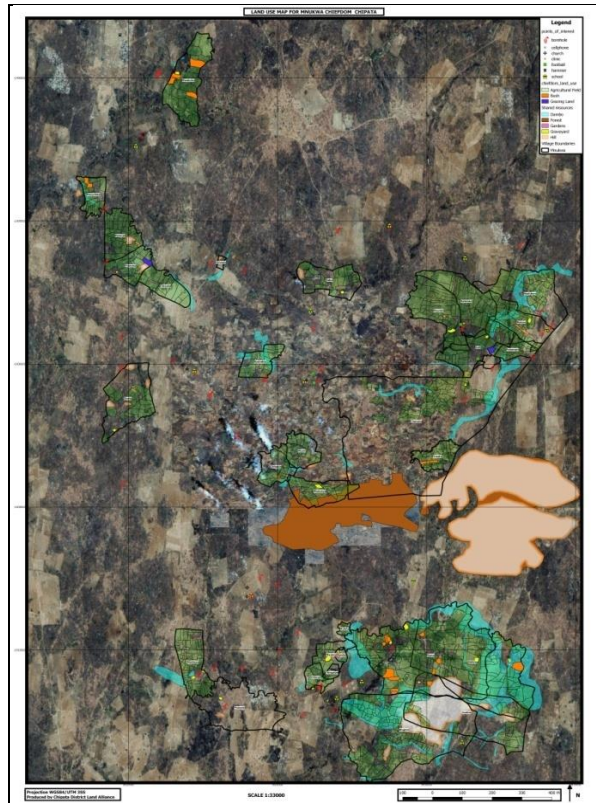
chiefs and their indunas from each chiefdom have validated the chiefdom land use maps, a meeting will have to be arranged for all stakeholders including traditional leaders, civic leaders, planners, environmental experts and other relevant stakeholders. In this meeting CDLA is expected to present the chiefdom land use maps which will be uniform across all chiefdoms. Lessons learnt from the land use planning exercise will have to be clearly stated so that all the stakeholders buy into what the CDLA is doing.

Land use planning in Nzamane Chiefdom was supposed to be a replica of what the TGCC project did in the four pilot projects of Maguya, Mkanda, Mnu kwa and Mshawa chiefdoms see sample maps 2 and 3 below drawn at a scale of 1:33000.

Map 2: Mshawa Chiefdom Map



Map 3: Mnu kwa Chiefdom Map



Source: CDLA GIS Team



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