FOREWORD

Njombe Town Council, located in the Southern Highlands of Tanzania in the Njombe Region, was established in July 2007 under the Local Government Act no. 8 of 1982. As an administrative headquarter for Njombe Region, the Town is a key engine for the social and economic development of the Region. The Town is ripe for a green revolution. Large part of the Town, about 74 percent is green, characterized by different types of vegetation. The cool climate, fertile soil and a reliable amount of rainfall, which characterizes the Town, provide favorable conditions for agriculture. Agriculture is the primary growth potential area in terms of employment, food security, income generation and agro processing. The Town is a big producer of maize and Irish potatoes, other food crops, horticulture crop production, and tea and flowers. Other economic activities include forestation, livestock production, industrial production, fishing, tourism and financing activities. The Town is also endowed with various natural resources including forest resources, rivers, and streams, which are potential for socio, ecological as well as economic development. The geographical size of Njombe Town, with the total area of 3,212 square kilometres is by far, the biggest urban centre in terms of spatial size in Tanzania, offering potentials for sustainable utilization of the land.

Due to the various potentials which exist in Njombe, the Town is becoming an increasingly attractive for dwellers as well as investors. There is also an increase of social and economic activities given the Town's administrative as well as socio-economic importance to the region. Consequently, the Town is facing challenges related to soil erosion, scattered population growth, urban sprawl and un coordinated spatial growth of the Town. Other challenges include inadequate provisioning of public utilities and social infrastructure services. The Town is also facing challenges related to underutilization of the existing potentials for agriculture, tourism as well as agro processing industries.

The preparation and completion of this Master Plan is a timely undertaking that will not only address the existing challenges but also provide a framework for the sustainable growth and development of the Town. The Master Plan subscribes well to the vision of the Town, which aims at becoming a green city which is safe, clean, healthy, inclusive, productive, and competitive where neighbourhoods are revitalized, history is preserved, the natural environment is respected, and where all people can reach their full potential through education, commerce, culture, tourism, and wellness. The Plan embraced a green city planning approach by integrating the economy, settlements and the ecological systems. The Master plan adopted a concept of green city development with decentralized satellite towns so as to maintain the greenery of the Town on one hand but also ensure better access to public utilities as well as socio-economic facilities and services on the other hand. The Master Plan propose green corridor strategy that involve maintaining the existing trees as well as planting new to reduce erosion, as well as maintain water quality in the rivers in addition to other benefits such as provision of fruits, shade and enhancing micro-climate.

The proposal for infrastructure improvement including expansion and upgrading of the airport into a regional level, provision of storm water drainage systems, construction of solid waste land fill facilities, development of the satellite towns, which are self-sufficient as well as designation of ten percent of the land for industrial uses provide a catalytic base for transforming the economy of Njombe Town consistent with the national strategy of realizing an industrial base economy. This Master Plan should therefore serve as a tool for harnessing the Town's potentials in line with the proposals put forward by the Master Plan with a view of contributing to improved living standards of the people as well as ensuring sustainable development of the Town.

In view of the foregoing, I comment the Njombe Town Council by taking the vital exercise of preparing the Town Master Plan admits scarce human and financial resources. I wish to recognize and comment the contribution of all stakeholders who made the preparation of this Master Plan possible. These include the World Bank, the Ministry of Lands and Human Settlement Development, the Njombe Regional Administrative Secretariat, the technical team, public and private institutions, as well as individuals.

I remain hopeful that this Master Plan will be used to guide the spatial growth as well as spearhead the socio-economic development of the Town.

William V. Lukuvi (MP)

Minister for Lands, Housing and Human Settlement Development

Date:

MASTER PLAN APPROVAL

I ……..,

Director of Urban and Rural Planning by virtual of powers vested in under Section 12(4) of the Urban Planning Act No 8 of 2007 DO HEREBY approve:
The Njombe Town Master Plan 2018-2038

ACKNOWLEDGEMENT

We are delighted to present Njombe Town Master Plan that will guide the spatial growth of the Town for the next 20 years. The preparation of this Master Plan would not have been possible without valuable contributions of various stakeholders. In this regard, we wish to extend our sincere gratitutde to the following:

The President‟s Office Regional Administration and Local Government (PO-RALG) through the Urban Local Government Strengthening Program (ULGSP), which provided funding for preparation of this Master Plan. We also recognize the hard work done by the Consultant CRM Land Consult Ltd of P.O.BOX 35774, Dar es Salaam, which cooperated with our technical staff to prepare this Master Plan. We wish to thank the Technical Team of the Project led by the Head of the Department of Land and Natural Resource. We appreciate contributions provided by the Technical Staff in Njombe Town Council for providing information and input to the plan. Special thanks go to the Council Steering Committee under the Supervision of the Town Director, the Urban Planning and Environmental Standing Committee which passed their resolutions at different stages during the preparation process; members of the Full Council who resolved to start the preparation of this Master Plan and also endorsed the final draft Master Plan for subsequent processes of approval.

Special thanks go to the Ministry of Lands, Housing and Human Settlements Development for providing the guidelines for preparation of the Master Plan and for the technical support accorded throughout the process of preparing this Master Plan. Thanks also goes to the the Njombe Regional Administrative Secretariat for coordinating the process of preparing and approving the Master Plan. Last and not least, we thank the people of Njombe Town and all stakeholders from the public, private as well as civil society organisations, religious institutions, and political leaders who provided information through social economic survey, town-stakeholders‟ consultative workshops, public hearing and official interviews. It is not easy to exhaust the list everyone who facilitated or participated in one way or another in the preparation of the Njombe Town Master Plan, each one’s contribution is highly appreciated.

Hon. Edwin Mwanzinga

Mayor, Njombe Town Council.

EXECUTIVE SUMMARY

Njombe Town is a key engine of social and economic development for Njombe Region. The Town has an area of 3,212 square kilometres, with h10 percent of the area being urban and 90 percent rural. The Town has a tota of 13 wards and 45 villages. Acoording to the 2012 population census the Town had a total of 130,223 people with an annual growth of 0.8 per annumn. The average GDP of Council residents is TZS753,102/= per year. The Town is the regional capital of Njombe Region as well as the district headquarters of Njombe Rural District.

The Town is situated along the trunk road from Makambako to Songea and has well developed road transport infrastructure facilities. The spatial location of Njombe Town in the southern highland offers unique advantages to socio-economic development in many ways. It connects all directions of the Southern highland zone of Tanzania and beyond the national border. Apart from the well-developed transport infrastructural facilities by road, the Town has an air strip, which offers potentials for air transportation. The Town comparative advantages are enhanced by the conducive weather and soil types suitable for tropical and temperature crops as well as livestock production. Njombe Town is also endowed with rivers and springs including Luhiji River, Ijumulo, Hagafillo and Matarawe Rivers, which are potential for not only domestic and industrial water sources but also for fishing, irrigation as well as mini-hydro power generation.

The geographical size of Njombe Town is by far the biggest urban centre in terms of spatial size in Tanzania. With a population density of 40 persons per square kilometres, most part of the Town, especially in the peri urban areas is still undeveloped. The undeveloped land in peri-urban areas such as Kifanya and Matola Ward offers potential for planning new neighbourhoods and satellite towns. The Town has potential arable land for agriculture activities including both food and cash crops. There also exist various tourist attractions including religious sites, Majiji Cave, Welela wetland as well as Hagafilo and Nyamuyuya water falls.

Despite the potentials, Njombe Town is facing various developmental and social economic challenges. The challenges include underutilization of the tourism potentials, soil erosion and land degradation on the upper lands, scattered population growth, urban sprawl, as well as, uncoordinated spatial growth. Other challenges include underutilization of arable land for production, underutilization of irrigation potentials, and underutilization of agro processing potentials for industrial development. The Town also face challenges related to inadequate community and administrative facilities as well as inadequate provision of public utilities, specifically, water supply, solid waste management, storm water drainage systems and energy supply, especially in the peri-urban wards.

The preparation and completion of this Master Plan is a timely undertaking that will not only address the existing challenges but also provide a framework for the sustainable growth and development of the Town. The Master Plan is an indispensable instrument for defining the shared vision of the Town's political, social, economic and cultural expressions, regarding its future urban form and development. All the proposals given in the Master Plan are based on a wide range of consultations through literature review, household surveys, institutional surveys, field observations and stakeholders' meetings. Basing on these consultations the plan is invariably a participatory and solid tool for the coordination and preparation of programmes and detailed plans for all development sectors.

It is envisaged that for the coming twenty years, the Town will strengthen its position of a regional administrative and socio-economic centre. The basis for this strength is the fact that the cool climate amidst the hot equatorial climate, its transit position to the neighbouring regions, the huge arable land and agricultural plantations around it, and its history for tourism shape its future destiny. It therefore, among other things, aims at making the Town an industrial hub for food processing, timber processing, home and office furniture centre, a tourist centre and a more effective regional centre for technological transfer to its hinterland and agricultural products market for internal and external uses.

This Master Plan, in proposing different land uses to meet the future demands, assumes the national population growth rate of 2.7 percent per annum., which is above the current Town population growth rate. The key assumption for taking a growth rate of 2.7 per cent per annum lies on fact that the Town has largely expanded to rural areas and improvement of industrial development, physical infrastructure, energy supply, community facilities and social services will create attract migration as well as investors to the Town to make use of the created opportunities. The plan, therefore, adopts a target population of 259,925 urban populations by the year 2038. This will be a population increase of 129,702.58.

The planning proposals are based on the general planning principles to maintain a clear hierarchy of service centres, green growth, and decentralized sattelite centres surrounded by green belts. The approach will help to enhance and conserve green structures and rivers, protect public open spaces, in addition to produing fruits, shade as well as engance the micro climate.

The Master Plan provides a framework to guide and coordinate the preparation of detailed planning schemes for the proposed land uses, as well as control urban sprawl through development of satellite

towns in the peri urban areas. The Master Plan proposes two satellite centres namely, Kifanya and Matola. The satellite centres aim at decentralizing services to the communities and at the same time coordinate land development in the peri-urban zones of the Town, which is currently taking place un-coordinated. The satellite towns will be self-contained in terms of basic services and will be organized in neighbourhoods and communities to enhance provision of socio-economic facilities and service as well as limiting the urban sprawl. The Master Plan propose regularization of all informal settlements in Ramadhani, Uwemba, Mjimwema, Kifanya, Matola, and Ihanga Wards so as to limit encroachment of environmentally sensitive areas suc ash forests, wetlands, rivers, and valleys while at the same time ensuring provision the basic physical and social infrastructures facilities and services.

The Master Plan also provides proposals for sustainable utilization of land and other natural resources, including the existing land, rivers, streams, forest resources, and protection of the forest reserve from encroachment. A green corridor strategy that involve planting and maintaining along the existing rivers and valleys is proposed to carb soil erosion and water pollution in the rivers. The plan discourages settlement expansion to approach Hagafilo Bridge and along Kihesa stream.

To foster economic development, a total of 32,674.7 hectares, which is equivalent to 10.2 percent of the total planning area of Njombe Town has been set aside for industrial use include establishement of Special Economic Zones in areas of Kifanya, Luponde, Matola, Luwemba, Yakobi, and Ihanga Wards. In line withenhancing industrial development, the plan proposes establishment of timber processing industries and establishment of furniture centres to cater for the regional, national and international market, taking into account that commercial tree planting is among the key economic activities of the Town.

The Master Plan will also enhance the administrative functions of the Njombe Town as well as its commercial and business importance including the tourism activities. These involve the proposal to expand of the airport area from 94.3 hectares to 180 hectares so as to serve as regional airport. The Master Plan maintain the existing bi-polar Central Business District, which originate from the existing commercial centre to the new administrative centre. However, a proposal for redevelopment of the existing commercial centre, which has grown informally without any spatial plan to guide its development has been put forward. The Master Plan also seeks to improve provisioning of community and public utilities including a proposal to gradually shift from onsite sanitation to community level decentralized waste treatment and disposal systems, use of both the natural and constructed channels for storm water drainage, as well as construction of waste disposal sanitary landfills are proposed at Mjimwema, Matola and Kifanya Wards.

Illuminata Mwenda
Town Director, Njombe Town Council

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LIST OF ABBREVIATIONS

CBD	Central Business District
CBO	Community Based Organisation
CMT	Council Management Team
CRDB	Corporate Rural Development Bank
DC	District Commissioner
DSM	Dar es Salaam
EPZ	Economic Processing Zone
EWURA	Energy and Water Utilities Regulatory Authority
FYDP	Five Year Development Plan
GDP	Gross Domestic Product
GIS	Geographical Information System
GPS	Genera l Planning Scheme
LGAs	Local Government Authorities
MCH	Maternal Child Health
MLHHSD	Ministry of Lands, Housing and Human Settlements Development
MMR	Maternal Mortality Rate
MKUKUTA	Mkakati wa Kukuza Uchumi na Kupunguza Umasikini
NBC	National Bank of Commerce
NBS	National Bureau of Statistics
NGOs	Non-Governmental Organisation
NHC	National Housing Corporation
NJUWASA	Njombe Urban Water Supply and Sanitation Authority
NMB	National Microfinance Bank
NTC	Njombe Town Council
NSSF	National Social Security Fund
OSHA	Occupation, Safety, and Health Administration
PO-RALG	President's Office Regional Administration and Local Governmen
RC	Roman Catholic
SIDO	Small Industrial Development Organisation
TANWAT	Tanganyika Wattle Company Limited
TDV	Tanzania's Development Vision
TZS	Tanzania Shillings
UWAMBANJO	Umoja wa Wafanyabiashara Mbao Njombe
UWAMILI	Umoja waWapandaMitiLiwengi
UWAMIKI	Umoja wa Wapanda Miti Kifanya
VIP	Ventilated Improved Pit Latrine
WDC	Ward Development Committee
WEO	Ward Executive Officer

CHAPTER ONE

INTRODUCTION

1.1Background

Njombe Master Plan 2018-2038, provides a long-range vision for the Njombe Town's community. It guides effectively the appropriate use of the land within the town in order to protect the public health and safety, and to promote general urban welfare. The Master Plan serves as an important urban management tool for coordinating urban development programmes, plans, and projects so as to realize sustainable urban growth. The Master Plan guides urban development and management of the Njombe Town by effectively demarcating the different uses of land for the present and future needs in terms of residential, commercial, agricultural, institutional, circulation systems, and other basic uses needed for the social, economic, as well as enviornmental development of the Town. In addition, this Master Plan address the existing urban development challenges by proposing the spatial interventions that facilitate the day of day socio-economic activities, including access to the basic urban services.

1.1.1 Njombe Master Plan and National Development Agenda

It is worth nothing that the Njombe Master Plan 2018 – 2038 is in line with the Second Five Year Development Plan, 2016/17 – 2020/21 (FYDPII). It is crucial to underscore that the FYDPII is the principal and shared tool in the realization of National Vision 2025. The Tanzania's Development Vision (TDV) 2025, which aspires to have Tanzania transformed into a middle income and semi industrialized nation by 2025, characterized by attributes such as high quality and sustainable livelihoods; peace, stability and unity; good governance and the rule of law; an educated and learning society; and a strong and competitive economy. The theme of FYDP II, which states "*Nurturing Industrialization for Economic transformation and Human Development"* incorporates the main focus of two frameworks, namely growth and transformation which are discussed in the First Year Development Plan (FYDPI) and poverty reduction presented in MKUKUTA II. The Njombe Master Plan underscores the FYDP II interventions that enable Tanzania to industrialize in a way that will transform its economy and its society.

The Master Plan translated the FYDP II into reality on the ground by designating 10 percent of the total planning area of Njombe for industrial investments of different scales, which cover over 30,000 hectares; proposes road networks that link the central urban areas to the settlements and sub-centres in the periphery to improve access to basic services, provides areas for more schools and health care facilities as well as market for local and international goods and services.

1.1.2 The Njombe Master Plan and Regional Development Initiatives

The Njombe Master Plan is inclined with the Njombe Regional Development Initiatives. In 2011, Njombe Region formulated the Regional Bankable Projects and Socio-Economic Profile, which stressed the urgency of preparing land use plans to overcome the land management and development challenges so as to facilitate economic growth. The profile identified development projects at regional and local scale, which this Master Plan has taken into account. Some of the projects include agro-economic zones, agro-processing industries, multi-crop irrigation schemes, flower farming, logs and timber processing industries, regularization of informal settlements, preparations of land use plans, detailed plans in all the areas and establishment of medium sized airports, to mention a few. In the course of preparing this Master Plan, the existing potentials were thoroughly identified, analysed and among others, projects suggested as reflected in Chapter Nine.

1.1.3 The Njombe Mater Plan and National Development Agenda

The Njombe Master Plan takes into account the International Development efforts, specifically the sustainable development agenda, which stresses the following issues pertinent to Njombe Town:

(i) Make cities and human settlements inclusive, safe, resilient and sustainable through participatory planning where interests of stakeholders are considered and their vision mainstreamed;

(ii) Eradicate extreme poverty and hunger by promoting equitable access to service and resources, coordinate socio-economic activities, designate land for local investors, urban farming and informal sector activities to improve household incomes;

(iii) Achieve Universal Primary Education by ensuring that schools are located in a convenient distance from residential areas and are easily accessible even in the urban fringes;

(iv) Promote gender equality and empower women by making serviced land available for all;

(v) Reduce child mortality by ensuring equitable access to health care and improvement of water supply and sanitation;

(vi) Improve material health by ensuring that health care facilities are located in a hierarchical order and specialized services such as MCH, surgery and other advanced healthcare services are available in higher order health care facilities;

(vii) Ensure environmental sustainability by coordinating and guiding spatial growth of the town and protect environmental sensitive areas;

(viii) Conserve and sustainably use the oceans, seas and marine resources for sustainable development;

(ix) Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversityloss.

The Njombe Master Plan 2018 – 2038 was prepared in a participatory approach in order to bring the sense of ownership by both the Town Council and the communities. This ultimately makes its spatial development strategies implementable. Due to the fact that Njombe is covered largely by green structures, the Master Plan deploys the green growth planning approach to integrate the built-up and non-built-up environment taking care of urban ecological system for sustainable growth.

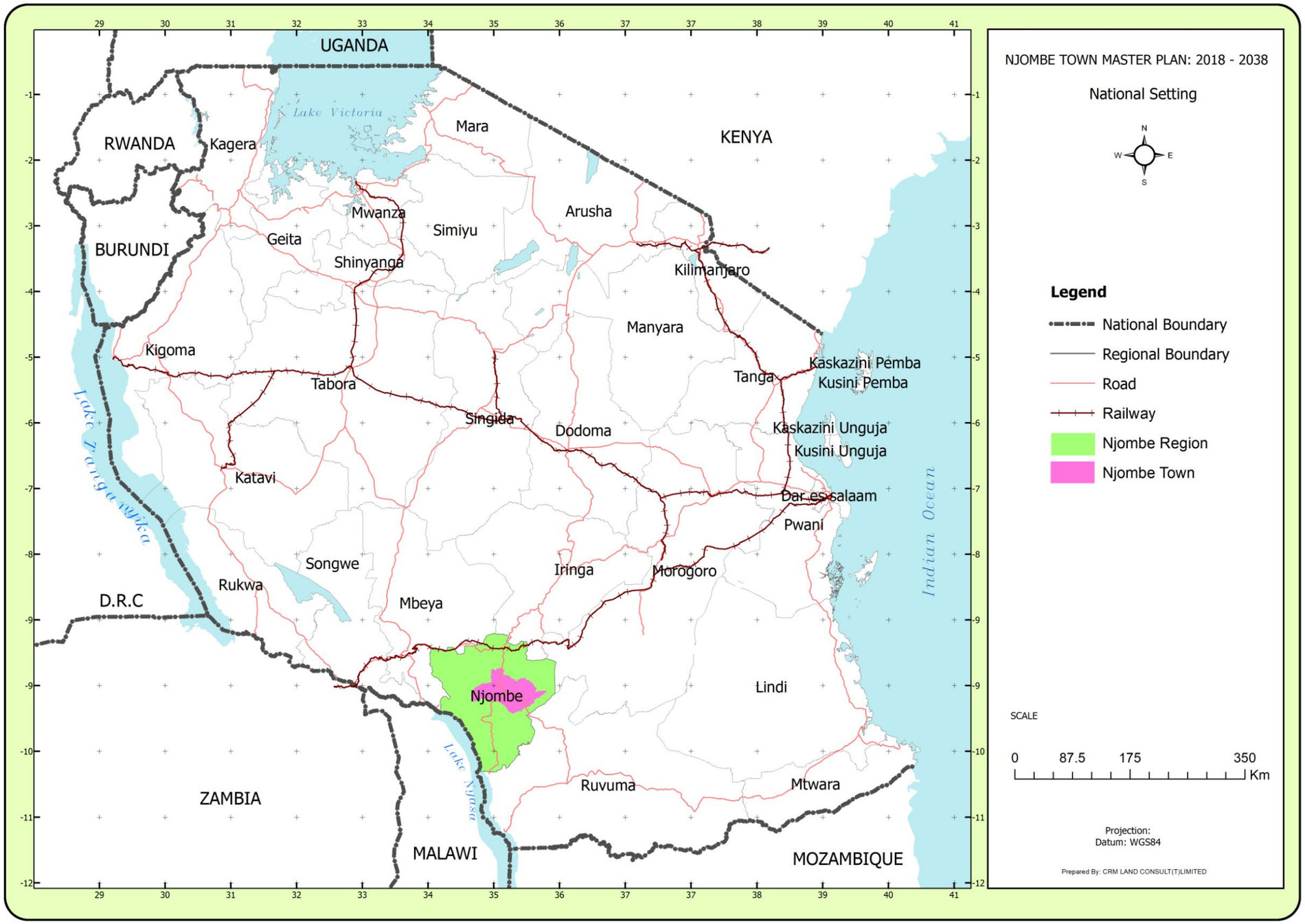
1.2 Location

Njombe Town is located in Njombe Region in the Southern Highlands of Tanzania (Map 1.1). The Town is situated along the trunk road from Makambako to Songea lying between South of Equator 9^{o}.10 and 9^{o}.45 latitudes and 34^{o} 25' – 35^{o} 27' longitudes East of the Greenwich Meridian.

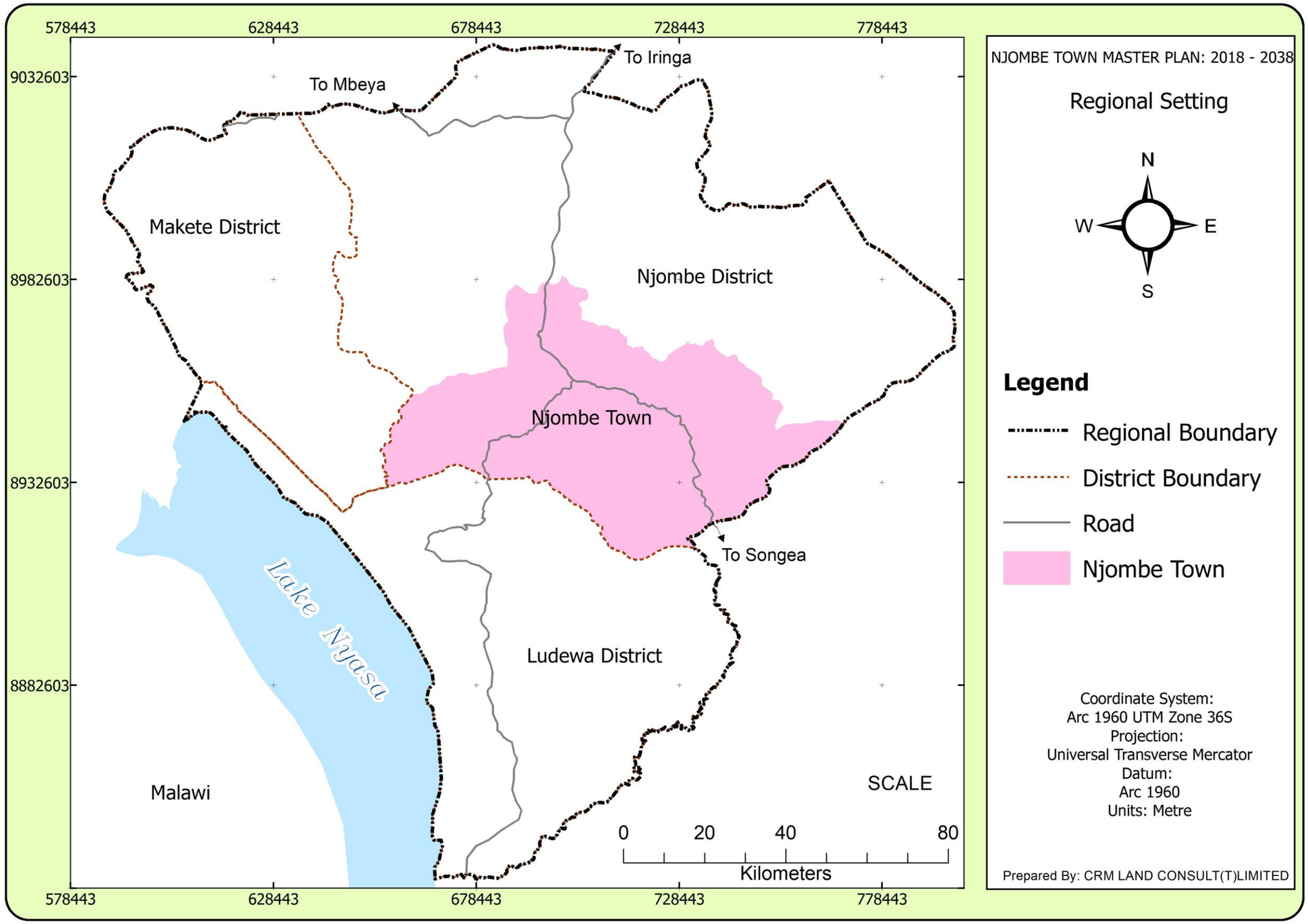
While in the South Njombe Town borders Ludewa District and Ruvuma Region, in the East it borders Ruvuma Region and in the West it borders Makete and Njombe Districts. The town borders Wanging'ombe District in the North (Map 1.2).

The spatial location of Njombe Town in the southern highland offers unique advantages to investors in many ways. It connects all directions of the Southern highland zone of Tanzania and beyond the national border. Apart from the well-developed transport infrastructural facilities by road; there is also an air strip, which offers potentials for air transportation. The Town comparative advantages are enhanced by the conducive weather and soil types suitable for tropical and temperature crops as well as livestock production.

Map 1.1 Location of Njombe – National Setting



Map 1.2 Location of Njombe Town – Regional Setting



The geographical size of Njombe Town, with the total area of 3,212 square kilometers is by far, the biggest urban centre in terms of spatial size in Tanzania. The analysis of existing situation shows that Njombe Town depicts both urban and rural characteristics. The area with urban characteristics covers only 12 percent and rural area is aboutt 88 percent of the total area.

1.3 Historical background

Njombe is one of the historical towns in Tanzania where Germany artifact can be found. The name "Njombe" originated from Mdanda village previously called "Mdzombe"by the indigenous community. Mdandu was a German "Boma" during the German colonial administration. The name "Mdzombe" came into being due to the presence of a big tree which naturally existed in the village. The name gradually changed to "Njombe" due to failure in the pronunciations of the vernacular language by foreigners.

Njombe Town was declared a Town Council on 1st July 2007 through the Government Notice numbers 118 and 119, the local government instrument, 2007 as a result of division of division of Njombe District Council into two. The Town is the headquarters for the Njombe District Council and Njombe Region. Due to its central loation and administrative functions, the town functions as a central place by providing commercial, economic and social services to the surrounding centres, namely Uwemba, Kifanya, Matola, Luponde, Lwungilo and Lupembe.

It is worth noting that prior to March 2012; Njombe was one of the districts of Iringa Region. The latter was subdivided into two regions, namely Iringa and Njombe in March 2012. The current Njombe Region comprises 6 Local Government Authorities (LGAs), including; Njombe Rural District Council, Njombe Town Council, Makambako Town Council, Makete District Council, Ludewa District Council, and Wanging'ombe District Council.

1.4 Administrative set-up

Administratively, Njombe Town Council has two divisions namely; Njombe urban and Igominyi. The town has 13 wards, 44 villages and 26 sub-wards (Map 1.3).

In terms of organizational structure, Njombe Town Council is administratively led by a Full Council. The council is formed by Ward Councilors and Members of Parliament elected by residents from the respective wards and constituencies respectively. Members of Parliament also include special seat for female representatives. The full Council is led by Chairman elected among the Councillors. The Town Director, oversees day to day operations and leads different social economic sectors, departments and sections under the Town Council. At the lower level there are Ward and *mtaa*/village councils, which form the grassroots level of the Town council's decision making and line of communication (Figure 1.1). There is, however, a controversy of the existence of village authorities in urban areas as Njombe town contrary to the national administrative setup. All the villages have to be degazetted to remove the confusion of parallel lines of administration.

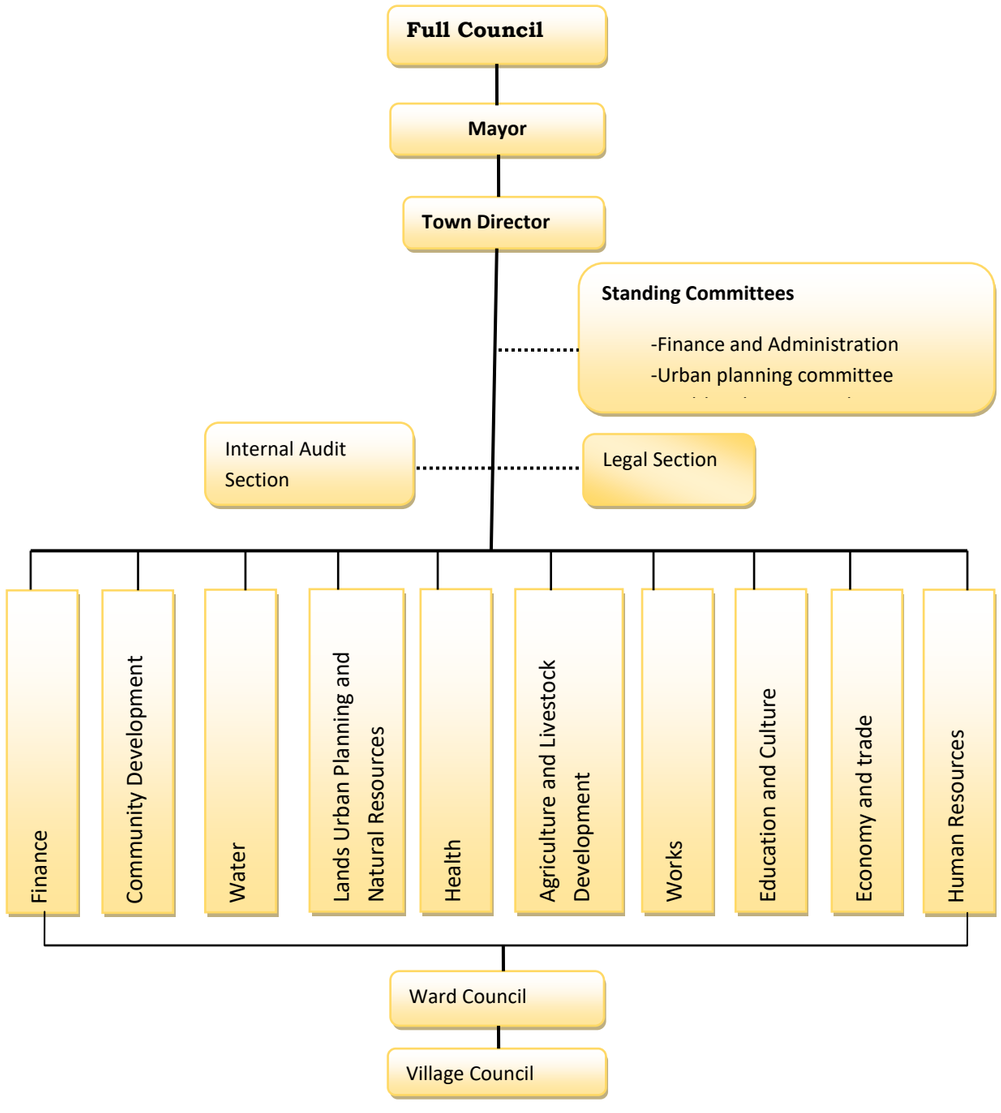
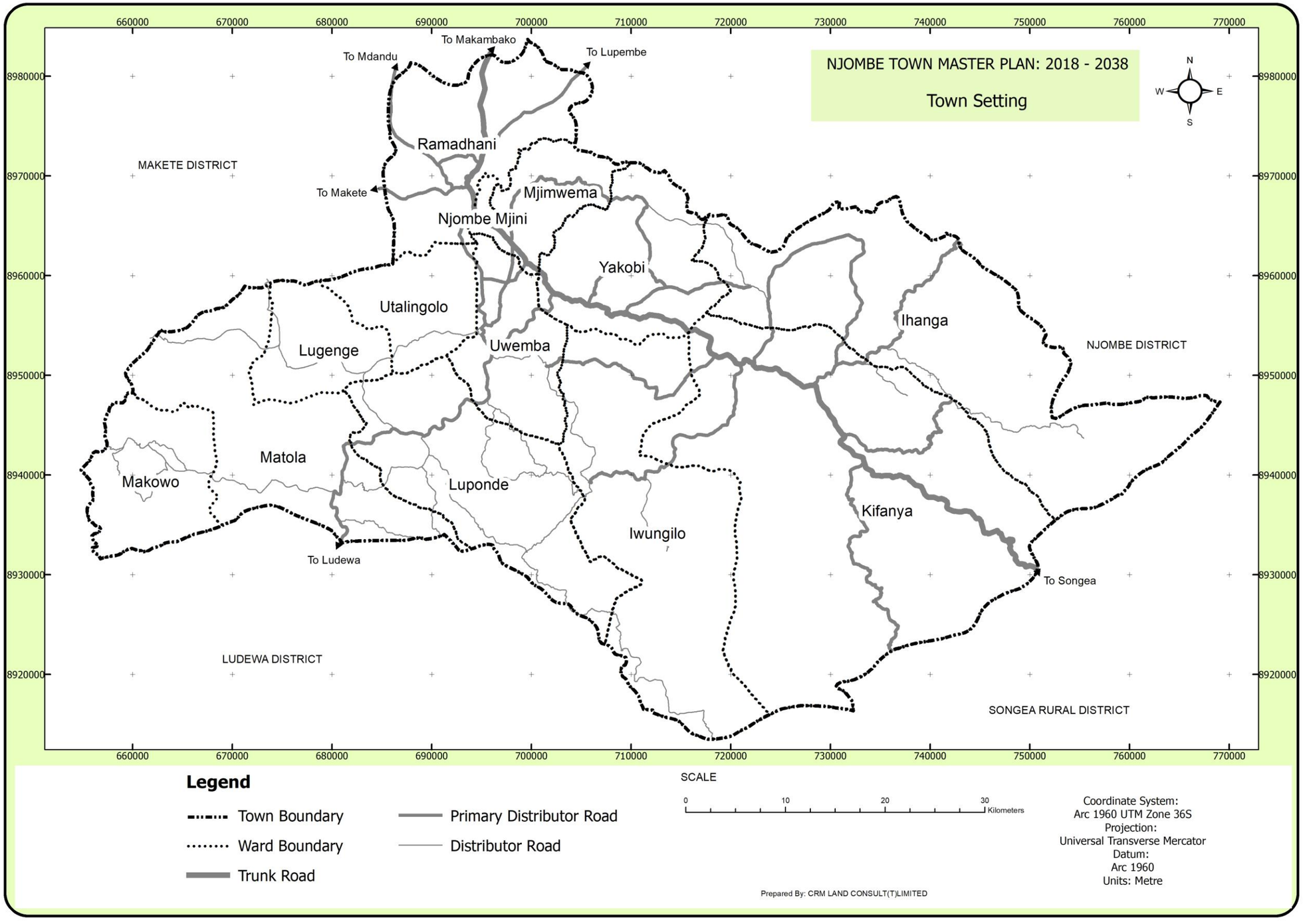


Figure 1.1 Njombe Town Council Organization Structure
Source: Njombe Town Council, 2016

Map 1.3 Town Setting



1.5 Climatic Condition

The climatic condition of Njombe Town and the Region as a whole is influenced, largely by the altitude which forms three climatic zones, namely the Highlands Zone, the Midlands Zone and the Low lands zones. The Midlands Zone lies between 700 and 1,700 metres above sea level and this zone ranges between 1,100 and 1,300 millimetres per annum and temperature are mild to cold falling below 10^{o}C during the period between June and July. On other hand the Highlands Zone lies at an altitude of 1,600-3,000 metres above sea level. This area includes Imalinyi in Wanging'ombe, Lupembe, Mlangali, Liganga and part of Mawengi Division in Ludewa and Makete districts. Temperature is normally below 15^{o}C with rainfall ranging from 1,000 to 1,600 millimetres per annum, falling in a single season from November to May. The dry and cold season occurs after the rainny season, and it lasts from June to September (Figuree 1.2).

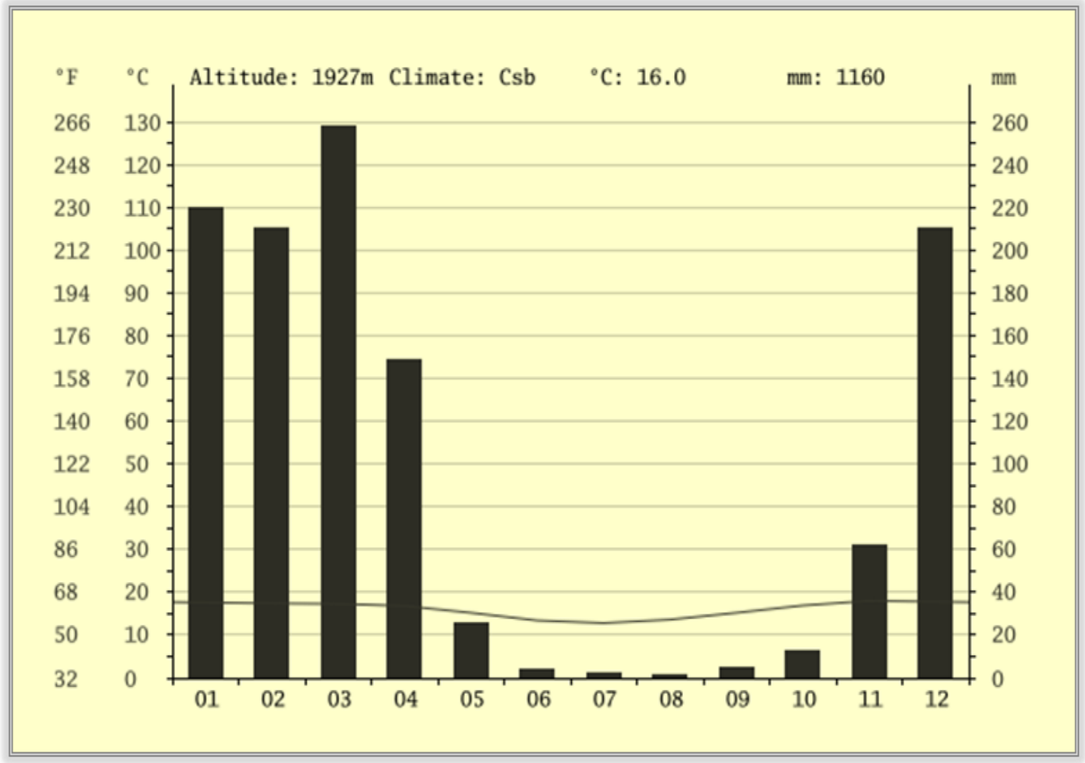


Figure 1.2 Variation of temperature and rainfall variation in Njombe Town
Source: Climate-Data.org, 2018

The lowland zone lies between 600 and 1,400 metres above sea leve. This area includes Mdandu and Wanging'ombe Divisions in Wanging'ombe District, Masai and Mwambao Divisions in Ludewa District and Mfumbi Ward in Makete District. Temperature is between 15^{o}C and 20^{o}C with rainfall ranging from 600 to 1000 millimetres per annum, with occasional mild droughts in 4 out of 5 years. The variation in climate conditions in terms of temperature and rainfall patterns offers investors opportunities to diversity their agricultural, (e.g. horticulture) and livestock products (e.g. milk and wool) to take advantage of low seasonal supplies in other parts of Tanzania, East and Southern Africa and the world market at large.

In Njombe Town, the temperature is highest in November; at around 18.0^{o}C. July is the coldest month at 12.8^{o}C on average. In this month the temperature in some days falls below 10^{o}C (Figure 1.3).

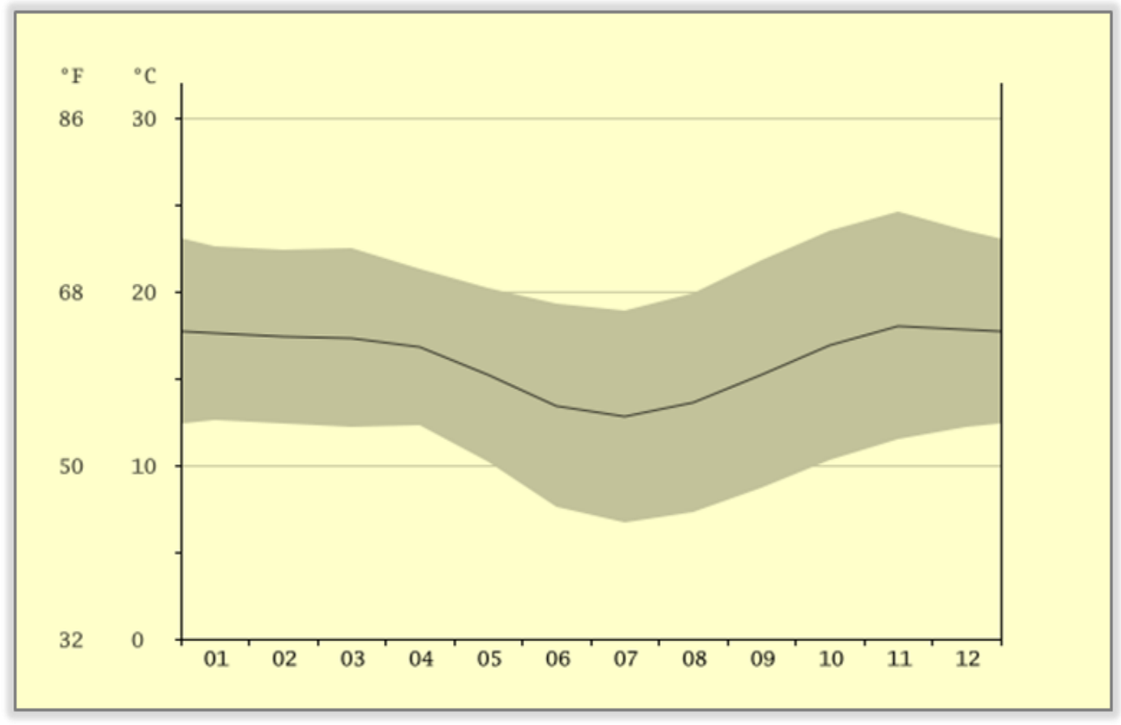


Figure 1.3 Annual Variation of Temperature in Njombe Town
Source: Climate-Data.org, 2018

1.6 Topography

The topography of the Town ranges from 1000 metres to 2,000 metres above sea level. The Town morphological features are characterized by mountains, hills, valleys and rivers all of which play key

roles in the provision of ecological services. Valleys in Njombe Town are along Melinze, Ngalanga, Kilimani, Kihesa, Luhuji, Ijumilo, Kibena, Matarawe, Airport and Agapilo. While some of the valleys act as catchment areas for rivers, such as Hagafilo and Luhuji, the rest of the valleys are dominated by settlements and farms. Given their significant contribution to Town's terrain, it is crucial that proper measures are taken to ensure that these valleys are maintained as areas of conservation importance by turning them into green corridors and avoid further settlement expansion.

Njombe Town has five permanent rivers and streams flowing through its built area snd the periphery. There are also seasonal streams. The biggest river is Luhji, which flows to Iringa region. The banks of Luhuji River are flanked by trees mostly of Eucalyptus, which consume large amounts of water. The catchments area is generally well conserved except some parts used for car washing and maize cultivation. There is Ijumilo tributary which flows through Njombe town centre separating Kihesa and Mgeendela areas. Matarawe River flows through Matarawe and joins Luhuji River at Luhuji valley. Hagafilo River flows through Magoda, Uwemba, Nundu, Kilensi, Yacobi, Peruhanda, Idunda, Iboya and joins Luhuji River in Kifanya areas.

Water from the rivers is used for washing and drinking in rural villages where piped water service is not available and for irrigation of vegetable gardens in some villages like Maoda and Uwemba. In the past, fishing was conducted in small ponds created along the main river channels. There is also a stream called Kilimani, which originates from Njosi and flows thorugh Kilimani and Kihesa area. Apart from the rivers, water bodies in Njombe consist of Igogosa dam, which is used for irrigation of tea plantatitions in Kibena. The dam is owned by three villages of Muhaji, Ijima and Mawindi. The various rivers and valleys also facilitate the natural drainage system in Njombe Town. Map 1.4 shows the topography of Njombe Town.

1.7 Vegetation

Vegetation relates to the green coverage of land which ranges from natural forests, grasses, scattered trees and shrubs. Vegetation play a key role in providing food (provisioning eco system services), ameliorating climate (regulating eco system services), protecting rivers (biological eco systems services) and sometimes traditional ceremonies being conducted in forests (cultural ecosystem services)

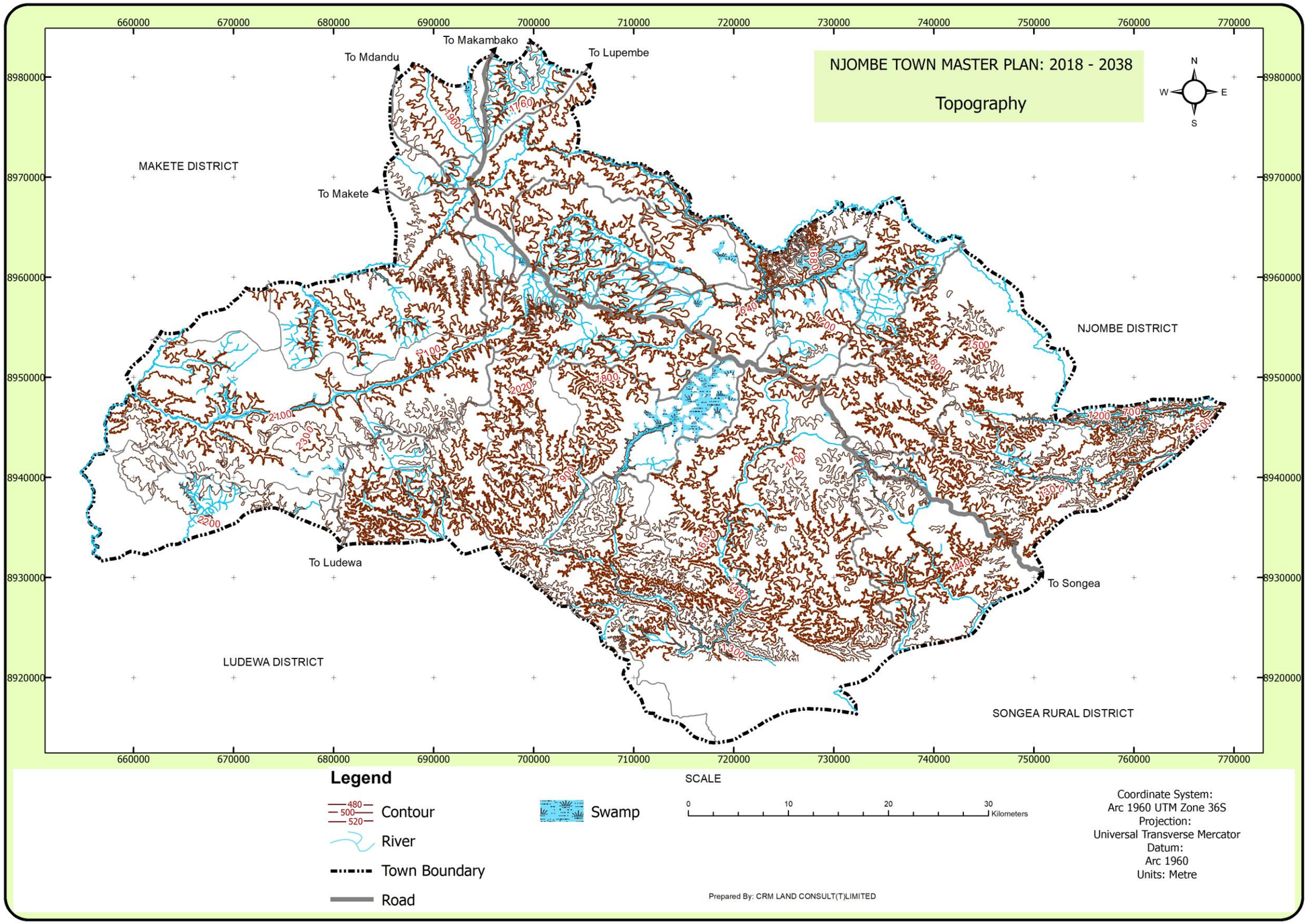
More than 80 percent of the town of Njombe is covered by a variety of vegetations including natural forests and scattered trees. The town has a total of 3,056.6 hectares of reserved natural forests, which are about 20 percent of the total forest land in the town. These include the conserved natural forests, which are protected as catchment areas and water including the Itoni, Mapala and Ngaruka forests. Others are Ikonde, Boimanda and Silupali. Therea are also Isililo, Mafifi, Igoma, Ilonganjaula, Itulikilo and Mayefuye natural forests. Most of these natural forests are dominated by species, such as Mheti, Mdobole, Mkalikali (Entandophragma species) Mgwina, Mzambaraumwitu (Syzigyum) and Miombo.

Njombe Town is also endowed with different types of trees scattered in the urban centres and villages. Scattered trees dominated by a mixture of natural species and planted trees, include pines, eucalyptus, cyprus and mlingo. The scattered trees serve as important part of green structures, which provide ecosystem services to the urban dwellers within the Town. Some of the institutions found in the urban centre, such as Njombe Secondary School have own tree plantations, which serve as an important component of Njombe's green structures.

Most of the agricultural land of Njombe town is also dominated by tree plantations of different species. Apart from tree plantations for timber, wood, charcoal and poles, Njombe is rich in fruit trees some of which are within the wood and timber plantations. Apple and Avocado fruits dominate a large part of Njombe rural.

Despite the benefits accrued from the plantations, the trees pose threats to the natural ecosystem and morphological features of the town. For instance, water sources, including river and springs are affected by cultivation of various types of tree plants. Many parts of the river valleys are dominated by Eucalyptus species, which consume large amount of water for growth. The presence of Eucalyptus species near water sources coupled with other problems may increase future water flow shortage in the rivers in the future.

Map 1.4 The Topography of Njombe Town



1.8 Limitations and the Overall Structure of the Master Plan

1.8.1 Socio-economic constraints

The developmental challenges of Njombe Town emanate from the national, to the regional and down to the towns economies. At the national level there are many development challenges in areas of income distribution, population growth and service provision. Njombe Region and the Town is of no exception to the developmental challenges facing the country as a whole. Over years, the World Bank reports show that Tanzanian is among the poorest nations. More than two-thirds of the population lives below the internationally recognized income poverty line of USD 1.25 per day. This shows that at national level the economy has not grown sufficiently to adequately cater for its people's welfare. It, therefore, has failed to generate more employment and additional jobs to contribution to the implemantaion of the various developmental plans. The social and politics of economics for Njombe are part and form a segment of the weak international trade balance of the third world countries to which Tanzania belongs. The low and fluctuating prices of agricultural products in the world market, which are exported unprocessed and increasing prices for imports creates trade imbalance.

At the Town level, development limitations also relate to budget deficits, which hinder the Town Council to fully implement its development plans including provision of infrasyructure facilities and services.

It is worth noting that a vibrant development of any town depends on the economic production of its hinterland. The Njombe Town hinterland faces the following which affect the Town's economy:

(i) The rainfalls and temperatures favours a variety of crops production but there is lack of modern technologies for production including lack of intensive mechanization in agriculture;

(ii) Agricultural products have low prices both the internal and the external markets; and

(iii) Inadequate social and economic infrastructure.

1.8.2 The Planning Regulatory Framework

It is worth noting that the Njombe Master Plan operates within the legal and policy framework of the country. Some of the pertinent legal and policy framework governing the operationalization of the plan include National Human Settlements Development Policy 2000, Urban Planning Act, No. 8 of 2007, 1995 National Land Policy (1995), Land Act No. 4 of 1999, National Environmental Policy of 1997, Environmental Management Act (EMA) of 2004 to mentioned a few. However, urban planning and spatial development of urban areas is largely regulated by the Urban Planning Act of 2007 and its regulations.

1.8.3 Governance constraints to plan implementation

One of the main reasons for inactive implementation of master plans is poor institutions arrangements from the national to the grassroots level of administration and execution, including uncoordinated financing, which persists in public agencies mandated to provide specific services in towns and the town council vis-a- vis the central government interventions. Many projects lack coordination of the actors, hence duplication of efforts, dispersal of scarce resources and little accountability. This Master Plan ought to recommend corrective measures to improve the governance system for implementation of the plan.

The implementations of master plans are also limited to a big degree, constraints in the planning framework. Different sector plans/actions do not pursue recommendations given in the master plans and, therefore, conflict or do not complement each other. Different actions are suggested to improve the planning framework by suggesting ways for removing possible overlaps between responsibilities of the national ministries responsible for planning and managing urban development. One of such confusions is the removal of the parallel lines of administration existing in Njombe Town where village councils operate within the town contrary to the national structure.

It is also important to highlight some of the salient features that constrain the implementation of many spatial plans in Tanzania.They include:

i) Poor or lack of implementation monitoring;

ii) Lack of funds for implementation of projects proposed in the master plans;

iii) Poor coordination among urban development actors, including utility agencies;

iv) Non-compliance and weak enforcement of laws and regulations;

v) Low level of involvement of the private sector in plan implementation; and

vi) Low level of community participation in plan preparation, identification of development projects, priority setting and plan implementation;

To overcome some of the obstacles of the plan implementation, Njombe Town Council ought to identify and make use of existing potentials as well as formulate home grown solutions of the existing problems. The development projects identified by this Master Plan are based on the available potentials. The Town Council also ought to effectively enhance participation of the private sector through Public-Private Partnership, CBOs and occasional Working Groups in implementing various proposals put by the Master Plan. Furthermore, the proposed development projects encourage or motivate the local community to

participate effectively in their implementations as they are aimed at improving their social and economic well-being.

1.9 Methodology used in preparing the plan

In the process of producing this existing situation, a number of activities were conducted including sensitization meetings to raises public awareness, base map updating, review of previous and existing plans, relevant legal and policy documents, household survey as well as collection of sector specific data. The existing situation report and draft report of the master plan were presented to the Council Management Team (CMT) and Town stakeholders where feedbacks were received for plan improvement.

1.9.1 Reconnaissance Survey

A reconnaissance survey of the planning area was conducted in order to obtain an overall impression of the Town spatial development pattern and the existing land uses, land forms, road networks/connectivity, surrounding development, urban transportation systems, existing community facilities and urban environmental condition. During the reconnaissance the boundary of the planning area was reviewed based on the description from the GN.

The first task was to plot the entire boundary of the town on Google earth image using extracted coordinates from ArcGIS software. Plotting of the boundary enabled orientation and familiarization with the important points of the boundary.

1.9.2 Base Map Updating

It was also important to update the base map for the Njombe Town so as to analyse the existing land use. The Njombe Town, like many other urban centres in Tanzania has a commonality of having physical developments superseding the capacity of the planning authorities to supply planning plots resulting into mushrooming of informal settlements. The updates included all the current changes on the land which are yet to be included in any existing detailed plan. In order to update the base map, topographic survey was carried out so as to create and update the base map. The topography of the planning area was observed to range from 1,000 meters the lowest to about 2,000 meters above means sea level (MSL). The town morphological features are characterized by mountains, hills, valleys and rivers all of which play key roles in the provision of ecological services. The topography was regenerated using the current Digital Elevation Model (DTM) collected from the Shuttle Radar Topography Mission (SRTM) with a resolution of 1” x 1” equivalent to approximately 30 m x 30m on the ground. The resolution from this image satisfied the requirement for general panning scheme preparation. The survey team converted the DTM and creates contours to make it well readable and aid in the planning process.

The land use features and zones were updated with the aid of the satellite images of 2015 and 2018. Updating of the base map also considered all the newly approved town planning drawings including those not yet to be developed as well as the regularized areas within the Town. To examine if the land use features were well surveyed, all the features were overlaid one after another on the DTM and their locations were examined in relation to the Town topography.

1.9.3 Sensitization Meetings

Community awareness and mobilization was conducted by the client in all the 13 wards constituting the Njombe Town. The objective of the meetings was to sensitise as well as raise awareness of the public regarding the needs, objectives as well as the process of preparing the Master Plan and how the community will be involved in the preparation process.

The sensitization meetings also aimed at creating awareness, soliciting commitment and elaborating on the roles, mandates and ownership of different stakeholder in the Master Plan preparation. The public sensitization meetings also acted as a platform through which the public identified some of the important land use and planning related issues, worth to be intervened.

1.9.4 Review of Documents

A review of literature was conducted in order to, among others, inform the existing situation of the Njombe Town in its wide dimensions including economic, social, environmental, demographic and other relevant aspects. Documents reviewed include the Njombe Town Central Area Redevelopment Plan 2013-2028, the Njombe Region Report on Bankable Projects and the Socio-economic Profile of 2011. Other documents reviewed comprised the policy and legal framework governing urban planning in Tanzania including the Urban Planning Act (2007), the Land Act (1999), the Human Settlements Development Policy (2000), and the Environmental Management Act (2004). The population and housing census data from the National Bureau of Statistics (NBS) covering the period between 1968, 1978, 1988, 2002 and 2012 were also reviewed to understand both the Regional and Town population growth trends and projections.

1.9.5 Household Survey

A household survey was conducted to collect data on demographic, socio and economic characteristics of the residents. A total of 1,045 households drawn randomly from the 13 wards of Njombe Town, were

interviewed. A standard household questionnaire with both closed and open ended questions was used in the survey. The summary of households surveyed by wards are shown in Table 1.1.

Table 1.1 Number of households surveyed by ward

Ward Name	Number of Households Surveyed
Kifanya	127
Luponde	111
Matola	108
Mji Mwema	201
Njombe Mjini	220
Ramadhan	40
Ramadhani	123
Uwemba	115
Total	1045

Source: Household Survey, 2016

1.9.6 Collection of Sector Data from Various Departments

Data were also collected from various Departments and Sections of the Njombe Town Council. Such data included trends in crop production, livestock keeping, trading activities, exploitation of natural resources, tourist activities as well as fishing activities. Data were also collected in relation to types, physical distribution, and nature as well as access to various community facilities such as health, education, water, and sanitation. Moreover, data were collected from other sectors such as industries, employments and housing development. The data collected from the various sectors helped to understand the existing situation of the town in its wider perspective taking into account all the existing sectors of development.

1.9.7 Interview with Utility Agencies and Parastatal Organisations

Interviews were conducted with parastatal organisations and public utility agencies, including the Tanzania National Road Agency (TANROADS), the Tanzania Electric Supply Company (TANESCO), the Tanzania Telecommunications Company Limited (TTCL), the National Social Security Fund (NSSF), the Tanzania Building Agency (TBA) and the National Housing Corporation (NHC). The interviews were conducted for the purpose of getting information on the activities and services carried out by the various institutions and their influence to the existing and future land uses. It was also important to explore the plans and projects of the various stakeholders as well as their interests and views on the envisaged Njombe Master Plan.

1.9.8 Traffic Survey

A traffic survey was conducted in order to analyze the characteristics of transportation and identify existing problems and issues of transportation in the Town. Table 1.2 summarises the traffic survey conducted in Njombe Town. The survey involved the inventory of road conditions and traffic conditions and its characteristics.

Table 1.2 Summary of traffic survey conducted at Njombe Town

Survey	Objective	Coverage	Methods
Household interview survey	To obtain trip characteristics of resident in the Njombe Town	Sample size 1045	Home visit interview survey
Cordon Line Survey	-To obtain current traffic volume entering and exiting the Njombe Town -To understand travel characteristics of the passengers	10 on road stations in the surrounding area of the Town	-day vehicle traffic count -day Origin- Destination (OD) interview at road side -12 hours
Screen Line Survey	-To obtain current traffic volume within the Town -To understand travel characteristics of passengers	41 on-road stations within Njombe Town	-day vehicle traffic count -12 hours

1.9.9 Njombe Town stakeholders' consultation

A town-wide stakeholders meeting was conducted through which the draft plan was presented to the stakeholders. During the stakeholders meeting various comments and recommendations were received for improving the plan. About 200 key stakeholders from various institutions including the Regional Commissioner (RC), representatives from public utilities agencies including TANESCO, TANROADS, Tanzania Rural and Urban Roads Agency (TARURA), Njombe Urban Water Supply Authority (NJUWASA), Tanzania Building Agency (TBA), the Prevention and Combatingof Corruption Bureau

(PCCB), the Tanzania Police Force, the National Health Insurance Fund (NHIF), the National Housing Corporation (NHC), and the Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA). The stakeholders also included heads of departments and sections of the Njombe Town Council, the Division administrative secretaries; the ward Councilors, Members of Parliament from the Njombe Town, retired government officers including retired ministers and members of parliament (PMs), and Ward Executive Officers (WEOs). Representatives of religious leaders including Roman Catholic Priests, Lutheran Church Pastor, an Anglican Bishop & Muslim Sheikh also formed part of the stakeholders. Others were business persons, representatives from financial institutions, particularly commericla banks and the Kifanya Ward SACCOS, Cooperative Societies representatives, and representatives from the mining sector (large, medium and small scale operators). The stakeholder's meeting was also attended by important political leaders in Njombe Town and the Region at large including the representative of the CCM Regional Secretary, representative of the CCM Regional Chairperson, the District Commisioner, the Regional Security Committees, the District Administrative Secretary, and the Njombe Regional Secretary.

From the wide range of key stakeholders, discussions were conducted and comments as well as recommendations were provided to improve the draft Master. This Master Plan therefore incorporates views, ideas and recommendations of the Njombe Town stakeholders. The consultant worked on the comments to improve the draft Master pPan for Njombe Town.

1.10 Structure of the Report

This report comprises eleven chapters. Chapter one provides an introduction of Njombe Town where discussions are largely focusing on the locational aspect, historical development of the town, climatic condition, legal and policy framework and planning methodology. Chapter two presents demographic characteristics of Njombe Town, whereas, chapter three describes the town's economy and employment. Chapter four presents the existing land uses while chapter five deals with housing and residential development. Chapter six presents information on the existing social and community facilities and describes the spatial distribution of public services in the town. Chapter seven focuses on the public utilities and chapter eight describes the transport, transportation and communication networks. Chapter nine summarizes the urban planning issues, goals, projections, potentials analysis and urban development concepts. On the other hand, chapter ten puts forward planning proposals, policies and recommendations. Chapter eleven dwells on the plan implementation and costing.

CHAPTER TWO
DEMOGRAPHY

2.1 General overview

Demography is a central component of the social contexts and social changes since it draws extensively from other related discipline like sociology, economic, statistical history and political science. It is concenerned with analysis and understanding of population phenomena which are influenced by fertility, mortality and migration over time. This chapter discusses the demograohic nature of Njombe Region as a whole and narrows down to the demographic details of Njombe town in particular.

2.2 Population size, Growth and Trend

According to the 2012 national population census, Njombe Region had a total population of 702,097 of which 329.359 were males and 372,738 were females. Njombe Region exhibits the lowest population growth rate in Tanzania (Figure 2.1). Reports from TACAIDS show that HIV- Aids is one of the main causes of deaths in the town and the region at large. which may also be ascribed to the low population growth rate.

The region has an average household size of 4.1 with a sex ratio of 88 and average population growth rate of 0.8 percent per annum. Population distribution by district in Njombe Region shows that Wang'ing'ombe District has the highest population followed by Ludewa District while Njombe Town ranks the third as per the 2012 national population census (Table 2.1).

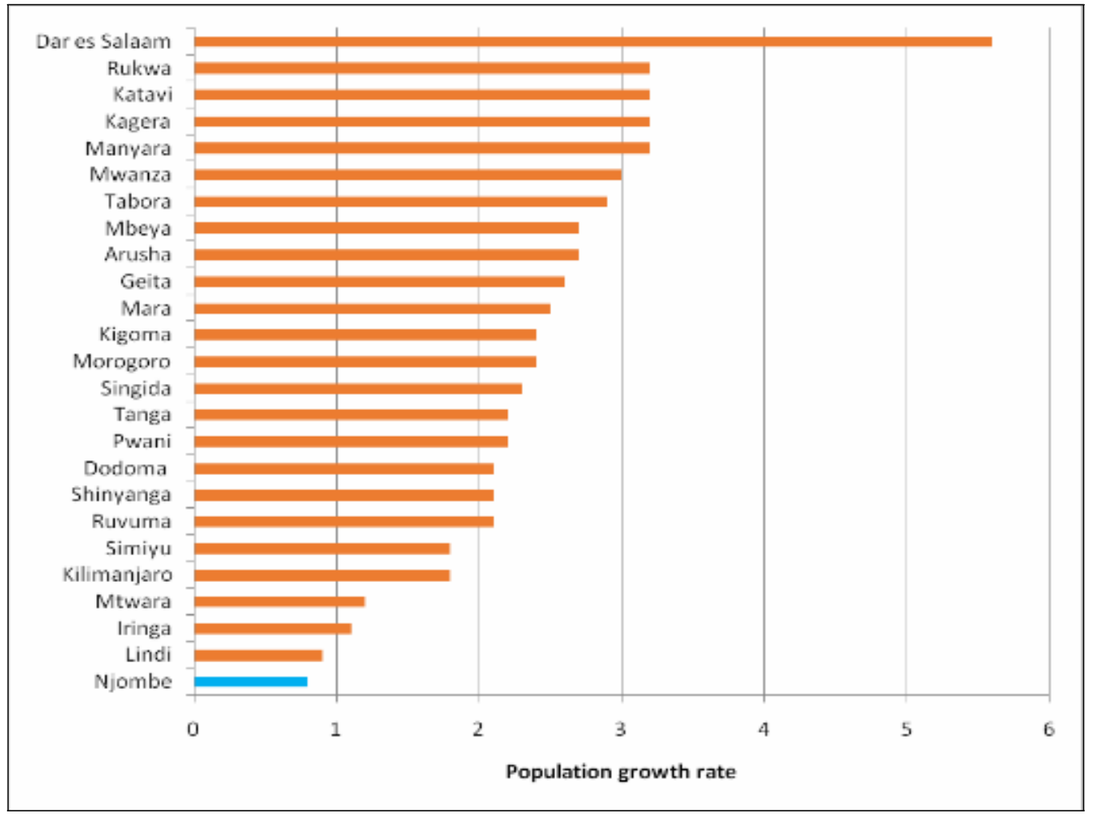


Figure 2.1 Population Growth Rate per Region in Tanzania
Source: URT, 2013

Table 2.1 Population Distribution by District in Njombe Region

S.N	District	Population size	Percentage
2	Wanging'ombe District Council	161,816	23.0
5	Ludewa District Council	133,218	19.0
1	Njombe Town Council	130,223	18.5
3	Makete District Council	97,266	13.9
6	Makambako Town Council	93,827	13.4
4	Njombe District Council	85,747	12.2
TOTAL		**702,097**	**100**

Source: URT, 2013

Njombe Town Council had a total population of 130,223 as per the 2012 National Population Census. Out of the total population for the town, males were 61,112 and females were 69,111

2.3 Population Distribution Pattern

Njombe Town has both urban and rural characteristics. Out of the thirteen wards of Njombe three have are urban charecterised by trading/small business activities and urban characteristics, nine have rural characteristics and one has a mixture of urban and rural characteristics. The urban wards are characterized by dense housing development, trading/business activities and institutional areas while the rural wards have sparsehousing development characterized by agricultural activities both farming and livestock keeping. The urban and rural nature of the different wards has influenced the population distribution in Njombe Town whereby the urban wards are more populated than the rural wards.

Njombe Mjini Ward has the highest population size which stands at 26,678, followed by Ramadhani Ward with a population of 16,305 and Mjimwema Ward with a population of 13,929. The three wards have urban characteristics and they form part of the town urban core. Makowo Ward has the least population size of 4,213, followed by Utalingolo Ward, which has a population of 4,536. Table 2.2 shows population distribution by ward in Njombe town.

Table 2.2 Population Distribution by Ward in Njombe Town

SN	Ward Name	Status	Population size and sex			Avarage household size
			Total	Male	Female	
1	Njombe Mjini	Urban	26,678	12,464	14,214	3.7
2	Mjimwema	Urban	13,929	6,505	7,424	4.1
3	Ramadhani	Urban	16,305	7,695	8,610	4.0
4	Yokobi	Rural	5,660	2,730	2,930	3.9
5	Kifanya	Rural	9,011	4,171	4,840	4.2
6	Ihanga	Rural	5,095	2,338	2,757	4.1
7	Iwungilo	Rural	8,419	3,912	4,507	4.3
8	Luponde	Rural	9,372	4,471	4,901	4.4
9	Matola	Rural	12,262	5,649	6,613	4.8
10	Makowo	Rural	4,213	2,079	2,134	4.7
11	Lugenge	Rural	5,843	2,737	3,106	4.4
12	Uwemba	Mixed	8,900	4,236	4,664	4.0
13	Utalingolo	Rural	4,536	2,125	2,411	4.2
	TOTAL		130,223	61,112	69,111	4.1

Source: URT, 2013

2.4 Ethnic Composition

The socio-economic survey conducted in early 2016 that the main ethnic group in Njombe Town is the Bena tribe, which constitute about 90 percent of the entire population. Other ethnic groups are Kinga, Pangwa, Hehe, Ngoni, Nyakyusa, and Chagga. Nyakyusa, Ngoni and Hehe constitute about 110 percent of the population.

The Bena, who are the majority, are largely involved in farming and livestock keeping albeit on a small scale. They are found in different wards of the town. The other ethnic group is mainly found in and around the large tea plantations located in the north, central and south-eastern parts of the town.

2.5 Population Density

The 2012 National population census revealed that Njombe Town had an average population density of 40 persons per square kilometre. The Town is the third most densely populated urban center in the region. The most densely populated centre is Makambako Town with 109 with persons per square kilometre followed by Wanging'ombe District Centre with 50 persons per square kilometer (Table 2.3)

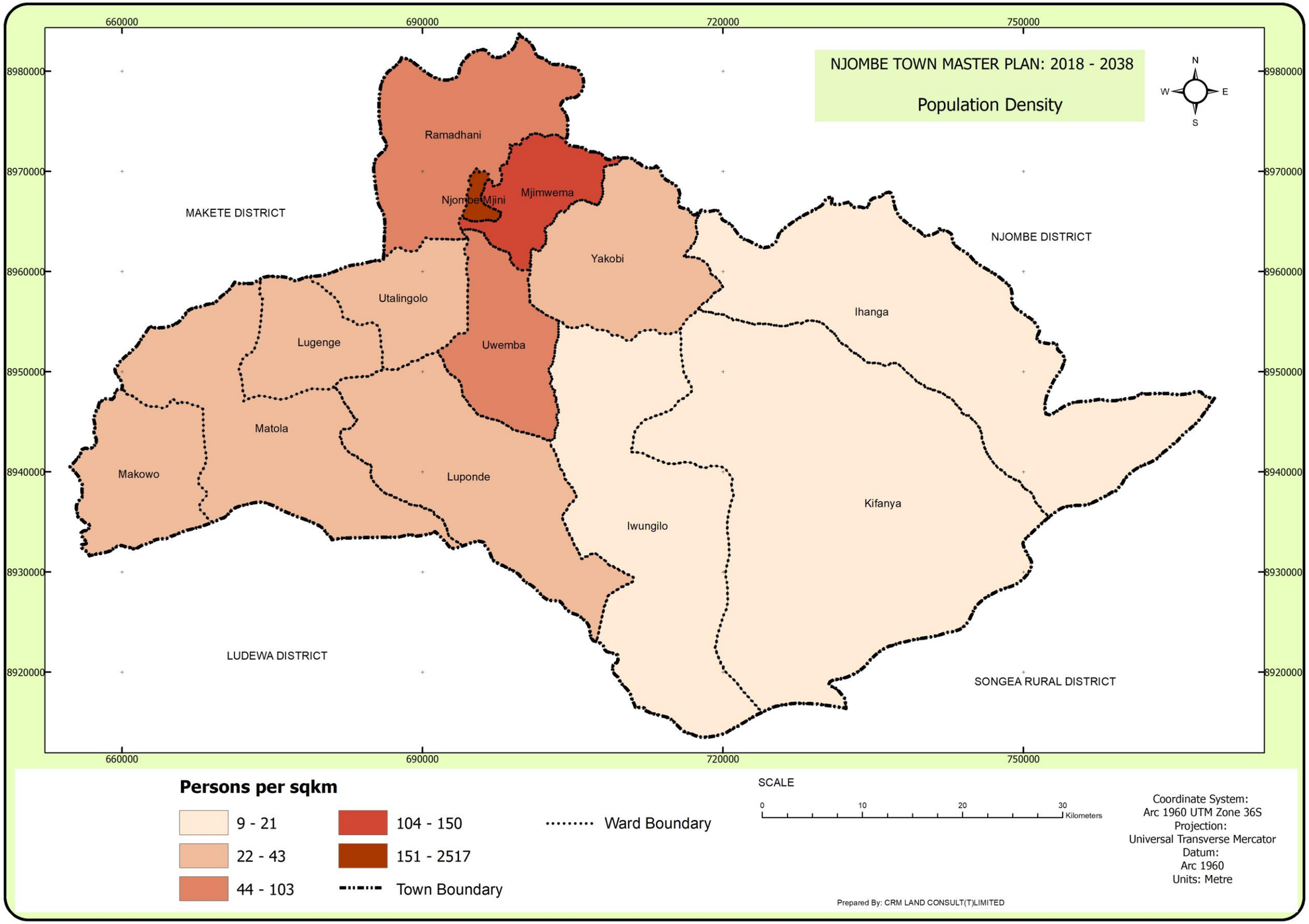
Table 2.3 Njombe Region Population Density at the 1998, 2002 and 2012 national population census

District	People per Square Kilometers		
	1988	2002	2012
Njombe Town	-	-	40
Njombe District	22	28	27
Makambako Town	-	-	109
Wanging'ombe District	40	41	50
Ludewa District	16	20	21
Makete District	21	22	20

Source: URT, 2013

The low population density of Njombe Town is due to the fact that a large part of the town is occupied by villages, which have relatively low population size. The population in the villages is sparsely distributed and most of the land is used for farming including commercial three plantations. Njombe Mjini Ward has the highest population density, which ranges between 151 to 2517 person per square kilometre, followed by Mji Mwema Ward with a population density of 104 to 150 persons per square kilometre and Ramadhani and Uwemba Wards with population density of 44 to 103 persons per square kilometre. Kifanya, Iwugilo and Iahanga Wards have the lowest population density, which ranges from 9 to 21 persons per square kilometre (Map 2.1).

Map 2.1 Njombe Town Population Density



2.6 Age and Sex Structure

The Population Distribution by Age and Sex of the 2012 national population census shows that Njombe Town has a sex ratio of 88 males for every 100 females, meaning that there are more females than males in the town. This sex ratio is less than the national sex ratio of 95 for every 100 females. It was noted from the household interview that generally, males at Njombe Town migrate more than females, of which, most of them move to other places like Dar es Salaam to look for employment opportunities.

Table 2.4 Age and Sex Structure in Njombe Town as per the 2012 National Population Census

Age Interval	Male	Female	Total
0-4	7838	8084	15922
5-9	8851	8791	17642
10-14	8592	9057	17649
15-19	7269	8078	15347
20-24	5827	7134	12961
25-29	5204	6319	11525
30-34	4077	4869	8946
35-39	3455	3846	7301
40-44	2541	2907	5448
45-49	1986	2358	4344
50-54	1584	2089	3673
55-59	1084	1412	2496
60-64	932	1271	2203
65-69	626	915	1541
70-74	524	811	1335
75-79	342	495	837
80+	378	675	1053
TOTAL	**61112**	**69111**	**130223**

Source: URT, 2013

According to the analysis of the 2012 census data on population distribution by age and sex, children between 0-4 years were 15, 922 of which 7838 were males and 8084 were females. Analysis f the data in Table 2.4 reveals that, excepting the 5-9 age group, in all the age groups across the table, the total number of females exceeded the men category. Further analysis of the population data shows that the age category between 10-14 was the largest with a total number of 17,649 people of which 8,592 were males and 9,057 were females. This was followed by the age group 5-9 with a total population of 17,642 out of which 8851 were males and 8791 were females. The age category of 75-79 had the smallest population, which was 837 of which 495 were females and 342 were males. Figure 2.2 illustrates the pyramid of the age structure based on the 2012 population census.

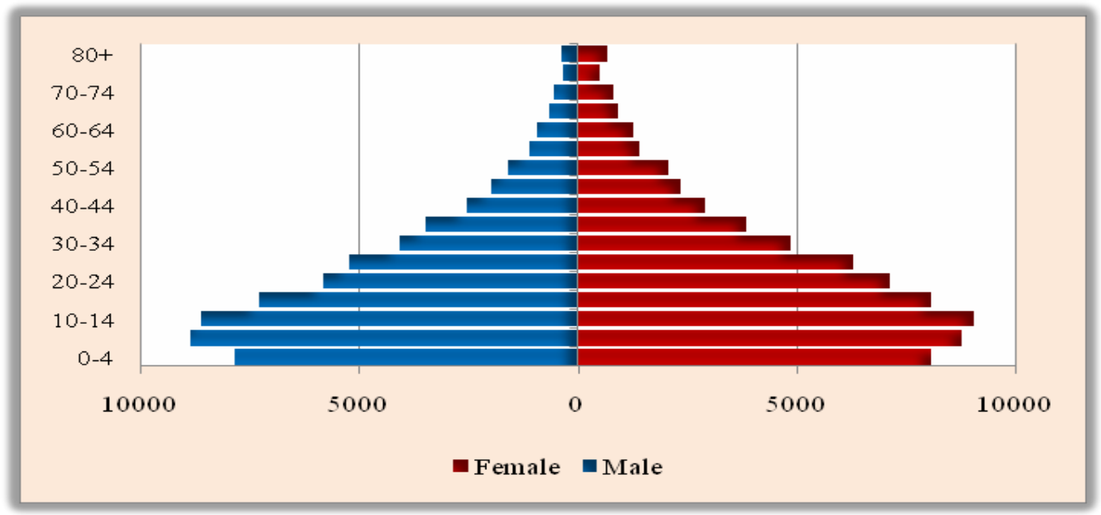


Figure 2.2 Njombe Town Population Pyramid based on the 2012 national population census
Source: Constructed from URT 2013

The fact that the young are groups constitute the majority of the population in Njombe Town provides vital information for planning purposes. For instance, the age structure between 10-14, which was recorded to be highest as well as the category between 5-9, the second in the rank, indicates the need to plan and ensure sufficient social infrastructure facilities, such as schools, health and training centres to cater for those age groups.

The demographic data in terms of age group distribution show the workforce available for economic activities in Njombe Town, i.e., age between 20 to 54 years. However, the working age group seems to decrease as the age increases. For instance, there are more people at the age of 20-24 than the age of 50-54 (Figure 2.4). There is therefore, a need to invest on measures and strategies that will ensure that the working population at their early ages, from 20 years plus are absorbed in the economic and production sectors so as to have effective utilization of the workforce.

2.7 Household size

According to the 2012 National population census, the average household size for Njombe Town stands at 4.1 with a total 31,762 households. Comparison of the household size with other towns and districts in Njombe Region shows that Njombe Town runs the third after Ludewa District and Makambako Town. Ludewa District has the largest average household size which is 4.4 followed by Makambako Town and Njombe District with 4.2 average household size (Table 2.5)

Table 2.5 Njombe Region Household Size

District	Total Population	Number of Households	Average Household size
Njombe TC	130,223	31,762	4.1
Wanging'ombe DC	161,816	40,454	4.0
Makete DC	97,266	26,288	3.7
Njombe DC	85,747	20,416	4.2
Ludewa DC	133,218	30,277	4.4
Makambako TC	93,827	22,340	4.2
Total	**702,097**	**171,537**	**4.1**

Source: URT, 2013

2.8 Dependency Ratio

Dependants are persons aged 0-14 years and those aged 65 years and above. Economically active age group includes persons aged 15-64 years. Table 2.6 shows the number of dependants and economically active persons in Njombe Region based on the 2012 National population censuses. From Table 2.6 dependents account for 43 percent of the population in Njombe Town.

Table 2.6 The number of Dependents and Working Population in Njombe Town

Number of Dependants				**Number of working population**			
Age interval	Male	Female	Total	Age interval	Male	Female	Total
0-4	7838	8084	15922	15-19	7229	8078	15347
5-9	8851	8791	17642	20-24	5827	7134	12961
10-14	8592	9057	17649	25-29	5204	6319	11525
65-69	626	915	1541	30-34	4077	4869	8946
70-74	524	811	1335	35-39	3455	3846	7301
75-79	342	495	837	40-44	2541	2907	5448
80+	378	675	1053	45-49	1986	2358	4344
				50-54	1584	2089	3673
				55-59	1084	1412	2496
				60-64	932	1271	2203
TOTAL	27151	28828	55979	TOTAL	33959	40283	78244

Source: URT, 2013

Analysis of the dependant and age working groups show that the dependance ratio in Njombe is 27. The analysis of the dependency ratio has taken into assumption that people below 15 years and above 65 years (65+) are outside of the labour force, as well as the assumption that those aged 15-64 are participating in the labour force. The results, therefore, indicate that in every 100 people 27 are dependants. The dependancy ratio gives signals of the potential risk that the town economy may face in supporting the economically dependent population especially if the ratio is maintained or increased the future. There is also a need to ensure proper and effective utilization of the economically active population through, for instance, established of different types of industries, improving agriculture as well as the commerce sectors.

CHAPTER THREE
ECONOMY AND EMPLOYMENT

3.1 Introduction

Njombe is a resource-rich region with many natural resources that include fertile land, cool climate, water bodies, minerals, natural forest and waterfalls. These resources provide opportunities in enhancing the socio-economic development of the Njombe Town Council (NTC). The resources are also key in facilitating employment opportunities, which ultimately increases income and poverty reduction. The following sections present macroeconomic indicators and economic activities pertaining to NTC.

3.2 Macroeconomic indicators of Njombe Town Council

The macroeconomic variables represent the main indicators of the economic performance of the town. Sustained macro economic indicators, such as high GDP per capital imply that the economy is stable and strong enough to sustain the wellbeing of the surrounding community. Tables 3.1 and 3.2 present the economic indicators, such GDP and GDP distribution by districts in Njombe Region.

Table 3.1 GDP Distribution in Njombe Region

District /Town	2013	2014	2015
Njombe TC	570,758	690,447	729,564
Wanging'ombe DC	88,385	158,758	156,252
Makete DC	63,185	90,541	93,417
Njombe DC	81,402	92,476	132,527
Ludewa DC	65,855	111,562	222,459
Makambako TC	62,950	83,059	82,564

Source: National Bureau of Statistics, 2018

Table 3.1 shows the GDP distribution of Njombe Region, where NTC is leading in terms of GDP in all the periods as compared with other six districts, which portrays the importance of this town to its hinterlands.

Table 3.2 Share of Njombe Town Council to the Regional GDP in 2015

Region/ District	Njombe TC	Wanging'ombe DC	Makete DC	Njombe DC	Ludewa DC	Makambako TC	Total
Year 2015	729,564	156,252	93,417	132,527	222,459	82,564	1,416,783
% Share	51.5	11.0	6.6	9.4	15.7	5.8	100

Source: Natioonal Bureau of Statistics, 2017

Table 3.2 shows the percentage share GDP to Njombe Region where Njombe Town Council was leading in terms of GDP as compared to other districts in 2015. The percentage share of the GDP is clearly shown in Figure 1 where Njombe Town Council with 51 percent is leading in terms of GDP share among all districts and this fact is explained by the presence of agricultural value chain addition activities, industries as well as mushrooming service sector. Makambako TC has the least share 5.8 percent of the GDP to Njombe Region.

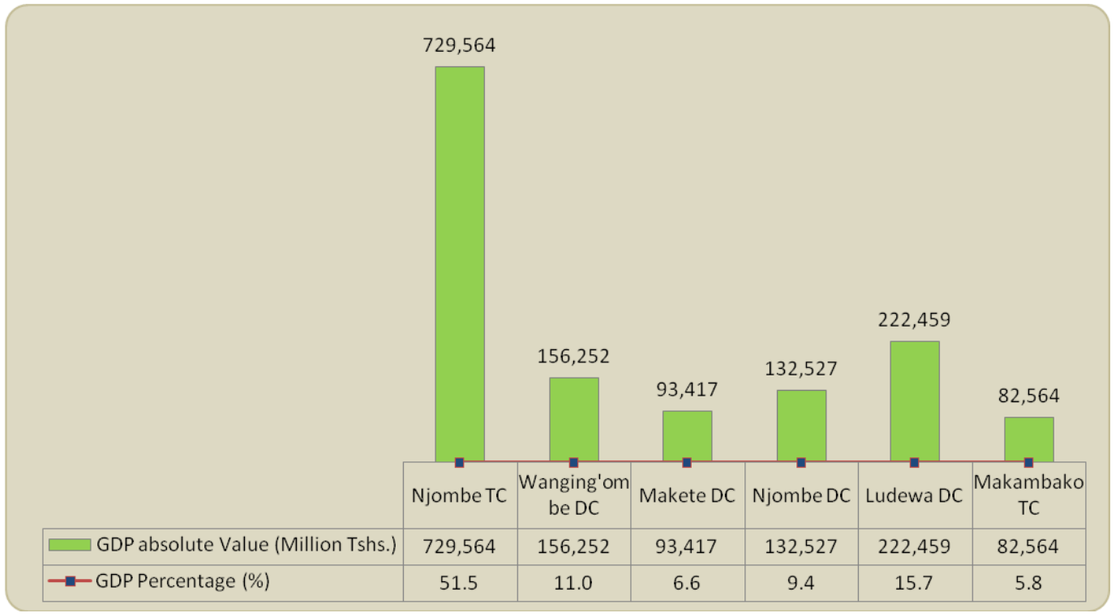


Figure 3.1 GDP at Current Prices and Percentage Shares by District Council, 2015
Source: National Bureau of Statistics, 2018

3.3 The GDP per Capital in Njombe Region by District Councils

Per capital GDP at current prices for Njombe Region was Tsh. 1970,391 for the year 2015; Njombe Town Council had the highest per capital of Tsh. 5,470,429 while Makambako District Council had the least per capital of Tsh 859,232 for the year 2015. In addition, agriculture is the main economic base for the region. Agriculture contribution to Njombe regional GDP was 76.3 percent followed by service activity with 18.0 percent for the ear 2015.

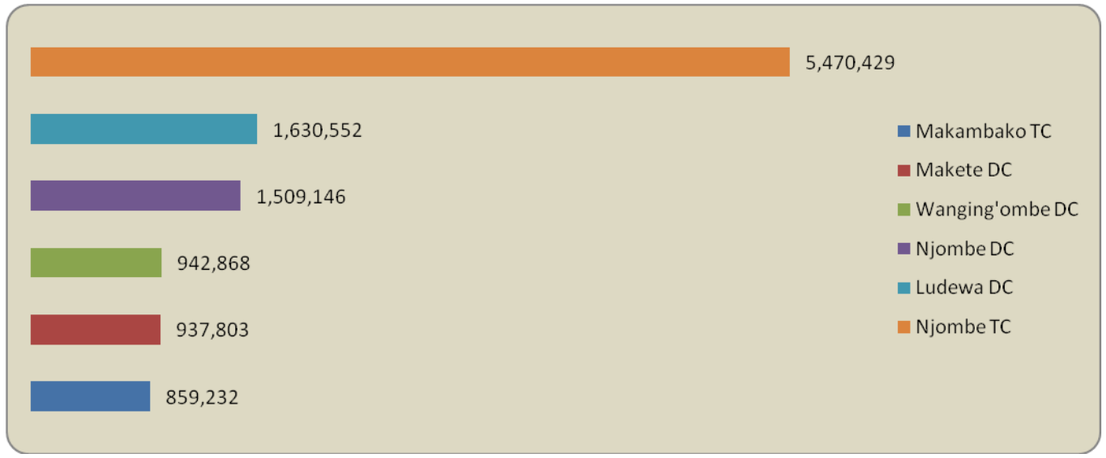


Figure 3.2 Njombe Region Per Capital GDP at Current Prices by District Council, 2015 in Tanzanian Shillings
Source: National Bureau of Statistics, 2017

3.4 Economic Resource Base in the Town

Njombe is a green town and the hub of the Njombe Region with trading and service activities. The town's cool climate, fertile soil and a reliable amount of rainfall, which are favourable conditions for agriculture, have enabled the Town to be a big producer of maize and Irish potatoes. Agriculture is the primary growth potential area in Njombe Town in terms of employment, food security, income generation and agro processing. It is estimated that about 90 percent of the population in the region are employed in agriculture. The crops which are commonly grown are both food and cash crops, which include maize, beans, round potatoes, sweet potatoes, cassava, pyrethrum, wheat, cowpea, green pea, finger millet, paddy, millet, groundnuts, pigeon peas, and vegetables. Other sectors of economy in the town include mining, trade and commerce, industries, lumbering, beekeeping, tourism and fishing.

3.5 Economic Activities

The major economic activities in Njombe Town are agriculture, service, industrial production, trade, agriculture, livestock and poultry, forestry, fishing and financing.

3.5.1 Agriculture

According to the household survey, agricultural activities employ 88 percent of the total population in Njombe Town. Agricultural activities are practiced, especially in peri-urban areas and the hinterland villages whereby both food and cash crops are produced. The main food crops are maize; potatoes, beans and wheat while the cash crops include tea, sunflower, coffee and pyrethrum. Maize and potatoes are dominant in Uwemba, Luponde, Kitulila, Matola, Lugenge, Ihalula and Utalingoro Wards.

Due to its fertile soil, a cold weather and reliable amount of rainfall, which favours condition for the production of different crops, Njombe Town in among the highest producers of maize and Irish potatoes in the region and nation at large.

Njombe town has a total area of 321,200 hectares of land. Arable for crop production covers a total area of 192,700 hectares, which is about 60 percent of the total land coverage. However, only 52,018 hectares, about 27 percent of the arable land, are used for cultivation. The remaining area, 140,682, i.e., 73 percent of the arable land, is un-utilized.

3.5.1.1 Distribution of Arable Land

Arable land is distributed in all the wards of the Town with Kifanya ward having the biggest share of 42, 56 hectares, i.e., about 22 percent of the total arable land. However, only 10 percent of its land is cultivated in each ward of the Town.

Table 3.3 Distribution of Arable Land by Ward

Ward	Total land Area(Ha)	Arable Land Area (Ha)	Arable Land Under Cultivation (Ha)	Percent of qArable Land Under Cultivation
NjombeMjini	4,176	1,495	374	25
Mjimwema	6,424	3,817	2,000	52
Ramadhani	8,030	2,878	2,167	74
Yakobi	13,812	18,787	3,422	18
Kifanya	15,096	42,560	4,426	10
Ihanga	47,378	26,494	2,313	9
Iwungilo	24,893	28,422	5,763	20
Luponde	23,287	14,933	5,114	34
Matola	44,165	11,790	5,049	50
Makowo	67,612	10,212	5,711	13
Lugenge	17,023	13,970	5,327	4
Uwemba	17,987	8,286	6,267	75
Utalingolo	31,317	9,056	4,085	46
Total	**321,200**	**192,700**	**52,018**	**28**

Source: Department of Agriculture anda Livestock Development, Njombe Town Council, 2018

Table 3.4 Food Crop Production

Type of food crop	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Maize	54,150	56857	56884	56953	62250	112037	112091	113527	113640	113728
Irish potatoes	44,539	47902	52184	48189	57083	155198	155073	324403	306461	303427
Beans	6,066	6136	6114	6163	6186	3381	3677	3669	4452	4448
Wheat	5290	4561	4578	4626	4236	4230	4248	4846	4838	4791
Peas	3,753	3791	3813	3883	2047	2921	2896	2867	2784	2757
Sweet potatoes	2,826	2458	2585	2481	2564	3561	3543	3692	3248	3216
Millet	162	364	348	373	378	251	246	256	246	244

Source: *Department of Agriculture anda Livestock Development, Njombe Town Council, 2018*

Njombe is largely an agricultural town by its prominence of both food and cash crop production. People engage in crop production and tree farming due to the availability of arable and fertile land coupled with favourable climate, which favour production of different crops. Maize is the leading crop produced in the Town, both as food and cash crop, followed by Irish potatoes, beans and wheat. Maize dominates the production increased from 54,450 tons in 2008 to 113, 728 tons in 2017. That, means the production more than doubled in the period of ten years. In addition, maize cultivation is practiced in all the wards of Njombe Town. Production of Irish potatoes also shows an increase trend of quantity produced in Njombe Town. The production of Irish potatoes increased from 44,539 in 2008 to 303,427 tonnes in 2017 as shown in Table 3.4. Compared to other food crops grown in the Town, Irish potatoes have the highest yield per hectare. The plate 3.1 shows an example of an Irish potato farm in Njombe Town.

Plate 3.1 An Irish potato farm in Njombe Town

Table 3.5: Trend of food crop production in Njombe Town

Type of food crop	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Maize	54,150	56,857	56,884	56,953	62,250	112,037	112,091	113,527	113,640	113,728
Irish potatoes	44,539	47,902	52,184	48,189	57,083	155,198	155,073	324,403	306,461	303,427
Beans	6,066	6,136	6,114	6,163	6,186	3,381	3,677	3,669	4,452	4,448
Wheat	5290	4561	4,578	4,626	4,236	4,230	4,248	4,846	4,838	4,791
Peas	3,753	3,791	3,813	3,883	2,047	2,921	2,896	2,867	2,784	2,757
Sweet potatoes	2,826	2,458	2,585	2,481	2,564	3,561	3,543	3,692	3,248	3,216
Millet	162	364	348	373	378	251	246	256	246	244

Source: *Department of Agriculture anda Livestock Development, Njombe Town Council, 2018*

The increase of different types of crop produced was also attributed to the introduction of irrigation farming, which supports cultivation during the dry seasons. Irrigation is performed in almost in every ward in the Town. Although the Town receives enough rainfall during the rainy seasons, farmers use the irrigation system to cultivate in dry seasons. The most common crops under irrigation are Irish potatoes, tea, flowers, fruits and vegetables. The dominant sources of water for irrigation are Hagafilo and Ruhuji Rivers. The major means of irrigation systems are hand bucket and gravity. Plates 3.2 and 3.3 show Hagafilo irrigation water source and gravitational irrigation system respectively.

Plate 3.2 Hagafilo irrigation water source in Njombe Town

Plate 3.3 Gravitational irrigation system in Njombe Town

About 14 percent of the agricultural area of the Town is under irrigation. Makowo is the leading Ward with 30 percent of the area, which is under irrigation farming. Luponde and Matola Wards follow, with 22 percent of the area under irrigation for each of the Ward. Despite the potentials available for irrigation farming in Njombe Town, the irrigation potentials are yet to be fully utilized.

3.5.1.2 Cash Crop production

Cash crops produced in Njombe Town include tea, sunflower, coffee and flowers. Tea farms occupy the largest area among all the crops, thus it is a leading cash crop produced in Njombe Town. Tea has an average planted area of 1,803 hectares, approximately 92 percent of the cultivated area used for cash crops, which is 1,949 hectares. The farms are largely found in Luponde and Matola wards. Table 3.5 shows that tea production was increasing at different growth rate. Nonetheless, the average growth rate is about 19 percent per annum. Plate 3.4 illustrates an example of a tea plantation in Njombe Town.

Table 3.6 The trend of Cash crop production in tons

Type of cash crop	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Tea	2,882.70	3,203	3,489.60	3,722.50	4,129	5,211	5,764	4,204	9,401.20	9,593.30
Growth Rate in %		11.1	8.9	6.7	10.9	26.2	10.6	-27.1	123.6	2.0

Department of Agriculture anda Livestock Development, Njombe Town Council, 2018

Plate 3.4 A tea farm in Njombe Town

Sunflower is the second leading cash crop grown in Njombe Town. The area, which is used for sunflower production, 121 hectares, is relatively small compared to the area used for tea production. Oil produced from sunflower is used both for home consumption and for business purposes. Flowers are also produced as cash crops in Njombe Town. Flowers are cultivated in Uwemba ward largely for exportation purposes. Plate 3.5 is an illustration of flower cultivation in Uwemba Ward.

Plate 3.5 Flower production in Uwemba Ward, Njombe Town

Coffee is also grown in Njombe Town albeit at a small scale. It was noted during the household survey that a large proportion of households in the Town prefers to grow tea and sunflower more than coffee cultivation due to labour intensity needed for the latter. However, coffee is a potential cash crop in terms of investment since the weather condition of Njombe is suitable for coffee production. Currently coffee is produced in only 16 hectares of land.

3.5.1.3 Horticultural activities

Horticultural activity is among the economic activities in Njombe Town. In terms of land distribution Kifanya Ward has a large horticultural land for horticulture production approximating 134 hectares. Ihanga and Yakobi Wards follow it with the average of 80 and 76 hectares respectively. Other wards are endowed with horticulture land of about 40 hectares on average as shown in Table 3.7.

Table 3.7 Distribution of land for horticultural production according to wards

S/No.	Ward	Area in Hectares
1	Lugenge	59
2	Iwungilo	80
3	Ramadhani	43
4	Uwemba	66

5	Kifanya	134
6	Matola	45
7	Luponde	47
8	NjombeMjini	11
9	MjiMwema	31
10	Ihanga	111
11	Utalingolo	31
12	Makowo	30
13	Yakobi	76
14	Total	764

Source: *Department of Agriculture anda Livestock Development, Njombe Town Council, 2018*

Table 3.8 shows the types of horticultural products produced in Njombe Town from the year 2008 to 2017. There is evidence of increasing production of horticultural products. Generally, production increased from 199.5 to 276.5 tonnes between the years 2008 and 2009. However, the production average at 230 tonnes between 2009 and 2015. Major changes in production of horticultures occur between 2016 and 2017 when production of 625 and 648.5 tonnes were produced as compared to the previous period.

Table 3.8 Trend of horticultural production in tons

Type of Horticultural Output	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Apples	7	52	54.8	57.7	60.7	62	58.9	28	81.7	83.4
Avocado	3	27.7	29.2	30.7	32.3	34	46.6	49	221.6	233.3
Guavas	34	35.8	37.7	39.7	41.8	44	60.8	64	64.6	65
Passion	6	6.4	6.7	7	7.6	8	12.4	13	15.7	16.5
Peaches	29	27.7	29.2	30.7	32.3	34	39	39	40.6	42.7
Pears	36.4	38.3	40.3	42.5	44.7	47	54.2	57	60	61.1
Pineapples	35.5	37.4	39.4	41.5	43.7	46	49.6	72	76.5	80.5
Plums	48.6	51.2	53.9	56.8	59.8	63	61.7	61	64.3	66
Total	**199.5**	**276.5**	**291.2**	**306.6**	**322.9**	**338**	**383.2**	**383**	**625**	**648.5**

Source: *Department of Agriculture anda Livestock Development, Njombe Town Council, 2018*

3.5.1.4 Vegetables

Table 3.9 shows the types of vegetable products produced in Njombe Town from the year 2008 to 2017. They include cabbages, kale (*Sukuma-wiki*), Tomatoes, amaranths, carrots, Swiss chard, *ngogwe*, Chinese cabbage, and Ethiopian kale. Cabbages are leading in terms of production over the period of ten years and output-increased form 118 tonnes in 2008 tons in 897 tonnes in 2017. There is also evidence of increasing production of other vegetable productions. Generally, production increased from 536 tons in 2008 to 4951.1 tons in 2017. Major changes in production of vegetables occurred in 2013 to 2014 when the total output increased from 587 to 2974 tons respectively.

Table 3.9 Trend of vegetable production

Type of vegetable	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Cabbage	118	123.9	130	136.5	143	151	811	854	871	897.4
Kale (Sukuma	55	56.1	58.9	61.8	58.7	61.0	35.2	37	73.8	75.4
Tomatoes	116	121.8	127.9	130.5	124	49	610	643	656	779.4
Amaranthus	49	73.5	88.2	138.3	141	144	618	631	644	965.1
Carrots	27	27.5	28.9	30.3	31.8	19	262	276	282	507.7
Swiss chard	21	22.4	31.8	33.5	35.3	36	124	131	134	349.1
Ngogwe	36	34.2	25.8	25.27	26.6	28	253	266	271	397.4
Chinese cabbage	51	48.5	46.1	19.8	20.9	22	180	189	193	285.3
Ethiopian Kale (Figiri)	63.4	64.7	66	69.5	73.2	77	80.8	355	680	694.3
TOTAL	**536**	**572.6**	**603.6**	**645.5**	**655**	**587**	**2974**	**3382**	**3804**	**4951.1**

Source: Department of Agriculture anda Livestock Development, Njombe Town Council, 2018

3.5.2 Livestock Keeping

Njombe residents are not only involved in crop farming but also in livestock keeping. The types of livestock kept include cattle, goats, sheep, pigs, and poultry. The 2007/08 National Agricultural Sample

Census revealed that 86 percent of households in the Town were poultry farmers, 24.2 percent were rearing cattle, 23 percent were rearing goats and 9.9 percent were rearing sheep. Moreover, there is an increasing trend of livestock keeing in the Town, in which the year 2013 surpassed all the years with the highest growth rate of 55.15 percent. Much of the growth rates were mainly contributed by the repaid increase in the production of poultry. Table 3.10 shows the trend and growth rate of livestock growth in the Town from 2007 to 2017.

Table 3.10 Trend and Growth rate of livestock in NjombeTown

Year	Cattle	Goats	Sheep	Pigs	Poultry	Total	% Growth Rate
2007	27,978	12,876	3,732	13,656	20,974	**79,216**	
2008	28,156	12,988	3,745	13,745	20,987	**79,621**	**0.51**
2009	28,566	13,234	3,798	13,839	21,754	**81,191**	**1.97**
2010	28,780	13,427	3,859	13,844	21,899	**81,809**	**0.76**
2011	30,187	14,671	4.007	14,027	23,812	**82,701**	**1.09**
2012	32,428	15,504	4,222	14,621	35,461	**102,236**	**23.62**
2013	34,156	16,112	4,519	12,573	91,255	**158,615**	**55.15**
2014	35,162	16,931	4,213	14,181	110,136	**180,623**	**13.88**
2015	31,309	17,216	3,978	16,282	141,588	**210,373**	**16.47**
2016	28,090	17,912	3,959	5,673	214,301	**269,935**	**28.31**
2017	30,251	18,123	3,814	5,923	287,116	**345,227**	**27.89**

Source: Department of Agriculture anda Livestock Development, Njombe Town Council, 2018

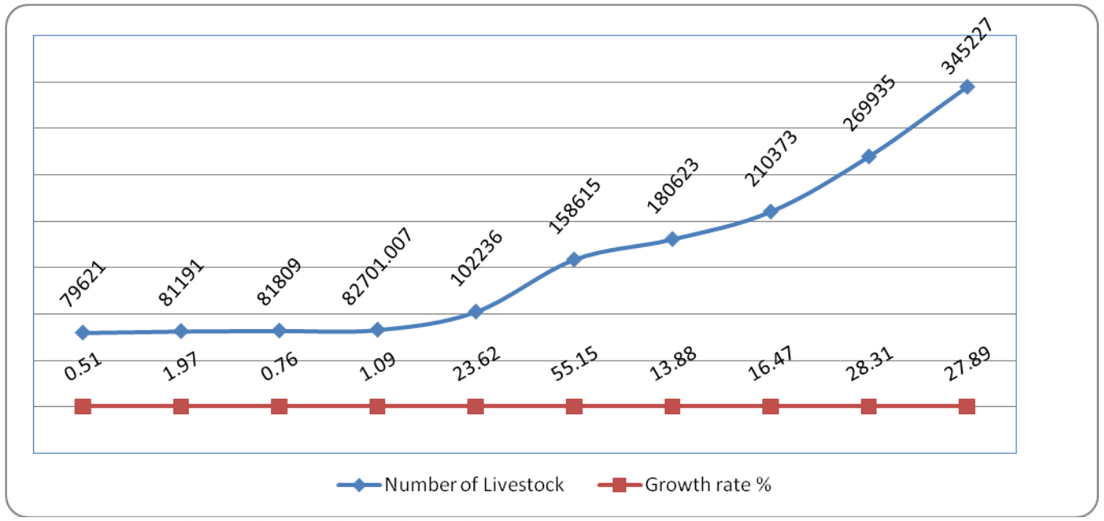


Figure 3.3 Number of livestock Vs Growth rate
Department of Agriculture anda Livestock Development, Njombe Town Council, 2018

In terms of cattle keeping, Njombe Town has both traditional as well as improved dairy cattle. Catlle rairing is practiced in almost all wards of Njombe Town with Lugenge, Matola, Utalingolo, and Kifanya Wards taking the lead in terms of number of cattle kept.

Due to the presence of improved dairy cattle in Njombe Town, there also existence of small scales dairy farms in various areas of the town. The farms are situated in the wards of Njombe Mjini, Mjimwema, Ramadhani, Uwemba, and Utalingolo. The Uwemba Mission farm in Uwemba Ward has most of the dairy cattle farms, followed by Kilocha farm in Njombe Mjini Ward and Mtewele farm in Mjimwema Ward. Other dairy cattle farms are found in Utalingolo and Ramadhani Wards. The distribution of small scale dairy farms in Njombe Town is shown in Figure 3.4.

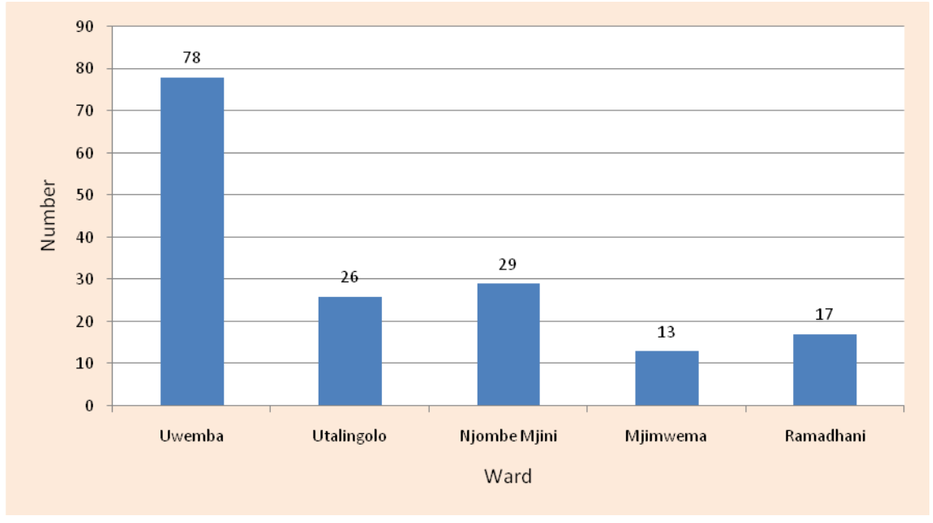


Figure 3.4 Small Scale Dairy Farms in Njombe Town

Department of Agriculture anda Livestock Development, Njombe Town Council, 2018

As far as grazing land is concerned, Njombe Town has a total of 48, 802 hectares of land that is suitable for grazing. However, the utilized grazing land is about 34, 588 hectares found mostly in Kifanya Ward. All other wards of Njombe Town have small proportions of grazing land with exception to Njombe Mjini.

3.5.3 Fisheries

Fishing activities is one of the economic activities conducted by people in Njombe Town. These activities are mainly conducted on ponds constructed by people on their own locally using both traditional and technology methodology. People in Njombe Town traditionally conduct these activities with low technology and mechanization. Since the 2007, the number of dam constructed for fishing activities has been increasing (Table 3.11). This increase corresponds/corroborates with the total fish harvest. This implies that the number of people venturing into fishing activities has increased since 2007.

Table 3.11 Trend of dam construction and fish harvest

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Dams	96	103	109	112	115	118	121	128	129	120	113
Harvest (Kg)	2650	2842.8	3008	3091.2	3174	3256.8	3339.6	3533	3560	4032	3799

Source: Lands, Urban Planning and Natural Resources Department, Njombe Town Council, 2018

3.5.4 Commercial tree plantations

Commercial tree plantation is a potential economic activity in Njombe Town and the Region at large. A total of 100,466 hectares are specifically for commercial tee plantation in the Town. Commercial tree plantations are largey found in Kifanya Ward. The booming tree plantation in Njombe started back in 2008 when the Kenya Forest Authority banned the harvest of its forest for ten years to allow regeneration. The banning of forest harvest in Kenya increased demand for timber and wood products, which triggered the expansion of tree plantations in Tanzania, specifically in Iringa and Njombe Regions. It was during that time when the change of technology also occurred where most tree farmers changed from using hand saw to chainsaws, which simplified tree harvesting and increased production (Njombe Environmental profile, 2015). Tree plantations in Njombe are dominated by Pine, Eucalyptus, Cyprus, Black Wattle (Mlingo) and Grevilia Lobster species. Cyprus and Grevilia Cyprus are largely used for firewood; Eucalyptus is more suitable for poles (apart from wood) while Black wattle (Mlingo) specie is planted specifically for charcoal burning.

There are other species, which are planted mostly in town centre for ornamental and firewood purposes. These species are Hekia, Jacaranda, Casualina, Cena Spectabilis, White Bottle Brush and Acrocelpus. In most of the tree plantations the age distribution of the three species used for timber and wood ranges between 3 to 8 years, which is considered the suitable age for harvesting. Table 3.12 depicts the number of trees planted since 2007 to 2017. The average planting trees were 3.85 million in 2007. It increased further to 5.10 million in the year that followed. In the year 2010 tree planting increased tremendously from 5.10 million to 14.41 million representing a growth rate of almost 183.63 percent. Nonetheless, tree planting culture averaged 6 million between 2010 and 2014 though the growth rate was declining. Moreover, the levy collected from commercial tree plantation increased from 358.22 in 2015 to 488.13 and 835.24 in 2016, 2017 respectively.

Table 3.12 Trend of growth rate of trees

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Number of trees planted (Million)	3.85	5.10	14.41	9.63	6.72	5.92	6.72	8.76	10.32	14.55	14.93	10.70
Tree Plant Growth Rate (%)		32.39	182.63	-33.19	-30.16	-11.93	13.55	30.21	17.88	40.98	2.61	-28.36
Levy Collected (Tsh Million)									358.22	488.13	835.24	

Source: Author's computation from data obtained from the Natural Resources Department, Njombe Town Council, 2018

3.5.5 Industry

According to a Census of Industrial Production 2013, Njombe Region had a total number of 1,660 industries ranging from small, medium to large and provides almost 5,638 employment opportunities. Notably, Njombe Town constitutes 11.08 percent of all industries in Njombe Region though it has 11 large industries, which is equivalent to almost 64.8 percent of all large industries in the region. There are also 8 medium and 52 small industries located in the Town leading to an aggregate of 71 industries in total. Table 3.13 presents the distribution of industry according to size and the number of employment.

Table 3.13 Distribution of industries according to size and number of employment

Council Name	Size of Industry			Total	% Share
	Large	Medium	Small		
Njombe Town	11	8	52	71	11.08
Njombe District	2	0	60	62	9.67
Wangig'ombe DCistrict	2	6	152	160	24.96
Makete District	1	3	102	106	16.54
Makambako Town	0	37	132	139	21.68
Ludewa District	1	2	100	103	16.07
Total	17	56	598	641	100.00

Source: SIDO Njombe Region, 2018

Data obtained from the Small Industries Development Organisation (SIDO) indicates that most of the indi=ustries in Njombe region in general have employed an naverage of 1-4 people, with few industries emplying large number of people as indicated in Table 3.14.

Table 3.14 Level of employment by industries in Njombe Region

No of employees	**1-4**	**5-9**	**10-19**	**20-49**	**50-99**	**100-499**	**500+**
No of industries	1536	116	Nill	4	2	1	1

Source: SIDO Njombe Region, 2018

The small scale industries in Njombe town include different types of food processing including maize milling to sunflower oil processing. Other small scale industries are welding, carpentry and timber processing factories. There are also few small scale mini hydropower plants. The small scale industries are scattered all over the town, in the different wards.

The medium enterprises compose of the mini hydro electricity generation, milk processing and water processing industries. The industries are also distributed in different wards in Njombe Town, with exception to Ramadhani, Njombe Mjini and Makowo Wards which have no a single medium scale industry.

The large scale industries in Njombe town consist of electricity generation plants; wattle processing, timber processing, tea processing and food processing factories. In total, there are four large-scale industries in composing of one electricity generating industry found in Njombe Mjini ward, one wattle and one timber processing in Ramadhani ward and one tea processing industry in Luponde.

3.5.6 Bee keeping

Njombe Town is also endowed with favourable climate for beekeeping. There are two potential types of beekeeping activities that exist in Njombe Town, namely traditional beekeeping and modern beekeeping. On average both types of beekeeping have contributed to the increase in honey production and revenue as shown in Table 3.15.

Table 3.15 Trend of honey production and sales

Year	Honey Production (Kg)	Sales (Tsh)
2012	7889	63,112,000
2013	9,317	74,536,000
2014	8,596	68,768,000
2015	13,265	106,120,000
2016	14,868	118,944,000
2017	16,359	130,872,000
Total	**70,294**	**562,352,000**

Source: Lands, Urban Planning and Natural Resources Department, Njombe Town Council, 2018

Table 3.15 shows that the production of honey has been increasing from 2012 to 2017. It is evidence that from 2012 to 2017 the production of honey has almost doubled from 7,889 tonnes to 16,359 tonnes. This means that bee keeping is a lucrative business in Njombe Town. The income generation from the sales of honey has also shown an increasing trend. For instance, the sale from honey was only Tanzanian

Shilings 63.1 million in 2012 compared toTanzanian Shillings 130.8 million received in the end of 2017. Plate 3.6 shows bee-keeping technology in Njombe Town.

Plate 3.6 Bee keeping technologies in Njombe Town

3.5.7 Tourism

Tourism in Njombe Town is at the infant stage of development. However, the Town has enormous tourism potentials which have not been fully explored. The Town Council has recently identified tourism centers, such as Ruhuji, Hagafilo and Nyamuyuya waterfalls, and the Utengule wetland, which is 73 kilometres from Town centre and historical caves regarding Bena's and German war. In addition, other sources of tourist activities are the natural forests, which includes: Itoni, Mapala, Nguruka, Ikowe and Idamba. Njombe Town is also endowed with other supporting tourist activities, such as infrastructure that includes accommodation facilities, telecommunication services, roads, banking/bureau de change service and tour operators are important tool for the development ofcompetitive tourism industry. Given that tourism in Njombe Town is at the early stage of development, there is a high demand in terms of resources to make the sector more attractive.

Table 3.16 shows the historical sites that are potential for tourist in Njombe Town. The most important ones are sites like Yakobi church aged 100 years where a German missionary by the name of Paul Crosan died. There is also a Cave where Majimaji Warriors were killed after a person named Mafimba Mwalongo disclosed their hiding place. There are other sites essential for tourism like Welela wetland, Human Skull at Nyikamatwe and many others as shown in Table 3.16. Plate 3.6 and 3.8 show thetypes of waterfalls found in theTown. Plate 3.7 and plate 3.8 show the historical sites potentials for Tourism activities at Njombe Town.

Table 3.16 Historical sites in Njombe Town

Type of historical heritage available	Village	Ward	Division
Njombe territory chief dom tax collection centres (Njombe,Ludewa & Makete)	Kwivaha - street	Njombe mjini	Njombe mjini
Human skulls at Nyikamtwe	Hagafilo	Mjimwema	
Hagafilo and Nyamuyuya river water falls,			
Salmon fish at Hagafilo river			
		Ramadhani	
Yakobi church of 100 years old	Yokobi	Yokobi	Igominyi
Natural forest			
Cave of Maji Maji war warriors grave	Utengule	Kifanya	
Welela wetland	Lwangu/Utengule		
		Ihanga	
		Iwingilo	
		Luponde	
Hot spring	Mbega	Matola	
		Makowo	
		Lugenge	
Natural forest	Uwemba	Uwemba	
	Igeri		
		Utalingolo	

Source: Lands, Urban Planning and Natural Resources Department, Njombe Town Council, 2018

Plate 3.6 Hagafilo water falls

Plate 3.7 Nyamuyuya water falls

Accommodation facilities are important in attracting tourists. Therefore, information about hotels, camp sites and lodges is vital for the toursits, as it helps them to choose the type of accommodation they like as well as compare the quality against the prices they charge. There are in Njombe Town several hotels

and guesthouses. Table 3.17 reveals that by 2012 the number of hotels in Njombe Town was 22. The number of guesthouses in the same year was 98.

Table 3.17 Accommodation facilitation in Njombe Town Council

Ward	Number of Hotels			Number of Guest Houses		
	2010	2011	2012	2010	2011	2012
Total	10	15	22	53	61	98

Source: ***Department of Economy and Tradet, Njombe Town Council, 2018***

3.5.8 Mining

Mining activities are also conducted in Njombe Town albeit at a small scale. Minining involves extraction or excavation of various types of minerals including construction materials. Mining of construction materials is conducted at NyakamtweKware area where there is presence of granite stone. Other quarry sites include Mfeleke quarry sites where stones are obtained, Lusisi and Mtwando sites where sand is obtained and Muhaji, Lusisi and Mdandi quarry sites where brick is obtained.

There are some mining activities in other parts of the town including copper at Uliwa at Ihungilo Ward. However, the mining activities at that area were suspended due to emergency of conflict between the indigenous owners (residents) and the mining investor of the use of the land over the use of the land. The mining site is located in one of the village which is currently inhabited with people and has various facilities including primary and secondary schools, a health sentre and religious institution.

Mining sector in Njombe Town is generally undeveloped despite the existence of various mineral potentials such as gold, copper, manganese, granite stone, and iron. Due to the underdevelopment if the sector, currently there is no data available on the contribution of theh mining activities to the Town revenue. Howevr, for the secotor to make a positive contribution to the Municipal economy, efforts are to be done to clearly identiafy the potential mining areas and probably zone them so as to ensure effective tapping of the potentials.

3.5.9 Banking and non-banking Financial Institutions

Financial institutions form an important part in ensuring economic transactions. They facilitate the channeling of funds between lenders and borrowers. Banks often serve as the intermediaries between those who have resources and those who want resources. Financial institutions are the lubricants that keep economy going. There are different types of banking and non-banking financial institutions ranging from commercial banks, SACCOS, Insurance company as well as pension funds in the Town.

3.5.9.1 Commercial banks

There are three (3) commercial banks that provide financial services in Njombe Town, namely National Microfinance Bank (NMB), National Bank of Commerce (NBC) Limited, and CRDB Limited. Overtime the commercial banks increased from two banking institutions (NMB and NBC) to four banking institution (including CRDB and Njombe Community Bank) since 2008 to 2016. This is an indication that the demand for financial services is increasing in the town due to increasing number of formal and informal small scale business and increased population after establishment of Njombe as a new Region. Other factors include increased timber production in the town, which has attracted many timbers businessmen/women from other parts of the country as well as from neighbouring countries. Establishment of irrigation scheme, which resulted into increased production of round potatoes throughout the year. This also attracted businesses. Nevertheless, in 2018, the Bank of Tanzania (BOT) decides to close the then Njombe Communicty Bank (NJOCOBA) due to inadequate capital, which is contrary to Banks and Financial Institutions Act of 2006, and its regulations.

3.5.9.2 Savings and Credit Cooperative Society

In 2006, the Government introduced the National Economic Empowerment and Job Creation Programme in order to promote, support, and empower small and medium Tanzania citizen entrepreneurs acess loans to engage in productive activities. The programme encourages the establishment of Savings and Credit Cooperative Societies (SACCOS) at Ward level and offered to lend them a total of Tsh.21 Billion (Tsh.1 Billion per Region), popularly known as the ‘JK Billions’.

The main objective of the programme was to increase incomes of small and medium scale entrepreneurs and to create new jobs for Tanzanian citizens. SACCOs are gross-roots financial institutions, which have stood the test of time as effective micro financial institutions, offering members a convenient home for their savings and an access point for loans.

Currently, in the Town, there are 32 SACCOS in Njombe Town compared to 18 SACCOS, which existed in 2012, indicating a rapid increase of SACCO'S establishment in the tow. However, the most important indicator for the effectiveness of cooperative development is the amount of funds deposited in the bank and the amount of loans granted to the members. For example, a total of Tshs 265,017,549 was deposited in 9 SACCOS accounts by 2012. At the same time, a total of Tshs 17,116,560,941 was credited to individual members in 2012. The trend shows that there was an increase in the amount of money loaned to members from Tshs 5,101,337,430 in the period of January to December 2010 to Tshs 17,116,560,941 in the period of January to December 2012. The trend also shows that there is an increase in the amount of funds recovered from members from Tshs. 2,638,536,680 in the period of January to December 2010 to Tshs. 13,372,269,538 in the period of January to December 2012.

3.6 Economic infrastructures

This section points out the economic infrastructure available in Njombe Town. Economic infrastructures include road network, air services, telecommunication services, and energy sector.

3.6.1 Road Network

Road transportation is the major type of transportation for people and goods within and outside Njombe Town. The road network in the Town is composed of trunk, district, feeder and urban roads. There is a total road network of 1465 kilometeres. Njombe Mjini ward has the longest road network of 430 kilometeres (29.4%) followed by Mjimwema with 137 kilometeres (9.4%), Ramadhani 130kms (8.9%), kifanya 124 kilometeres (8.5%) and Luponde 120 kilometeres (8.2%). Ihanga ward has the shortest road network in the Town with 40 kilometeres (2.7%) and road lengths for other wards are as shown in Table 3.18

Table 3.18 Length of Road by Ward and by Grade, Njombe Town, 2012

Ward	Grade (Km)					
	Trunk	Regional	District	Feeder	Urban	Total
Total	80	70	522	386	407	1465

Source: ***Department of Economy and Tradet, Njombe Town Council, 2018***

3.6.2 Airport

Air service is another means of transport available in Njombe Town. There is one air strip, the Njombe Aerodrome (Airport), which carters for the visitors in the Town and other parts of the country. The airstrip is earth surfaced, which can handle only small aircrafts on charter flights. The aerodrome covers an area of 900 square kilometres with a runway of 2,000 metres length and 30 metres width. So far, the Aerodrome is in the process to be rehabilitated by fencing the area, expanding the runway, putting tarmac surface, constructing control Tower and expansion of passenger's lounge.

3.6.3 Telecommunication services

As a means of exchanging information over significant distances, telecommunication is very important as it provides access to relevant information and knowledge which improves efficiency and productivity; enhances social services delivery; increases access to market opportunities; and improves government performance, among others. Njombe Town is facilitated with reliable communication networks such as landline telephone, radio calls, and mobile phones, TV and radio channels. The Town has five (6) operating cellular phone companies namely: Vodacom, Airtel, Zantel, Tigo and Tanzania Telecommunication Company Limited (TTCL) as well as Halotel. Radio, television services and cable television accessed in the Town include Radio one, Tanzania Broadcasting Corporation (TBC), Radio Free Africa, and Clouds amoung others. Also, there is one radio station in the Town known as Uplands Radio but there are no TV stations.

3.6.4 Energy

Energy is a crucial ingredient for economic development. As both agricultural and industrial activities increase, the demand for energy similarly increases. Provision of a greater access to energy has been suggested. This will help grow economies and improve the lives of the poor. Njombe Town depends on various sources of energy for domestic as well as commercial uses. Such sources include electricity, paraffin, firewood, charcoal, gas and solar. However, majority of people in the rural areas use kerosene and firewood as a major source of energy for lighting and cooking. Some institutions and few individuals in the rural areas use solar energy and electricity as their source of energy for lighting and cooking.

3.7 Public Sector Revenue and Expenditure

Njombe Town Council is the main public sector responsible for revenue collection, recurrent expenditure, and execution of urban project for the town. The council is assisted by the central government in the form of annual subsidies. The Council annual recurrent and capital budgets are always in deficit as a result, the Council's capacity in maintenance of existing system of public utilities, community facilities and infrastructure are always under constrained. The Council's major local sources of revenue are; development levy from timber and other forests products as well as other general trade licences.

Table 3.19 shows that the actual revenues collected by Njombe Town Council have been increasing over a period of 9 years. In terms of development grant disbursement, the Njombe Town Council received only 32 percent and 35 percent of development grants between 2009/10 and 2014/15 financial years respectively. Nonetheless, during the financial years 2010/11 and 2013/14 Njombe Town Council received 99 percent and 126 percent of the estimated development grants respectively. A general observation from Table 3.20 reveals that Council received actual revenue of around 80 percent of the estimated development in each financial year.

Table 3.19 Revenue collected 2007/2008 to 2015/2016 (Tsh.Million)

Years	Estimated Vs Actual revenue	Own source	Public Expenditure and OC	Development Grants	Total
2007/2008	Estimated	253.5	2481.8	1457.8	4193.1
	Actual	212.4	1717.9	827.9	2758.2
	%	84	69	57	66
2008/2009	Estimated	305.4	3914.6	1896.0	6116.0
	Actual	301.9	3579.3	1255.3	5136.5
	%	99	91	66	84
2009/2010	Estimated	416.1	6425.1	2806.8	9648.0
	Actual	384.4	3493.4	899.0	4776.7
	%	92	54	32	50
20102011	Estimated	672.4	9745.7	3633.8	14051.8
	Actual	646.4	8635.0	3607.8	12889.3
	%	96	89	99	92
2011/2012	Estimated	896.7	11213.0	4726.2	16836.0
	Actual	826.3	9949.7	3221.4	13997.4
	%	92	89	68	83
2012/2013	Estimated	1293.1	13246.0	9241.8	23780.9
	Actual	1153.0	13059.3	6535.4	20747.8
	%	89	99	71	87
2013/2014	Estimated	1668.8	14269.4	3633.8	19572.0
	Actual	1504.4	12473.3	4560.6	18538.4
	%	90	87	126	95
2014/2015	Estimated	5864.8	16545.2	12819.6	35229.5
	Actual	4045.7	16310.1	4528.3	24884.1
	%	69	99	35	71
2015/2016	Estimated	4585.4	20534.6	9046.7	34166.7
	Actual	3331.4	20220.1	7762.4	31313.9
	%	73	98	86	92

Department of Finance, Njombe Town Council, 2018

3.8 Future Economic Prospects

The future economic prospects of the Njombe Town are to enhance the economic activities through rehabilitation and development of agro-processing plants, creation of tourist attraction facilities, construction of and improvement of infrastructure, as well as improvement of ICT services facilities by adopting the e-Government strategy. There are also prospects to increase the coverage of the area under irrigation scheme, enlargement of extension services, provision of reliable markets for both agricultural and industrial products, and livestock keeping improvement by adopting the improved breeds or the diseases resistant breeds. Other prospects include sustainable utilization of forest products by adhering to the principles of forest conservation and management prescribed under various global climate change protocols. The Town Council also looks forward to improve the air transport services through expansion and improvement of the airstrip improving the air strip to facilitate regional and national connectivity and as well as tourist activities. Other prospective areas for improving the town's economy include the use of timber production to create a hub for home and office furnitures.

CHAPTER FOUR
EXISTING LAND USE

4.1 General overview

This chapter describes the distribution of land and its uses in supporting the welfare of the residents in Njombe Town. Analysis of the existing land uses also provide important information regarding land requirement for the next 20 years, basing on the projected population and the service needs including the physical and social infrastructures.

4.2 Land Use Types

Land uses of Njombe Town are categorized into residential, commercial, industrial, institutional, recreational, circulation system, agricultural, water bodies, public utilities, mining, forestry, and reserved areas. However, the dominant land use in Njombe Town is agricultural, specifically urban farming, which covers about 73.8 percent of the total area of the Town.

4.2.1 Residential Land Uses

Residential land use comprises planned and unplanned clusters. The tottal residential area is 36,457.6 hectares, which comprise approximately 11.4 percent of the total land of Njombe Town. The mapping of different land uses in Njombe Town shows that 34,574.6 hectares, approximately 10.8 percent of the total land are unplanned. The unplanned residential area is about 95 percent of the total residential area of the Town. Planned residential settlements are in the wards of Njombe Mjini, Ramadhani, and Mjimwema all of which form part of the CBD. Most of the informal settlements are in the town periphery, particularly in the wards of Kifanya, Luponde, Uwemba, Matola, lwungilo, ihanga, utalingolo, Makowo Yakobi and Lugenge.

4.3.3 Commercial Land Use

Njombe Town has various commercial activities, mostly concentrated in the CBD, particularly in the wards of Njombe Mjini, Ramadhani, and Mjimwema. In the other part of the twon, commercial activities are done along them major roads. The commercial areas occupy only 18.7 hectares, which are about 0.006 percent of the urban area.

4.2.3 Institutional Land Use

Njombe Town constitutes different types of institutions, ranging from health, education, religious as well as administrative. The institutions include both the privately owned as well as the governmently owned facilities The total land occupied by institutions in Njombe Town is 1024.6 hectares, which is approximately 0.32 percent of the total area of the Town.

4.2.4 Commercial-Residential Land use

Commercial-residential land uses cover an area of 43.3 hectares, which is about 0.014 percent of the total planning area. The commercial-residential land use is largely found in the CBD in the wards of NJjombe Mjini, Ramadhani, and Mjimwema.

4.2.5 Industrial Land Use

Njombe Town has different types of industries, which cover a total area of 1, 3000.4 hectares. The industries can be classified in terms of their sizes, such as small scale, medium, and large scale industries. There are four large scale industries, located in Ramadhani, Njombe Mjini, and Luponde Wards. The industrial land use covers approximately 0.4 percent of the total land use. The present total area allocated for industrial use is relatively small and insufficient given the importance of the sector in economic development of the Town, region, and nation at large. This Master Plan has proposed and designated an adequate land for industrial purpose in order to give the sector its due weight for advancing the nation’s economy.

4.2.6 Agricultural Land Use

Agriculture in Njombe Town is done along the periphery areas. Agricultural land uses include land utilized for commercial tree plantations, tea farming and also general urban agriculture which include farming of the various food and cash such as maize, potatoes, as well as fruits, vegetables and flowers. The agricultural area also includes areas used for livestock keeping and associated activities including grazing and dairy farming. The total area for agricultural land use is 250,059.9 hectares which are equivaled to 73.8 percent of the total land of Njombe Town. Out of the total area used for agricultural uses, the area covered by general urban agriculture is 237, 043.4 hectares (approximately 94.8 percent of the total agricultural land) while commercial tree plantations occupy 11,875.6 hectares, and tea plantations covers 1,140.9 hectares. The agricultural land uses are scattered almost all over the Town, with high concentration in periphery wards. For instance, the commerical tree plantations are largely found in Kifanya, Ihanga, Yakobi and Ramadhani Wards. The general agricultural uses including cultivation of maize, potatoes and horticulture is largely done in Uwemba, Luponde, Kitulila, Matola, Lugenge, Ihalula, and Utalingoro Wards. However, in relation to the general agricultural practices, some of the farms are located in valleys especially in built up areas which threaten the conservation efforts of river valleys.

4.2.7 Forest

Njombe Town has both natural and artificial forests. The area under forest is 5,128.2 hectares, which are approximately 1.5 percent of the total land. The natural forests are located at Kifanya, Uwemba, Luponde, Lugenge, and Matola Wards. Natural forests in Njombe are managed either by the central government and the Town authority. Out of the total forest areas, 626 hectares are reserved forest managed by the central government and 2,431 hectares are under the conservation authority of Njombe Town Council. The artificial forests are scattered in different wards all over the town, with the largest farm located in Ramadhani ward.

4.2.8 Open Spaces

The public open spaces in Njombe Town occupy a total area of about 6.6 hectares, which are approximately 0.002 percent of the total urban land. Open spaces include; football playing ground and parks. The open spaces are owned by the government, few are privately owned by individuals and institutions.

4.2.9 Circulation System

Land for internal circulation comprises all the existing roads in the town. These include the trunk road which traverses the town from Songea to Makambako with a total distance of 96.96 kilometers. Others are district roads which connect the town with the neighbouring districts as well as access roads to the settlement clusters. The total circulation area is 12,147.1 hectares which are approximately 3.78 percent of the total area of the Town. The general condition of the district and access roads is poor.

4.2.10 Mining Areas

Njombe Town, as with the Njome Region, is endowed with mineral deposits of various types including copper, iron ore, gold and managanese. Copper deposits are believed (as no exploration has been done to confirm) in Uliwa area at Ihungilo Ward. The areas are also believed to have gold deposits. A minining investor with a license from the Government had started to extract copper on an area of approximately 20 hectares at Uliwa, but forced to stop due to conlict between himself and the residents/owners of the land in the area regarding compensation matters.

Granite stones are also believed to be available in NyakamtweKware, where different construction materials including concrete, stones and sand is obtained. Other areas with mineral deposits include Ramadhani and Utalingolo Wards where investors have already indicated/requested for licences for gold mining. Uwemba is also believed to have copper and gold deposits; Matola has manganese, while Lugenge has Mangenese and iron. These areas with different mining resourses can be marked as potential areas for mining. Map xx shows the location of potential mining areas in Njombe Town.

4.2.10 Other Land uses

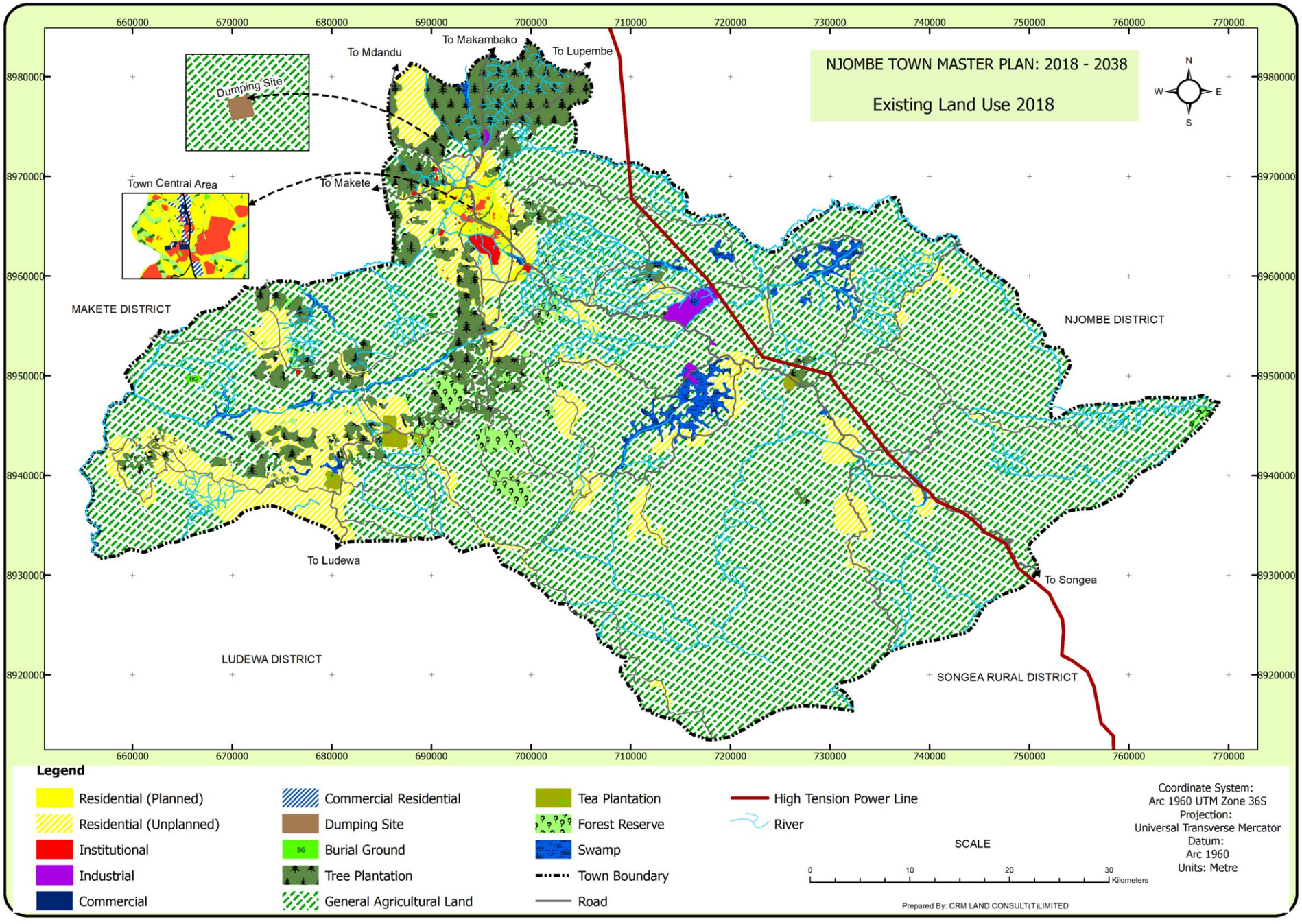
These include the airstrip, which covers an area of 83.9 hectares, dumping site, which occupies an area of about 1.7 hectares and cemetery with an area of 6.13 hectares. There are also water bodies including both permanent and seasonal rivers as well as dams. The permanent rivers include Ruhuji, Hagafilo, and Kiloza, which are the main sources of irrigation farming in Njombe Town.

Table 4.1 Summary of the Existing Land uses in Njombe Town

Land Use	Area in Hectares	Percentage
Residential Planned	1,883	0.586
Residential Unplanned	34,574.6	10.764
Institutional	1,024.6	0.319
Industrial	1,300.4	0.405
Commercial	18.7	0.006
Commercial residential	45.3	0.014
Dumping Site	1.7	0.001
Burial Ground	201.9	0.063
Tree Plantation	11,875.6	3.697
Agricultural Land	23,7043.4	73.799
Forest Reserve	5128.2	1.597
Open Space	6.6	0.002
Tea Plantation	1140.9	0.355
Swamp	6,368.3	1.983
High Tension Power Line	8,439.7	2.628
Circulation system	12,147.1	3.782
Total	**321,200.0**	**100.00**

Source: Field land use mapping, 2018

Map 4.1 Existing Land Use in Njombe Town



4.3 Land use at the CBD

According to the CBD Boundary obtained from the Njombe Town Council, the Town has a bipolar CBD, which is formed by the existing old commercial centre at the northen side of the CDB and the newly developing institutional centre at the southern part. The two centres are coordinated by Songea Road and few commercial residential plots on the North eastern side (Map 4.2). The old commercial centre part of the CBD comprises the wards of Ramadhani, Mjimwema, and Njombe Mjini. Dominant land uses are residential, commercial, commercial residential, open spaces, water bodies and urban agriculture. The CBD part comprising the newly developed administrative centre consist largely institutional land uses which include the Regional and Town headquartes. Other land uses are residential, commercial, commercial residential, open spaces, and conservatuion areas.

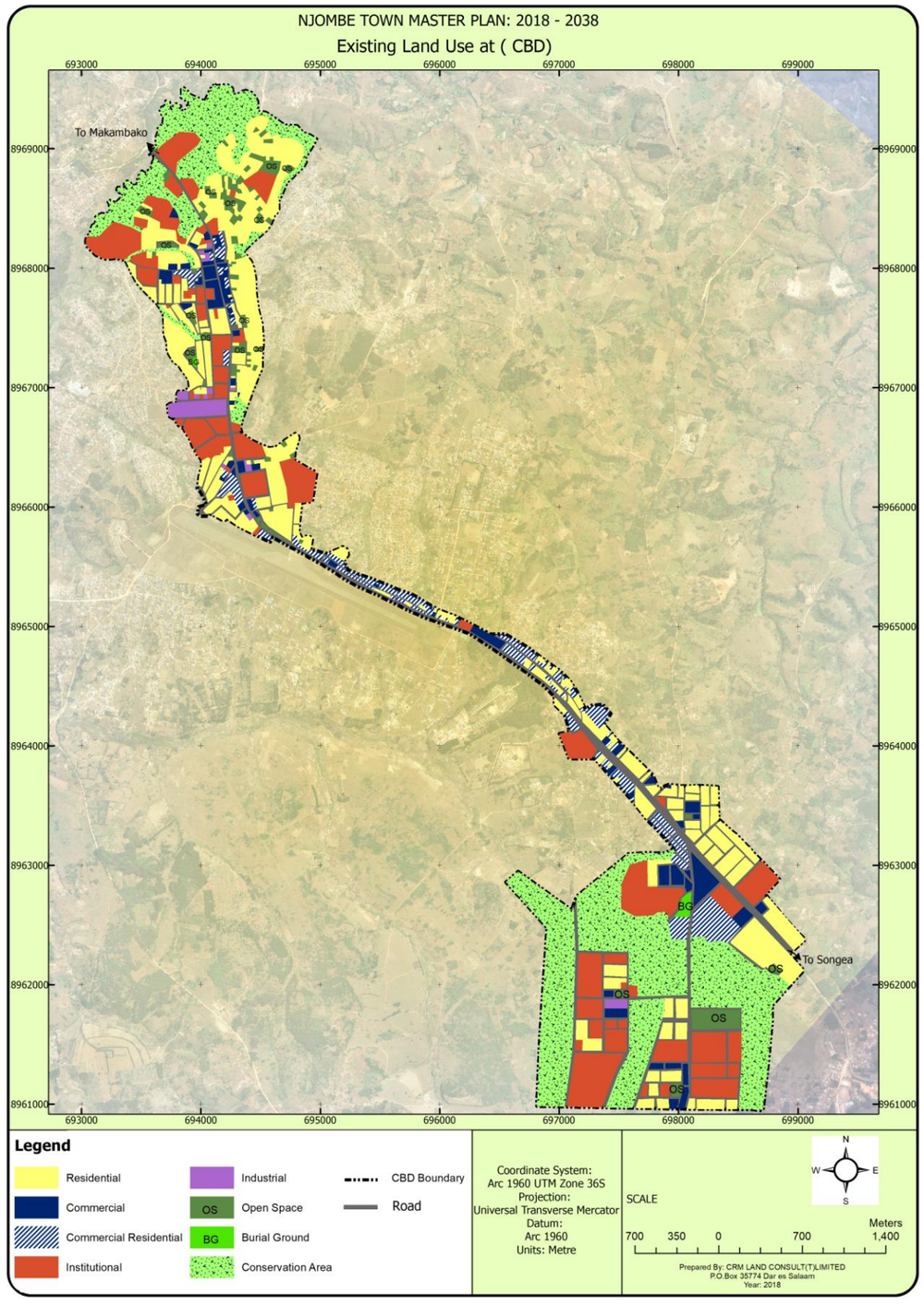
Conservation areas comprise the largest land use type which is 257.50 hectares, approximately 30 percent of the total CBD area. The conservation areas include the river valleys and swampy areas located at the CBD. Residential land uses are the second largest of all the land uses at the CBD comprising 207.04 hectares, which are about 24 percent of the total CBD area. The residential land uses include the the planned residential areas as wel as unplanned areas, which will need to be regularized. The unplanned residential land uses are found in the parts of the old commercial centre as the newly developing administrative centre is entirely planned. The third larget category of land use is institutional land covered by 167.40 hectares, which are about 19 percent of the total CBD area. Institutional land uses include the land occupied by the existing institutions as well as proposed new institutions. Other land uses include commercial residential, industrial, open spaces and play grounds, burial grounds, and circulation. Table 4.2 shows detailed distribution of the major landuses at Njombe CBD.

Table 4.2: Summary of existing land use at the CBD

Land Use	Area in Hectares	Percentage
Residential	207.04	23.93
Commercial	35.20	4.07
Commercial Residential	47.10	5.44
Institutional	167.40	19.35
Industrial	10.60	1.23
Open Space	27.60	3.19
Burial Ground	2.00	0.23
Conservation Area	257.50	29.76
Road	110.86	12.81
Total Area	**865.30**	**100.00**

Source: Field land use mapping, 2018

Map 4.2 Existing Land Use of Njombe Central Business District



CHAPTER FIVE
HOUSING AND RESIDENTIAL DEVELOPMENT

5.1 General overview

The housing industry in Njombe Town like many others areas in Tanzania is characterized by both planned and unplanned housing development through developers' self financing initiaties. There exisist various types as well as quality of housing in diferent parts of the Town. This chapter analyse the housing and residential development in Njombe Town by focusing on the housing situation, housing types, housing quantity, housing quality, occupancy characteristics as well as housing ownership. The chapter also looks at settlement development pattern and factors influencing the same so as to inform the proposals on land use development patterns in the envisaged Master Plan.

5.2 Housing situation

Housing development in Njombe Town can be classified into two categories namely; planned and unplanned. Planned housing is mostly at the central area. There are also mixed planned and unplanned housing development due to piece meal land development (Plate 5.1).

Plate 5.1 Formal and informal hosing development following Land form in areas surrounding the CBD

Houses in the unplanned areas are scattered, which are largely developed in the town peripheries. The informal development of houses in Njombe Town has to a larger extent been influenced by household's economic status and land utilization for agriculture. Most of these houses are largely developed along the roads (Plate 5.2)

Plate 5.2 Housing development along the rad to Luponde Ward in the peri-uban area

According to the social economic survey conducted in 2016, Njombe Town is dominated by three manor housing types, namely detached, semidetached, and row houses.

Detached houses: These are the most common type of houses, which are found in Njombe Town, occupying 60.2 percent of all houses. The majority of the detached houses are used for residential purposes, and few for institutional purpose, such as public offices. Detached types of houses are found in both the planned and the unplanned areas within the Town. Plate 5.3 shows an example of a detached house in Njombe Town.

Plate 5.3 Detached Residential houses in Njombe Town

Unlike in the urban areas, detached houses in peri-urban areas are scatted and are largely homestead (widely scattered house surrounded by farms) (Plate 5.4)

Plate 5.4 Detached house in Luponde peri-urban area

Semi detached houses: This type of houses occupies 39.2 percent of the houses available in Njombe Town as per the housing and socio-economic survey conducted in 2016. Detached houses are largely used for residential purposes and they are also found in both the planned and the unplanned areas with the Town (Plate 5.5).

Plate 5.5 Semi-detached house in Njombe Town

Row houses: According to the household socio-economic survey conducted in 2016, row houses constitute 0.6 of the houses in Njombe Town. Unlike the detached and semidetached houses, row houses are commonly used for public uses for instance; schools and others are used for residential purposes, such as staff quarters for public and private institutions. Table 5.1 provides a summary of different types of houses inNjombe Town.

Table 5.1 Housing Types in Njombe Town

House type	Number of houses	Percent
Detached houses	600	60.2
Semi detached houses	390	39.2
Row of house	6	0.6
Total	**996**	**100**

Source: Household Socio-economic Survey in Njombe Town, 2016

Traditional houses: there are also few traditional houses largely found in peri-urban areas like in Yakobi, and Matola Wards. Some of the traditional houses are found in some areas of Utalingolo Ward as well as in the unplanned settlements within the Central Business District.

5.3 Housing condition

The quality of houses in Njombe Town is determined by the type and the quality of building materials for floor, wall, and roof. In urban areas, most houses are generally in good condition with some variation in building materials and availability of basic services.

Floor material: From the socio-economic survey that was conducted in 2016, it was found out that 74.1 percent of the houses are constructed with cement as floor materials. Houses with sand and floor material constitute 25.6 percent while the rest, i.e., 0.2 percent have their floors made of tiles (Table 5.2).

Table 5.2 Housing Floor Material in Njombe Town

Materials	Number of houses	Percent
Cement	740	74.1
Sand	255	25.6
Tiles	2	0.2
Total	998	100

Source: Household Socio-economic survey in Njombe Town, 2016

Wall material: The common wall material used for houses in Njombe Town is burnt brick. Analysis of house hold data collected through socio-economic survey revealed that 69 percent of the houses in Njombe Town have burnt bricks as the house walling materials. This type of building material is dominant in both the planned and the unplanned areas. The second common type of wall material is un-burnt bricks, which constitute 30.3 percent. Mud and poles are also used as walling material by 0.6 percent the households, while 0.1 percent of the households used cement block as walling material (Table 5.3), mud and poles, unburnt and burnt bricks are mostly dominant in the unplanned areas, particularly in the periphery of the Town (Plate 5.7).

Table 5.3 Wall Material for Housing in Njombe Town

Materials	Number of households	Percent
Burnt bricks	689	69
Un-burnt bricks	302	30.3
Mud + poles	6	0.6
Cement blocks	1	0.1
Total	**998**	**100**

Source: Household Socio- economic survey in Njombe Town, 2016

Roof materials: The dominant roofing materials in Njombe Town are corrugated iron sheets. The household socio economic survey that was conducted revealed that 98.8 percent of the houses in Njombe Town are made of this particular type of building material. Houses roofed with corrugated iron sheets are found both in the planned and in the unplanned areas. Other roofing material used in the Town includes tiles, albeit in a small proportion (Table 5.4).

Table 5.4 Roofing Material for Housing in Njombe Town

Roofing materials	Number of households	Percent
Corrugated iron sheets	986	98.8
Roofing tiles	1	0.1
Thatch	7	0.7
Others	4	0.4
Total	**998**	**100**

Source: Household Socio-economic survey in Njombe Town, 2016

Plates 5.6 and 5.7 are examples of variations of housing conditions in parts of the urban and the peri-urban areas of Njombe Town respectively.

Plate 5.6 Variations of housing condition (extract from residential area in the central area)

Plate 5.7 Housing condition (extract) in the peri-urban area at Luponde Ward

The housing condition was also analysed by considering the physical accessibility of the houses or plots as well as the availability of the basic services, such as sanitation, water and energy supply. The analysis of the household social economic data revealed that 84.2 percent of the residential housing plots in Njombe Town are accessible by road. The analysis further revealed that 45.1 percent of the houses have pit latrines as a means of sanitation. In terms of utilities, 63 percent of the households interviewed have their houses connected with piped water supply.

5.6 Occupancy Characteristics

The average occupancy ratio in Njombe Town is 2.5 persons per habitable room, which is more than the national average that is 1.95 people per habitable room. Data collected through household socio economic survey revealed that 3.9 percent had an average of one person per room, 4.8 percent had households with 2 persons per room while 30.5 had 3 persons per room. The analysis further revealed that 21.7 percent of the households had 4 persons occupying one habitable room, while 31.6 percent had 5 persons per room and 7.3 percent had more than 6 persons per room (Figure 5.1).

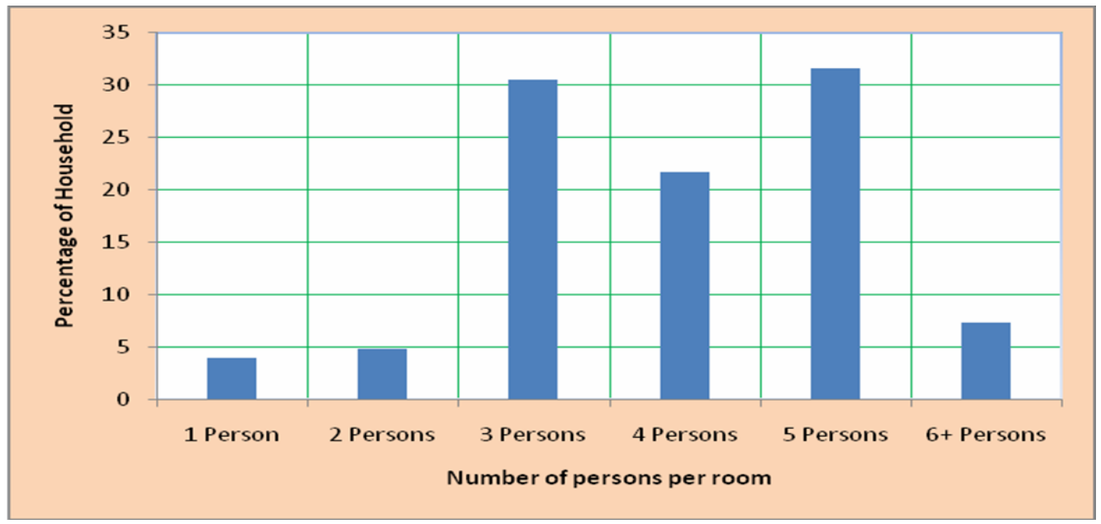


Figure 5.1 Occupancy Characteristics in Njombe Town
Source: Household socio-economic survey in Njombe Town, 2016

5.7 House Ownership

The analysis of the house ownership indicates that both tenancy as well as owner occupancy are the main categories of access to housing in Njombe Town. The analysis of data collected though household socio – economic survey shows that 87.9 percent of the households interviewed were owner occupiers, while 12.1 percent were tenants. Further analysis of the house ownership revealed that Mjimwema and Njombe Mjini Wards lead in terms of percentage of house owners, which was found to be 21.9 percent while Ramadhani Ward has more tenants, which accounts to 24.8 percent of all tenants in the Town.

5.8 Settlement Development Pattern

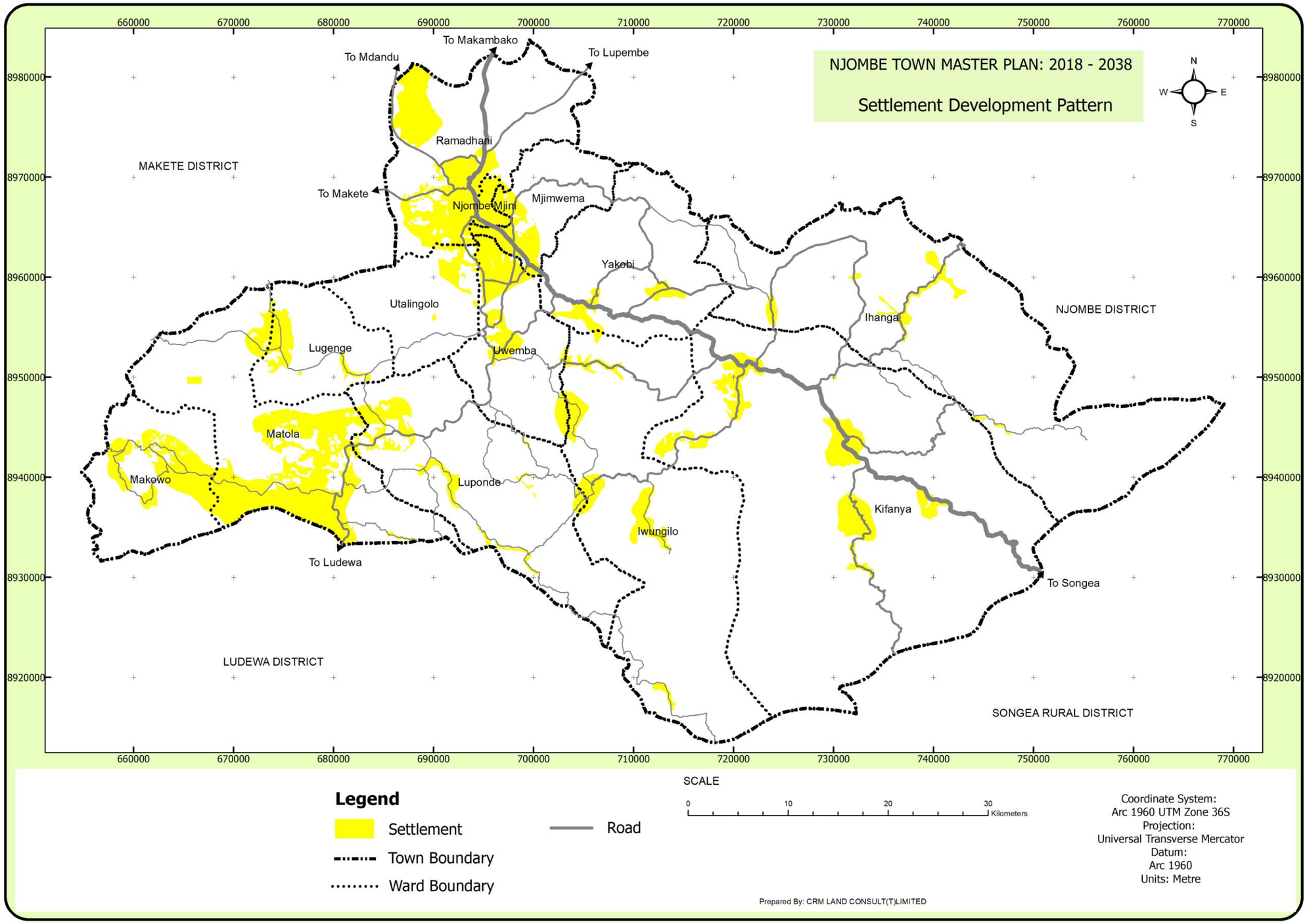
Njombe Town is characterized by mixed linear, radial or sprawl, and concentric settlements pattern (Map 5.1). Housing development pattern in the central area is conentric. The Central Business District has compact development with high concentration of commercial activities and community facilities. Residential houses and commercial activities are largely concentrated along the trunk road to Songea.

The peri urban areas of Njombe Town reveal sporadic development characterized with urban sprawl. Spatial development in the peri urban wards is characterized by scattered clusters of villages linearly situated along the main road from Dar es Salaam to Songea. The residential housing developments from the Town centre spread outwards in form of village clusters. The clusters are dense at the centre and spread outwards to the periphery with scattered and sparse housing development. The linkages between Njombe Town CBD and the rural hinterlands are determined by commercial, economic and administrative activities as well as the concentration of community facilities, such as education and health. Njombe Town serves as the central place, which supplies goods and services to the surrounding communities.

The settlement development pattern of Njombe Town has been largely influenced by topographical features, such as natural valleys, hills, and plateau as well as physical infrastructure specifically road networks, such as the district roads which connect Njombe to Songea, Makete, and Ludewa Districts. The soil fertility, existing forests as well as social services have also influenced the settlement development pattern of Njombe Town. For instance, the radial and concentric settlement development patterns are results of residents' attraction to settle near the fertile areas for agricultural purposes. The presence of large scale farms for food and cash crops as well as commercial tree plantation in differnet areas of the town has also influenced settlement development pattern.

Njombe Town as a whole, has 52 percent of its settlements development informally, i.e., with no plans, and the remaining 48 percent is planned. Land acquisition in Njombe Town is through both formal and informal processes. However, most people tend to acquire land informally because of various factors such as easy access and availability of plots in the informal areas as compared to the formal ones. The socio-economic data revealed that 48 percent of the people in Njombe Town proper have tile deeds while 52 percent do not have title deeds, reflecting the informality in settlement development and ownership of land by the majority.

Map 5.1 Njombe Town Settlement Development Pattern



CHAPTER SIX
SOCIAL AND COMMUNITY FACILITIES

6.1 General overview

This chapter provides analyses of social and community facilities in Njombe Town. The facilities and services analysed include education, health, recreation, and administrative. The facilities are analysed in terms of availability and distribution patterns so as to ascertain their sufficiency in relation to population needs as well as identifying gapswhich need planning interventions.

6.2 Education Facilities

Education facilities in Njombe Town can be grouped into five categories or levels, namely pre-primary (nursery) education, primary education, secondary education, and the colleges which include vocational training centres. Data collected from the Town Council Education Department shows that education facilities of different levels in Njombe Town are owned by the government or private individuals as well as institutions (Table 6.1). While the majority of the pre-primary and primary schools are owned by the government, ownership of secondary schools is both government and private. The nursery schools are located within the primary school compounds. However, the majority of the colleges and the vocational training centres are privately owned.

Table 6.1 The education facilities in Njombe Town

Facility	Public owned	Private Owned	Total
Nursery and Primary schools	65	6	71
Secondary schools	14	14	28
Colleges/vocational training centers	1	8	9
Total	**80**	**28**	**108**

Source: Education Department, Njombe Town Council, 2016

6.2.1 Preprimary and primary education

There are 71 primary schools in Njombe Town out of which 65 are owned by the government and 6 are under private ownership. An analysis of the spatial distribution by ward shows that Luponde and Ramadhani Wards are leading in terms of number of schools by having 9 schools each, followed by Mjini, Kifanya and Matola Wards each with seven schools. Yakobi Ward has only one primary school while Makowo Ward has three primary schools. While all wards have at least a government school, private schools are found only in the wards of Mjini, Mjimwema, Ramadhani, and Luponde Wards. It is understandable that the wards such as Mjini, Mjimwema, which form part of the CBD have many schools due to the number of population, which is also relatively high as compared to the wards on the periphery, surprisingly, a ward such as Kifanya, which has population of 9,011 and a large part of the area is used for agricultural activities has 7 schools while Ihanga Ward has only one primary school with a population of 5,095. Table 6.2 and Map 6.1 show the spatial Distribution of Primary School by ward in Njombe Town.

Table 6.2 Distribution of Primary School by Ward in Njombe Town

S/NO	Ward	Number of schools		
		Government Owned	Private Owned	Total
1	Njombe Mjini	6	1	7
2	Mjimwema	2	2	4
3	Ramadhani	7	2	9
4	Kifanya	7	0	7
5	Matola	7	0	7
6	Luponde	8	1	9
7	Uwemba	6	0	6
8	Utalingoro	4	0	4
9	Lugenge	5	0	5
10	Yakobi	1	0	1
11	Ihanga	5	0	5
12	Iwungilo	4	0	4
13	Makowo	3	0	3
	Total	**65**	**6**	**71**

Source: Education Department, Njombe Town Council, 2016

The number of primary schools in Njombe Town is equal to that of pre-primary schools because the education at nursery level is conducted within the compounds of primary schools, i.e. every primary school has a nursery school as per the government education policy. Map 6.1 shows the spatial distribution of Primary Schools in Njombe Town.

An analysis of pupils' enrolment for primary education indicates that for the past ten years, the number of students enrolled has been slightly decreasing from the year 2008 to 2012, increased in 2013 and decreased sharply in 2014. The trend increased again in 2015 (Figure 6.1).

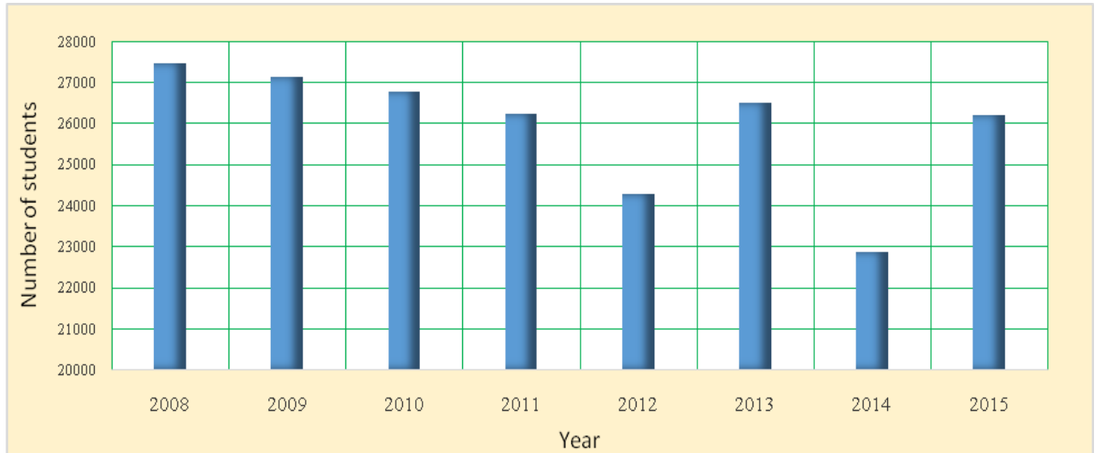


Figure 6.1 Pupils Enrollment in Primary Schools in Njombe Town, 2008-2015
Source: Education Department, Njombe Town council, 2016

Reasons for the fluctuating trend of enrolment (decrease-increase trend) may be attributed to student dropouts and decrease in enrolment. An analysis of the student enrolment by year of study shows that the number of students enrolled has also been decreasing as pupils move from one class/grade to another, suggesting that there have been drop outs from classes. Figure 6.2 shows enrolment of primary pupils by year of study.

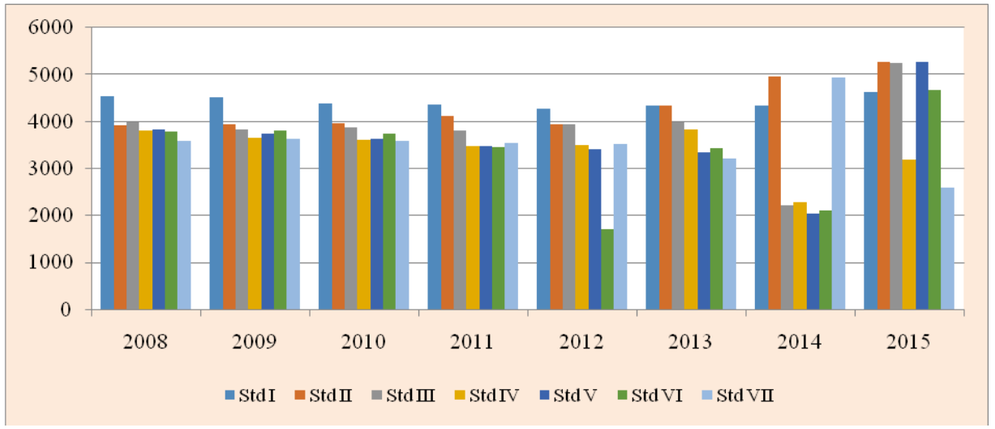
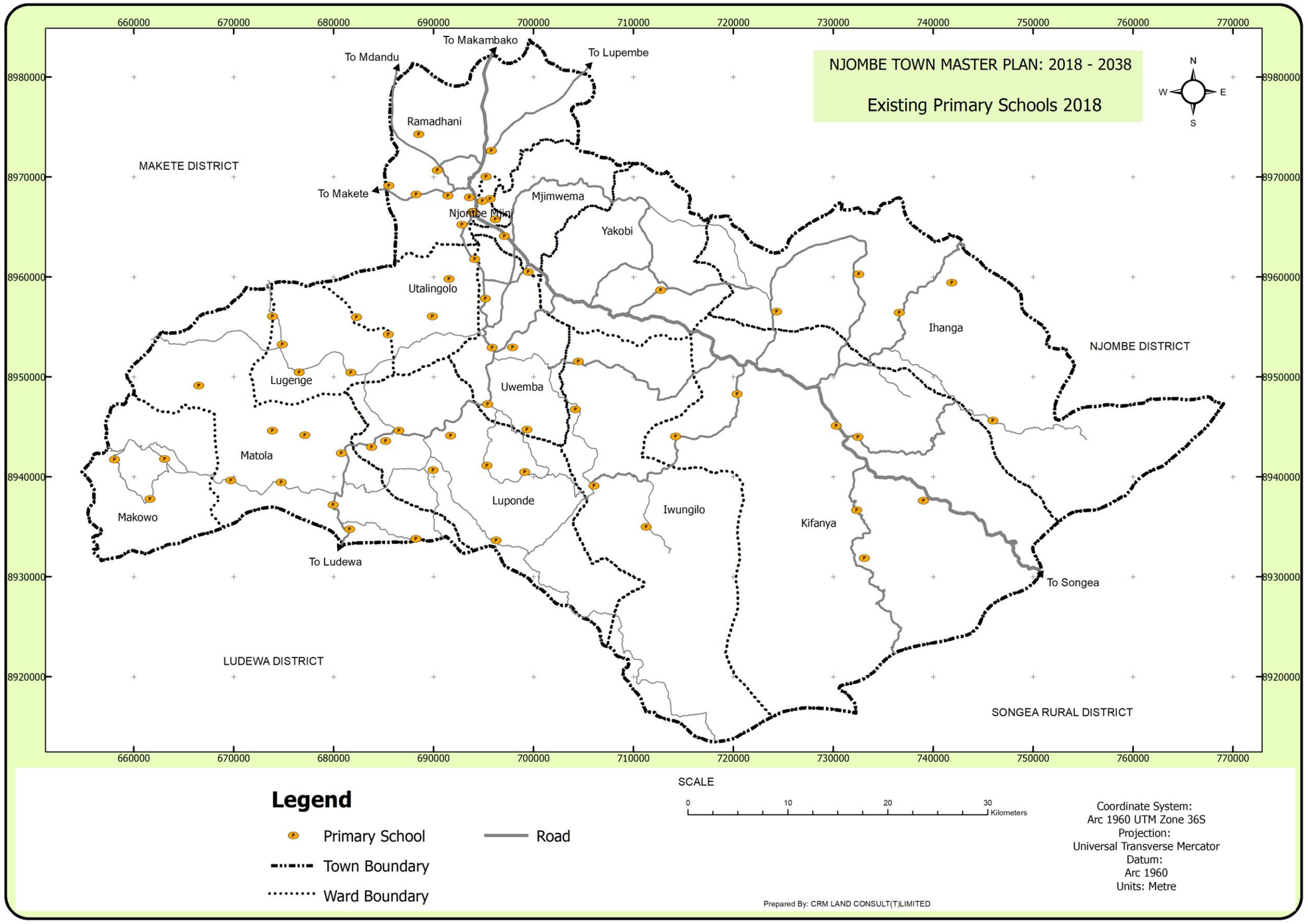


Figure 6.2 Primary Pupils' Enrolment by Year of Study, 2008-2015
Source: Njombe Town council, 2016

Map 6.1 Spatial Distribution of Primary Schools in Njombe Town



6.2.3 Secondary education

There is a total of 28 secondary schools in Njombe Town of which 14 schools are under public ownership and the other 14 are owned by private individuals and institutions. These secondary schools are located in different wards in Njombe Town with Njombe Mjini, Ramadhani and Mjimwema Wards having large proportion of the schools. Ihanga and Iwungilo Wards have three and two secondary schools respectively, while the wards outside the core CBD, including Utalingilo, Lugenge, Matola, Uwemba and Luponde have one secondary school each. However, Kifanya, Matola, Luponde, Utalingiro and Lugenge Wards have only private secondary school with no government owned secondary schools. Table 6.3 and Map 6.2 show distribution of secondary schools by ward in Njombe Town.

Table 6.3 Distribution of Secondary Schools by Ward in Njome Town, 2016

S/No	Ward	Number of schools		
		Government Owned	Private Owned	Total
1	Njombe Mjini	4	3	7
2	Mjimwema	1	4	5
3	Ramadhani	1	3	4
4	Kifanya	1	0	1
5	Matola	1	0	1
6	Luponde	1	0	1
7	Uwemba	1	1	2
8	Utalingoro	1	0	1
9	Lugenge	1	0	1
10	Ihanga	1	2	3
11	Iwungilo	1	1	2
	Total	**14**	**14**	**28**

Source: Education Department, Njombe Town Council, 2016

Analysis of data collected from the Council Education Department indicates that student enrolment in secondary schools in Njombe Town has been increasing from year to year. During the academic year 2015/2016, the total number of students enrolled was 6,660. The trend of students enrolled in the past 8 years is as indicated in Table 6.4.

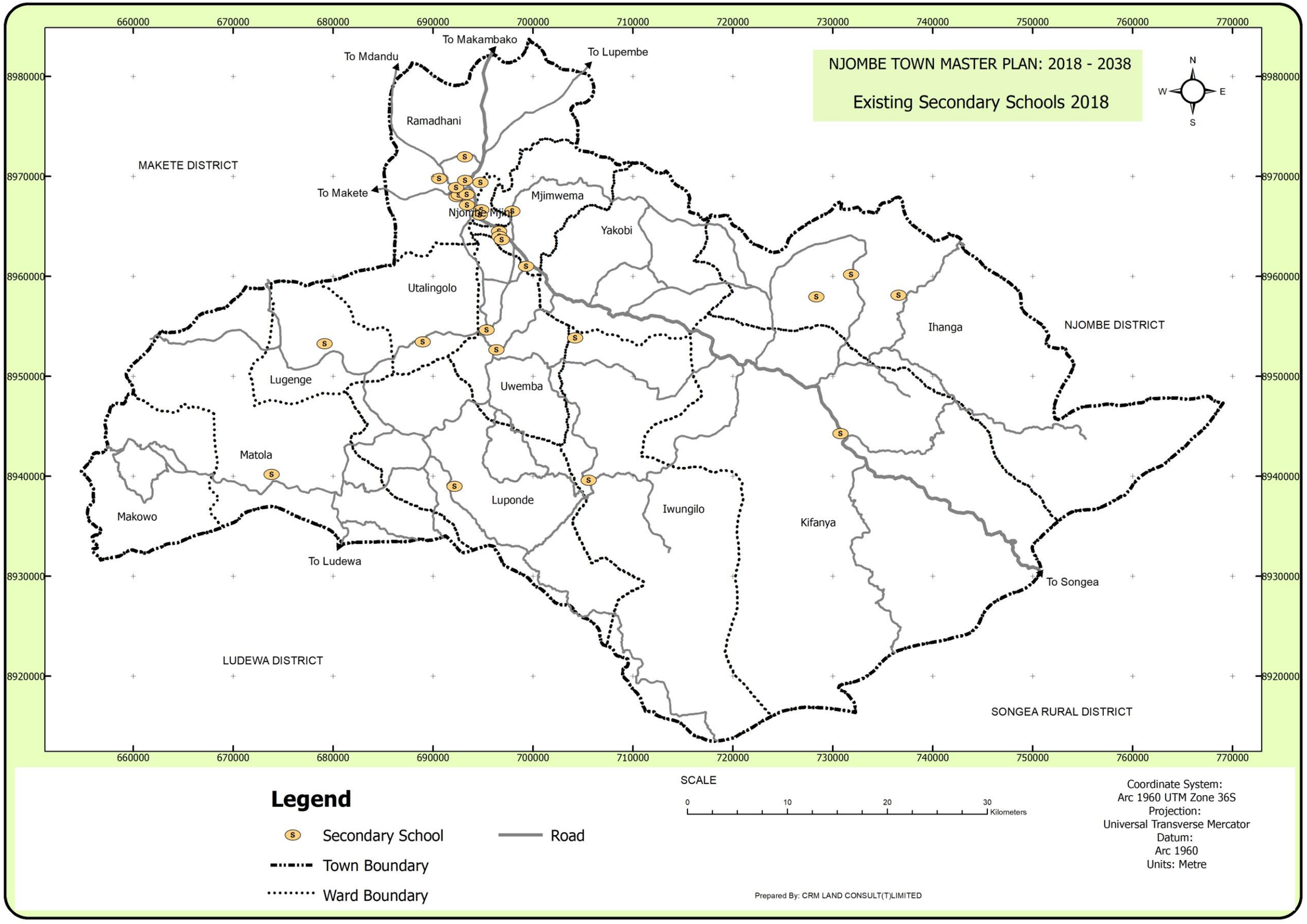
Table 6.4 Enrolment of Students in Secondary Schools, 2008/2009 - 2015/2016

Year	Form I	Form II	Form III	Form IV	Form V	Form VI	TOTAL
2008	1633	1512	1124	678	NIL	NIL	**4947**
2009	1887	1654	1230	133	584	519	**6007**
2010	1708	1796	1692	1336	616	577	**7725**
2011	1725	1874	1647	1355	602	482	**7685**
2012	729	823	838	700	70	62	**3222**
2013	1707	1850	1016	1332	588	483	**6976**
2014	1543	1677	1453	952	539	479	**6643**
2015	1611	1551	986	1280	603	629	**6660**
TOTAL	**4947**	**5904**	**6532**	**6601**	**3602**	**3231**	**30817**

Source: Education Department, Njombe Town Council, 2016.

Table 6.3 reveals that the number of students enrolled for secondary school education has been increasing in different years with the exception of the year 2011, which had a dramatic decrease of the number of students enrolled.

Map 6.2 Spatial Distribution of Secondary Schools in Njombe Town



6.2 Health Facilities

Health facilities in Njombe Town are categorized as hospitals, health center, dispensaries, pharmacies, mobile clinics, and health posts. In total there are 59 health facilities, which include 47 dispensaries, 10 health centres, and 2 hospitals distributed in different areas of Njombe Town (Map 6.3). The two hospitals are located in Ramadhani Ward. While 36 of the facilities are owned by the government, 23 are privately owned as indicated in Table 6.5.

Table 6.5 Health facilities in Njombe Town, 2016

Facility	Ownership		Total
	Government	Private	
Dispensary	31	16	47
Health Centre	4	6	10
Hospital	1	1	2
Total	36	23	49

Source: Health Department, Njombe Town Council, 2016

Further analysis of the health facilities at a level of dispensary shows that Njombe Mjini Ward leads by having seven dispensaries followed by Matola, Yakobi, and Kifanya Wards, each has five dispensaries. Makowo, Luegenge, Utalingilo and Mjimwema Wards have two dispensaries each (Table 6.6). The number and distribution of dispensaries suffice the existing situation as per the population requirements and the government health policy.

Table 6.6 Distribution of Dispensary Facilities by Ward in Njombe Town, 2016

S/NO	Ward	Ownership		Total
		Government	Private	
1	Njombe Mjini	4	3	**7**
2	Mjimwema	2	0	**2**
3	Ramadhani	4	0	**4**
4	Luponde	3	1	**4**
5	Matola	0	5	**5**
6	Utalingolo	0	2	**2**
7	Iwungilo	3	0	**3**
8	Uwemba	3	0	**3**
9	Yakobi	0	5	**5**
10	Kifanya	5	0	**5**
11	Lugenge	2	0	**2**
12	Ihanga	3	0	**3**
13	Makowo	2	0	**2**
Total		31	16	**47**

Source: *Source: GIS Mappin in Njombe Town, 2016*

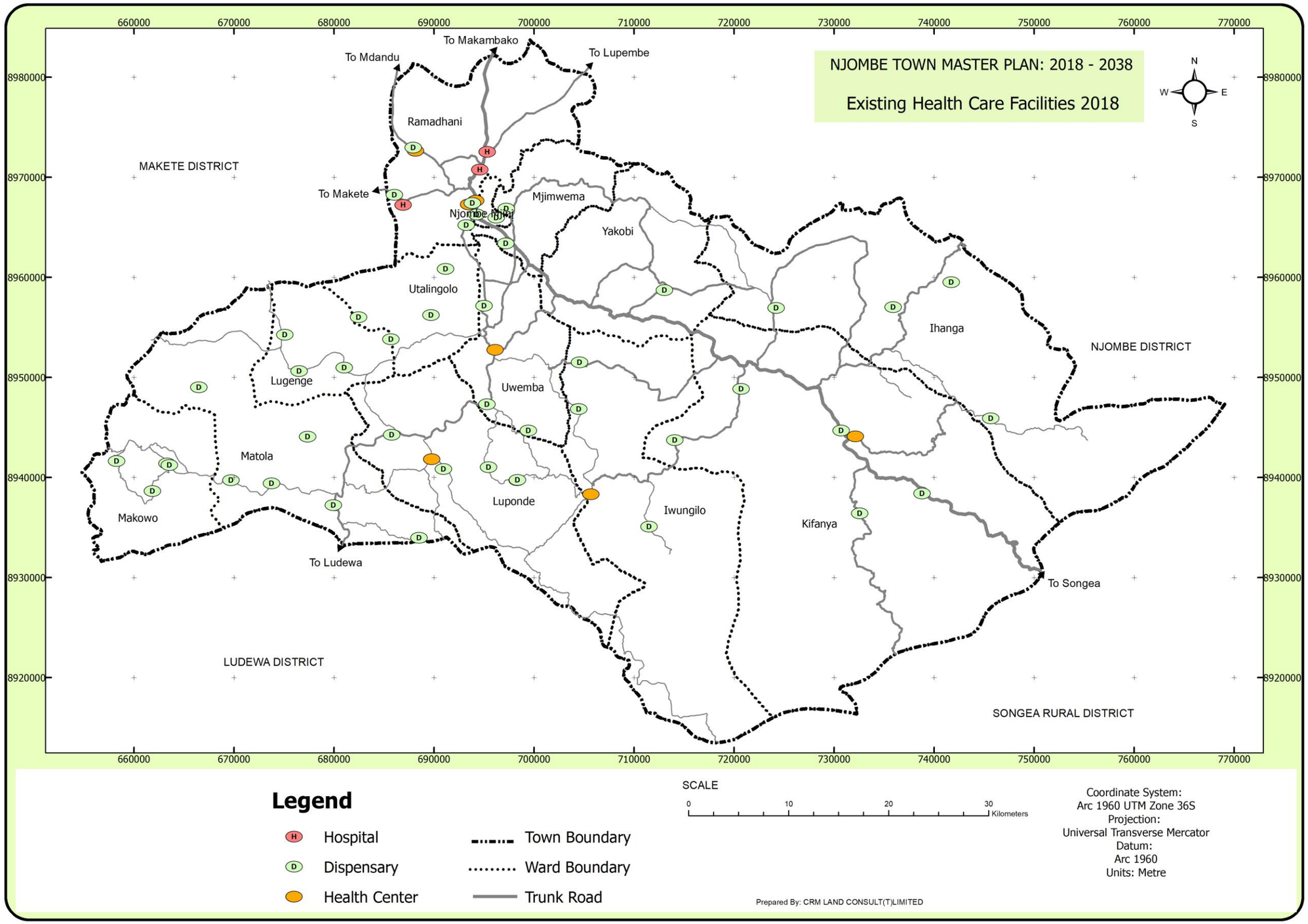
Detailed analysis of the number and distribution of health facilities shows spatial disparity in distribution of health centres. While Njombe Mjini and Mjimwema wards have two dispensaries, Utalingolo, Uwemba, Kifanya, Lugenge, and Ihanga wards have one dispensary each (Table 6.7). Ramadhani, Luponde, Iwungilo, Makowo and Yakobi have no health centres. This is contrary to the national requirenment for location of health centres in each administrative ward.

Table 6.7 Distribution of Health Centres by Ward in Njombe Town

S/NO	Ward	Ownership		Total
		Government	Private	
1	Njombe Mjini	1	1	**2**
2	Mjimwema	0	2	**2**
3	Ramadhani	0	0	**0**
4	Luponde	0	0	**0**
5	Matola	0	1	**1**
6	Utalingolo	0	0	**0**
7	Iwungilo	1	0	**1**
8	Uwemba	1	0	**1**
9	Yakobi	0	0	**0**
10	Kifanya	0	1	**1**
11	Lugenge	0	1	**1**
12	Ihanga	1	0	**1**
13	Makowo	0	0	**0**
Total		4	6	**10**

Source: GIS Mapping in Njombe Town, 2016

Map 6.3 Spatial Distribution of Health Facilities in Njombe Town



6.4 Administrative facilities

Administrative facilities available in Njombe Town include the Regional headquarter, the District Head Quarter, the Town Council offices, wards offices, villages' offices and sub-ward offices. While the regional and district headquarters offices as well as the Town Council office are located at the town centre, other administrative facilities are located in their respective wards, mitaa and villages.

The administrative facilities, especially at the level of ward and sub ward are facing challenges of space and location. It was observed that some ward offices are operating from rental houses. Therefore, the envisaged Master Plan should consider this and allocate land for public administrative facilities. Other administrative/social and community facilities such as court, police station, banks and the like are also present in Njombe Town as indicated in Map 6.4.

6.5 Recreational facilities

Njombe Town has various recreation facilities, including open spaces, garden/parks and community halls. There are 17 open spaces available in Njombe Town, 3 of them are located at the CBD, 3 at Kibena, 4 at Mjimwema, 3 at Kambarage and 4 open space are located are located at Lunyanyu. The open spaces are managed by the Town Council.

The Town has also a total of 19 parks, which are distributed into different locations. Five parks are located at Lunyanyu, two parks are located at kambarage and one park is situated at Mjimwema. Others are located in Ramadhani (three), Kibena (three), Nundu (two) and Magoda (three).

Plate 6.1 The CBD Park in Njombe Town

The community halls in Njombe Town are located in different wards, including Ramadani (three), Kibena (one) and Njombe Mjini (three). All the community halls are privately owned but they cater for the entire community.

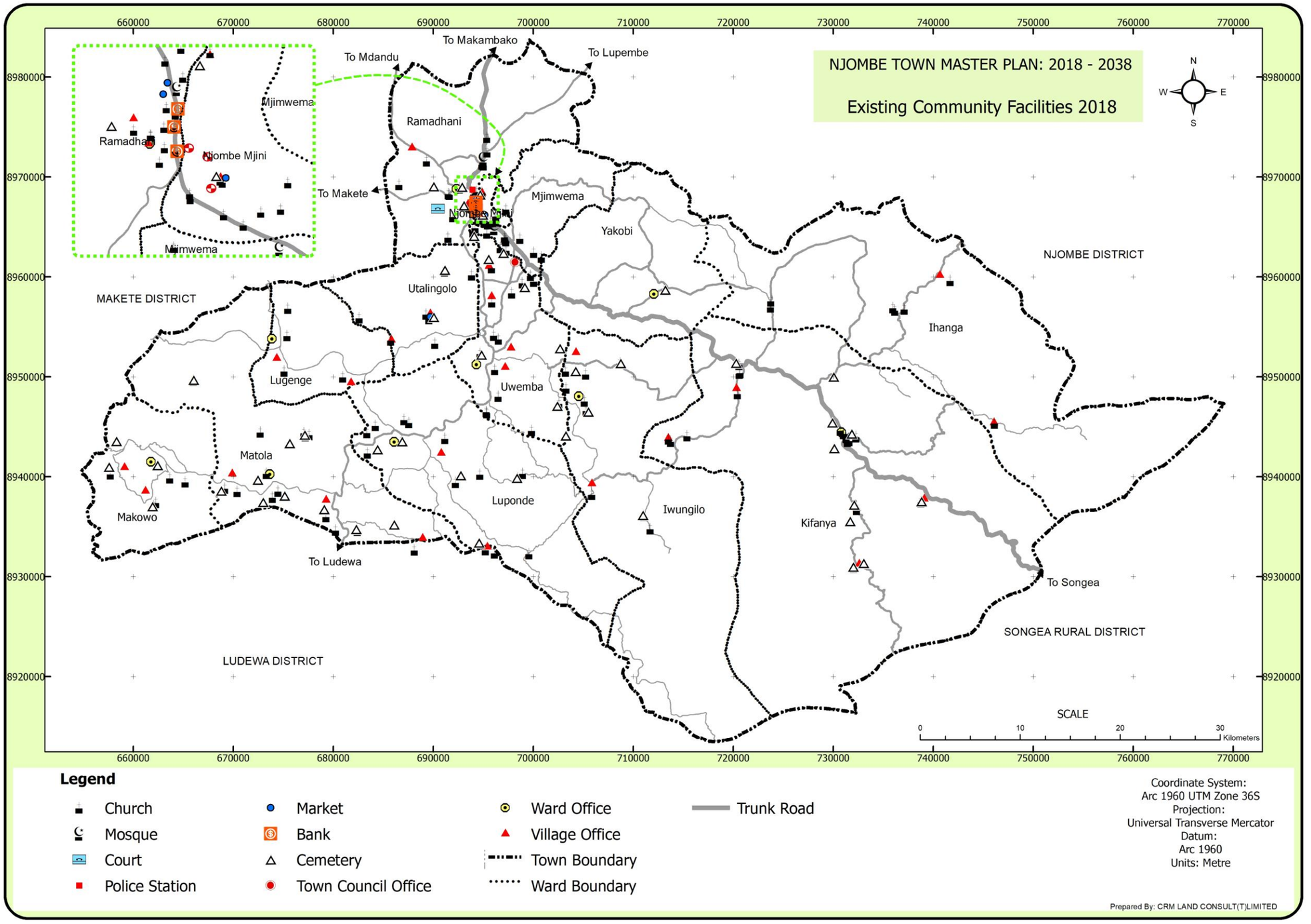
6.6 Burial Facilities

Njombe Town has 4 cemetery sites located at Mjimwema, Ramadhani, Kihesa, and Mgendela. However, at present residents use the cemetery site located at Mjimwema as other sites are full. In order to overcome the shortage, the Town Council have proposed three new areas for cemeteries. These are located in Nundu 15 acres), Itulike (20 acreas) area and Ramadhani (30 acres)

6.7 Religious facilities

In Njombe there are various religious facilities most of them are situated along the roads and within the residential areas.

Map 6.4 Existing Community Facilities in Njombe Town



CHAPTER SEVEN
PUBLIC UTILITIES

7.1 Introduction

Public utilities are important components of a master plan for any town. Alignment of public utilities depends to a large extent, on the existing land uses and is informed and informs the Master Plan proposals. This Chapter presents the analysis of the existing public utilities in Njombe Town. The basic service infrastructures in Njombe Town include water supply, wastewater collection and conveyance network; storm water drainage channels.

7.2 Water Supply

7.2.1 Water Sources and Distribution

Njombe Town is mainly supplied by spring sources which are managed by Njombe Urban Water Supply and Sanitation Authority (NJUWASA) and the Town Council Water Department. NJUWASA is responsible to serve 3 wards (Ramadhani, Mji mwema and Njombe Mjini) of the CBD while the Water Department is responsible for the rest 10 wards of the peri-urban. However, there are other potentially identified spring sources which have not been fully developed and utilized. NJUWASA has five spring water sources, namely Magoda (plate 7.1), Wikichi, Lunyanywi, Kibena, and Nyenga. Most of the schemes rely on gravity except one with variable capacities as indicated in Table 7.1.

Table 7.1 NJUWASA Water Sources and their details

	Name of source	Type of water distribution scheme	Design capacity (m3/d)	Production capacity (m3/d)
1	Magoda	Gravity	2500	1500
2	Wikichi	Gravity	600	400
3	Lunyanywi	Gravity	300	200
4	Kibena	Pumped		384
5	Nyenga	Gravity	1900	1800

Source: NJUWASA, 2018

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Plate 7.1: Selected NJUWASA water source intake at Magoda

Plate 7.2 Selected NJUWASA water source intakes at Nyenga

Plate 7.1 and 7.2 show selected NJUWASA water source intake at Magoda and at Nyenga respectively. The Town has about 35 springs operating and potential water sources. However, the most organized water schemes that are managed by Community Water User Ossociations (COWSO) are indicated in Table 7.2. Most of the water schemes are gravitational through pipes.

Table 7.2 Water schemes managed by COWSO serving the peri urban area in Njombe Town

S/No	Name of Project	Name of Villages Served by Project	Technology	Number of Public WPs	Number of Private Connections
1	Igoma-Iwungilo	Igoma and Iwungilo	Gravity	44	-
2	Lilombwi	Lilombwi	Gravity	11	-
3	Yakobi	Yakobi	Gravity	20	-
4	Boimanda	Boimanda	Gravity	32	-
5	Mbega	Mbega	Gravity	15	-
6	Iboya	Iboya	Gravity	15	-
7	Mamongolo	Mamongolo	Gravity	33	-
8	Nundu	Nundu	Gravity	20	-
9	Igominyi	Igominyi	Gravity	20	8
10	Limage	Limage	Gravity	15	15
11	Igola	Igola	Gravity	18	-
12	Ng'elamo	Ng'elamo	Gravity	21	-
13	Mfereke	Mfereke	Gravity	18	-
14	Makowo	Makowo	Gravity	10	-
15	Mtila	Mtila	Gravity	23	-
16	Matola	Matola	Gravity	44	-
17	Kifanya	Kifanya	Gravity	56	-
18	Miva	Luponde	Gravity	25	-
19	Liwengi	Kifanya	Gravity	15	-
20	Mgala	Ihanga	Gravity	5	-
21	Peruhanda	Macula and Mpobota	Gravity	13	-

Source: Njombe Town Water Department, 2018

7.2.2 Water Distribution

The distribution system used by NJUWASA is branched with one route from each source to distribution tanks located at different points. The distribution network is estimated to cover a total length of 41.86 kilometeres. The main pipeline is made of DI, PVC and HDPE materials ranging from DN 80 to DN200 millimeters. The system consists of a main pipe from the intake routing directly to the distribution tank thereafter branching to various user points.

Specifically water from Magoda source gravitates to the town through DN 200 PVC pipes to the storage tanks at Chaugingi and central Bus-Stand area. From these tanks water is distributed to a large part of the Town Centre. From Wikichi source water gravitates through DN 150 and 100 uPVC pipes to storage tanks at Ramadhani A and B. Large amount of water from this source feeds Ramadhani neighbourhoods. Water from Lunyanyu spring gravitates to the Town through DN 100 uPVC pipe to the storage tanks at Mjimwema A and B. From Mjimwema tanks water is distributed to Mjimwema and part of the airport areas. From Kibena Howard stream water is pumped to Kibena tank and supplied to Kibena regional hospital, nursing school and Kibena neighbourhoods. From Nyenga source water gravitates to the town through DN 225 mm HDPE pipes to the storage tanks at Nazareth and water is distributed through DN 160 mmHDPE connect to Magoda gravity main (existing) of DN 225mm uPVC pipes. Since the supplied water does not meet demands it is distributed by rationing. Total lengths of the gravity and distribution pipes are 49 and 91.644 km respectively.

The NJUWASA water supply is installed with meters. About 80 percent of the customers are metered. The charges of the rest are collected based on set flat rates (Table 7.3). Public stand pipes under the community Water Schemes in the peri urban areas are not metered. However, private connections are metered.

Table 7.3 Water metering and status in Njombe CBD, 2018

S/N	Water meter	Number of Customers
1	Number of metered customers	5336
2	Number of customers on flat rate	1297
3	Number of disconnected customers	665
4	Current active customers	5968
5	Domestic customers	6414
6	Commercial customers	109
7	Institution customers	110
Total number of customers		6633

Source: NJUWASA, 2018

The water distribution in the community scheme monitored by the Town water department covers the distance from the intakes to the tank and then to the public water stands and private connections. Communities through the COWSO have established a mechanism for revenue collection. The existing supply network for the urban areas consists of about 13 storage tanks and main pipelines of different sizes ranging from diameters of 37.5 to 75 millimeteres. The in-door connection covers less than 10 percent of the existing households.

7.2.3 Water coverage and water losses

Water supply coverage in the CBD (served by NJUWASA) is estimated to be 53 percent and the coverage in the peri urban area (served by the water department) is about 51 percent. However, it is expected that after completion of the ongoing construction of water schemes the coverage will be 80 percent.

The Non Revenue water (NRW) accounts for 30 percent in the three wards of the CBD served by NJUWASA. This is caused by two factors, either physical or commercial losses. The physical losses are caused by leakages in the water supply networks specifically through pipe breakages, losses in valves and other appurtenances. However, the authority is implementing various measures to reduce physical losses including timely leakage repairs and installation of ball valves in storage tanks to reduce the wastage of overflows. On the other hand, commercial losses involve the losses arising from illegal connection, faulty and adjusted meters.

7.2.4 Water Quality and Treatment

Water supply by NJUWASA is usually chlorinated to improve it quality before being distributed to the consumers. Water in the community schemes is not treated. Household treatment is encouraged. NJUWASA does the water quality monitoring once every month for some few selected parameters, (mainly physical parameters such as pH, turbidity, conductivity etc), and quarterly for all the important parameters (including chemical and biological parameters). The quality of spring water is affected by the anthropogenic activities upstream. Thus, it is necessary to monitor and take appropriate preventive and remedial actions against any water source pollution.

7.2.5 Water Consumption and Demand

Water consumption is categorized under domestic, institutional, gardening, and agricultural. Domestic consumption is the most significant, accounting for more than 60 percent of the total demand.

Water demand for the CBD (areas supplied by NJUWASA) is 8,914 cubic meters per day (m^3/d) but quality supplied is about 5,550 cubic meters per day (m^3/d) only. Water demand for the peri urban areas is estimated to be about 5, 8649 cubic meters per day (m^3/d). However, the actual water supplied in the peri urban areas is not estimated.

Table 7.4 List of Water storage and their capacities as managed by NJUWASA

S/N	Tank ID/Name	Capacity in M^3	Location	Status
1	Bus stand	90	Town centre	Good
2	Kihesa A	45	Kihesa area	Good
3	Kihesa B	50		
4	Ramadhani A	45	Ramadhani	Fair
5	Ramadhani B	90		
6	Kibena	90	Kibena area	Good
7	Matalawe	45	Matalawe area	Fair
8	Mjimwema A	45	Mjimwema	Good
9	Mjimwema B	25		
10	Chaugingi	90	Chaugingi	Fair
11	Joshoni	25	Joshoni	Fair
12	Nazareth	135	Nazareth Pr School	Very good
13	Airport	135	Airport area	Very good
14	Magereza	135	Kambarage area	Very good
Total		1045		

Source: Site visit and NJUWASA, 2018

7.2.6 Water Storage

The CBD which is under NJUWASA management has 14 storage tanks distributed in different locations. The details of the storage tanks, including their location and capacities are as indicated in Table 7.4.

The conditions of the tanks are generally good, although some were observed to deteriorate in quality. In order to ensure adequate supply of water of residents, construction of 4 new water storage tanks is in progress.

7.2.4 Water Storage

In Njombe Town, there are 13 water storage tanks with capacity ranging from 25 cubic meters to 150 cubic meters. Table 7.5 shows names of the water storage tanks, their capacity, and locations.

Table 7.5 List of Water Storage and their Capacities managed by Njombe Water Department

No	Tank ID/Name	Capacity M^3	Location	Status
1	Peruhanda tank	25	Madati	Good
2	Nundu tank	150	Nundu	Good
3	Limage tank	50	Nundu A	Good
4	Igominyi tank	50	Igominyi	Fair
5	Ngalanga	50	Ngalanga/Utengule	Fair
6	Lilombwi tank	75	Kibena area	Good
7	Liwengi tank	25	Matalawe area	Fair
8	Kifanya tank	75	Mjimwema	Good
9	Yakobi tank	50	Yakobi	Good
10	Ng'elamo tank	25	Ng'elamo Primary School	Good
11	Makowo tank	50	Makowo	Good
12	Mtila tank	50	Mtila centre	Fair
13	Igoma tank	50	Igoma/iwungiro	Good

Source: NJUWASA, 2018

7.2.6 Future plans on water management

The Njombe Urban Water Supply Authority (NJUWASA) is planning to expand and improve its supply in the CBD and outside the area to cover more wards that are currently not covered. This plan was decided and designed in the year 2011. It is not yet implemented due to lack of funds. In the design it is proposed to establish a regional block to include the areas that were not previously covered including the regional hospital. However, a review of the plan and design is needed when funds for implementation will be available.

There is also a design proposal to tap water from Hegafilo River (Plate 7.3), which will include a water intake, treatment plant and distribution lines. The design capacity of the scheme is 13,605 cubic meters per day. It is expected that this will meet the current water demand.

The treatment plant is conventional and it is to be installed on the secured area (compensation has already been done) of 12 hectares (Plate 74.) with four storage tanks (two tanks each of 2,500cubic meters, another 100cubic meters and the last 250 cubic meters).

Plate 7.4 Proposed water sources at Hagafilo River

Plate 7.3: Secured area for water treatment plant Wastewater Management

7.3.1 Wastewater generation

Major wastewater sources include domestic, institutional, and industrial activities. In Njombe Town, there are no major industrial activities done in the town. Therefore, the main source of wastewater generation is domestic activities. Njombe Town (including the urban area) does not have a central sewer; however, there is a plan to construct one in the near future.

7.3.2 Wastewater containment and disposal

Due to the fact that there is no central sewerage system in Njombe Town, residents use on the site sanitation systems for excreta disposal. Pit latrines, septic tanks and VIP latrines are facilities commonly

used. The household survey revealed that 90 percent of the interviewed use toilets and 70 percent out of this use pit latrines. The distribution of the toilets is as shown in Table 7.6. There is a big disparity between urban and rural sanitation. About 72 percent of those interviewed use pit latrines (mostly in rural areas). The remaining 4.9 percent of those questioned use VIP (mostly urban area) and 0.6 percent of use open defecation (in rural areas). Emptying of septic tanks is through the use of trucks. Disposal of wastewater emptied from septic tanks is uncontrolled and unregulated because there are no waste water treatment plant or oxidation ponds. There is therefore an alarming danger of ground and surface water pollution. It is also a menace to the urban environmental aesthetics.

The management of the sanitation sub-sector goes in hand with the water supply, i.e., NJUWASA and the Town Council Environment and Health Department (TCEHD). NJUWASA is responsible to manage the urban sanitation while TCEHD is responsible for the peri urban and rural sanitation.

Table 7.6 Coverage of toilets in Njombe Town by Ward

Wards	Total Number of Households	Total Number of Households with	Percent of Households	Total Number of Households	Percent of Households Without Toilet
Njombe Mjini	7703	7611	98.8	92	1.2
Mjimwema	4374	4243	97.0	131	3.0
Ramadhani	6031	5892	97.7	139	2.3
Kifanya	2597	1852	71.3	745	28.7
Ihanga	1503	1334	88.8	169	11.2
Yokobi	1723	1288	74.7	435	25.2
Umwemba	2853	2434	85.3	419	14.7
Luponde	2394	1808	75.5	586	24.5
Matola	2837	2327	82.0	510	18.0
Makowo	1065	1015	95.3	50	4.7
Lugenge	2003	1603	80.0	400	20.0
Utalingolo	1638	1280	78.6	358	21.9
Iwingilo	2434	1838	75.5	596	24.5
Total	39155	34525	88.2	4,630	11.8

Source: NJUWASA and TCEHD, 2018

7.3.3 Future plans on wastewater management

The township through NJUWASA is planning to construct a sewerage network to manage the wastewater in the CBD. An area with 12 hectares (Plate 7.4 and Plate 7.5) for wastewater treatment plant has been acquired (compensation has already been done) from the council. Other paper works regarding the type of treatment system to be installed have not yet started but are in the pipeline.

Plate 7.5 The secured area for construction of sewage treatment plant

7.4 Storm Water Management

Both natural and constructed channels serve for drainage of the town with the natural ones being pre dominant in the peri urban and constructed dominant in the CBD. The constructed channels are both trapezoidal and rectangular in shape. The general drainage condition is influenced by the topography and is considered fairly adequate.

7.5 Solid Waste Management

The Town Solid Waste (MSW) consists of all the waste generated from residential areas, such as domestic waste, plastics, paper bags, glass pieces, and paints. It is estimated that urban households generate 0.5kg of solid waste per capita per day. At this rate, the urban population generates 55 – 60 tonnes of solid waste per day or over 12,265 tonnes per year. The amount of solid waste collected in the CBD is 80 percent of the generated solid waste. The town solid waste does not cover the remaining wards outside the CBD and there is no private engagement in solid waste management. Solid waste at households and other generators is put in sacks and containers and put outside the houses where the municipal owned trucks collect them. There is no segregation of waste at all. The town has only one (1) truck for solid waste collection and disposal to the dump site. The truck is capable of collecting and

transferring about 40 tonnes per day but it collects and transfers about 75 percent only of its capacity. This is because there is no compactor for increasing the volume capacity of the truck. There are two solid waste collections and dumping sites systems, i.e., commercial collection points and in door collection system.

About 10 solid waste collection points are available at different commercial areas, 8 of them are located at Njombe Mjini ward and two are located at Mjimwema Ward. Commercial collection points include the Sokoni area, Posta kati and Kihesa area. The collection charge is Tsh. 200/= per business unit each day of collection except restaurants, guest houses, and Lodge as shown in Table 7.7.

Table 7.7 Solid waste charges collection system

S/NO	Type/Sources	Charge Rate (Tsh)
1	Restaurant Lodge & Hotel	25,000 per month
2	Guest houses (6-10 rooms)	6,000 per month
	Guest houses (More than 10 rooms	15,000 per month
3	Commercial areas	200 per personnel per day

Source: Site visit and Njombe Town Council, 2018

7.5.1 Solid waste in the peri-urban areas

Solid waste management in rural areas is not the issue of great concern to people either because they have adequate land space for disposal, lack of awareness or un-availability of management infrastructure. Some residents dump waste in borrow pits. This waste dumping pit presents physical hazard threat following non-technical planning criteria. It also presents environmental and air pollution from the sell and leachate that obviously end up polluting groundwater.

7.5.2 Waste transportation

Waste collection from both residential and commercial areas is transported by using a truck to the dumping site located at Ramadhani Ward. The collection and transportation route is not organized. The poorly organized collection and transportation route cause over-stay of collected wastes at the few collection points. This in turn causes overflow of heaps of waste at the points making them environmentally hazardous and poor aesthetics. Third Master Plan will propose better modalities for the collection and transportation of solid waste.

Plate 7.5 Open dumping site at Njombe Town
Source: Site visit, 2018

Njombe Town Council owns a solid waste disposal facility located at Ramadhani Ward, about 5 kilometers from the urban area. It serves all the wards in the urban area. All waste collected at transfer stations are ferried to this dump site by the Town Council solid waste truck. Deposition is open dumping, with waste exposed to all weather conditions, see Plate 7.4. There is no solid waste separation done either at collection or at dumping site. The dump site provided with a guard house and fencing to ensure security and avoid encroachment of human activities. Bad smell was a serious problem noted in the site visit. The dumping site is 2.5 hectares. The present capacity of the dump site is adequate for the Towns' generate waste.

7.6 Energy Supply

The Town's energy sources include firewood, charcoal, hydro and thermal electrical power. Other sources are solar energy, kerosene, diesel, and petrol. Electricity is produced and supplied by the Tanzania Electricity Supply Company (TANESCO). Tanganyika Wattle Company Ltd, Roman Catholic Mission of Uwemba, Mavanga, Lugarawa, Matembwe and the Lutheran Mission at Bulongwa have own sources of electricity. The Rural Energy Agency (REA) has distributed electricity form the hydro power projects (LUMAMA) at Lupande, Mawengi and Madunda. Currently the electricity power demand for the Town stands at 5 Mega Watts (MW), whereas 2MW are required for domestic use and 3 Mega Watts (MW) is for industrial purposes. The power available is currently sufficient.

Firewood and charcoal are also sources of energy used by a large proportion of the people of the Town; both urban and rural households. Fossil fuel, such as kerosene is used for lighting mostly in rural areas. Solar energy is used by the minority in the Town. According to the socio-economic survey conducted in 2015, 75 percent of the households use charcoal and 10 percent use firewood for cooking. The analysis further showed that 11 percent of the households use kerosene, 2 percent use electricity, and the other 2 percent use solar energy for lighting (Figure 7.1).

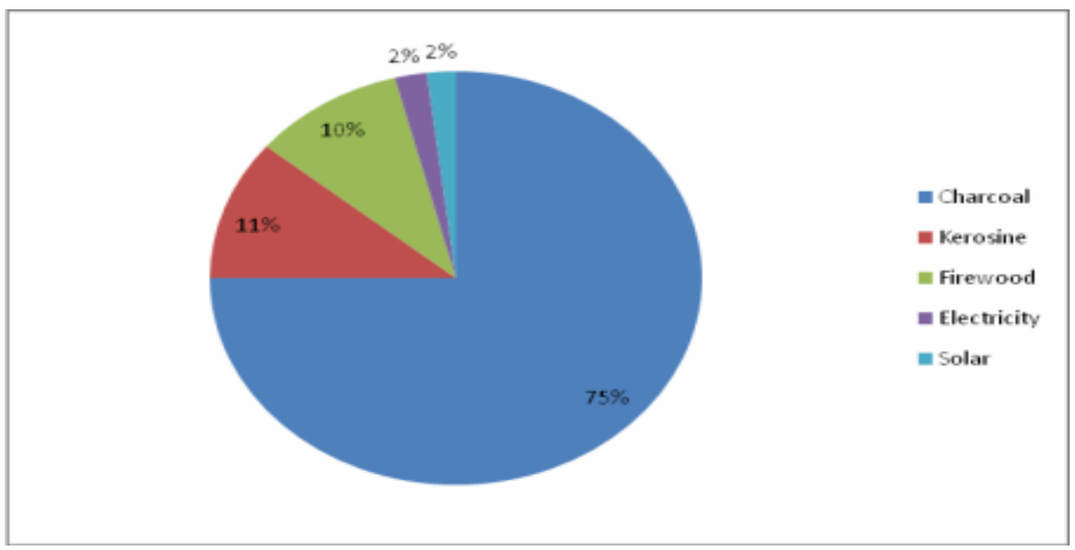
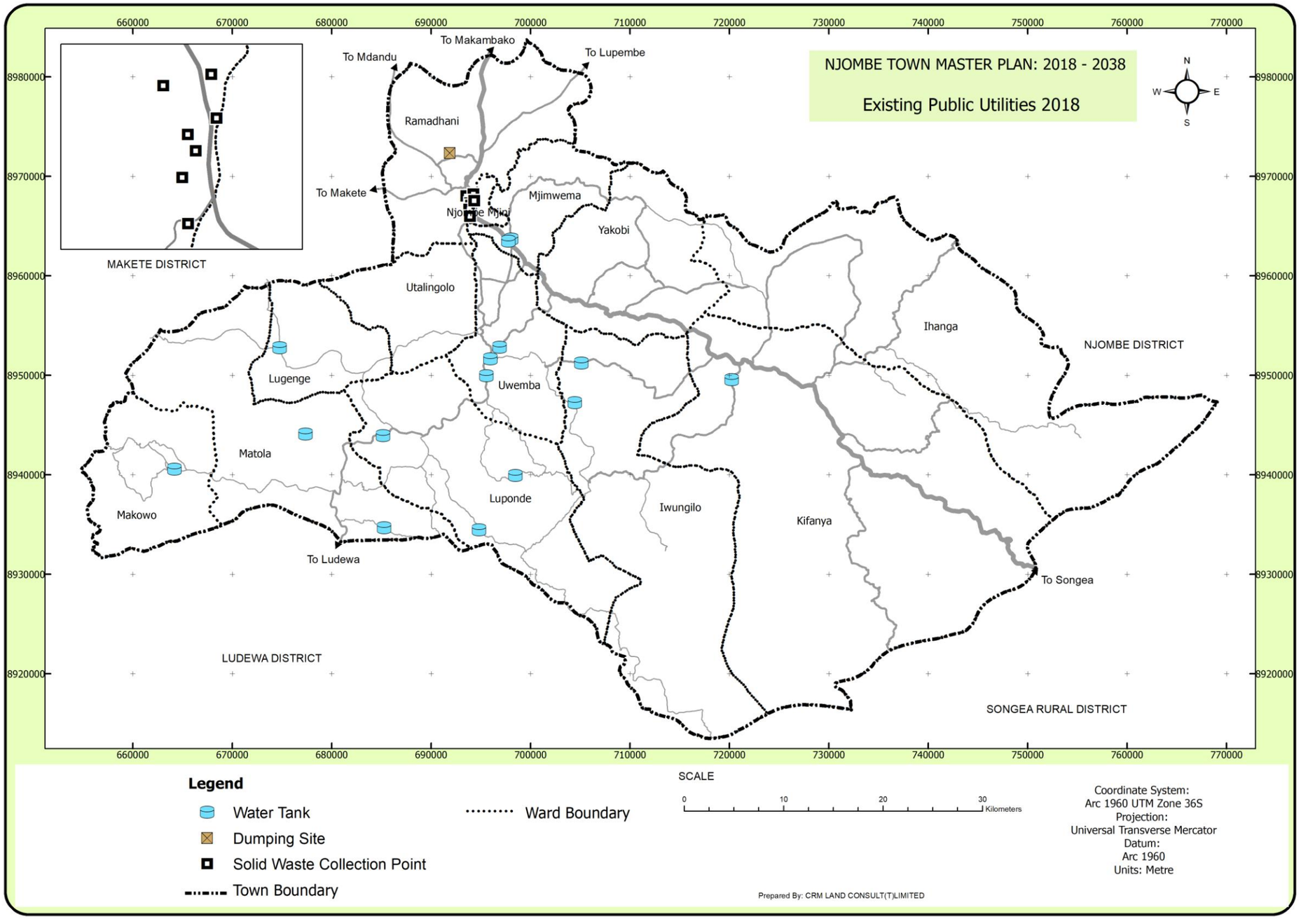


Figure 7.1 Household energy sources in Njombe Town
Source: Socio-economic survey in Njombe Town, 2016

Map 7.1 Spatial Distribution of Public utilities in Njombe Town



CHAPTER EIGHT
TRANSPORT, TRANSPORTATION AND COMMUNICATION

8.1 Introduction

Transport and communication infrastructure facilities are vital for social, physical and economic development of an area. It provides an enabling environment for settlement expansion and investment opportunities.

This chapter analyses and discuss existing transportation infrastructure in Njombe Town. The infrastructures discussed include road transport systems, air transport, and telecommunication. Road traasport systems entail analysis of road networks, road condition as well as parking facilities

8.2 Road Transport System

Njombe is a transit town to the neighboring towns and centres including Songea and Makambako due to its location. Moreover, the Town connects the Njombe Region with the neighbouring regions of Mbeya, Iringa as well as other regions such as Dar es Salaam through road transport. The regional bus terminal, which connects to different regions is located in Njombe Town. However, there is no reliable internal public transport system as most of the business and mini buses are inter-district and inter region. Local public transport is characterized by motorcycles, bajaj, and taxi which do not effectively facilitate mass transportation.

Most areas in the Central Business District are covered by tamac roads while large parts in the peri–urban areas are not adequately accessible and transportation of goods and services is difficult. Most community facilities such as education, health and administrative facilities are poorly accessible in thed peri-urban areas and in “urban villages” due to limited provision of road network and means of transport.

8.2.1 Road Network

Njombe is relatively well connected with transportation facilities and road network. The Town is well linked by roads to the rest of the region and other parts of the country. Major road links which exist include the following:

i. Njombe–Makambako – Dar es Salaam Road, linking with the Tanzania Zambia Highway. This is a trunk road, which links the Town with other regions as well as neighboring countries. The road is tarmacked and it is passable throughout the year;
ii. Njombe–Ludewa Road, linking the Town with south western part of the Njombe Region. This is a district distributor road, which links the town with Ludewa District. The road is a gravel road, passable throughout the year, although there are some sections which are passable with difficulties during the rainy season; and
iii. Njombe – Songea – Mbinga – Mbamba – Bay Road. This is a trunk, which links the Town the Songea Region. It is tarmacked and it is passable year round.
iv. Njombe-Makete-Mbeya Road. This is a district distributor road which links the Town with Mbinga and Songea Districts

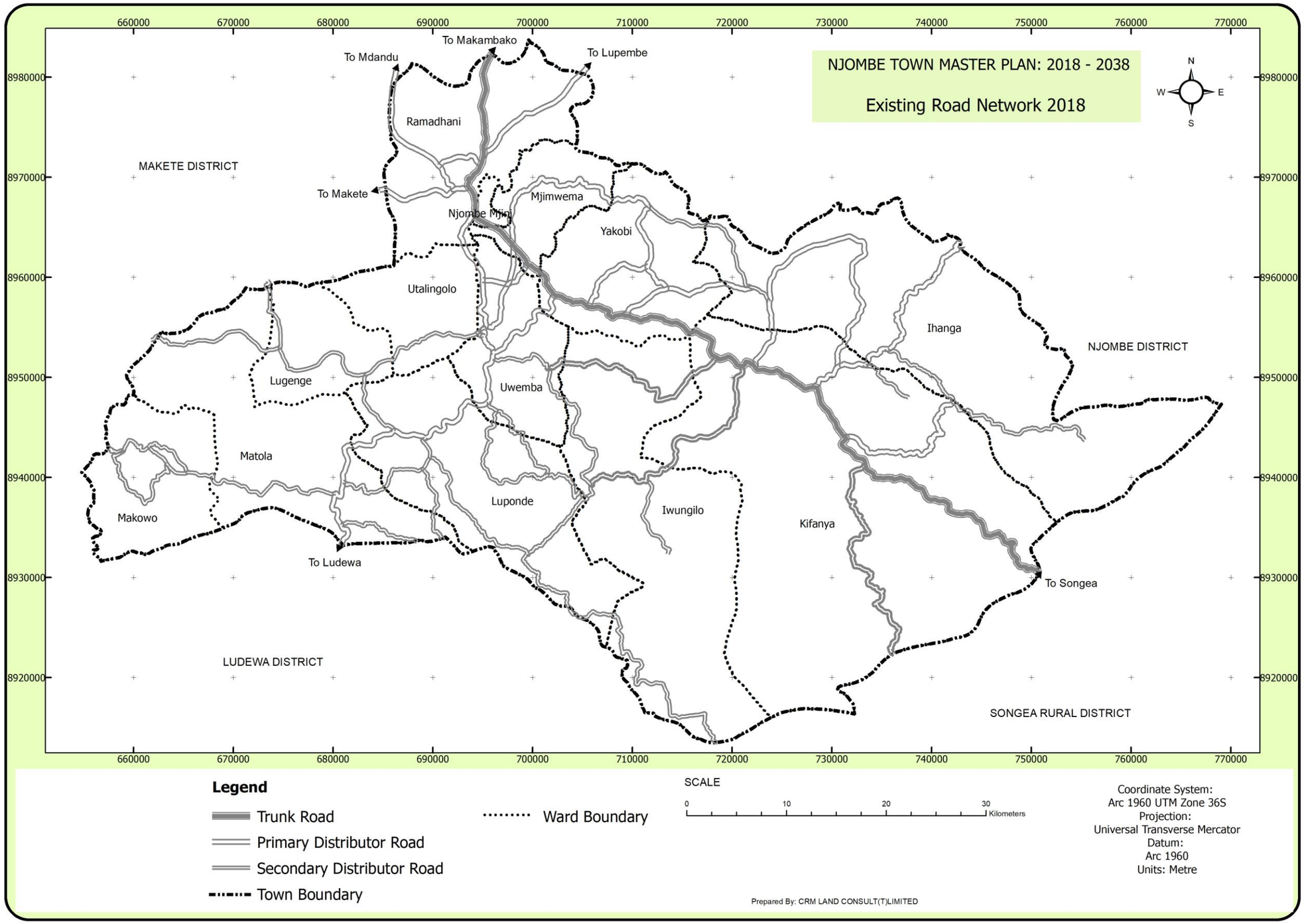
Regardless of the different types of roads which connect the town and neighbouring countries, regions and towns, roads within Njombe Town can be put into three categories as indicated in Table 8.1. The overall road network is shown in Map 8.1.

Table 8.1 Summary of road classes, surface, and condition in Njombe Town

Parameter	Characteristic	Total length (km)
Class	District Road	600
	Feeder Road	241.00
	Urban	407.00
Type of road surface	Earth	66.00
	Gravel	182.
	Paved	-
Road condition	Good	80.00
	Fair	729.00
	Poor	439.00
	Bad	-

Source: Works Department, Njombe Town Council, 2016

Map 8.1 The Road Network in Njombe Town, 2018



8.2.2 Road Classification

Road transportation is the major mode of transportation for people and goods within and outside Njombe Town. The road network is composed of trunk, district, feeder, and urban roads. The District roads constitute the large proportion of all the roads which is 35.6 percent, followed by urban roads (27.8 percent) feeder roads (26.3 percent) and last trunk and regional roads (10.2 percent).

The Town has a total of 1465 kilometres of roads. Large proportion of the road network is situated at the urban core in the wards of Njombe Mjini, Ramadhani and Mjimwema. Njombe Mjini ward has a total of 430 km (29.4 percent) of the entire road network followed by Mjimwema, which has 137 km (9.4 percent) and Ramadhani 130km (8.9 percent), Kifanya 124km (8.5 percent) and Luponde 120km (8.2 percent). Ihanga ward has the shortest length of road network, which is 40 kilometres (2.7 percent). Table 8.2 gives a summary of road classification and their distribution in different wards of Njombe Town.

Table 8.2 Road classification by ward in Njombe Town

Ward	Length (Km)						Percent of Total Road
	Trunk	Regional	District	Feeder	Urban	Total	
Njombe Town	5	0	82	63	280	430	29.4
Mjimwema	2	-	37	28	70	137	9.4
Ramadhani		5	41	30	57	130	8.9
Yakobi	34	-	37	19	-	90	6.1
Kifanya	39	-	48	37	-	124	8.5
Ihanga	-	-	23	17	-	40	2.7
Iwungilo	-	8	45	35	-	88	6.0
Luponde	-	33	48	37	-	120	8.2
Matola	-	4	39	29	-	73	5.0
Makowo	-	-	25	19	-	44	3.0
Lugenge	--		26	20	-	46	3.1
Uwemba	-	20	29	20	-	69	4.7
Utalingolo	-		42	32	-	74	5.1
Total	**80**	**70**	**522**	**386**	**407**	**1465**	

Works Department, Njombe-Town Council, 2016

8.2.3 Road Condition

The inventory of road condition in Njombe Town shows that large proportion of the roads is earth surfaced, accounting for 76 percent. Only 5.6 percent of all roads are tarmacked and the remaining 18.4 percent are of gravel surface. The roads with tarmac surface are in the Town centre in the wards of Njombe Town, Ramadhani and Mjimwema as well as wards of Yakobi and Kifanya. The rest of the wards have earth and gravel roads. Table 8.3 shows distribution of the different road surfaces and their coverage in different wards of Njombe Town.

Table 8.3 Distribution of Road Surfaces in Njombe Town

Ward	Type of Surface (Km)			Total (Km)
	Tarmac	Gravel	Earth	
Njombe Town	7	30	178	215
Mjimwema	2	14	80	96
Ramadhani	12	17	88	105
Yakobi	22	13	71	118
Kifanya	39	19	105	163
Ihanga		10	48	58
Iwungilo		25	99	124
Luponde		54	105	159
Matola		20	84	104
Makowo		10	54	64
Lugenge		10	56	66
Uwemba		30	56	86
Utalingolo		16	91	107
Total	**82**	**268**	**1115**	**1465**

Works Department, Njombe-Town Council, 2016

The fact that a large part of the Town is covered by earth type of road surface suggests that during rainy seasons most parts of the Town are not accessible. This was noted in the road condition inventory that only 24 percent of the total road network is passable throughout the year while 66 percent are partly passable during the relatively low rainy seasons, and the remaining 10 percent are not passable most of the year even during dry seasons (Table 8.4). This hinders transportation of goods and services as well s access to commercial, administrative, social and community facilities is impaired. The situation

adversely affects the communities living in those areas in terms of social services and overall economic growth and urban development.

Table 8.4 Road Passability in Njombe Town

Ward	Road length in Kilometres				Percentage
	Total Road	Passable	Passablea	Not passable	
NjombeTown	215	37	155	23	89
Mjimwema	96	16	70	10	90
Ramadhani	105	17	76	12	89
Yakobi	118	47	62	9	92
Kifanya	163	58	92	13	92
Ihanga	58	10	40	8	86
Iwungilo	124	25	86	13	90
Luponde	159	54	92	13	92
Matola	104	20	73	11	89
Makowo	64	10	47	7	89
Lugenge	66	10	49	7	89
Uwemba	86	30	49	7	92
Utalingolo	107	16	79	12	89
Total	**1465**	**350**	**970**	**145**	**90**

Source: Field susrvey and Works Department, Njombe-Town Council, 2016

Apart from poor condition of most of the roads in Njombe Town, there is a lack of storm water drainage system in most of the local distributor roads and in all access roads. Storm water drainage systems are provided in the trunk roads, i.e., Makambako – Njombe road, Njombe – Songea road and in the district roads (NJombe – Ludewa and Njombe – Makete roads). Table 8.5 shows the distribution of different road hierarchy and their status in terms of surface condition.

Table 8.5 Existing road type and surface condition in Njombe Town

Road hierarchy	Name	Carriageway	Road Surface and condition
Trunk road	Makambako-Njombe	8m	Tarmacroad_Good
Trunk road	Njombe-Songea	8m	Tarmacroad_Fair
District distributor	Njombe-Ludewa	7m	Earthroad_Good
District distributor	Njombe-Makete	7m	Tarmacroad_Good
Local distributor	Kwivaha	5m	Tarmacroad_Good
Local distributor	Chaugingi	6m	Earthroad_Fair
Localdistributor	Njoss	6m	Earthroad_Fair
Localdistributor	Uzunguni	6m	Earthroad_Fair
Localdistributor	Msikitini	6m	Tarmacroad_Good
Localdistributor	Halmashauri	6m	Earthroad_Fair
Localdistributor	Airport	6m	Earthroad_Good
Localdistributor	Kihesa	6m	Earthroad_Fair
Localdistributor	NMB	6m	Earthroad_Bad
Localdistributor	Matola	5m	Earthroad_Bad
Accessroad	Kigamboni	3m	Earthroad_Fair
Accessroad	MjimwemaPrSch	4m	Earthroad_Fair
Footpath	Stand-Tanesco	2.5	Pavement_Good

Source: Field susrvey and Works Department, Njombe-Town Council, 2016

8.3 Households Travel Pattern

The thirteen wards in Njombe Town are connected to each other and they depend to each other in different activities. However, majority of household trips are made within the respective wards, i.e., trip origin and destination occur in the same ward and thus they are termed as in ward trips or internal trips.

8.3.1 Trip Origin and Destination

Analysis of the travel characteristics in the thirteen wards revealed that the majority of the trips are generated from the Njombe Mjini Ward followed by Yakobi Ward andMji Mwema Ward (Figure 8.1).

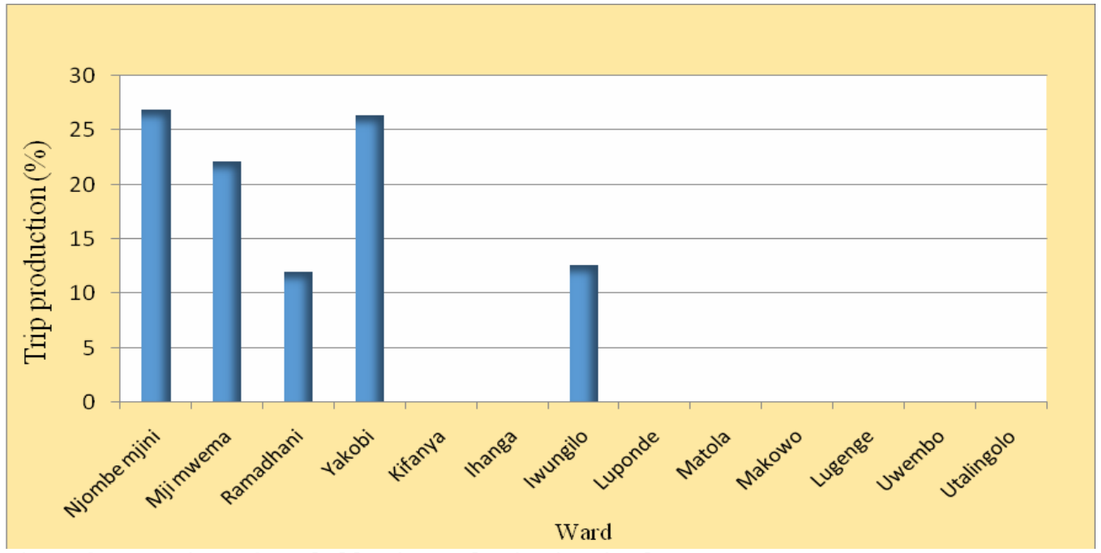


Figure 8.1 HouFigure 8. 1sehold Trip Production in Njombe Town
Source: Household Socio-Economic Survey, 2016

The majority of trips area attracted in Njombe Mjini Ward that attracts 25 percent of all the trips per day, followed by Matola Ward, Kifanya and Ramadhani Wards (Figure 8.2).

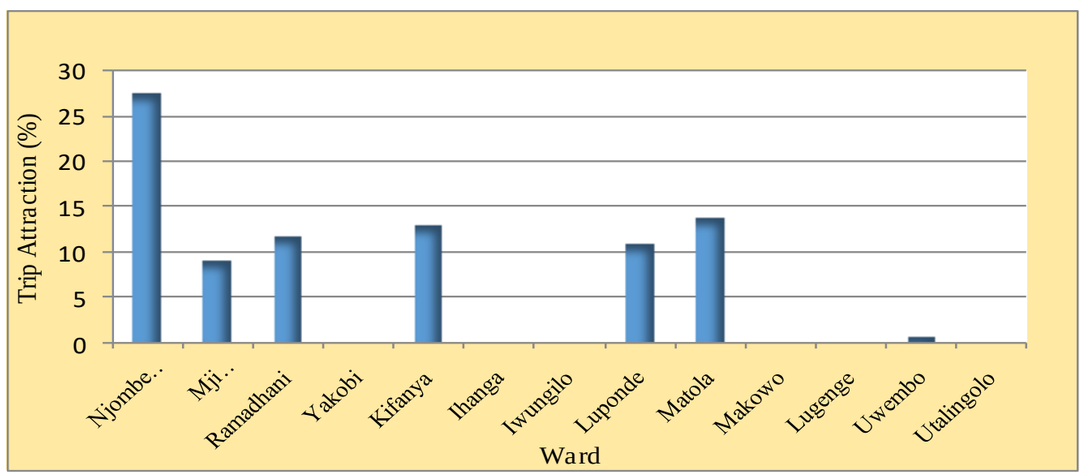


Figure 8. 2: Household Trip Attraction in Njombe Town
Source: Household Socio-Economic Survey, 2016

The proportion of trips generated and attracted in different wards reflects the concentration of various activities ranging from commercial, social, educational and work related which necessitate movement of households on daily basis. Wards located in the Town peripheries, such as Ihanga, Iwungilo, Luponde, Makowo, Utalingolo, and Lugele, have less trip generated as well as attracted attributed by less number of social facilities, services as well as economic activities.

8.3.2 Trip purpose

Trip purpose is the main reason for making trips either within the same ward or from one ward to another in Njombe Town. The majority of trips are made for the purpose of domicile that contributes 764 trips, which is about 44.89 percent of the total trip purposes in the Town. The second main trip purpose is work related, which contributes 465 trips, approximately 27.32 percent of all trips purposes in the Town. The third trip purpose is shopping that contribute 132, which is about 7.76 percent. However, trips purpose are different from one destination to another depending on what the respective ward can offer at best in terms of land use activities. Figure 8.3 depicts purpose of trips generated by household in wards in Njombe Town.

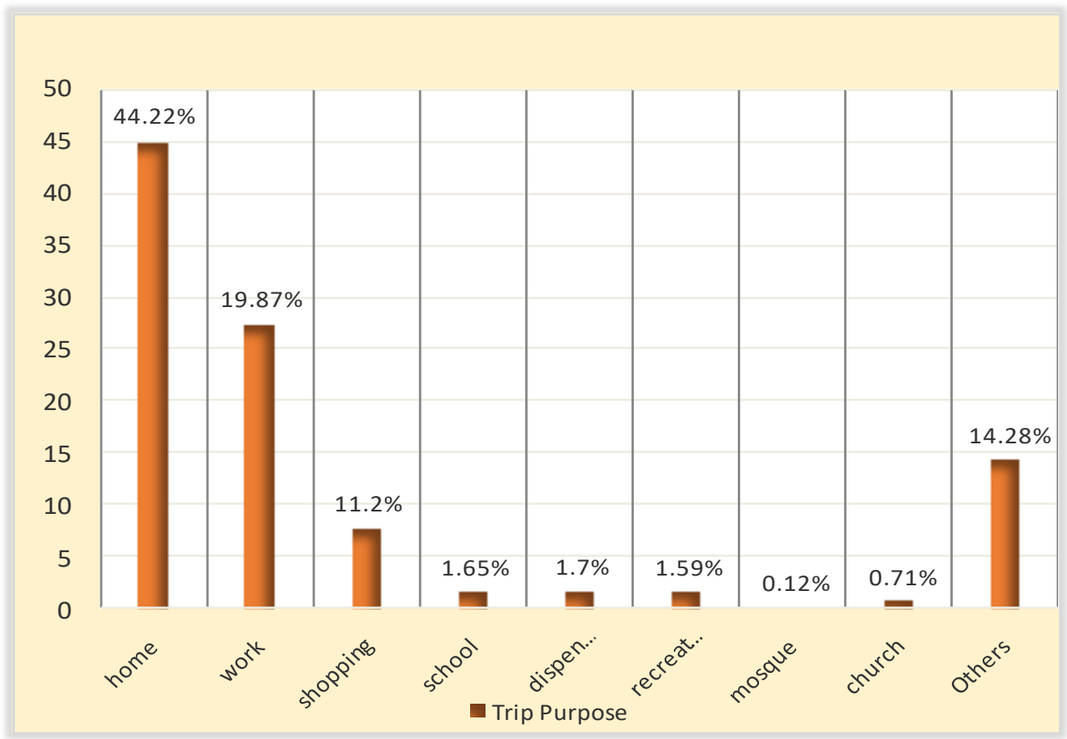


Figure 8.3 Household Trip Purpose in Njombe Town
Source: Household Socio-Economic Survey, 2016

8.3.3 Means and Mode of Transport

Walking is the main means of transport used by households in internal trips as it is used by about 50.90 percent of all the trips in the Town. Motorcycling is the second main mode of transport that constituteS 17.54 percent, while bus transport commonly known as daladala is the third means of transport constituting 12.13 percent of all trips in the Town. Bicycling is the fourth means of transport in the Town, which comprises 7.98 percent of the total trips in the Ttown (Figure 8.5).

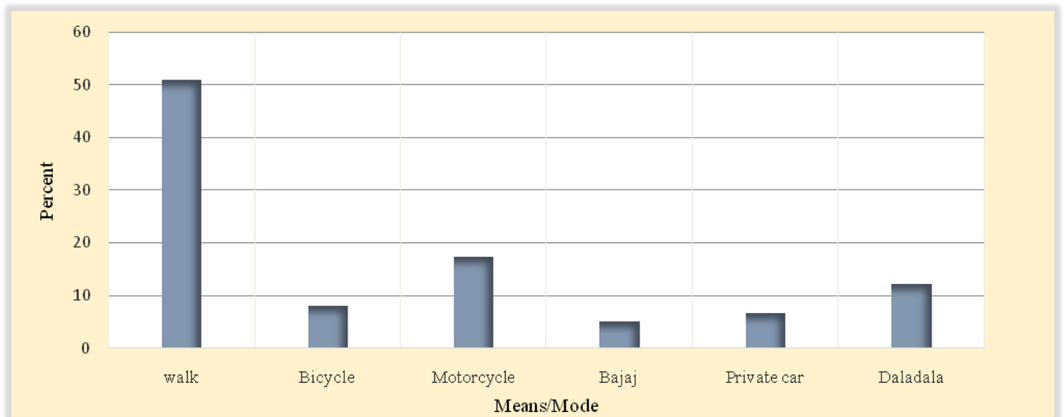


Figure 8.4 Means and Modes of Transport in Njombe Town
Source: Household Socio-Economic Survey, 2016

8.4 Public Transport

Njombe Town is served by various public transport services which are largely inter-regional transport services and inter-district transport services. Internal public transport services are under provided and that can be also confirmed by the different means used by households which rely on private means on the large extent as depicted in the previous section.

8.4.1 Inter-regional Transport Services

The inter-regional public transport services involve to and from the regions: Iringa, Mbeya, Rukwa, Dar es Salaam, Ruvuma, and Dodoma. The trips involve the use of buses and mini buses type of vehicles. Most of the trips are made of mini buses, which constitute 153 trips in a day while buses constitute 40 trips in a day. The Songea – Njombe route has most of the trips, which amount to a total of 32 trips per day. Table 8.6 depicts the different routes and mode of transport used for inter-regional public transport in Njombe town.

Table 8.6 Inter-regional Public Transport Services in Njombe Town

Route		**Mode of Transport**		
Trip Origin	Destination	Bus	Mini Bus	**Total**
Njombe	Dar	5	-	5
Dar	Njombe	5	-	5
Njombe	Iringa	-	24	24
Iringa	Njombe	-	26	26
Njombe	Songea	-	25	25
Songea	Njombe	-	32	32
Njombe	Mbeya	-	19	19
Mbeya	Njombe	-	13	13
Njombe	Mbinga	-	2	23
Mbinga	Njombe	-	3	3
Songea	Dar	11	-	11
Dar	Songea	09	-	09
Songea	Iringa	05	-	05
Iringa	Songea	03	-	03
Njombe	Dodoma	01	-	01
Dodoma	Njombe	01	-	01
Songea	Mbeya	04	-	04
Mbeya	Songea	05	-	05
Songea	Sumbawanga	01	-	01
Sumbawanga	Songea	01	-	01
Mbinga	Mbeya	02	-	02
Mbeya	Mbinga	01	-	01
Songea	Dodoma	01	-	01
Dodoma	Songea	01	-	01
Njombe	Matilu	-	01	01
Matilu	Njombe	-	01	01
Njombe	Mtera	-	01	01
Mtera	Njombe	-	01	01
Njombe	Ubaruku	-	02	02

Ubaruku	Njombe	-	01	01
Iringa	Namtumbo	01	-	01
Namtumbo	Iringa	01	-	01
Njombe	Ilula	-	01	01
Ilula	Njombe	-	01	01
Total		47	153	200

Source: Traffic survey, 2016

8.4.2 Inter-District Transport Services

The inter-district transport services at Njombe town are carried out mainly using mini buses and buses. Mini buses were observed to be the best preferred mode of transport for inter-district transport services to which they contribute of 99 trips out of 109. Buses and Minibuses are used only inn a small proportion, each constituting 5 trips in a day (Table 8.7). Most trips are made between Makambako and Njombe Town.

Table 8.7 Inter-District Public Transport Services

Route		**Mode Of Transport**			
Trip Origin	**Destination**	**Bus**	**Mini Bus**	**Noah & Hiace**	**Total**
Makete	Njombe	1	5	-	6
Ikonda	Njombe	1	-	-	1
Lugarawa	Njombe	-	2	-	2
Makambako	Njombe	-	22	-	22
Lupila	Njombe	-	2	-	2
Lupembe	Njombe	-	4	-	4
Usalule	Njombe	-	1	-	1
Ukwama	Njombe	-	1	-	1
Ilembula	Njombe	-	1	-	1
Uliwa	Njombe	-	-	1	1
Mdandu	Njombe	-	-	1	1
Makanjaula	Njombe	-	-	3	3
Amani	Njombe	-	1	-	1
Mndindi	Njombe	-	-	-	-
Ludewa	Njombe	-	6	-	6
Njombe	Lusitu	-	1	-	1
Njombe	Boimanda	-	1	-	1
Njombe	Kipengele	-	2	-	2
Njombe	Ngalanga	-	2	-	2
Njombe	Madilu	-	1	-	1
Njombe	Mavanga	-	1	-	1
Total		5	99	5	109

Source: Traffic survey, 2016

8.4.5 Internal trips

There are routes for internal public transport such as Kibena-Igominyi, Kibena-Nundu, Kibena-Kifanya. The trips are made either by Hiace or Noah type of mini-buses. There is a permanent stand for Town Hiace, which make trips within Njombe Town. The bus stand is also located in Njombe Mjini ward. However, it was observed during the traffic survey that Noah type of vehicles are preferred modes of transport for internal trips than Hiace or mini buses due to convenience of access

Taxis are also used for internal public transport in Njombe Town. Tricycles *(Bajaj)* and motorcycles (*Bodaboda*) also provide public transport for internal trips. Most *bajaj* park at Msikitini Street from where they make their trips to different areas in the Town. The Njombe Town Council is in the process of restricting *bajaj* from making trips along the trunk road so as to avoid accidents and congestion along the roads. There is therefore a need for the establishing specific routes for *Bajaj* and motorcycles so as to accommodate the needs of transportation services in the town.

8.5 Parking Facilities

Both public and private parking areas are provided in Njombe Town. Public packing facilities include bus and truck terminals, public building locations and on-street parking, while private parking are parking lot along business areas, offices, and special functional areas. Table 8.8 indicates results of the parking survey performed in August 2016.

Table 8.8 Parking Facilities in Njombe Town

Type and Location	Ownership	Area in SQM	Remarks
Truck parking at Matalawe	Public	24500	Poor condition of the parking area. It
Taxi parking at Masasi	Public	250	Insufficient space
Bodaboda parking besides Njombe	Public	-	Insufficient space
Bajaji parking at National housing	Public	-	-Inadequate security in parking area
Bodaboda parking at Nundu	Public	-	-Improvement of parking area
NSSF parking	Private	-	-
NBC Bank parking	Private	680	-
Noah parking at Kwivaha	Public	1540	Inadequate security in parking area
On Street parking (Njombe-	Public	-	Inconvenient to other road users
Njombe bus terminal	Public	5420	Inadequate parking space
Taxi parking-Opposite NBC Bank	Public	-	Inadequate parking space
Namaingo Business Agency-Truck	Private	4940	Poor condition of the parking area. It

Source: Parking Survey, 2016

The parking areas generate income to the Town Council. For instance, trucks are charged between TShs 2000/hour to 80,000 per year as parking fee at the Matalawe parking area. Taxis are charged a parking fee of TShs 500 per day while *Bajaji* are charged Tshs 1000 per day. This suggests that if the parking facilities are improved, the Town Council can improve its revenue collection through parking fees.

8.3 Air Transport

Njombe airport is located 4km at the south east of Njombe Town. The air strip was constructed in 1943 and completed in 1945. It is operated under Tanzania Civil Aviation Authority. The total area of Njombe airport is approximately 90 hectares with a runway of 2,000 metres length and 30 metres width.

The airport has been constructed within the town and its runway thresholds are located close to neigbouring community areas and the main trunk road of Songea Makambako. It is precisely co-located within the urban area characterized by roads, expanding housing development and institutional land owned by the prisons. VIETTEL mast and VODACOM mast of 40 metres and 30 metres respectively are located on the transition surface of the aorodome.

The aerodome runway has a length of 1890 metres and width of 30 metres, whereas the runway orientation is 12/30. The aorodme qualifies for 3A day operations as per the regulations 11 of the Civil Aviation (Aerodome) Regulations of 2017. Commercial flights by the Auric Air, which carrier 5-13 passengers operated for the last time, in September to December 2013. The operations ceased due to high operation costs attributed by low number of passengers. Currently, the airstrip is in very poor condition as the runway is now covered with shrubs and some people have their vegetable gardens around the airport building (lates 8.3 and Plate 8.4).

Plate 8.1: Vegetable grown at Njombe air strip

Plate 8. 2: Part of the air strip covered with vegetation

Table 8.9 illustrates total movements including passengers embarked and disembarked in Njombe Town Airstrip between 2010 and 2016. The table also compares the aircraft movement in Njombe Town with the total flights in other airports in Tanzania Mainland between 2010 and 2013.

Table 8.9 Passengers embarked and disembarked in Njombe Town airstrip from 2010 to 2016

Year	Total movements		Disembark		Embark		Total	
	Njombe	Tanzania Mainland	Njombe	Tanzania Mainland	Njombe	Tanzania Mainland	Njombe	Tanzania Mainland
2010	30	152,299	93	800,831	78	845,826	**171**	
2011	11	172,532	41	982,994	20	1,005,524	**61**	
2012	17	185,877	65	1,136,467	46	1,136,467	**111**	
2013	47	191,198	132	1,391,846	131[1]	1,391,846	**263**	
2014	21	NA	27	NA	47	NA	**74**	NA
2015	27	NA	143	NA	93	NA	**236**	NA
2016	3	NA	14	NA	18[2]	NA	**32**	NA

Source: Tanzania Airport Aviations, 2016

Currently the airstrip is not in use. Arrangements are underway to rehabilitate the Aerodrome, including fencing the area, expanding the runway, putting tarmac surface, constructing Control Tower, and expansion of passengers' lounge.

Njombe Town and the region at large need an airport so as to foster the large investment in tea production, mining, forestry, flower production, tourism, water and electricity services. This opportunity is also backed up by the presence of Songwe International Airport in Mbeya for export purposes.

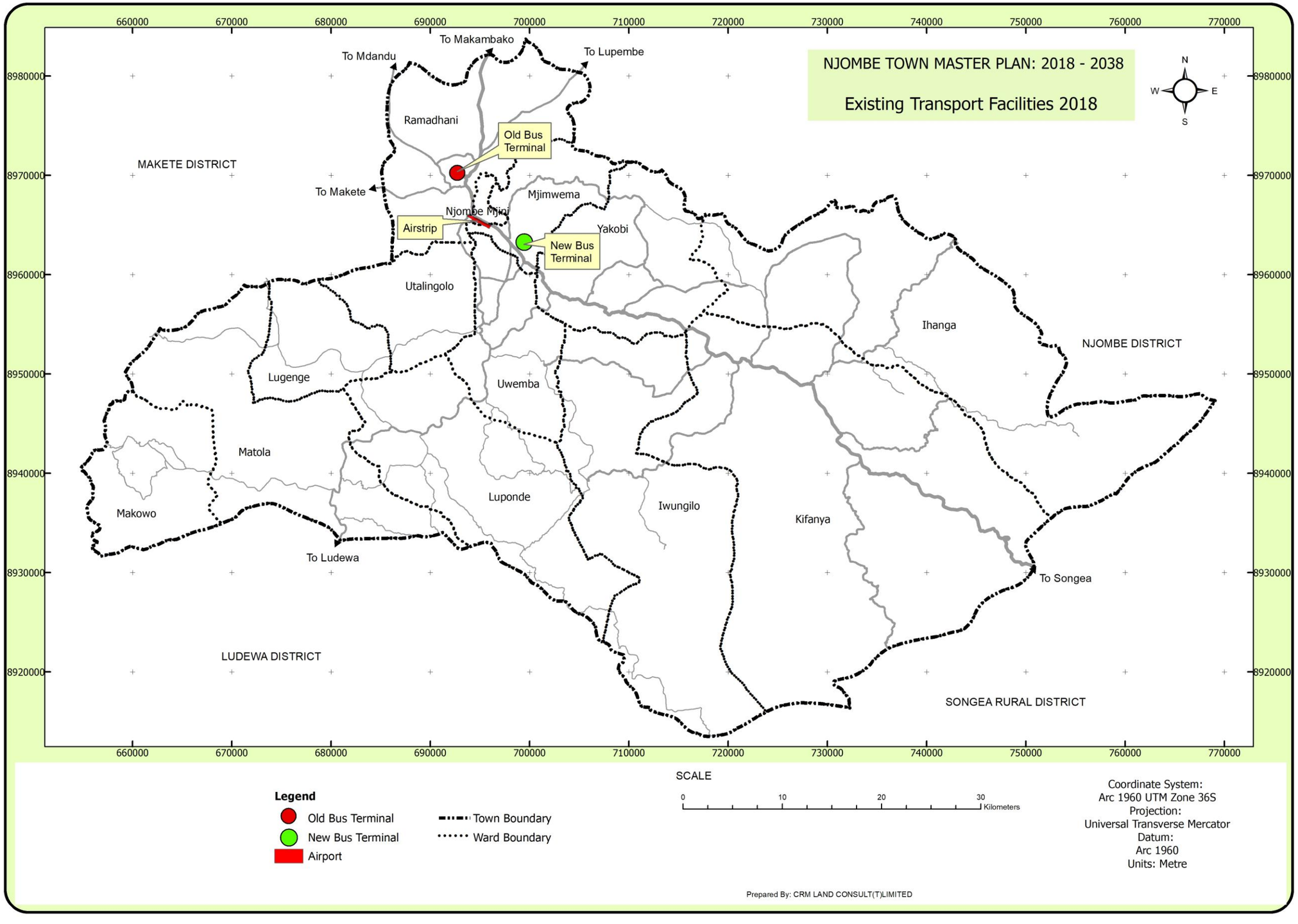
According to the information obtained during the stakeholder's workshop in Njombe Town, the government has set aside some funds for its rehabilitation and expansion. The expansion of the airport however, may cause demolition of few buildings located close to the airstrip including the exising residential houses and masts close to the airstrip so as to enable provision of adequate strip end runway safety areas (RESAs) for safe operation of aircraft. However, for the airstrip to be able to accommodate operation exceeding Code 2B, and be upgraded from an airstrip to a regional airport, expansion is inevitable.

8.4 Telecommunication

Njombe Town is well served with telecommunication networks to the rest of the world. Telecommunication is very essential in servicing and stimulating socio-economic development in the area. Njombe as a region is connected with the National Fiber Optical Cable Network, the National ICT Broadband Backbone. The Tanzania Telemommunication Company Limited (TTCL), which operates both land line and mobile communication services provides services to individuals, and institutions. Other mobile communication services including HALOTEL, TIGO, VODACOM, ZANTEL and AIRTEL also operate in the Town. Internet and fax services are also available.

In Njombe, there are 6 radio stations which are accessed in the region, namely Uplands FM, TBC Taifa, Ebony FM, KISS FM, Overcomers FM Radio, and Radio Free Africa. Different televisions stations can also be accessed. Map 8.2 shows the existing transport facilities in Njombe Town.

Map 8.3 Existing Transport Facilities in Njome Town



CHAPTER NINE

SUMMARY OF CHALLENGES, GOALS, OBJECTIVES, STRATEGIES AND THE URBAN CONCEPT

9.1 General Overview

This chapter prodes a summary of the issues identified from the existing situation of Njombe Town, which needs to be addressed for the town's development. The chapter identifies issues related to all the sectors of development ranging from economy, environment, transport, community facilities as well as public utilities. The chapter also gives a summary of goals and objectives of the envisaged Njombe Town Master Plan for the next twenty years. The urban concept, which guides the proposed mater plan is also discussed.

9.2 Summary of the Challenges

9.2.1 Underutilized Tourism Sector

Njombe Town has various tourism attraction sites such as Yakobi church aged 100 years where a German missionary by the name of Paul Crosan died. Other tourism attraction sites include a cave where the Majimaji Warriors were killed, Welela wetland, waterfalls and human skull at Nykamatwe, Hagafilo, and Nyamuyuya water falls. These sites need to be made accessible, developed, and protected for tourism attraction to enhance revenue generation and employment endeavors.

9.2.2 Soil erosion and land degradation on upper lands

The topographical features of Njombe Town are characterized by undulating lands comprising of valleys, as ell as small and big hills. Although the land form of the Town eases natural drainage by the existence of valleys and rivers, attention should be given to it to prevent deforestation and restrict farming activities at the highlands, along the valleys and rivers to avoid soil erosion. In the highlands soils are water eroded, low pH, high clay and iron aluminumoxide and low fertility.

9.2.4 Scattered Population Distribution and Low Population Density

Njombe Town has a large geographical size. The Town is dominated by rural culture and large scale commercial tree plantations. By its geographical size, it experiences scattered population distribution and low population density. This situation impedes the provision of basic infrastructure and social services. As a result, the town experiences poor service delivery to its communities and in particular to the villages included within the urban boundaries.

9.2.5 Under Utilization of Arable Land for production

Njombe Town is one of the largest producers of food and cash crops in Tanzania because of its good climate and soil fertility. However, only 28 percent of the arable land is used for crop production. Therefore, there is under-utilization of arable land for agricultural activities which, if fully utilized, would improve food security, employment and exportation to the other regions and the neighbouring countries.

9.2.6 Underutilization of Irrigation Potentials

There is a huge potential for irrigation farming in Njombe Town. However, only 14 percent of the total potential areas for irrigation scheme is used for irrigation farming. Irrigation farming in Njombe town has increased the production of Irish potatoes in three folds for the past five years. Therefore, there is a need to identify potential areas for irrigation schemes in order to expand irrigation farming so as to ensure crop production during the dry seasons.

9.2.7 Underutilization of agro processing potentials for industrial development

Njombe Town has large scale farms for cash crops, which include tea, sunflower, and commercial trees. These crops are sources of raw materials for industrial production. However, there are no processing industries in the Town that can process these raw materials. Investment in processing industries would create employment opportunities and foster town and regional economic growth. Therefore, there is a need to identify potential areas for industrial investment in agro-processing and timber production and processing to promote economic growth and facilitate realization of national development agenda on industries. Njombe Town also needs to establish an Economic Processing zone and large scale industrial areas, produce value added products from crops and timber (furniture centre for local and export).

9.2.8 Un-coordinated spatial growth

The dominant land use in Njombe Town is farming, which account for 65 percent. As aforesaid the Town has also natural and artificial forests. The Town has a bi-polar central business centre where public administration institutions are situated away from the commercial centre. The settlements are growing with no plans to guide the Town's direction of development, and as result many areas are not planned and serviced. Equally, there is no clear framework to ensure that environmental resources are sustainably managed.

9.2.9 Urban Sprawl

Housing development in the town is sporadic especially outside the CBD and is sprawling along the main roads. The urban sprawl has mostly affected the urban wards of Ramadhani, Uwemba, Mjimwema, Kifanya, Matola, and Ihanga. The unregulated housing development encroach environmentally sensitive

areas, such as forests, wetland, river, valleys and hills leading to environmental degradation. Therefore, there is a need to regularize the existing informal settlements to provide basic physical and social infrastructures for sustainable growth of the Town.

9.2.10 Community and administrative facilities

Njombe Town, being a regional headquarter, requires the provision of regional facilities, such as referral hospital, higher learning institutions, regional library, stadium, and a sport centre. The facilities also include regional transport facilities, such as Airport, a regional bus terminal, a regional police station, a resident court and a central market. The Town also requires new areas for cemeteries, central park and tourist central facilities. Most wards have at least a dispensary and few have a health centre. Such facilities are not available in Luponde, Utalingolo and Yakobi wards.

9.2.11 Inadequate provision of public utilities

Njombe Town experiences inadequate provision of public utilities, such as water, sanitation, storm water drainage systems and solid waste management.

Water supply: Water supply network covers only the central area of the Town, namely Mjini, Ramadhani, and Mjimwema Wards. The rest of the wards have not water supply network and the majority, i.e., 45 percent rely on shallow wells. There is a need to extend the water distribution network to cover new areas which were included in the urban fabric following the extension of the urban boundary and declared planning area.

Solid waste management: It has been noted the solid waste management has been recognized as one of the major problems facing the Njombe Town Council. The main challenges associated with solid waste management in Njombe Town include inadequate number of solid waste collection points/transfer stations and vehicles as well as inadequate facilities for solid waste disposals. As a result, on site burning of the wastes is commonly practiced, subsequently the released toxic metals, such as chromium nickel and lead from the burning, result into health hazards and water pollution.

Storm water drainage system: The storm water drainage system in Njombe town is in poor condition. Most of the roads are services with open ditch drains, which are mostly blocked due to the poor construction and maintenance resulting in water stagnation, especially in areas with gentle slopes. Due to lack of maintenance, the base and walls of the few existing drainage channels are heavily eroded during rainy seasons. The envisaged Master Plan will take advantage of the topography of the town to enhance natural storm water drainage system. The new roads must be constructed with side storm water drainage channels and awareness should raised to prevent disposal of solid wastes into drainage canals.

Energy: Firewood and charcoal are the major sources of energy used for cooking in Njombe Town. While socio-economic survey conducted in 2015 indicates that 75 percent of the people use charcoal, 10 percent use firewood, 2.1 percent use electricity, and 1.9 percent use solar power. Reserved areas for power supply such as electricity, gas should be designated in the new neighbourhoods to discourage the use of charcoal and firewood which in the long run is not sustainable as they adversely affect the environment. This plan cannot, however, completely dismiss the use of wood energy within the 20-year span. An area for urban forest is to be designed for future charcoal and firewood for the poor households who will inevitably continue to use charcoal.

Transportation: Unlike many urban centres, Njombe Town lacks intra-urban mass transport system. Local public transport relies largely on Motorcycles, *Bajaj* and Taxi which do not effectively facilitate mass transportation. The envisaged plan for the next 20 years should focus on mass urban transport to cut down transportation cost and improve efficiency of service delivery and car parking system.

Njombe Town has an air strip which is used to provide services for commercial flights, particularly by Auric Air. The operation of the air strip stopped in 2013. Currently, the airstrip is in very poor condition as the runway is now covered with shrubs and some people have their vegetable gardens around the airport building. The presence of large scale food and cash crop production and the on-going effort to improve urban services and industrial production will continue to attract local and international investors to take advantage of the existing potentials. The Master Plan, therefore, recommends the expansion and activation of the airport to facilitate regional and national local flight movements.

9.3 Goals and objectives

9.3.1 Vision

To become a green city which is safe, clean, healthy, inclusive, productive, and competitive where neighbourhoods are revitalized, history is preserved, the natural environment is respected, and where all people can reach their full potential through education, commerce, culture, tourism, and wellness.

9.3.2 Mission

To provide a quality and equitable social, economic, and administrative services for sustainable urban development.

9.3.3 Goal of the plan

The main goal of the Master Plan is to achieve a sustainable development of the Town for the well-being of is residents and surrounding areas at present and within the period of 20 years. This plan will guide,

manage control development of the Njombe Town for the period of 20 years; between 2018 and 2038. The Master Plan acts as a planning and management tool for guiding detailed planning and development of the Town and other plans within the areas of jurisdiction of the Town Council.

The purpose of the envisaged Njombe Master Plan is to coordinate urban development activities to achieve sustainable development of the Town. Hence the Master plan, through participatory approach, will promote health, safety, good order, amenity, convenience, and general welfare of Njombe inhabitants. It will also enhance efficiency and economy in the use development process in the Town.

9.3.4 Objective of the Plan

The overall objective of the Master Plan is to provide the framework for sustainable urban land management of Njombe Town. The specific objectives of the are:

1. To guide and coordinate the preparation of detailed planning schemes for the proposed land uses, including areas for regularization schemes;
2. To ensure sustainable utilization of land and other natural resources, including the existing land, rivers, streams, hills, forest resources, and protection of the forest reserve from encroachment;
3. To improve accessibility within the planning area by improving and introducing road networks, especially in the newly included wards in the urban boundaries;
4. To control urban sprawl through promoting development of sub-centres in the peri-urban in the engulfed villages;
5. To foster economic growth and employment through industrial development and establishment of economic processing zones along the major roads;
6. To reduce underutilization of valuable land in the CBD by infill development and encouraging densification, mixed uses, and compact development of settlements through encouraging vertical settlement growth;
7. To promote environmental conservation of all environmentally sensitive areas like wetland, forest, water catchment areas, and valleys;
8. To curb further proliferation of squatter and informal settlement through planning and surveying underdeveloped land in the peri-urban areas, and in the engulfed villages;
9. To establish buffer zones along the rivers, valleys, steep slopes and natural forest to stop encroachment and deforestation.;
10. To regularize and formmalise informal settlements in order to improve access to services and to attain security of tenure; and
11. To attract investments within the Njombe town through identification of the potential areas for local, regional, national and international investments.

9.4 Population Projections

The central focus of planning is population. As population grows, there are increased demands placed on limited resources, such as land for housing, infrastructure, agriculture, forests as well as solid and liquid waste disposals. Therefore, population projection is an important aspect in planning as peoples' needs and demands increase with increase in population.

Population projection often deals with computations of future projection size and characteristics based on assumptions about future trends in fertility, morality and migration. There are also assumptions that focus on pre-conditions that foster population growth in a particular urban setting. As such, it is crucial to put assumptions that reflect on the existing context in relation to the expected intervention on the status quo. This Master Plan considers the aforementioned dimensions to make the projections meet the future demand for the next 20 years.

Sanitation: The use of pit latrines is common in Njombe Town. It is estimated that about 80 percent of the urban inhabitants use pit latrines especially the low income earners. Low-cost, simplicity of construction, little or no water usage, and ease in operation and maintenance and the ease for regular improvement of the facility makes it convenient and easily taken up. The use of pit latrines in densely populated areas poses health risks due to the fact that the majority of urban inhabitants also use water from the shallow wells. It should be noted that the pit latrine technology currently offers a number of options ranging from simple designs like the traditional (without concrete slabs) to the simple improved, and further to more advanced Ventilated Improved (VIP). It is worth nothing that improved sanitation protects the environment and improves people's health, therefore translating into socio-economic development and poverty eradication. The envisaged Master Plan proposes measure to facilitate access to improved sanitation facilities such as ventilated pit latrine, decentralized sewerage system and stabilization ponds in the new planned areas.

9.4.1 Assumptions

Njombe Region as a whole has the lowest growth rate in Tanzania which stands at 0.8 per annum based on the National Population and Housing Census of 2012. However, the projection of population assumes that the population in Njombe Town will grow at the rate of 2.7 percent, which is the current national growth rate. The basic assumptions behind population projections for Njombe Town focus on the following:

i) ***Population growth*:** It is assumed that the Town population will grow at the rate of 2.7 per year for the next 20 years of the plan span. The average of 2.7 percent growth rate is assumed due to the expanded urban boundary which engulfed the surrounding villages and anticipated improvement of service delivery and industrial investments proposed by this Master Plan.

ii) ***Infrastructure improvement:*** The arguments behind such assumption are largely based on the fact that the existing effort to improve infrastructure in the Njombe Town including health care, power supply, airport, improvement of road from Makambako to Songea which passes through Njombe Town will continue to boost economic activities at the Town. The Master Plan further assumes that the Njombe Town will be connected to the national electric grid line to improve the supply of electricity for both residential and industrial uses.

iii) ***Economic growth:*** The population projectios assumes that the town will experience high economic growth due to improvement of basic infrastructure as aforementioned. This situation will attract local and international investments, the situation which will contribute to rapid population growth due to immigration in the near future.

iv) ***Available land:*** The Town has a total area of 321.2 hectares of land declared as a planning area of which 180,000 hectares are potential for urban development. Many future migrants are expected to settle in the peri-urban areas where normally price of land is low. Therefore, more attention is to be given, to the peri-urban land management to counter proliferation of squatter development. Efforts should be taken in terms of acquiring land for new neighborhoods planning and provision of basic infrastructure including community facilities.

9.4.2 Critical assumption in project calculations

Projections are used for analzing future needs for major public facilities, such as water and waste waster treatment plants, water and sewer lines as well as designing new roads. Community facilities, such as school and health care facilities deploy projection when analysis is made for current and future demand.

Therefore, projections of population for instance, provide a set of information, which show the future course of fertility, mortality and migration depending on the assumptions used. Under this projection population growth variable, i.e., fertility, mortality and migration are seemingly omitted but they have been taken care of by the growth rate of the population in the formula represented by the later r. The population project computation in this case is based upon the total number of population and growth rate in Njombe Town, Njombe Region, and National or Country Population derived from the 2012 Housing and Population Census in Tanzania. The critical assumption in this population projection for the Town is that if the growth rate will not remain below the national average. Therefore, the main assumptions behind the estimated population in different time periods is that they hold true if an only if the growth rate(r), does not significantly change within the estimated time interval. The computation approach used is the exponential growth which is equivalent to the growth of an investment with compound interest.

9.4.3 Population Projection by Wards

The population growth by ward provides relative results which reflect the existing situation. The population projection is, therefore, made by wards to show variation in population increase among urban, peri-urban, and the rural wards. It was clearly observed that the wards which are still experiencing rural characteristics will continue to grow slowly due to poor accessibility and lack of substantial economic base to attract investments and migrants. However, a higher rate of 2.7 percent is assumed as an average urban population growth rate for the next 20 years due to the fact that improvement of infrastructure and industrial investment will accelerate the assumed growth rate.

Table 9.1 Population Projection by wards 2012 (base year) to 2038

Name of Wards	population of 2012		Total	Projcted population																			
	Male	Female		2018		2020		2022		2024		2026		2028		2030		2032		2034		2036		2038	
				Male	Female	Male	Female	Male	Feamle	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Njombe Mjini	12,464	14,214	**26,678**	14624	16678	15425	17591	16269	18553	17159	19569	18099	20640	19089	21769	20134	22961	21236	24217	22398	25543	23624	26941	24917	28415
Mjimwema	6,505	7,424	**13,929**	7633	8711	8050	9188	8491	9690	8956	10221	9446	10780	9963	11370	10508	11992	11083	12649	11690	13341	12329	14071	13004	14841
Ramadhani	7,695	8,610	**16,305**	9029	10102	9523	10655	10044	11238	10594	11854	11174	12502	11785	13187	12430	13908	13110	14669	13828	15472	14585	16319	15383	17212
Yakobi	2,730	2,930	**5,660**	3203	3438	3379	3626	3563	3824	3758	4034	3964	4255	4181	4487	4410	4733	4651	4992	4906	5265	5174	5553	5458	5857
Kifanya	4,171	4,840	**9,011**	4894	5679	5162	5990	5444	6318	5742	6663	6057	7028	6388	7413	6738	7818	7106	8246	7495	8698	7906	9174	8338	9676
Ihanga	2,338	2,757	**5,095**	2743	3235	2893	3412	3052	3599	3219	3796	3395	4003	3581	4222	3777	4454	3983	4697	4201	4954	4431	5225	4674	5511
Iwungilo	3,912	4,507	**8,419**	4590	5288	4841	5578	5106	5883	5386	6205	5680	6544	5991	6903	6319	7280	6665	7679	7030	8099	7415	8542	7820	9010
Luponde	4,471	4,901	**9,372**	5246	5751	5533	6065	5836	6397	6155	6747	6492	7117	6847	7506	7222	7917	7618	8350	8034	8807	8474	9289	8938	9540
Matola	5,649	6,613	**12,262**	6628	7759	6991	8184	7374	8632	7777	9104	8203	9603	8652	10128	9125	10682	9625	11267	10151	11884	10707	12534	11293	13220
Makowo	2,079	2,134	**4,213**	2439	2504	2573	2641	2714	2785	2862	2938	3019	3099	3184	3268	3358	3447	3542	3636	3736	3835	3940	4045	4156	4266
Lugenge	2,737	3,106	**5,843**	3211	3644	3387	3844	3573	4054	3768	4276	3974	4510	4192	4757	4421	5017	4663	5292	4918	5582	5188	5887	5328	6209
Uwemba	4,236	4,664	**8,900**	4970	5472	5242	5772	5529	6088	5832	6421	6151	6772	6488	7143	6843	7534	7217	7946	7612	8381	8029	8840	8468	9324
Utalingolo	2,125	2,411	**4,536**	2493	2829	2630	2984	2774	3147	2926	3319	3086	3501	3255	3693	3433	3895	3620	4108	3819	4333	4028	4570	4248	4820

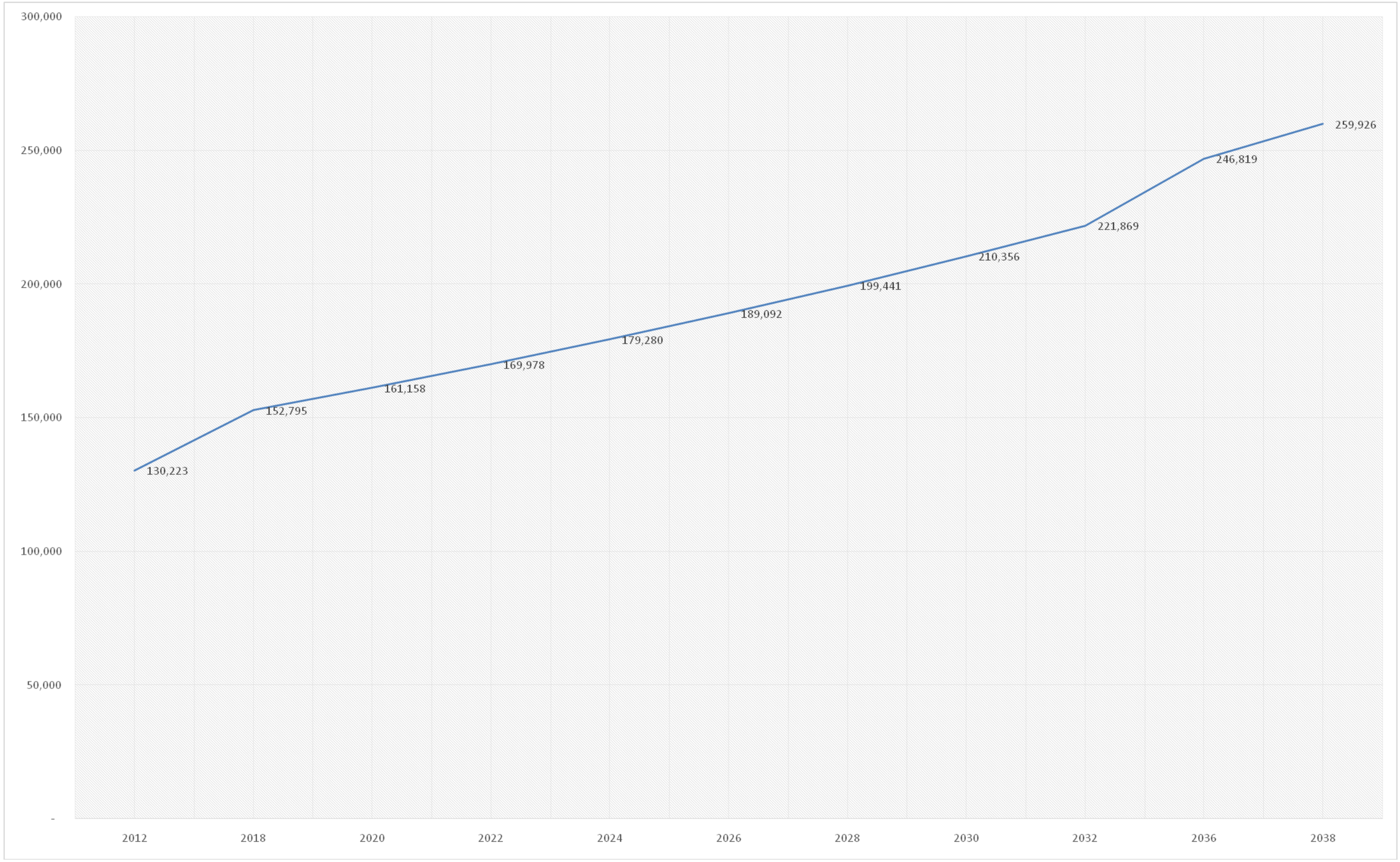


Figure 9.1 Town Population Projection between 2012 and 2038

9.5 Land Requirement

9.5.1 Neighbourhood

The population projection suggests that there will be a total population of 259,926 inhabitants in Njombe Town by the year 2038. The population projections indicate a net increase of 112, 148 people from the base year 2012. Therefore, for the next 20 years, Njombe Town will require 22 new neighbourhoods with the total area of 1,980 hectares with an average of 5000 inhabitants (Table 9.3). With the existing household average of 4.7, the neighborhoods will constitute a total of 1000 households. Therefore, the total number of residential plots per neighbourhood will be 1000. The plot categories will consist of high density (60%), medium density (30%) and low density (10%). Based on urban planning and space standards and the main function of neighbourhood, the total area for each neighbourhood will be 90 hectares (Table 9.2). The neighborhood area constitutes also reserved land for public facilities, such as nursery and primary schools as well as dispensaries.

9.5.2 Communities

A community is the intermediate centre in the proposed hierarchy of centres in Njombe Town. The envisaged community will comprise 4 neighbourhoods based on the terrain of the land and nature of the existing settlements. Focusing on the functions required at the community level, the land use requirement for the future population has been made with reference to urban planning and space standards of 2018. Table 9.3 shows the facilities and land requirenments at a community level.

Table 9.2 Future Land requirenment at neighbourhood level, 2018

Standard Population For a Neighborhood Estimated At 5000				**Projection 5 Years:4 Neighborhoods**		**Projection 10 Years:9 Neighborhoods**		**Projection 20 Years:22 Neighborhoods**	
Functions	**StandardSize(Ha)**	**Facilities**	**TotalLand(Ha)**	**Facilities**	**Land Requirement(Ha)**	**Facilities**	**Land Requirement (Ha)**	**Facilities**	**Land Requirement (Ha)**
Primary Schools	2	2	4	8	16	18	36	444	888
Open Space (10%)	9	1	9	4	36	9	81	22	198
Circulation (14%)	12.6	1	12.6	4	50.4	9	113.4	22	39.1
Neighborhood Park	2.5	1	2.5	4	10	9	22.5	22	55
Children Playing Field	1.5	1	1.5	4	6	9	13.5	22	33
Playing Field	1	1	1	4	4	9	9	22	22
SportField	1.5	1	1.5	4	6	9	13.5	22	33
Market	0.25	1	0.25	4	1	9	2.25	2	5.5
Shops	0.05	20	1	80	4	180	9	420	22
Public Area	0.25	4	1	16	4	36	9	84	22
Religious Site	0.25	4	1	16	4	36	9	84	22
Library	0.2	1	0.2	4	0.8	9	1.8	22	4.4
Community Hall	0.3	1	0.3	4	1.2	9	2.7	22	6.6
Cemetery	1.5	2	3	8	12	9	13.5	22	33
Bar/Restaurant	0.12	1	0.12	4	0.48	9	1.08	22	2.64
Commercial Zone	0.2	1	0.2	4	0.8	9	1.8	22	4.4
Service Industries	1.5	1	1.5	4	6	9	13.5	22	33
Collection Point	0.04	2	0.08	8	0.32	18	0.72	44	1.76
Residential			49.25		197		443	22	1,083.5
Total					360		796.25		2508.9

Table 9.3 Future Land requirement at community level, 2038

Standard facilities and land requirements for a community					5 years : One communities		10 years: Two communities		20 years:5 communities	
Facility	Level	Standard size(Ha)	No.of required facilities	Land required (Ha)	Facilities	Land required (Ha)	facilities	Land required (Ha)	Facilities	Land requir ed (Ha)
Health centre		7	1	7	1	7	2	14	5	35
Secondary school	(O-level)	5	1	5	1	5	1	10	5	25
	(A-level)	2	1	2	1	2	2	4	5	10
Community park		4	1	4	1	4	2	8	5	20
Golf course		35	1	35	1	35	2	70	5	175
Active recreation	Children playfield	6	1	6	1	6	2	12	5	30
	Playing fiels	15	1	15	1	15	2	30	5	75
	Sport field	30	1	30	1	30	2	60	5	150
Passive recreation	Picknick	10	1	10	1	10	2	20	5	50
	Camping	100	1	100	1	100	2	200	5	500
Market		15	1	15	1	15	2	30	5	75
Public area		1.5	5	7.5	5	7.5	10	15	25	37.5
Religious site		0.8	4	3.2	4	3.2	8	6.4	20	16
Library		0.8	1	0.8	1	0.8	2	1.6	5	4
Community hall		1	1	1	1	1	2	2	5	5
Cemetery		6	2	12	2	12	4	24	10	60
Hotel site		0.08	2	0.16	2	0.16	4	0.32	10	0.8
Bar/restaurant		0.25	4	1	4	1	8	2	20	5
Guest house		0.2	10	2	10	2	20	4	50	10
Commercial zone		0.6	1	0.6	1	0.6	2	1.2	5	3
Motorcar showroom		0.3	2	0.6	2	0.6	4	1.2	10	3
Motorcycle showroom		0.15	1	0.15	1	0.15	2	0.3	5	0.75
Bicycle showroom		0.06	1	0.060 .4	1	0.06	2	0.12	5	0.3
Cinema hall		0.4	1		1	0.4	2	0.8	5	2
Industry/trade(Manufacturing/heavy)		20	1	20	1	20	2	40	5	100
Parking lots	45 degrees	0.0145	1	0.0145	1	0.0145	2	0.029	5	0.0725
	90 degrees	0.12	1	0.12	1	0.12	2	0.24	5	0.6
Residential zone		197		197		197		394		985
Total land required for the projected periods						476		951.2		2,378.02

Table 9.4 Functions in central area of satellite town

Functions	Types of recreational	Standard size (Ha)	Required facilities	Future
Hospital		36	2	72
Polytech		5	2	10
VETA		3	2	6
Active recreational	Children playing field	20	2	20
	Playing field	10	2	20
	Sport field	50	2	100
Passive recreational	Pick nick	100	2	200
	Zoo	20	2	40
	Camping	40	2	80
Market		100	2	200
Shops		2	2	4
Public area		2.5	2	5
Religious site		2.5	2	5
Library		1.5	2	3
Community hall		1	2	2
Cemetery		1.5	2	3
Guest house		6	2	12
Commercial zone		115	2	230
Tech clusters(processing)		200 acres	2	81.92
Motorcar showroom		4000m.square	2	0.08

9.5.3 Land required for industrial investment

The Master Plan proposes to create a conducive environment for local and international investments. It proposes to allocate land for an Economic Processing Zone (EPZ) and an industrial area. In this way the plan translates the FYDP II into reality on the ground. In total about 10 percent of the total planning area of Njombe Town has been set aside for industrial investments of different scales covering over 30,000 hectares; proposes road networks that link the central urban areas to the settlements and sub-centres in the periphery to improve access to basic services, provides areas for more schools and health care facilities as well as market for local and international goods and services.

9.6 Urban Development Concept

9.6.1 Structure of Njombe Town

Njombe Town is dominated by vegetation of different types. The built-up is small as discussed in chapter four on the existing land use. Structurally, four urban "zones" can be identified, radiating out from the CBD, which broadly reflects different urban environments across the urban planning area. These zones include inner urban zone, sub-urban zone, peri-urban zone and rural zone, which form the largest part of the Town.

a) Inner Urban Zone

The inner-urban zone, so called "the urban proper" is densely populated and hosts most of the socio-economic activities as well as community facilities. It is the oldest built-up area in the Town, compact, though sprawling along the main roads.

Plate 9.1 Development pattern in the urban proper

b) Sub-urban zone

Sub-urban zone is, spatially, the rapidly growing zone where new housing and commercial activities are vibrantly dominated by informalities in settlement development and economic activities diminishing from the inner-sub urban zone to the outer-sub urban zone. Due to the nature and the extent of settlement development, there are many un-developed pocket that call for infill development and provide possibilities for delivery community services and basic infrastructure.

Plate 9.2 Development pattern in sub – urban

c) Peri-urban zone

Peri-urban zone is the zone in transition where both urban and rural functions and land use interact. The landscape features are subject to rapid modification by human activities. It is considered the highest urbanizing zone where agricultural land and green spaces are rapidly converted to urban function. This zone also hosts valuable protected areas, natural and artificial forests, hills, preserved woodlands, prime agricultural lands and wetlands which can provide essential life support services for urban residents. This is a zone directly experiences the immediate impacts of land demands for urban growth. Therefore, peri-urban zones, are often environmentally unstable than either urban or rural settings.

For spatial planning intervention, it is crucial to understand and analyze the complex interactions between urban land use, environmental change, and socio-economic system in peri-urban area and

applies a holistic approached largely from systems perspective to address challenges emerging from interactions, function and peri-urban ecosystem services provided to the urban residents.

Plate 9.3 Development pattern in Peri-urban areas

d) Rural zone

This is typically characterized by rural socio-economic culture. Houses are sparsely developed with low population density. The larger areas are occupied by forests and farm lands. This is also a zone with high concentration of commercial trees plantations as well as natural forests largely serve as water catchment forests. It is a general a green zone which calls for environmental conservation and mechanism for sustainable natural resources utilization.

Plate 9.4 Development pattern in rural areas within town boundary

9.7.2 Urban Planning Approach

The nature of socio-economic and environmental contexts in Njombe Town calls for an integrative planning approach that addresses the environment, economic, and socio issues while safeguarding the existing biodiversity. The planning approach in this case is green city planning with self-contained service centres developed in the existing infrastructural facilities. These sub-centres and residential housing will be expanded and improved access to services. The existing informal settlements will be regularized and formalized to provide missing facilities, formal tenure rights and services.

9.7.3 Green City Planning Approach

As towns become greener they create a more attractive place for people to live, work, and invest, which in turn enhance the potential for job creation, inward investment and economic growth (Johnston & Newton, 2004, EC, 2004). Njombe Town is naturally green. The settlements are scatted within the green spaces along the line with road network and farmland. Therefore, the proposed plan will integrate economy, settlement and ecological system (Figure 9.3). The purpose is to make Njombe Town's future growth sustainable. The guiding principles include the folowing:

i) Eco-friendly developments;

ii) Equitable access to resources and services;
iii) Conserving biodiversity;
iv) Inclusiveness;
v) Economic competitiveness; and
vi) Connectivity.

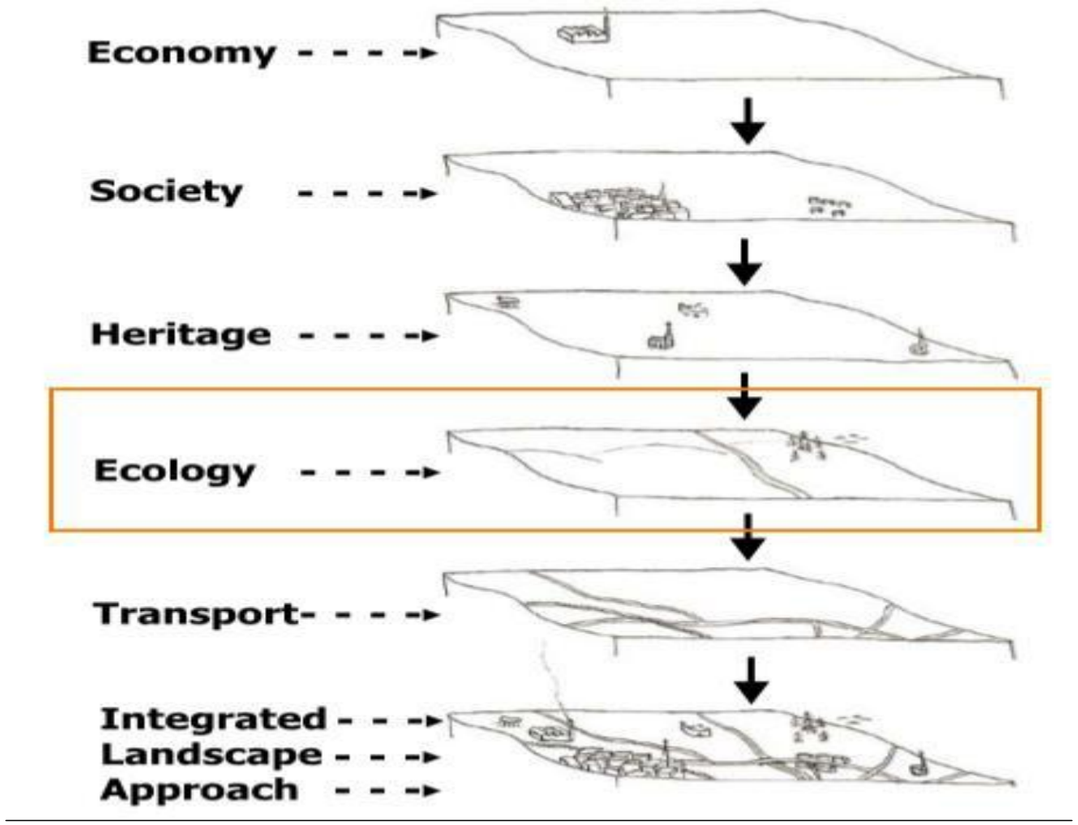


Figure 9.2 Integrated planning approach for sustainable growth of Njombe Town

9.7.4 Urban Green Space

Urban green space includes everything in cities which have vegetation. Collectively it is sometimes referred to as "Green infrastructure", encompassing the entire working landscape in cities that serve roles, such as improving air quality, flood protection and pollution control. Common types of urban green spaces include; open green spaces, private gardens, individual and institutional land, local parks, district and regional parks, river corridors and flood-plains, commercial tree farms, natural forests, wetlands, etc.

9.8 Potential Analysis

Potential can be categorized into two categories namely basic potentials and derived potentials. Basic potentials include both naturally occurring potentials, such as lands, forests, rivers to mention a few as well as social/technical infrastructural systems and institutions, which have been established by the Town Council or Regional administration. The derived potentials are usually the outcomes of the investments in the basic potentials (Table 9.5).

Table 9.5 Potential Analysis of Njombe Town in 2018

Type of potential	First level derived potentials	Second level derived potentials	contribution
a) Landand natural resources			
Abundant land area	-Abundant land area -Fertile land -Favourable climate -Varied agricultural produces -Location of different socio-economic activities	- Agricultural intensification -Agro processing industries -Trading and expansion of local and regional markets -Exportation -Improved Service delivery	-Employment creation -Food security -Improved accessibility -Raise per capital income -High living standards -Plan for different land uses -Establishment of economic processing zone -Plan for satellite towns to decentralize services to the peri-urban areas -Value chain enhancement
b) Water resources including springs and rivers			
Ruhdji, Ruaha, Mbege and Hagafilo	-water storage dams -multi-crop irrigation schemes -fishing -tourism -power plants	-Trade -Industries -Service delivery -Water supply -Improved agricutlture	- Employment -Food security -Raised per capital income -High living standards
c) Green infrastructure			
Natural and artificial forests, trees	-Building materials -Bee keeping -Eco-tourism	-Lumbering processing industries -Honey and wax industries	-Employment -Raise per capital income -Energy supply

and other vegetations	-tree farming -Logs	-Furniture centres -Recreational facilities -Wood-fuel	-Improved housing development -Raise living standards of people Hence poverty alleviation
d) Human Resources (Labor force -Number of people)			
Labour Force	Productivity	Industrial, professional activities, Trade and commerce	-Increased production and service delivery
e) Institutional Resources			
Regional Administration and Town Council	Trade and commerce	Provisions of infrastructure and services	Enhance town council administration
Religious Organizations	-Community facilities and services	Health care and education delivery	-Employment -Improved health -Access to health care -Access to education
NGOs and CBOs	-Community facilities -Training Centres	Health care and education delivery Environmental management experts and activists	-Employment -Improved health -Access to health care -Access to education -Environmental management
Finacial Institutions - Njombe CBD	-Financial Services	-Savings -Loan - Financial Transfer	-Employment -Access to credit -Business expansion and housing improvement through loans
f) Phyiscal Infrastructural Resources			
Road, telecommunication, electricity and water supply, airport	Trade and commerce,	Hydroelectric power, lumbering, tourisms,	Enhance nvestment opportunities -Increase Town revenue -

9.8.1 Basic potentials

Njombe Region at large and the town in particular are well endowed with natural resources which constitute abundant potentials for economic growth. There are also basic infrastructures such as roads, airport, water supply, electricity and storm water drainage systems that can be enhanced to make Njombe Town economically competitive over the surrounding urban centres. Other basic potentials are the existing institutions, which include the Regional Administration, Town Council and various NGOs, CBOs as well as Religious organizations which engage in urban development and environmental management activities.

a) Natural Resources

These are material provided by the earth that humans can use to make more complex (human made) products. In Njombe Town natural resources includes; land, water, Vegetation, forest, and rivers. The fertile soil is found in different areas in the Town, such as Njombe Mjini, Mjimwema, Ramadhani, Yakobi, Kifanya, Ihanga, Iwungilo, Luponde, Matole, Makowo, Lugenge, Uwemba and Utalingolo Wards. The identified areas are used for agricultural activities particularly crop production. The agricultural activities, can be promoted adequately by establishing large scale – irrigation schemes through different rivers found in the area such as Hagafilo River.

b) Land

Land is the crucial basic potential which provides platform for all human activities. It provides fertile soil for crop production, pastures for livestock rearing; spaces for human settlement development, industrial location, infrastructure, vegetation, and minerals to mention a few. Both rain-fed and irrigation schemes are conducted on land and are technically considered as a first level derived potentials from land. The agro based industries for food processing and fruit processing and packaging are the second level potentials. The establishment of farm and agro-based industries create employment opportunities, increase households' income and alleviate poverty.

c) Vegetation

Vegetation is one of the basic potentials that cover about 90 percent of the Njombe Town. These include natural and man made forests. Vegetation play a key role in providing ecosystem services, ameliorating climate, protecting rivers (biological ecosystem services). Natural forests largely cover catchment areas and provide habitat for a wide of wildlife. Economic activities, such as bee keeping can be conducted in the forest. From vegetation's, potentials, such as timber processing industries, wood fuel, and furniture centres can be established, which in turn create employment to the local community.

d) Water resources

There are different sources of water found in Njombe Region, such as the hot spring found at Mbege in Matola Ward and the Welela Wetland which are potential for tourism activities The spring is used as tourism attraction and revenue collected from it contributes to the provision of services within the area.

The Walela wetland acts as a water source for the local communities and is one of the tourism attractions due to availability of animals such as snakes, monkey and kwale. Other water resources, which are potential for tourism include Hagafilo and Nyamuyuya waterfalls.

e) Human resources

Humans are a basic potential that can be used to foster development in Njombe Town. Human resources include both skilled, semi and unskilled labours engaging in farming activities, trading, as well as those employed in the public and the private sectors. Having skilled labour, such as Farmers, Engineers, Surveyors, Planners, Cartographers, Architects, Land officers, Medical Officers, Teachers, to mention a few, improve the town administration and production.

f) Infrastructural resources

Infrastructure resources include the existing roads, water supply, electricity supply and telecommunication, such as TTCL, Vodacom, airtel, halotel, as wel as internet networks. The available roads in Njombe Town are used in transporting goods and services. The other infrastructures found in Njombe Town include schools, dispensaries and religious facilitates. The different services provided obtained from the various infrastructures contribute to the Town revenue, create employment, improve access to services, and raise living standard.

g) Institutional resources

Institutional resources include the Regional and Town Councils as well as the Ward and Sub-ward local institutions at the grassroots. Other institutions include the NGOs, CBOs, religious organization, postal offices, and financial institutions such as the NMB, CRDB, FINCA and Savings and Credit Cooertaives Societies (SACCOS). The various institutions provide supportive potentials in terms of planning, coordinating and facilitating the use of other potentials available in the town so as to boost the urban development.

9.8.2 Derived potential

These are the resources which result from utilization of basic potentials. For example, when labor and arable land resources are utilized on land, it results into agriculture. The first level derived potentials from the utilization of basic potentials include agriculture and lumbering.

a) Agriculture

Agriculture is a derived potential from the fertile land and water resources existing in Nombe Town. The Town has abundant and fertile soil for agriculture, which is already practiced in a large part. Agriculture creates employment opportunities; contribute to individuals and household's income, as well as the Town's revenue. The agricultural potential need to be well exploited so as to ehance the Towns economy.

b) Lumbering

Due to the presence of natural and man-made forests, lumbering activities can be considered as a potential for industrial development. Lambering activities have a potential to positively contribute to the Towns economy through employment, income as well as revenue generation.

Apart from the first level derived potentials, there are second level derived potential which can be obtained by combining derived potentials with some basic potentials. For example, when agriculture is combined with labour, and traders produces the potential for agro-industries. Hence the possible second derived potentials in Njombe Town include industries.

Industrie**s** are secondary potentials that are derived from the combination of first level potentials. The potential can be derived by combining agriculture, traders, and labour force (skilled labour, and unskilled labour). In Njombe Town there exists three levels of industries, which are small scale, medium scaleand large scale industries. Products from the various industries can be used for local consumption with some of them having potentials for export. For instance, processing industries such as furniture service centers are potential for producing furniture for office and domestic uses which can be sold sold to local markets and some of them can be exported to other part of the countries as well as abroad.

It is worth noting that all potentials are interlinked and depend on each other for their realization. The potentials available can support the communities in Njombe Town in different ways. Basing on human resource potential, some of the huma resources will be employed in different sectors like industries, agriculture and service delivery. Food security will also be enhanced as agricultural production and productivity will be maximized.

Therefore, in developing urban development concepts and land use proposals, analysis of the basic and the derived potentials is essential for effective planning and implementation of development projects. They provide clues on what need to be done, where, how, and under what capacity.

9.9 The Urban Development Concepts

This subsestion presents alternative concepts, which can be used to guide the future land use and development of Njombe Town. Two alternative development concepts are discussed: the first is a green city with centralized service centre and the second is green city with decentralized service centres. The detailed discussion of each alternative is presented in the succeeding subsections.

9.9.1 Alternative Development Concept I: Green City with Centralised Service Centre

Njombe Town depicts three distinctive major spatial development features namely urban proper, peri-urban areas and rural areas. While the urban proper is the most occupied, densely developed with few areas requiring infill development, the peri urban zone has scattered housing development with big junks of vacant land. The rural zone has few scattered settlements and most of the land is used for agricultural activities. Given the large size of the Njombe Town area, one may argue that by the time span of this Master Plan the periurban/rural zone will not be reached in term of intensive development. The zone therefore offers potential for agricultural and natural resources management activities to continue to boom. However, to realize the potential of continuing utilizing the agricultural land, there is a need to devise mechanism to guide urban evelopment which limit sprawal and engulfment of the agricultural land bearing in mind that urbanization converts agricultural land into urban development. By this understanding, the principle of concentration of major urban services in the inner zone, spreading out to the peri urban zone is important. The rural zone is served for future expansion.

With the Green City with Centralised Service Centre Concept, the development will concentrate and spread out to the rest of the Town from the existing Town Centre (Figure 9.3). All major functions and services will be concentrated at the Town centre whereby people from the Wards outside the urban core will have to commute to access the centrally provided services.

The advantage of this approach is threefold:

i) Concentration of services always reduces initial capital costs for investment;
ii) Agriculture land is not much disturbed. In turn, will make agriculture production to continue maintaining or even increase its revenue contribution to the council and the nation at large; and
iii) Plan monitoring and evaluation is simplified and more effective.

The disadvantages of this approach include the fact that, the centralized service centre will create unbalanced service provision within the Town with the urban wards accessing easily the services while those in the peri urban may face challenges of access to basic facilities and services. Communities may not be wholly interested with the economies of concentration of services at town level but rather equitable distribution of services and resources to their clusters. As such, this may cause social unrest and political stand as they are all contributing to the council coffers.

The concept defeats the present need of bringing services close to the people. The economics of time to the rural communities is not considered in this approach. As such these people will continue to use more time in accessing services in the urban centres, time that could be used in production activities.

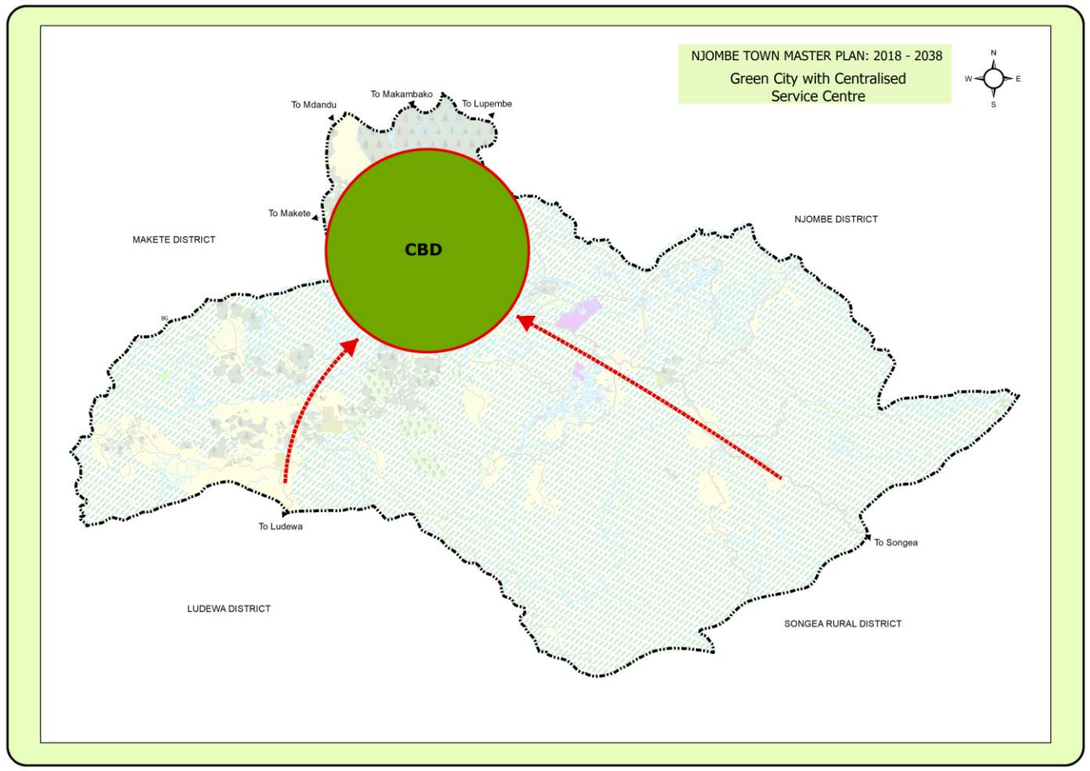


Figure 9.3 Green Centre with centralized Service Centre

9.9.2 Alternative concept II: Green City with Decentralized Service Centers

The green city with decentralized service centre concept take into account the nature of settlement development and existing infrastructural facilities. Its main objective is to bring services to where people live. The idea is to create self-contained nucleated settlements developed from existing service centre in both peri-urban and rural settlements integrated to urban fabric (Figure 9.5).

The decentralized service centres concept is guided by the malti nuclei theory, which it refers to smaller metropolitan areas which are located somewhat near to, but are mostly independent of larger metropolitan areas. Unlike the centralized service centre concept which concentrates all the services in the urban core, this concept decentralizes urban settlements and related functions into service centres found in the intermediate and peri urban zones. The objective is to maximize access to community and

commercial services for population which is unevenly distributed all over the town area. The decentralized cenrice centre concept allows people to live and access service in the peri urban environment by focusing development and provisioning of services in and around the existing settlements or centres.

Due to the existing spatial development of Njombe Town, the Master Plan proposes three service centres (Figure 9.4). The first service centre is the existing CBD wich will be maintained and contioully being improved interms of services provided so as to save as administrative centre for the Region and the Town and at the same time provide the basic services to the immediate population.

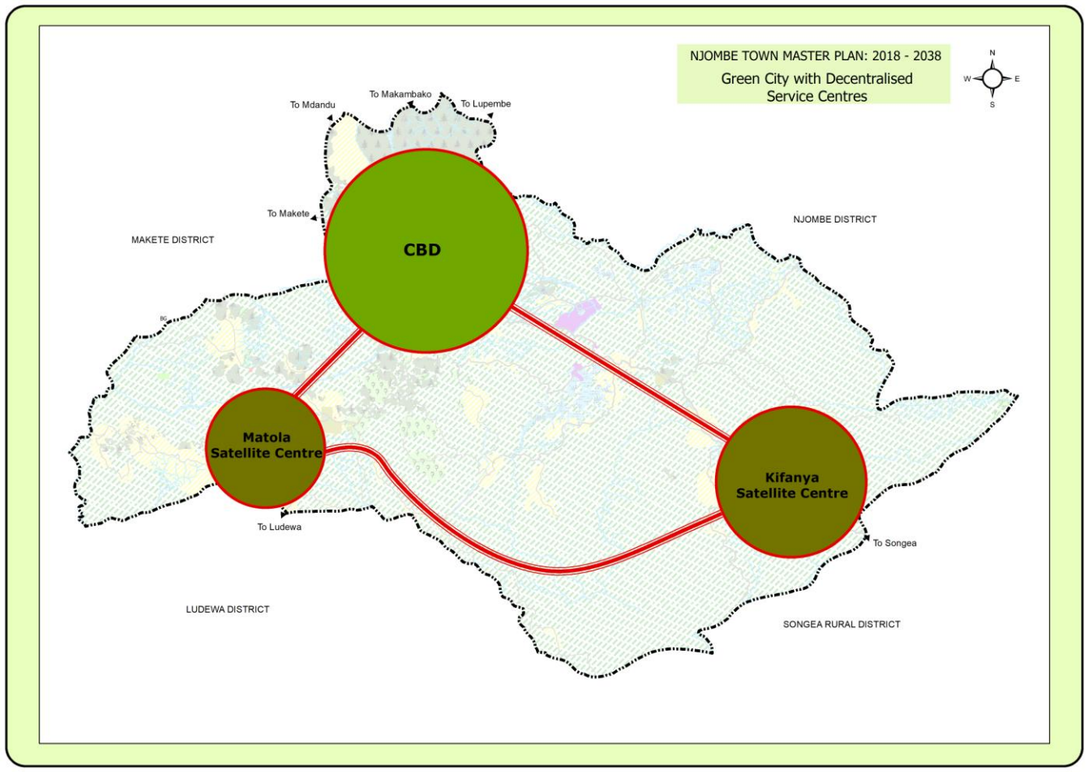


Figure 9.4 Green Growth with decentralized services

Two other service centres are proposed, one at Kifanya and the other at Matola. The Kifanya Service centre will serve the population at Kifanya and the neiboring settlements in the Ihanga and Iwungilo Wards. The Matola service centre will serve the population at Matola and the surrounding wards including Makowo, Luponde, Lugenge and Utalingolo The landscape of the service centres is a mixture of housing, institutional areas, service industries, market area, shops, surrounded with agricultural land uses. The decentralized service centre therefore will therefore be self sufficicient containing both work and/service and residence within a decetralised environment.

As population projection of the Town shows, only 22 new neighborhoods will be required in the next 20 years, relatively huge land (144,255.76) about 45 percent of the total land will still remain and be used for urban farming and commercial tree plantation.

The advantages of the green decentralized service centre include the following:

i) It allows grouping together of scattered settlements ata close vicinity and thus facilitate economy of scale in provisioning of infrastructures;
ii) The decentralization of services ensures close proximity of services to residents;
iii) It reduces travel distances to work places and in accessing services and thus contribute to miniming the possible contribution to green house gases emiision throtg motorized transport; and
iv) It offeres linkage and sharing of facilities between adjacent settlements
v) Allow people to live and get services in the peri urban environments.

The disadvantages of the decentalised service centre concept include:

i) The need for high investment costs for the decentralised infrastructures:
ii) Increased demand for land to accommodate each new increment of population growth
iii) Increase the costs of public infrastructure because lower densities require more linear feet of roads and water lines to serve each lot.

CHAPTER TEN
PLANNING PROPOSALS, POLICY, AND RECOMMENDATIONS

The analysis of the existing situation implies that Njombe Town should not be planned in isolation of its impact regions or the so called “informal satellite centres’ existing within the planning area but deeply rooted in rural character. These sub-centres are somewhat not worthwhile to be called urban areas by both level of population and infrastructure/service provision. Some of the sub-centres emerged from the rural context including Matola, Kifanya, Luponde and Uwemba Wards. With the total urban area of 3,212 square kilometers and the nature of settlement development, which is generally scattered in the peri-urban areas, the proposal for spatial development ought to adopt a decentralized system of planning and service delivery.

As conceptualized in Chapter Nine, Njombe Town depicts three distinctive major spatial development features namely urban proper, peri-urban areas, and rural areas, which prompt application of different planning interventions to address the socio-economic and spatial development issues that upsurge from urban rural contexts. The town is also endowed with varieties of natural resources, which provide multiple ecosystem services of socii-economic importance to its communities, calling for the deployment of regional planning tools to guide and coordinate spatial development patterns for land use and execute sustainable natural resource utilization and conservation of wildlife.

10.1 The General Planning Principles

The preparation of the Njombe Town Master Plan 2018-2038 capitalized into and among others, three general planning principles, namely hierarchy of settlements and service centres, green growth, and decentralized compact service centres which will be surrounded by green belt. Due to the large spatial size of the planning area, which stands at 3,212 square kilometers, the planned service centres and sub-centres will be self-sufficient with compact and mixed uses to provide basic services to the surrounding communities and therefore minimize travel frequency to the Central Business District (CBD). The planning proposal takes into account the existing spatial developpment patterns while minimizing sprawl by providing green belt and buffer zone for natural forests, rivers, hills and valleys.

10.2 Njombe as a “Green City”

About 90 percent of Njombe Town is covered by green structures. Njombe has a vast land covered by green vegetation. A proper planning is therefore needed to ensure that a significant amount of the land is well maintained for the future vegetation. Green infrastructures in Njombe can be referred to as an interconnected network of green space that conserve the natural ecosystem values and functions and provides the associated benefits to human population. The infrastructure includes all the green and blue components within and around the Town and its villages from parks and green spaces such as soccer fields, woodlands, and more natural habitats such as natural forests, river corridors like Hagafilo, Luhuji and Ijumilo. The structures also include street trees, incidental pockets of green in villages and other rural areas surrounding the town, public and private gardens, vegetable patches, croplands, plantations and open spaces. Green structures in Njombe have significant potentials to improve the quality of life of its dwellers, the urban environment factors as climate, pollution, noise levels, and traffic emission and ensure urban sustainability. The current availability of green structures, which include natural forests, valleys and other reserved areas increases its potential for green infrastructure planning. The presence of rivers, which flow throughout the year is another potential factor for enhancement and conservation of green infrastructure planning, which will also foster their ecological functioning.

Proper planning, coupled with demarcation of rivers and identification of areas of ecological potential like valleys, will determine the future of Njombe’s green infrastructure. There is a lot to learn about green infrastructure planning from other towns and cities worldwide as well as those within the country. The city of Bratislave, Slovakia, for example, has maintained more than 60 percent of its green infrastructure for community use and other ecological functioning while the city of Madrid has only about 5 percent. In Tanzania, the city of Dar es Salaam has more than 60 percent of its area green, while both Arusha and Mbeya have more than 40 percent green. Green infrastructure provision in cities of Bratislava, Dar es Salaam, Mbeya and Arusha is, however, far higher than the international standard which is approximately 20 to 30 percent coverage of the total geographical area and 15 to 25 square metres urban green spaces per capita. International minimum standard suggested by the World Health Organization (WHO) and adopted by the United Nations Food and Agriculture Organization (FAO) is a minimum availability of 9 square metres of green open space per city dweller. The larger percent of green areas in Dar es Salaam, Arusha, and Mbeya is attributed to un-developed land in the peri urban areas, which is not ideal for future sustainability of green structure planning.

The difference between green infrastructure provision in Bratislava, Dar es Salaam, Arusha, and Mbeya is that while green infrastructure provision in Bratislava is a result of both general and detailed planning,

green structures in Dar es Salaam, Arusha and Mbeya are the result of undeveloped peri urban areas, and therefore, not sustainable for future planning. Apart from un-developed peri urban, the three cities of Tanzania are threatened by uncontrolled urbanization, which is largely attributed to among other factors, lack of detailed planning. Lack of detailed spatial planning makes green infrastructure provision vulnerable to encroachment. It is important that Njombe Town establishes and complies with its green infrastructure planning to reduce their encroachment so as not to fall same trap as other cities in Tanzania. Having been dominated by tree plantations, the Town remains vulnerable to green infrastructure depletion once changes of land use from tree plantations to other uses occur. It can, therefore, be concluded that apart from general planning, detailed planning can suffice for green infrastructure planning in Njombe given its current potential and opportunities.

There are however, potential factors for green infrastructure enhancement in Njombe which include;

(i) Presence of rivers and valleys, which can easily be turned into green corridors;
(ii) Presence of natural forests, which can be maintained under strict rules for conservation of indigenous species;
(iii) Availability of open spaces in between houses/along the roads, which make it easy to plant trees under the campaign of one house, two trees;
(iv) Availability of tree planting stakeholders who can contribute significantly, financially, and in kind (provision of seedling) in tree planting campaign;
(v) Preparation of detailed planning in residential areas, which will ensure provision of green infrastructures, and
(vi) Extended greed areas to over 70 kilometres from one end to the other with a lot of trees gives wider choices on which areas should be maintained for green infrastructure provision.

10.3 Green infrastructure planning: Policy issues and Recommendations

10.3.1 Why plan for green infrastructure in Njombe Town

Green infrastructure planning in Njombe Town will allow decision to be made to safeguard important components of the green infrastructure network and crucial functionality, enhance key functionality as well as create new green infrastructure components in areas of high need, such as the CBD and highly populated areas like Zambi and Sangamela. A clear appreciation of the services from green infrastructure also means that in areas where it is lost (for example, due to new urban development) the functions and benefits that it provided are well understood and that appropriate compensation can be considered. Yet, without adequate planning, the green infrastructure resource of Njombe Town might rapidly deplete and the benefits derived from it will be eroded. It can, therefore, be concluded that green infrastructure is an important part of any planning effort, especially in the town with multiple green infrastructure like Njombe.

10.3.2 Future dynamics of green infrastructure in Njombe Town

Green infrastructure planning will consider future dynamics on the performance of present green structures. The dynamics are contributed by various factors, including population change, (which lead to settlement expansion and higher generation of waste), market dynamics of commercial tree plantations, climate change, government strategies, policies and laws and the general perception of the public. These dynamics are highlighted hereunder:

(i) Commercial tree plantation: The future of commercial tree plantation is attributed by market forces and dynamics. Decline of timber market may mean change of business pattern from tree plantations to crop production which may eventually reduce forest areas and overall green infrastructure;
(ii) Settlement expansion: Settlement expansion in Njombe Town is inevitable given the population projections. The population projection at an annual growth rate of 2.7 indicates that the Town will have 259,926 inhabitants by 2038. The increased population will require areas for residential development, community facilities, commercial and industrial investment area as well as areas for recreational facilities and road expansion. All these dynamics will reduce the size of green infrastructure in the Town;
(iii) Scattered trees: The existing scattered trees in Njombe Town can be sustained and form an important part of green infrastructure provision, if well maintained;
(iv) Rivers: The population growth, settlement expansion as well as need of land for community and public infrastructures all pose a threat to the existence of rivers;
(v) Government strategies, policies and laws: Dynamics of government strategies and laws for industrial expansion, power supply infrastructure might reduce green infrastructure provision; and
(vi) General public perception: In most cases communities have missed the benefits provided by green infrastructure. Communities in Njombe just like any other area in Tanzania take green infrastructure for granted.

10.3.3 What to consider for green infrastructure planning in Njombe Town

The existing land use map presented in Chapter Four of this Master Plan serves as the basis for morphological analysis of Njombe Town. A large part of Njombe Town morphological types is dominated by urban agriculture, commercial tree plantations and tea farms all of which are considered as green structures. There are also green structures, in patches, in other land uses which makes the Town greener. Morphological analysis of Njombe Town is important to establish location of the various green infrastructures which are important input in determining their future.

Green infrastructure planning in Njombe Town should consider the four benefits of green infrastructure worldwide as a way to integrate the global agenda on green growth, climate change resilience and sustainable development. However, focus should be given the benefits that are more preferred in Njombe Town. Benefit of green infrastructures in Njombe does not different from those in Dar es Salaam, Bratislava or any other city. However, Njombe Town has advantage of its extended area and natural resources. Benefits of green infrastructure in Njombe Town are;

i) Provisioning: These include Timber, Wood, food such as vegetable, poles, charcoal from planted forest);

ii) Regulating: Although Njombe Town is known for its cold environment influenced by several factors including high altitude, hilly landscape and vegetation, trees continue to play key regulating role, i.e regulating the climate, water, air, as well as ersosion control;

iii) Cultural services: These are the nonmaterial benefits people obtain from the green infrastructure through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences, including recreation and ecotourism; and

iv) Supporting services: supporting services are defined as those services that are necessary for the production of all other green inftrsture ecosystem services including the provisioning, regulating and cultural services. These include services relate to support of primary production, climate regulation, soil formation and retention, nutrient cycling as wellas provisioning of habitat.

The various benefits obtain from the green structure services are vital and crucial especially for the Town, which is rapidly expanding like Njombe. It is therefore important to consisder maintaining as well as improving the green infrastructure services in Njombe Town so as to sustainably benefit from the services provided by the structures.

The following guidelines give consideration for provision of green infrastructure in various areas in Njombe Town:

(i) Enhancement and conservation of green rivers so as to protect rivers from erosion, create green corridors, and conserve water sources;

(ii) Enhancement of green structures on residential houses and institutions for for shade, fruits, as well as firewood;

(iii) Maintanance of natural forest to conserve the town's indigenous species/vegetation;

(iv) Species selection is important depending on where the green structure is established. Specie selection will depend on use. For instance, need for shade, fruits as well as those which meet the local climatic conditions; and

(v) Town – wide tree plantation along the roads, central area and along the river banks and valleys as buffer zones as well as corridors.

10.3.4 Rivers and Natural springs: Policy Issues and Recommendations

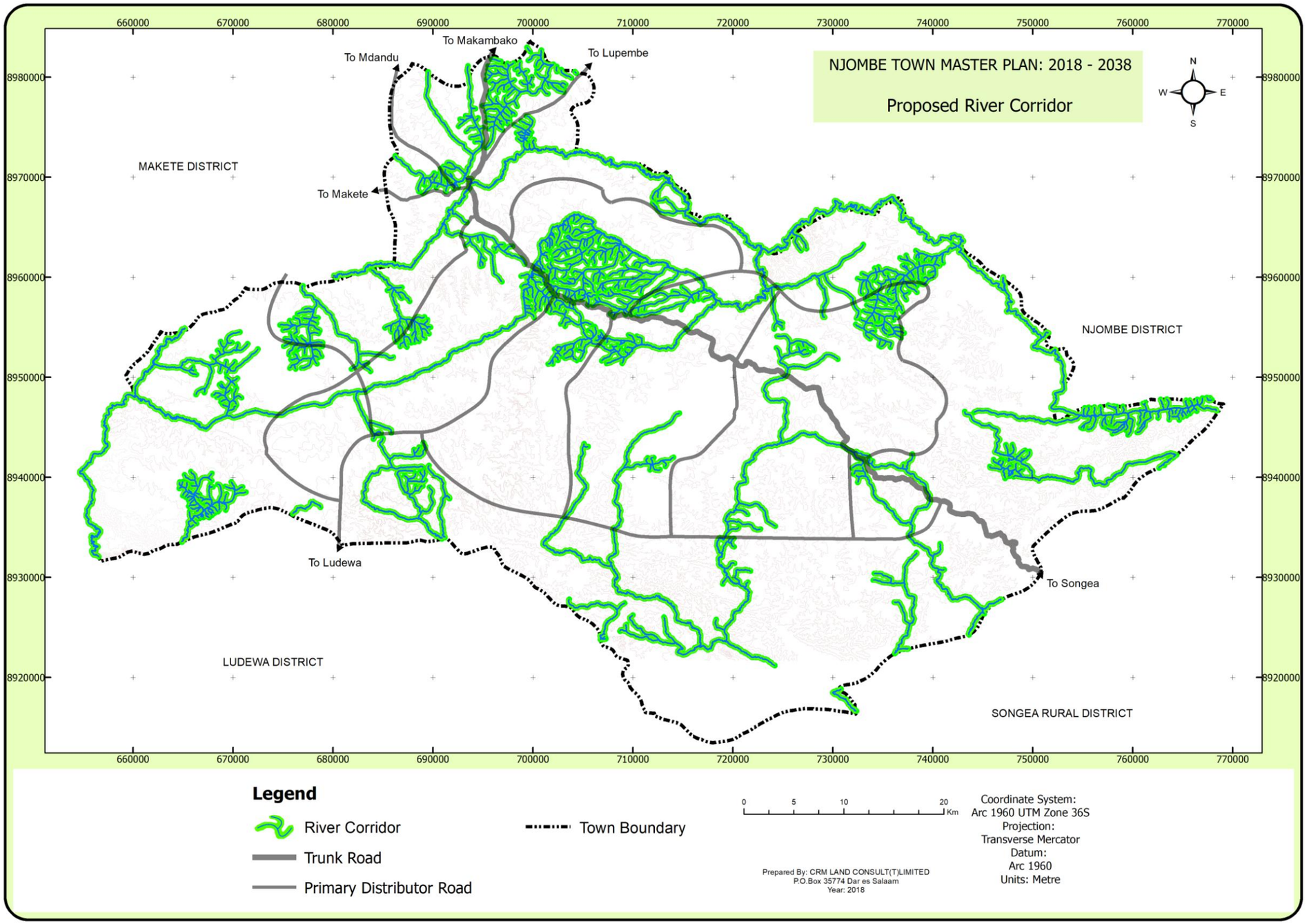
Njombe Town has more than five permanent rivers and streams flowing through its urban as well as in the rural areas. There are also seasonal streams in rainy seasons. The biggest river is Luhuji, which flows to Iringa Region. Luhuji catchment area is dominated by trees on its banks although most of these trees are Eucalyptus, which consume large amounts of water. The catchment area is fairly maintained although there is a car washing and maize cultivation activities in some areas. There is also Ijumilo River, which flows through Wikichi, Ramadhani, Itulike and Mgodechi areas to join Luhuji River at Luhuji valley. Kihesa River flows thorugh Njombe Town centre separating Kihesa and Mgendela areas. Matarawe River flows through Matarawe and joins Luhuji River at Luhuji valley. Hagafilo River flows through Magoda, Uwemba, Nundu, Kilensi, Yakobi, Peruhanda, Idunda, Ihoya and joins Luhuji River in Kifanya area. Water from the rivers is largely used for washing especially in the urban proper. In the rural villages where piped water service is not available, water from the rivers is used for drinking and irrigation of vegetable gardens in some villages like Magoda and Uwemba. In the past fishing was conducted in small ponds created along the main river channel. There is also a stream called Kilimani, which starts at and flows through Kilimani and Kihesa area. Apart from the rivers, water bodies in Njombe also consist of Ihogosa dam, wich is used irrigation of tea plantation in Kibena. The dam is owned by three villagesof Muhaji, Irima, and Mawindi.

Despite the potential availability and use of rivers and natural springs in Njombe Town, the water sources face various challenges caused by human activities. For instance, large parts of the river valleys are dominated by eucalyptus species, which consume large amounts of water for their growth. In the

long run, continuing planting tree species such as eucalyptus along the river valleys may reduce the volume of water in the existing rivers. There is also a challenge of illegal and unstatianble cutting of tree on river banks for various uses firewood, charcoal and poles, which expose the river banks to erosion and cause siltation and pollution. There is also a notable rate of valleys pollution caused by agro-chemicals used in vegetable gardens, maize and beans farms on Luhuji and Ijumilo Rivers, which threaten lives of the downstream water users. Further analysis of river water will confirm its suitability for down-stream water users. Settlement expansion especially near Hagafilo bridge and along Kihesa stream is alarming as it may result into erosion, pollution and siltation of rivers.

The Master Plan recommends adoption of a green corridor strategy by maintaining the existing trees as well as plant plant new ones so as to reduce erosion filter pollutant and maintain the quality of water in the rivers. Trees on river banks will also provide fruits, shade and ameliorate micro-climate. The National Environmental Management Act of 2004 as well as the district by-laws prohibits any agriculture activities within a minimum distance of 60 metres from a water boy bank. Raising awareness and enforcement of the National Environmental Management Act as well as the bylaws, including imposing fines for culprits will reduce encroachment and degradation of river banks. Furthermore, farmers should be encouraged not to use chemicals near river valleys because the soil is still fertile. Organic farming can reduce impacts of agro-chemicals in the river waters in the Town. Map 10.1 shows the proposed green corridor along the rivers so as to maintain and ensure their sustainability.

Map 10.1 Proposed River Corridors at Njombe Town



10.3.5 Commercial Tree Plantations: Issues, and Recommendations

A large part of Njombe Town, which is estimated to be more than 70 percent in "rural" peri-urban and urban areas is dominated by commercial tree plantations. It has been noted that commercial tree plantation is the largest contributor to the Njombe Town economy. It is, therefore, important that its management structure and key actors are analyzed so as to to inform the green green infrastructure planning in the Town. Forest management in Njombe Town is guided by the Forest Act of 2002. Forest conservation draws various actors and institutions in Njombe Town including both the government and non government. The government actors include the central as well as local governmet authorities. With the exception of the central government all the other government actors operate within the district council to ensure that interests of forest stakeholders, such as business people are served in line with conservation efforts. The Non government actors in the forest sectors in Njombe Town include private companies, NGOs Associations, as well as CBOs. These actors either own tree plantations or promote ownership and conservation for the purpose of boosting the economy of Njombe Town. Some of these actors are Umoja wa Wafanyabiashara ya Mbao Njombe (UWAMBANJO) whose focus is tree planting and selling of timber and wook. Religious institutions, such as the Roman Catholic, Anglican, and Lutheran also own tree plantations of various sizes in different villages. Tree plantations are also owned by individuals (who form another group of actors) and their focus is to grow trees and sell. A part from the management role it plays, Njombe Town Council also own tree plantations. Other actors are private companies, such as TANWAT, education institutions such as primary and secondary school and Tree growers' associations, such as Umoja wa wapanda Miti Kifanya (UWAMIKI), Umoja wa wapanda miti Liwengi (UWAMILI), and Umoja wa wapanda miti Lilombwi. There are NGOs such as PANDA MITI KIBIASHARA and Forest Development Trust, which support tree planting in villages of Njombe and Iringa Regions.

The wide range of the actors described above provide an evidence that commercial tree planting is an important aspect of economic growth and livelihood enhancement of the Town inhabitants, the private and the public institutions as well. The sector employs people from all sectors/cadres. It is, therefore, important that coordination and planning strategies are put in place to ensure that these actors do not cause environmental degradation but contribute to the enhancement of urban green infrastructure while working on economic growth.

Although commercial tree plantations have been an important business in Njombe Town, it is however, important that green infrastructure planning is laid down to ensure their maintenance for the near future generations. That is because tree farmers can easily change to other crops or turn their plantations into other economic activities once the dynamics of tree plantations change. Green infrastructure planning will ensure green structures are maintained within the Town and its outskirt especially in the future in the anticipation of shift of tree business. Forest fires also threaten both natural and planted forests.

10.3.6 Natural Forests: Issues and Recommendations

Natural forests form the largest part of the water catchment areas. It is estimated that Njombe Town has a total of 3056.6 hectares of reserved natural forests, which covers about 20 percent of the total forest land in the Town. However, the natural forest managers are facing challenges, largely caused by social and economic activities. Such challenges include illegal harvesting of natural trees, fire outbreaks, and unregulated farming activities and housing development in reserved areas.

Community awareness on the balance between commercial and conservation benefits and stakeholders participation on firefighting is important in ensuring forests' existence. Lastly, institutions which have tree plantations, such as secondary schools, religions and parastatal organization should be encouraged to have a master plan for their areas to guide physical expansion and ensure that the existing green structures are maintained.

10.4 Proposed Utilities Delivery

Public utilities are an important component of economic well-being of the community. The utilities satisfy people's basic wants and provide comfortable living. Planning for utilities is part and parcel for development plans for any neighbourhood or city. The provision of various utilities need space, thus, planning for them ensures that they are part and parcel of land use. This section provides an overview of how the public utilities in Njombe Town will be like in the next 20 years. The overview covers projections, propositions and recommendations for ensuring the Town is environmentally managed. The utilities covered include water supply, wastewater management, solid waste management, and drainage.

10.4.1 Water Supply

Water Sources and Distribution

Njombe Town will continue being supplied by the existing spring sources and the separate water schemes serving the peri-urban areas. The modality for incorporation the water schemes under the management of NJUWASA will be decided and implemented as the Town expands and as the NJUWASA water supply extends to those areas. As an immediate plan, NJUWASA has identified an alternative water source to augment the existing water sources. The source is Hagafilo River, which is

expected to have an intake and a conventional water treatment plant (Map 10.2) the intake and the water treatment will require a total space of 16,300 square metres. The sources will feed three water tanks at Hagafilo (1500 square metres), Mgodechi (1200 square meters) and Itulike (900 square metres), making a total of 19,900 square metres area requirement for the main component of the water supply scheme.

New potential water sources have been proposed to be rivers/streams most of which are fed by the existing springs. The proposed new sites for drawing water are as indicated in Map 10.2. The sources will be further explored through detailed feasibility studies and design before being incorporated into the Town water supply scheme. Therefore, in the next 20 years the water sources in the Town will be as indicated in Map 10.2

The sustainability of these water sources will depend on the protection measures taken as currently most of the water sources are endangered by human activities mainly agriculture. Strategies, such as adequate enforcement of by-laws and laws; demarcating catchment areas; prohibiting conduct of any anthropogenic activity within the specified buffer zone are a pre-requisite.

10.4.2 Water distribution

The current distribution network is mainly confined to the CBD. However, the distribution network will expand to cover the peri-urban areas. Water distribution networks will be designed to start from the water intake/treatment plant to the storage/distribution tank and from the distribution tank to the consumers (house connections or standpipes). The main distribution pipe will be laid along the road for easy monitoring and maintenance.

The recommended type of distribution system is closed loop systems to enhance water availability all the time even when there is a faulty in the distribution network. The system consists of a main pipe from the intake routing directly to the distribution tank, thereafter branching to various user points. The distribution network is expected increase by more than 100 percent to reach the areas that are current not supplies with the Town supply systems. The existing distribution network will continue being used but will need some rehabilitation to reduce water losses.

Metering will be increased from the current 80 percent to 100 percent. However, it is proposed that prepaid meters be installed to increase the efficiency in revenue collection and levels of service. Currently non-revenue water account for 30 percent and it is caused by two factors which are either physical losses or commercial losses, strategies to reduce non-revenue water will include timely repairs, installations of ball valves in all the storage tanks, installations of prepaid meters, improve network surveillance methods and frequency.

10.4.3 Water quality and treatment

For the NJUWASA water supply, water is currently chlorinated to improve its quality before being distributed to the consumers. However, the water quality is currently affected by anthropogenic activities such that the quality of water supplies is not good. The future projections necessities to improve the treatment scheme and control human activities in the catchment so that water is not polluted. Proposed land use plan shows that there will be an increase in the number of industries and expansion of the residential areas. Such increase has a substantial impact on water quality. Therefore, all the new water sources will need to be equipped with a conventional water treatment. The Hagafilo water source, which are one of the immediate source to be implemented will be installed with a conventional water treatment plant involving, sedimentation, coagulation and flocculation, filtration and disinfection.

Water quality monitoring will be improved by conducting regular water quality checks. It is proposed that for surface water sources where treatment plants are installed, daily monitoring of the raw and treated water be done. For all sources monitoring of the quality of water supplied will be done on a daily or weekly basis. A comprehensive water quality monitoring will be done at least once in a quarter of the year.

10.4.4 Water Consumption and Demand

The current per capita demand is 75litres per day. It is expected that the per capita water demand will increase due to industrial expansion as the industrial area increase to 10 percent of the Town area. Lifestyle change is also expected to change as the township becomes urbanized and modernized (westernized). Taking into consideration all these, it is projected that the per capita water demand might increase from 75 to 120 in the coming 20 years. Therefore, the total water demand by the year 2038 is expected to be 30,417.96 cubic metres per day. This demand has taken into consideration the following use categories:

i) Domestic uses;
ii) Industrial consumption;
iii) Fire fighting;
iv) Institutional uses; and
v) Commercial water uses.

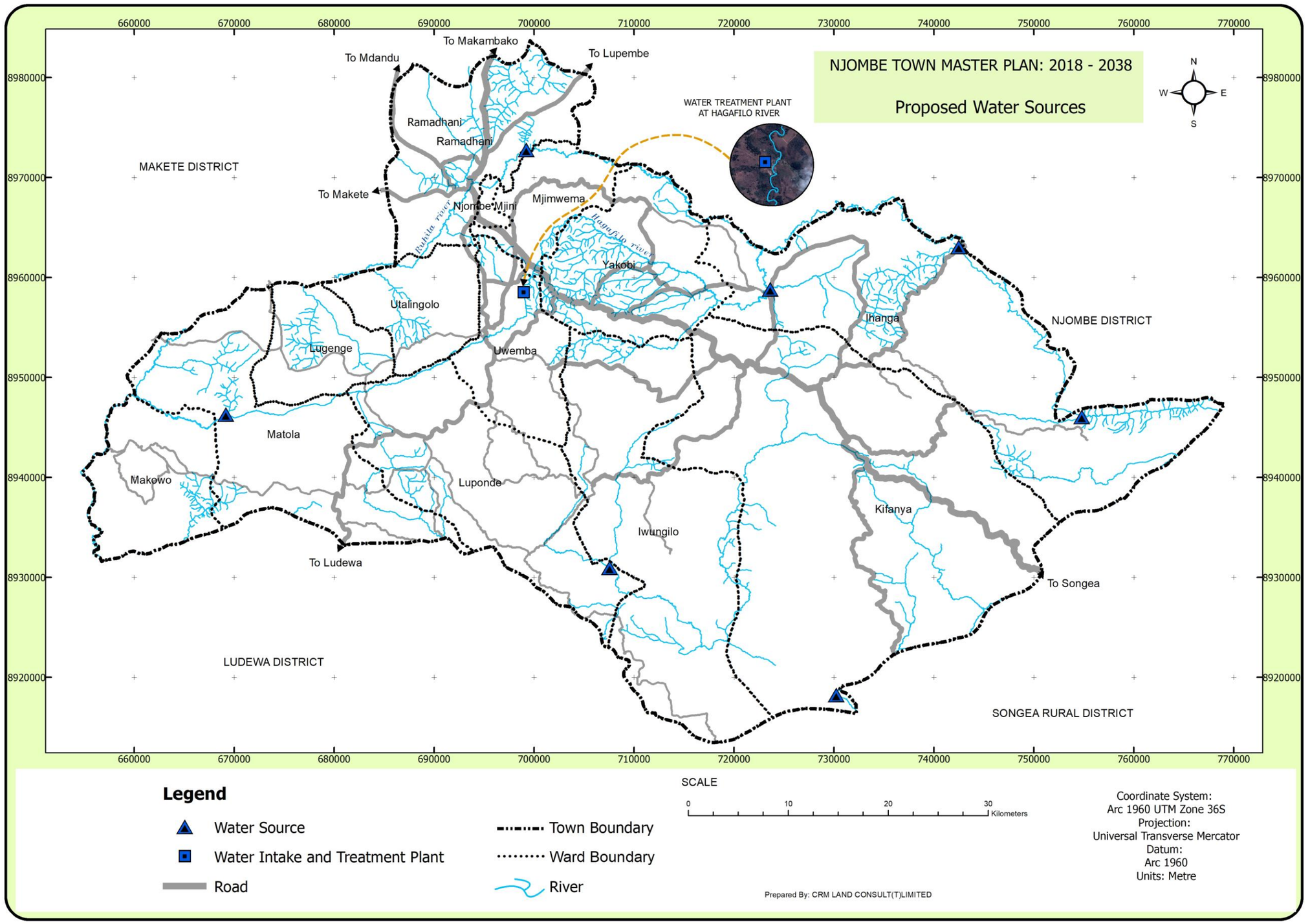
It is anticipated that the water required can be met by the existing and potential/proposed sources provided that they are well protected and maintained. This calls for strategies for water sources protection that may include the use of strict by-laws.

Water consumption is categorized under domestic, institutional, gardening and agricultural. Domestic consumption is the most significant and it will account for more than 60 percent of the total consumption.

10.4.5 Water storage

According to the water design manual by the Ministry of Water and Irrigation, the recommended storage capacity is at least seven hours of the daily demand. Therefore, the required storage capacity is 8,871.91 cubic metres. Therefore, the Town Council will have to increase its storage capacity five times the current storage capacity in the next 20 years. Two types of tanks will be installed namely storage and distribute tanks. The storage tanks will entirely save the purpose of storing water and the distribution tanks will serve both storage and maintaining pressure in the distribution network. Whenever possible the distribution tanks will be installed higher than storage tanks. For the water sources, construction of a dam for water storage can be considered. The dam will collect water from a river or stream in wet season and store it for various uses, including water supply.

Map 10.2 Proposed Water Sources in Njombe Town



10.5 Wastewater Management

10.5.1 Wastewater generation

The major wastewater sources in the township will come from domestic and industrial activities. The industrial sewage is expected to expand with the proposed industrial expansion. Both water consumption and wastewater are expected to increase. The estimated wastewater generation is expected to be 24,334,368 cubic meters per day (80 percent of the water consumed).

10.5.2 Management of wastewater

The management of wastewater will continue on short term basis to be onsite with emphasis of installation of improved facilities and onsite treatment systems particularly properly designed septic tank fitted with soak away pit. However, with time the Town will shift from onsite treatment systems, that are currently used to community level decentralized treatment and disposal systems rather than to a centralized system. Each of the proposed systems will collect sewage from the community or neighbourhood and convey it to an anaerobic treatment system.

The CBB can be served by one centralized treatment system utilizing the space that has already been secured or alternatively install several community decentralized systems. Installation of a centralized system may be limited by topography and nature of the terrain it is desired that sewage transport is driven by gravity and not pumping (to reduce operating costs). On the other hand, installation of several community decentralized anaerobic treatment systems may provide competitive advantages by serving space, availing opportunity for resources recovery and gas production.

All the satellite cities will be served by community, 15 decentralized wastewater treatment systems as indicated in Map 10.3. Choice for the technology, the detailed investigations and designs will need to be done separately before installation of the systems.

Step by step strategies to improve sanitation are as suggested below:

i) Promote installation of appropriate sanitation facilities at household level;

ii) Construct an aerobic or anaerobic wastewater treatment facility at the area already secured;

iii) Promote involvement of private operators and NJUWASA in emptying and desludging of onsite treatment systems;

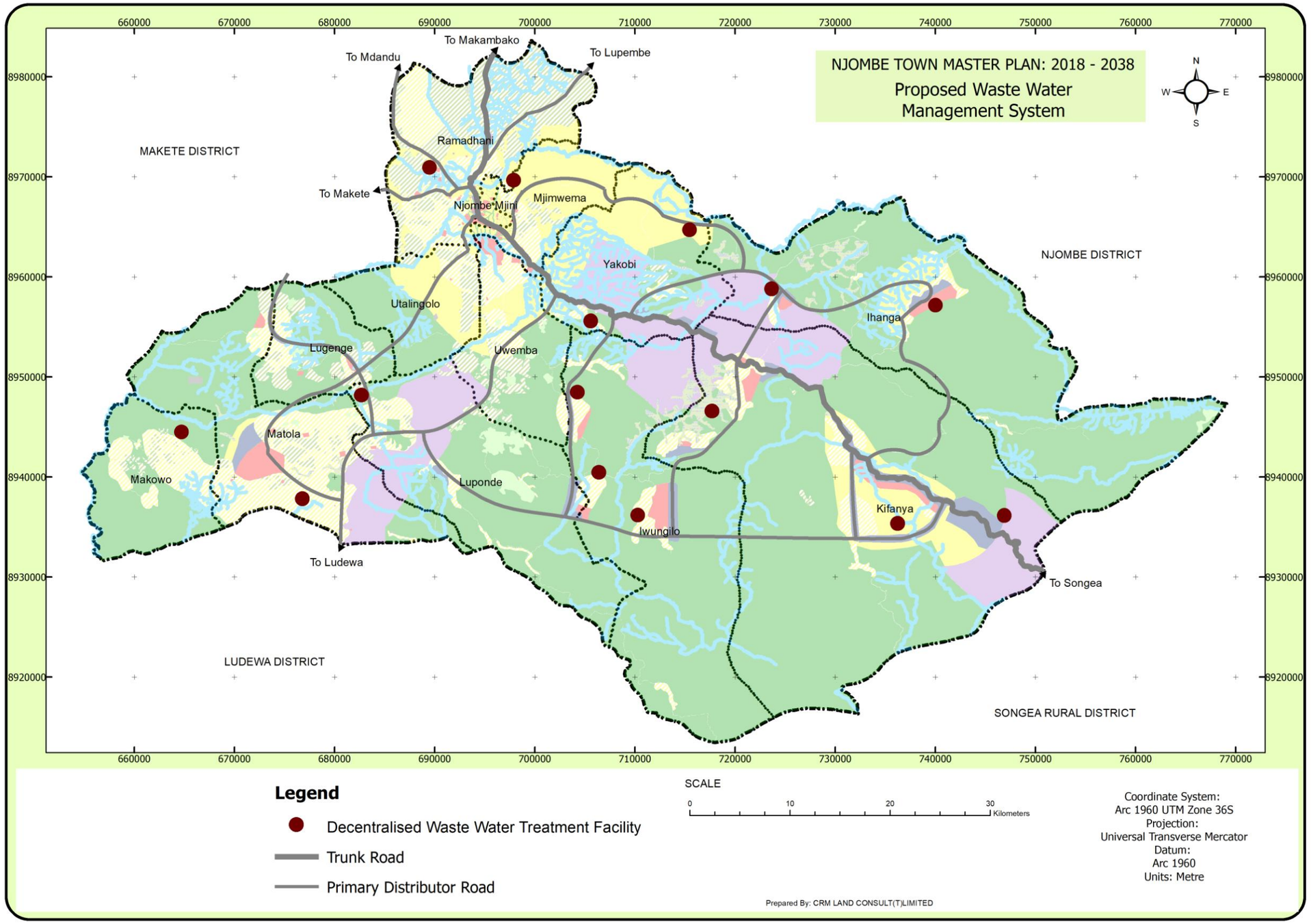
iv) Mobilization of funds for detailed designs of decentralized community anaerobic wastewater treatment systems;

v) Installation of the systems; and

vi) Monitoring and maintenance of the installed systems.

vii) Monitoring and maintenance of the installed systems.

Map 10.3 The locations of the proposed decentralized wastewater treatment systems in Njombe Town



10.6 Storm Water Management Estimate surface runoff for Njombe in m/S

Both natural and constructed channels will be used to drain the Town. Currently the natural drainage channels and the constructed ones are dominant in the peri-urban and the CBD respectively. The constructed channels will be laid along each road to be constructed and will be either trapezoidal or rectangular in shape depending on the detailed specification to be provided during road construction. The constructed drainage channels will feed into the existing natural drainage channels which eventually drain into the Rufiji River.

Runoff estimations have been done using the rational method as given below: -

Storm water quantity, Q = C.I.A / 360

Whereby,

Q = Quantity of storm water, cubic meter per second

C = Coefficient of runoff

I = intensity of rainfall (mm/hour) for the duration equal to time of concentration, and

A = Drainage area in hectares

The estimated amount of runoff is as given in Figure 10.1. In the figure the maximum surface rainfall for the township is expected to be in March which is 57 cubic meters per second. Assuming a four hours rainfall in a day it is expected that the maximum amount of runoff is 820,800 cubic meters per second. This amount can be handled with the existing natural drainage and the constructed channels as proposed in Map 10.4.

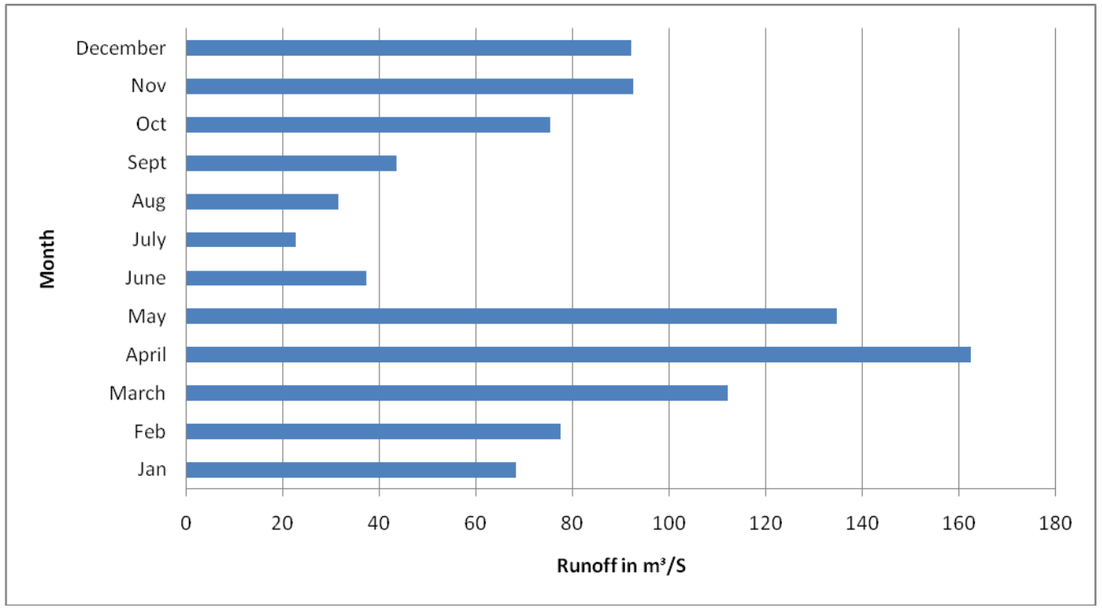
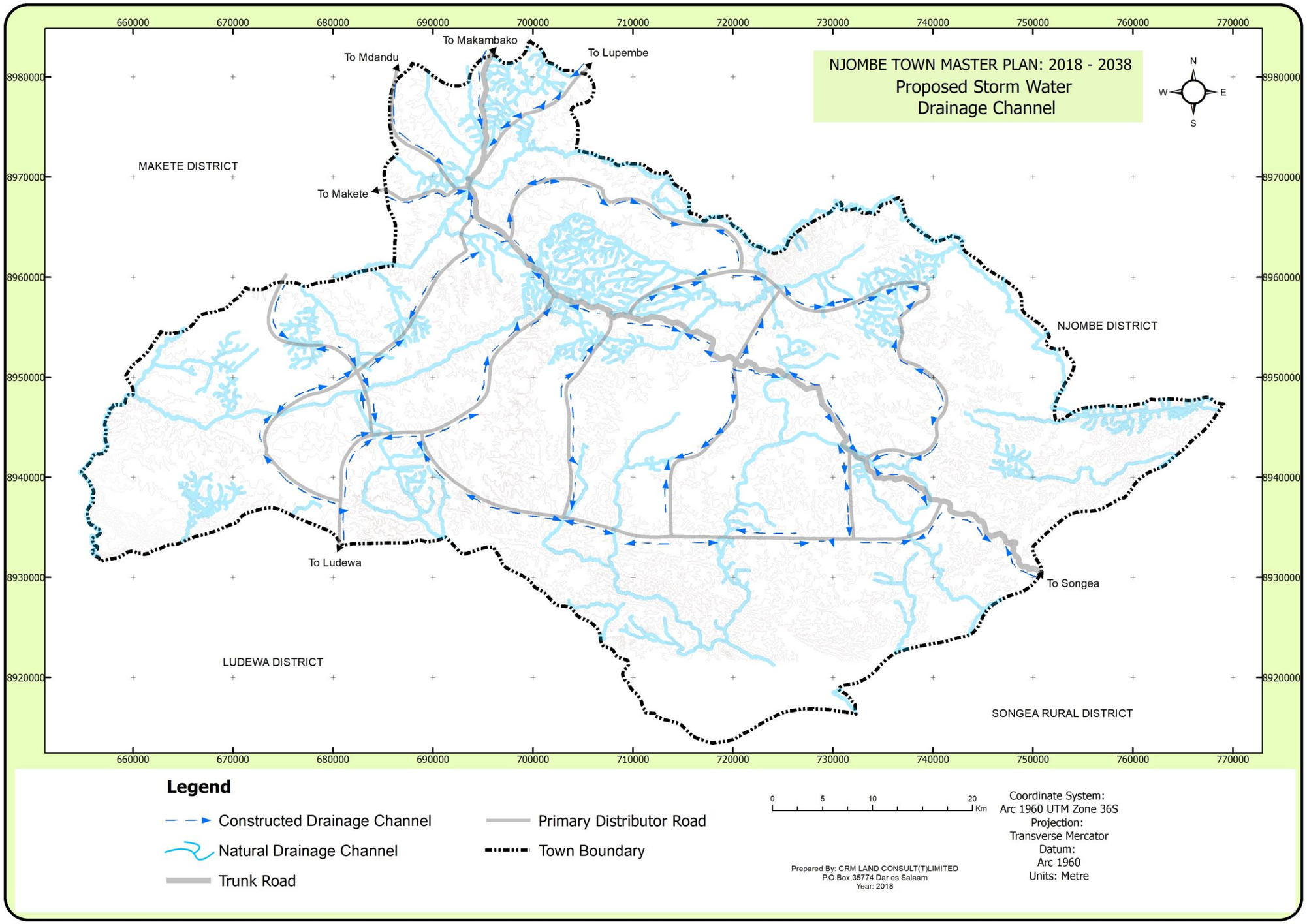


Figure 10.1 Estimate surface runoff for Njombe in m³/S

Map 10.4 Proposed Storm Water Drainage System in Njombe Town



10.7 Solid Waste Management

10.7.1 Solid waste generation and household management

The typical generation rate for urban centres in Tanzania ranges from 0.2-0.8kilogrammes percapita per day. It is estimated that the current waste generation rate for Njombe Town is 0.25 kilogrammes per capita per day. However, the generation rate is expected to increase due to lifestyle change as more people embark on buying packed materials from commercial centres proposed by the Master Plan. The estimated solid waste generation rate is expected to increase from 0.25 to 0.35 kilogrammes per capita per day. The total amount of solid waste generation is expected to be 88719 kilogrammes per day.

Management at household level will be in such a way that waste will be collected and stored in labeled and coloured dust bins to collect waste according to the stipulated categories. Therefore, household segregation of waste is emphasized. Each household will send the waste to a township collection point known as transfer station where the waste can be picked by waste trucks and sent to the disposal facility.

10.7.2 Collection of waste

Waste transfer stations are facilities where municipal solid waste (MSW) is unloaded from collection vehicles. The MSW is briefly held while it is reloaded onto larger long-distance transport vehicles (e.g. trains, trucks, barges) for shipment to landfills or other treatment or disposal facilities. The transfer stations will be designed in such a way to have chambers to collect the waste according to the category as sorted from the household. They will act as a temporary storage facility before the waste is transported to the disposal facility. Each transfer station will serve a reasonable population density in accordance with the detailed design of the facility. Siting of the transfer station will be guided by the following criteria:

i) Every public place, such as a market;
ii) Every big institution with significant generation of waste;
iii) Every industry with significant generation of waste;
iv) Every residential block provided that the station is accessible by all residents; and
v) All the open spaces and recreational areas provided there is no accessible transfer station.

10.7.3 Waste disposal

The solid waste in Njombe Town will be collected and disposed to the proposed engineered sanitary land fills at three locations as indicated in Map 10.5. The proposed sites have taken into consideration the following aspects:

Landfill site for solid wastes should be selected on following criteria:

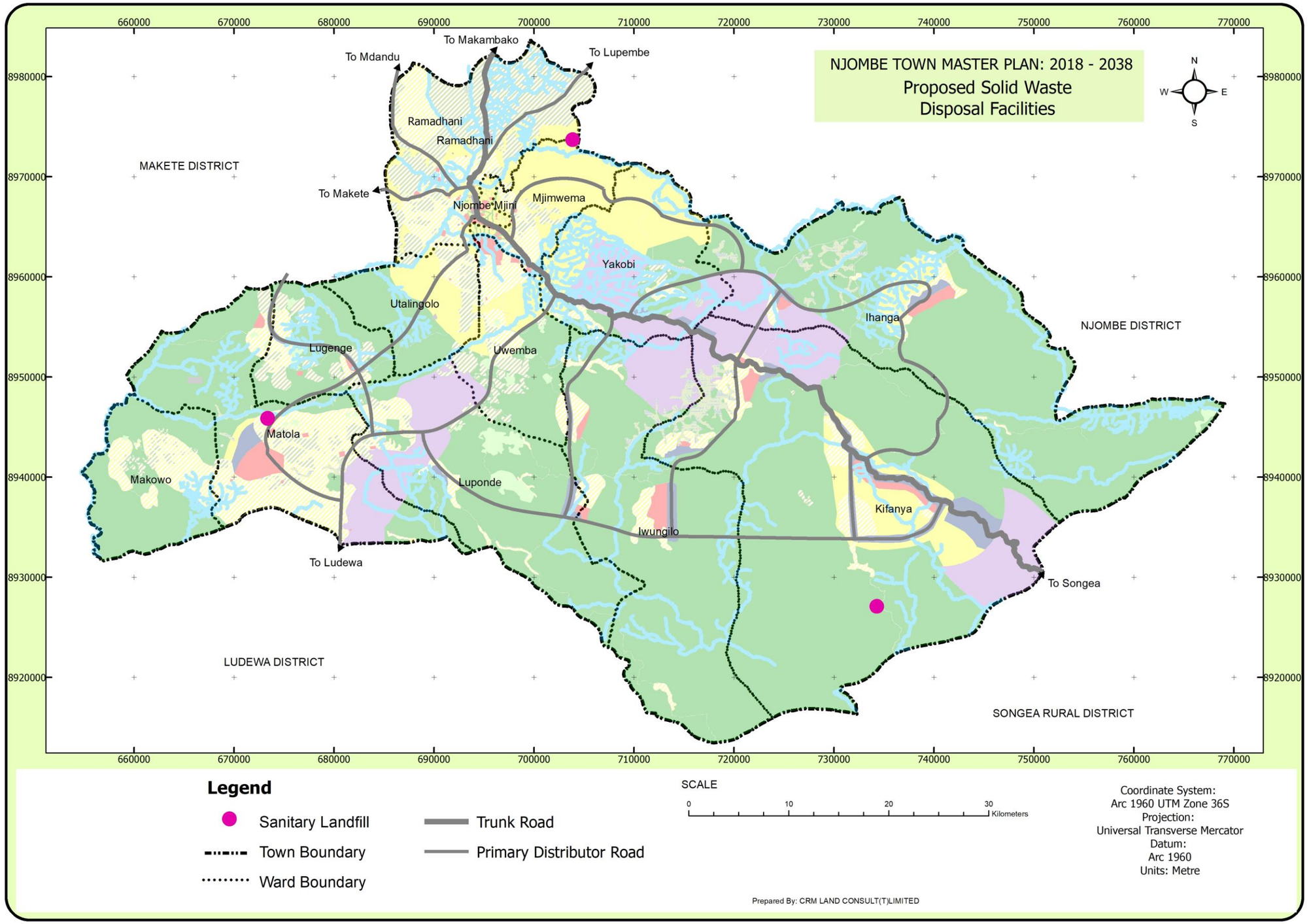
i) Sufficient land area enough to provide landfill capacity so that the projected need can be fulfilled for several years;
ii) Site away from the residential areas;
iii) Relatively less steep gradient topography;
iv) Low water table;
v) No ecologically sensitive features;
vi) No significant water bodies

- No major power transmission or other infrastructure like sewers, water supply lines crossing;
- Low probability of groundwater pollution; and
- Selection of landfill site should be based upon the examination of environmental issues.

It is recommended that a recycling facility can be installed near the site or as an integral part of the landfill to facilitate recycling of the recyclables.

The current dumping site will be closed as it is near residential areas and it is not well protected such that there is potential for environmental pollution. Each landfill will be installed and managed in accordance with the detailed designs and specifications.

Map 10.5 Proposed solid waste disposal facilities



10.7.5 Energy Supply

Njombe Town Council energy requirements will be for the following purposes:

i) Domestic consumption for lighting, cooking and heating;
ii) Industrial for production, cooling and lighting;
iii) Institutional for lighting, electronics equipment uses, heating and cooling; and
iv) Small and medium enterprise for production.

The available sources of energy are electricity, biomass, solar, gasoline, and gas. Electricity will be obtained from the national grid and the separate private hydro generation power plants, such as operated by Uwemba Catholic Mission, Tanganyika Wattle Company Ltd and BulongwaLutheran Mission. The supplementary electricity source is the Hydro Power Project (LUMAMA) at Lupande, Mawengi and Madunda managed by the Rural EnergyAgency (REA). Currently the electricity power demand for Njombe Town stands at 5Megawatts whereas 2 Megawatts required for domestic usesand 3Megawatts iss required for industrialpurposes. With the anticipated population growth and industrial expansion, the estimated electric energy requirements are 8Megawatts and 4Megawatts for industrial and domestic consumption respectively. Therefore, the total electricity demand will be 12Megawatts.

The current main source of cooking energy is biomass, using charcoal. This source is discouraged due to environmental reasons. Therefore, the township will strive at reducing biomass fuel consumption and adopting environmentally friendly types of energy, such as gas.

10.8 The Proposed Land Use

Spatial location of land use is based on the spatial development patterns of Njombe Town. Each informal settlement in every ward will be regularized and new neighbourhoods will be located based on the population increase in the respective wards. Resettlement will be done when the development is for public interests but will be minimized as much as possible. The proposed land uses are shown in Map 10.6

10.8.1 Residential

The proposed residential areas include the old planned areas, new planned and areas with settlements for regularization. While planned residential areas cover an area of 33,919.2 hectares which account for 10.6 percent of the total area of Njombe Town, residential area for regularization stands at 10.8 percent covering a total area of 34,574.6 hectares, the latter are informal settlements, which need to be regularized.

10.8.2 Commercial

The area set aside for commercial use covers a total area of 8,637.7 hectares accounting for 2.7 percent of the Town area. Commercial use, include retail shops, wholesale shops, supermarkets, local markets at ward and sub-ward levels, saloons, restaurants, guest houses, lodge, bars, hotels, stationaries, butchers, petrol stations, groceries, etc.

10.8.3 Commercial-residential

The Master Plan has proposed 0.04 percent of the total urban area, which is about 124.1 hectares, for commercial-residential use. These are areas to accommodate both commercial and residential use. Commercial residential areas are situated along the central business district of the town, along the major roads and trading centres in sub-urban and peri-urban areas.

10.8.4 Institutional

The institutional area or zone covers a total of 4,813.9 hectares, which comprise 1.6 percent of the total urban area. The areas set aside for institutional use include public administrative buildings, parastatal organizations, and utility agencies; private institutions and organizations, social infrastructural facilities such as educational and health care facilities, religious facilities, cemeteries, as well as parking facilities.

10.8.5 Open spaces

The total area allocated for open spaces cover 12,510.7 hectares. This area is about 3.9 percent of the total area of Njombe Town. Open spaces include both public and private open spaces, which are accessible to the general community, regardless of size, design or physical features and which are intended primarily for amenity or recreation purposes. A comparatively affordable entry fee can be introduced for maintaining the open spaces for sustainable uses. Open spaces have significant importance in the life of settlements. The areas with high green-coverage have ecological and environmental importance. These green spaces can improve the urban climate, abate the urban heat island effect by their regulating functions and reduce environmental damages. Through their social importance, the open spaces can help residents in adjusting to the healthy life style. By their aesthetic importance, they determine the characteristic of the settlements, ameliorating the built-up character of the cities. Therefore, open spaces can enhance their appeal to tourists and residents alike at Njombe Town. The areas allocated for open spaces should be surveyed and title deeds issued to avoid encroachment.

10.8.6 Industrial areas

Industrial are engines of urban development and generator of employment opportunities. The area zoned for industrial uses accounts for 10.2 percent of the total planning area covering an area of 32,674.7 hectares of Njombe Town. The industrial area will cater for various types of industries ranging from small scale, medium and large scale. The industrial areas will also include a special economic processing Zone (EPZ).

10.8.7 Forests

As presented in Chapter one and Chapter nine, Njombe Town has numerous natural and artificial forests. The Master Plan restricts unauthorized use of natural forest which covers a total of 5,128.2 hectares. Apart from providing habitats for wide range of wildlife as well as livelihoods for human, natural forests also offer water shed protection, prevent soil erosion and mitigate climate change effects. The conservation of natural forests from encroachment is one of the strategies to reduce their disappearance.

10.8.8 Urban agriculture

Urban agriculture is one of the important economic activities that contribute to household's income and food security. Land use proposed for urban agriculture include general agricultural land for different cash and food crops except commercial tree plantation. The general agricultural land covers a total area of 130,046.9 hectares, which is about 40.5 percent of the total Town area. Land proposed for commercial tree plantation covers a total of 25,492.9, which is 7.9 percent of the total land area for Njombe Town.

10.8.9 Circulation

A circulation system is crucial component of urban structure that connects different land uses, people with services. It provides the general skeleton of urban form and direct land investment. The circulation is primarly defined by the existing and proposed road networks which connects various functional areas within the town. The total occupied by the proposed circulation network is 16,858.50 hectares, which stands at 5.25 percent of the total planning area.

10.8.10 Airport

Njome airstrip, which is located in Njombe Town is currently not in use. The airstrip has a total area of 94.3 hectares and can operate only small aircrafts, those not exceeding Code 2B. The airstrip is surrounded by residential houses, institutional land uses including the prison, and a school in addition to Vodacom masts located on the transition surface of the aorodome. However, given the administrative and commercial importance of Njombe Town to the rest of the region, it is undeniably that the airport needs to be expanded and upgraded so as to serve at the Town, district and regional level. The Master Plan proposes an expansion of the airport area from 94.3 hectares to 180 hectares so as to serve as regional airport. The expansion will necessitate demolition of few existing building located near the airport including a total of 130 residential houses at the southern west part of the airport. The expansion will also engulf part of the institutionall area occupied by the Prisons, 23.2 hectares, which is about 34 percentt of the total area. The airport expansion will also engulf the entire institutional area occupied by SIDO, which is 0.5 hectares.

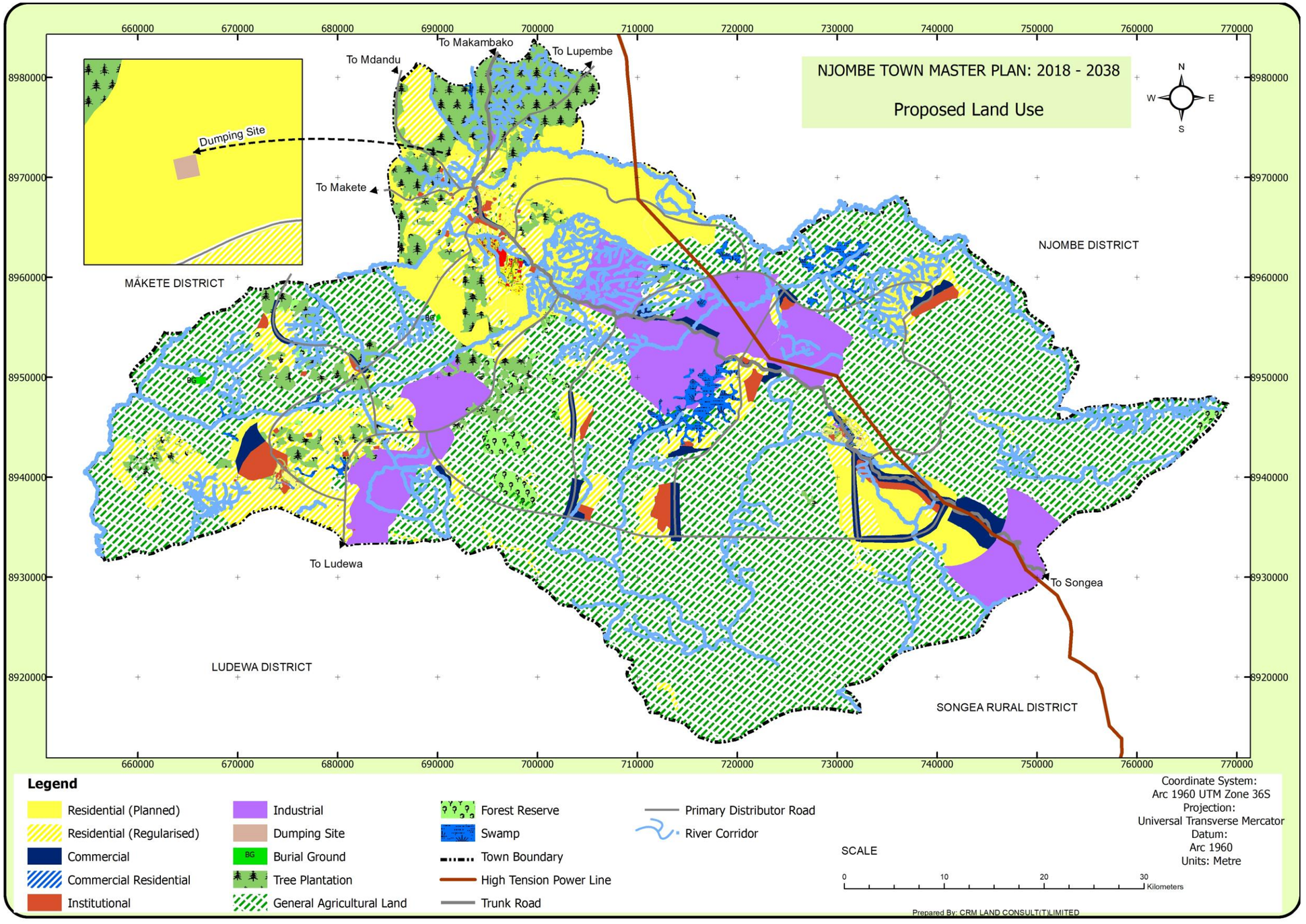
10.8.11 Other land uses

Other land uses proposed in the Master Plan include, dumping site, which covers 13.7 hectares, burial grounds (1,416.9 hectares), swampy area, which form part of conservation areas (6,368.3 hectares), and land for high tension power (8,439.7 hectares). Table 10.1 shows the detailed land use distribution as proposed in the Master Plan.

Table 10.1 Summary of the proposed land uses 2038 in Njombe Town

Land Use	Area in Hectares	Percentage
Residential (Planned)	33,919.2	10.6
Residential (Regularised)	34,574.6	10.8
Commercial	8,637.7	2.7
Commercial Residential	124.1	0.04
Institutional	4,813.9	1.5
Industrial	32,674.7	10.2
Open Space	12,510.7	3.9
Airport	180	0.06
Dumping Site	13.7	0.004
Burial Ground	1,416.9	0.4
Tree Plantation	25,492.9	7.9
Urban Agriculture	130,046.9	40.5
Forest Reserve	5,128.2	1.6
Swamp	6,368.3	2.0
High Tension Power Line	8,439.7	2.6
Circulation Network	16,858.5	5.2
TOTAL	**321,200.0**	**100.0**

Map 10.6 Proposed Land use plan 2038, Njombe Town 2018-2038



8.9 Proposal for the Central Business District

The Master Plan proposal on the Central Business District maintains, the proposal put forward by the Town Council, which considers a central area originating from the existing commercial centre to the new administrative centre. It is a bipolar Central Business District connected with a continuum of few residential commercial and institutional land uses.

The Master Plan however proposes redevelopment of the existing commercial centre, which has grown informally without any spatial plan to guide its development. The existing situation of the Town central commercial area need intervention as there are haphazard and informal housing developments coupled with lack of infrastructure services including roads, drainage systems, and water facilities. The central commericla area also lacks areas for community services, such as areas for open spaces, as well as areas for facilities such as education and health. There is also a mushroominhg of high raise buildings, which are uncoordinated and hence results into a chaotic visual appearance of the Town. In addition, there is decay in housing conditions and existing infrastructure. The construction of multi-sorely buildings is not in in line with supporting facilities, such parking spaces, sanitation, fire-fighting station, open spaces, and recreational facilities.

The aim and objective of the redevelopment plan is to ensure that major function and activities rendering services to the majority of the Town residents are provided with adequate space, effectively, and efficiently. This calls therefore for the need to re-arrange, coordinate and guide the spatial location and utilisation of major functions and services within the Town. The need to redevelope the existing commercial centre also aim at transforming the existing dilapidating central area into a modern thriving centre with attractive physical environment in order to meet the Regional Headquarter standards. It is anticipated that the redeveloped central commercial area will improve the Town's capacity to adequately meet the increasing demand for administrative business offices, commercial and cultural activities and provide safe, convenient, comfortable and efficient circulation of vehicle and pedestrians.

The Master Plan is informed by the proposed redevelopment Plan of 2013-2038, which has however not been implemented. The proposal for redeveloping the ccentral commercial area therefore builds on the previous proposed redevelopment plan and emphasise on the following needs:

i) To ensure effective utilization of the high value central area land by replacing existing building those are dilapidated with modern structures;
ii) To meet the increasing pressure of office and commercial accommodation;
iii) To provide adequate social services for the central area resident population;
iv) To create conditions for safe, comfortable and efficient circulation of vehicles and pedestrians and provide for adequate organized parking areas;
v) To create a balance between interior and exterior place in the built fabric of the central area;
vi) To improve the microclimate of public outdoors spaces by appropriate planting and outdoor furniture;
vii) To improve the environmental quality of the central area;
viii) To match the provision of infrastructure (water supply, sewerage, storm water drainage, electricity and telecommunication) with anticipated demands;
ix) To preserve the central area as an attractive part mixed urban area with different land uses fitted into a historic framework; and
x) To recognize and encourage private investors and public – private partnership to help implement a significant part of the redevelopment plan.

The informal settlements in the existing commercial centre will need to be regularized and be provided with essential facilities including roads as well as areas for facilities such as health and education.

The administrative zone of the Central Business District, which is relatively new in terms of land development and has a detailed plan to guide its development, will require minimum intervention as opposed to the old commercial zone. The area is planned for high rank administrative uses, including the Regional and Municipal Ofiices. The area will also ooccupy few residential houses largely of low density to carter for government employees as well as the Regional and Town administrative and political leaders.

Land uses proposed in the commercial central area include, residential, commercial residential, commercial, institutional, light industries, recreational, burial grounds, and circulation as well as conservation areas (Map 10.7 and Table 10.2).

Map 10.7 Proposed land use plan for the Central Business District, Njombe Town

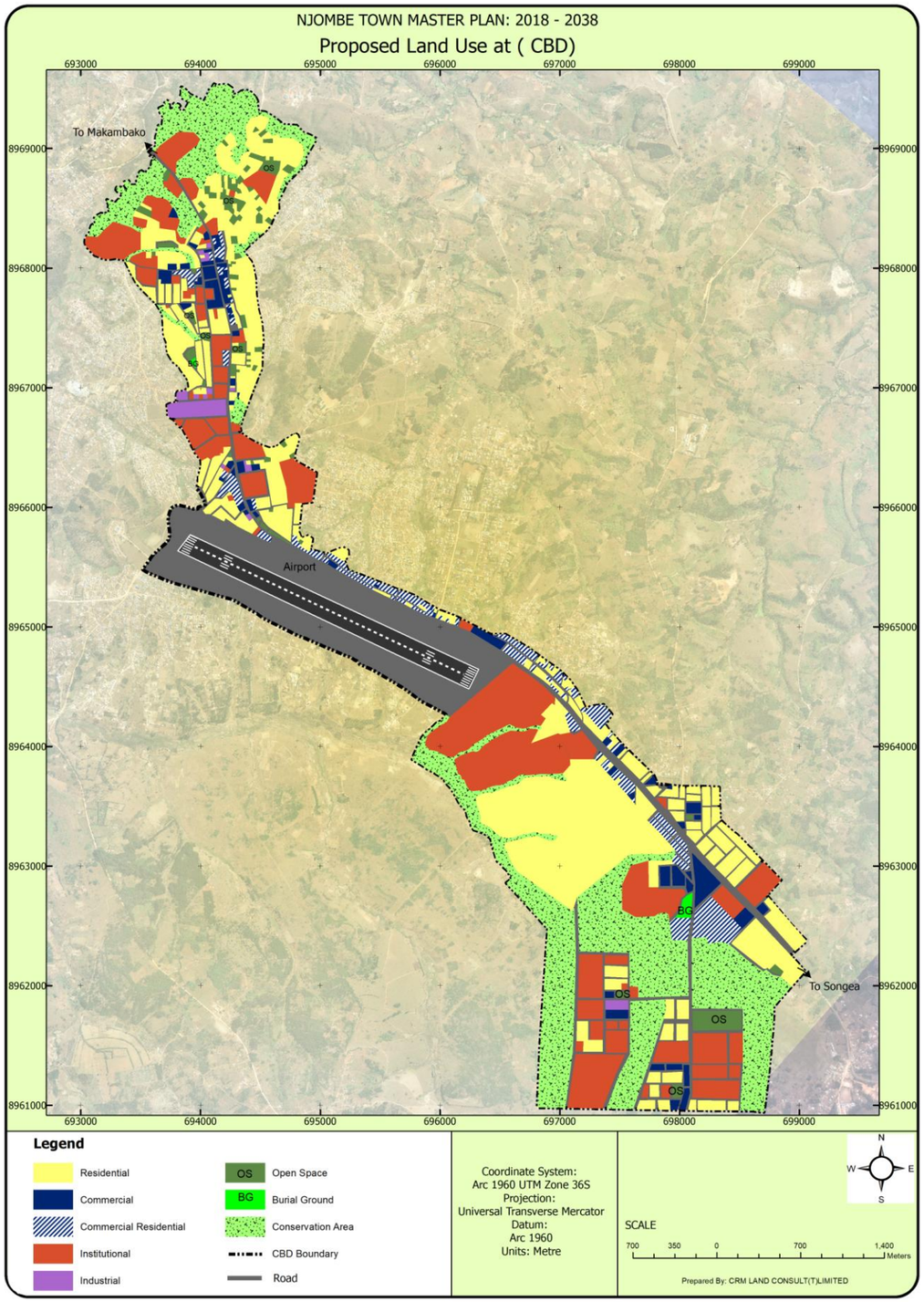


Table 10.2 Propsed Land Uses at the Central Business District

Land Use	Area in Hectares	Percentage
Residential	320.34	25.65
Commercial	35.20	2.82
Commercial Residential	47.10	3.77
Institutional	237.10	18.99
Airport	180.90	14.49
Industrial	10.60	0.85
Open Space	27.60	2.21
Burial Ground	2.00	0.16
Conservation Area	282.20	22.60
Road	105.76	8.47
Total Area	**1248.80**	**100.00**

a) Residential Zone

The proposed residential zone covers total area 320.34 hectares, which is about 26 percent of the total Central Business District Area. Areas proposed for residential zone are mainly located in the far north of the CBD, in the existing commercial centre and far south in the newly developing administrative centre the periphery of the Central area. The residential zone includes also all the existing residential developments including those located in planned areas as well as those in unplanned areas, which will be regularised.

b) Commercial Zone

This zone is proposed to cover an area of 35.20 hectres, about 3 percent of the total CBD area. The zone will accommodate various commercial activities including super markets, shopping complexes, whole sales, retail shops, bars, restaurants, banks, insurance and the likes. This zone is found along Songea road with its nuclei in (Old Bus stand), Magereza road and regional block road.

c) Commercial-Residential Zone

The commercial residential zone is proposed to covera total of 47.10 hectres, about 4 percent of the total CBD area. The commercial-residential zone, include the mid zone of the existing commercial area at the central area and along the Songea Road. The Master Plan proposes high rise buildings of up tp four storeys in this zone. The residential use in this zone residential has been proposed in order to achieve the

necessary mix and to make it lively. Retail services in this area, is proposed to be accommodated in Commercial/Residential buildings.

c) Institutional Zone

The Master Plan proposes an institutional zone with a total area of 237.10 hectres, which is about 19 percent of the total CBD area. The Institutional land include the area occupied by Prisons, the regional and town headqurtes as well as the areas occupied by various institutions including religious and academic areas. The institutional land also includes parking areas such as the existing bus termina at Njiombe Mjini Ward and proposed new bus terminal at Mji Mwema Ward.

c) Airport

The Master Plan propose an area of 180.90 hectres for airport. The proposed area expands the current size and level of the airport from an airstrip to a regional airport. The political and administrative functions provided by Njombe Town as well as its commercial and business importance, including the tourism activities necessitates the Town to have a regional airport.

d) Industrial Zone

The Master Plan proposes areas for light industries with a total of 10.60 hectares, which is about 0.9 percent of the total CBD area. The area is proposed to accommodate light industrial activities, which are environmentally friend like garages, workshops, lumbering and the like. The industrial zone shall maintain the current development mostly dominated by single storey structures.

e) Open spaces

Areas proposed for open spaces amount to 27.60 hectares. These include all the existing open spaces and recreational facilities which have been retained. The areas also include proposed new open spaces and parks in the new neighbourhoods in the administrative zone.

f) Burial Grounds

The total area proposed for burial ground is 2.0 hectares. These include the existing cemeteries within the central area as well as proposed ones in the new neighbourhoods in the administrative zone.

g) Conservation area

A total of 282.20 hectares, which is about 22.6 percent of the CBD are set aside as concervation areas. These include the existing valleys and swampy areas which need to be protected and maintained for ecosystem services. The Valleys will form green corridors where various ecosystems services including provisioning, regulation, and cultural as well as supporting services can be enhanced.

g) Road network

The road network covers a total area of 105.76 hectares, which is about 8.5 percent of the total CBD area. These include include the Songea road and various access roads connecting different functional areas.

8.10 Proposed Building Height at the CBD

The height zoning proposals are based on the adopted planning standards provided by the Ministry of Lands and Human Settlements Development G.N 157 of 1997. Consideration put foward in proposing the building height include the land value, the demand for varius services and functional uses of the land. Currently, most of the buildings at the CBD are single story causing underutilization of space in the central area where value of the land is high and is highly demanded. Morever, new constructions carry different heights resulting into unpleasant appearance of the Town scape.

The Master Plan therefore proposes and emphises the need to guide vertical growth of the CBD so as to attain aesthetic value at one end as well as economic value of the land on the other hand.

The proposed building heights has therefore considered various factors including the terrain, plot sizes, infrastructures and utilities, air circulation as well as soil stability. Five zones are proposed for the building heights at the CBD as follows:

a) Zone A

This zone is proposed for construction of 1 to 2 storey buildings. The zone includes large part of the residential buildings existing in the CBD.

b) Zone B

Two to three storey buildings are proposed in zone B. These include the commercial and commericial-residential as well as institutional land uses in the proposed administrative centre as well as the existing commercial CBD.

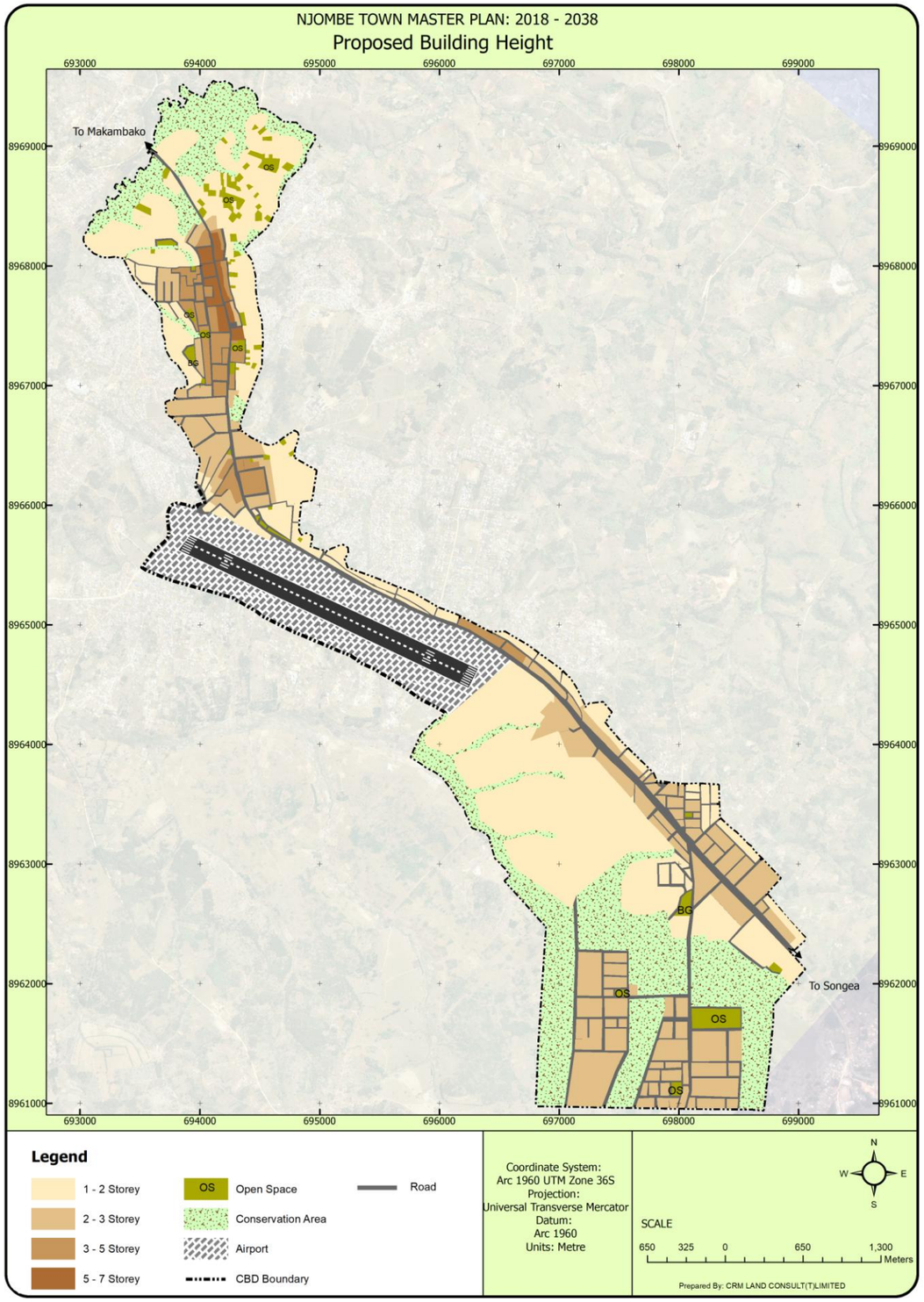
c) Zone C

Building heights of 3 to 5 storeys are proposed in zone C. The zone largely covers commercial zone at the existing commercial area of the CBD.

d) Zone D

Zone D is proposed for 5 to 7 building storeys. This includes the commerical residental areas along the Songea Road, as well as the central part of the existing commercial cetre.

Map 10.8 Proposed Building heights at the CBD



8.11 Proposal for the Satellite Towns

The Master Plan proposes two sattelie towns namely, Kifanya and Matola. The satellite centres aim at decentralizing services to the communities and at the same time coordinate land development in the peri urban zones of the Town, which is currently taking place un- coordinated.

The scattered settlements of Njombe Town spread over the entire urban area covering about 800 square kilometres notably sprawling along the major roads, in the fertile land and long the natural rivers and springs. This nature of growth calls for decentralized services as centralization cannot work in such an expanded and scattered settlement clusters of the urban area. Most of the settlements are mixed urban and rural contexts. Service provisions are limited to the inner-urban areas of the Town.

The Master Plan proposes development of satellite towns where services are brought close to the people in order to maximize accessibility. The Master Plan does not aim to disrupt the existing development pattern but propose interventions that balance between built-up and un-built up environment for sustainable growth. The proposed satellite towns will be self-contained in terms of basic services and there will be intermediate/sub-centres centres, which will bridge the gapbetween satellite towns and the central business district.

The proposed settlements will be organized in neighbourhoods and communities to enhance provision of socio-economic facilities and service as well as limiting the urban sprawl.

8.11.1 Kifanya Sattelite Town

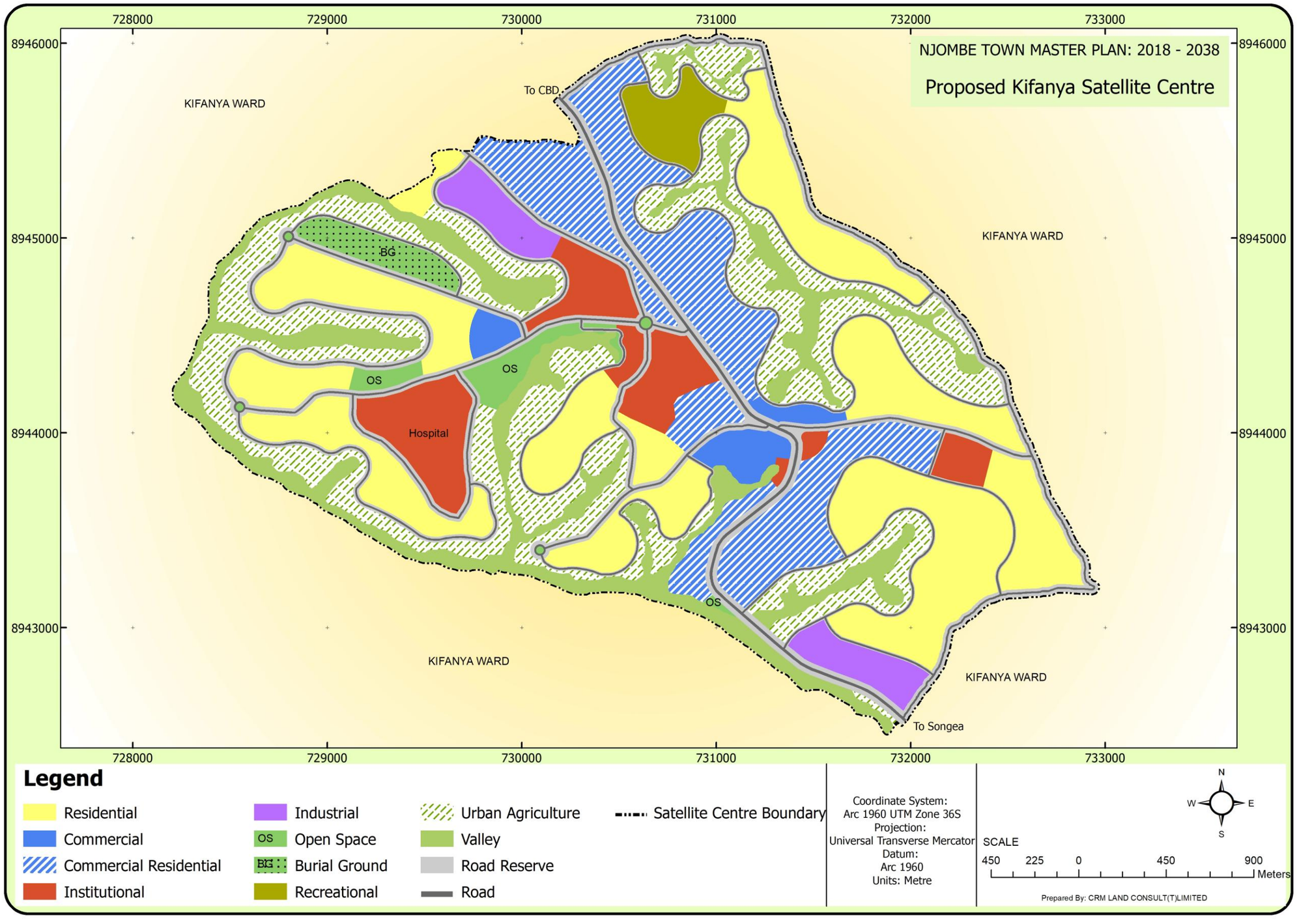
The proposed Kifanya Satellite Town is located at Kifanya Ward. Currently a large part of Kifanya Ward is used for agiculrure activities with few residential uses. The Ward has a total population of 9,011. This is one of the largest Wards in the Town and is dominated by commercial tree plantations. A total area of 927 hectares is proposed for the centre. The satellite centre is proposed to serve the existing and projected population in Kifanya and the surrounding wards of Ihanga and Iwungilo. The centre will comprise various services including and functional land uses, including residential, commercial, commercial residential, institutional, industrial, open spaces, burial grounds recreational as well as circulation. Due to the fact that the satellite centre is located in the prei urban zone, currently characterised as rural where agriculture is largely practised, a large part of the satellite centre, about 18 percent is also proposed for urban agriculture. Other parts of the Kifanya Ward not included in the satellite centre will continue to be used for urban agriculture activities.

The overall satellite centre will form a planning district with District Centres that serves the four communities. One community will constitute 4 neighbourhood units. At neighbourhood level, the frequently used services, such as a health care dispensary, pre-and primary schools, opens space, children play grounds, retails shops, a local market, religious facilities, a sub-ward office, a police post, to mention a few will be available. Map 10.8 and Table 10.3 shows the proposed distribution of the various land uses at the Kifanya service centre. The detailed descrition of the service center is contained in the Technical Supplement section 2.10

Table 10.3 Proposed Land Uses at Kifanya Satellite Centre in Njombe Town

Land Use	Area in Hectares	Percentage
Residential	225.6	24.3
Commercial	16.8	1.8
Commercial Residential	123.6	13.3
Institutional	60.7	6.5
Industrial	25.6	2.8
Open Space	13.4	1.4
Burial Ground	12.0	1.3
Recreational	15.03	1.6
Urban Agriculture	173.3	18.7
Valley (conservation areas)	112.1	12.1
Road (circulation)	149.7	16.1
Total Area	927.8	100.0

Map 10.9 Proposed Kifanya Satellite Centre in Njombe Town



8.11.2 Matola Satellite Centre

The Master Plan proposes Matola Satellite Centre at Matola Ward. Currently Matola Ward has a population of 12,262 and is largely rural in nature with large part of it used for agricultural activities. Matola and the neighboring areas is famous for agricultural production of maize and potatoes. The Matola Satellite Centre will serve the current and projected population in Matola Ward and the neighboring wards of Makowo, Luponde, Lugenge and Utalingolo.

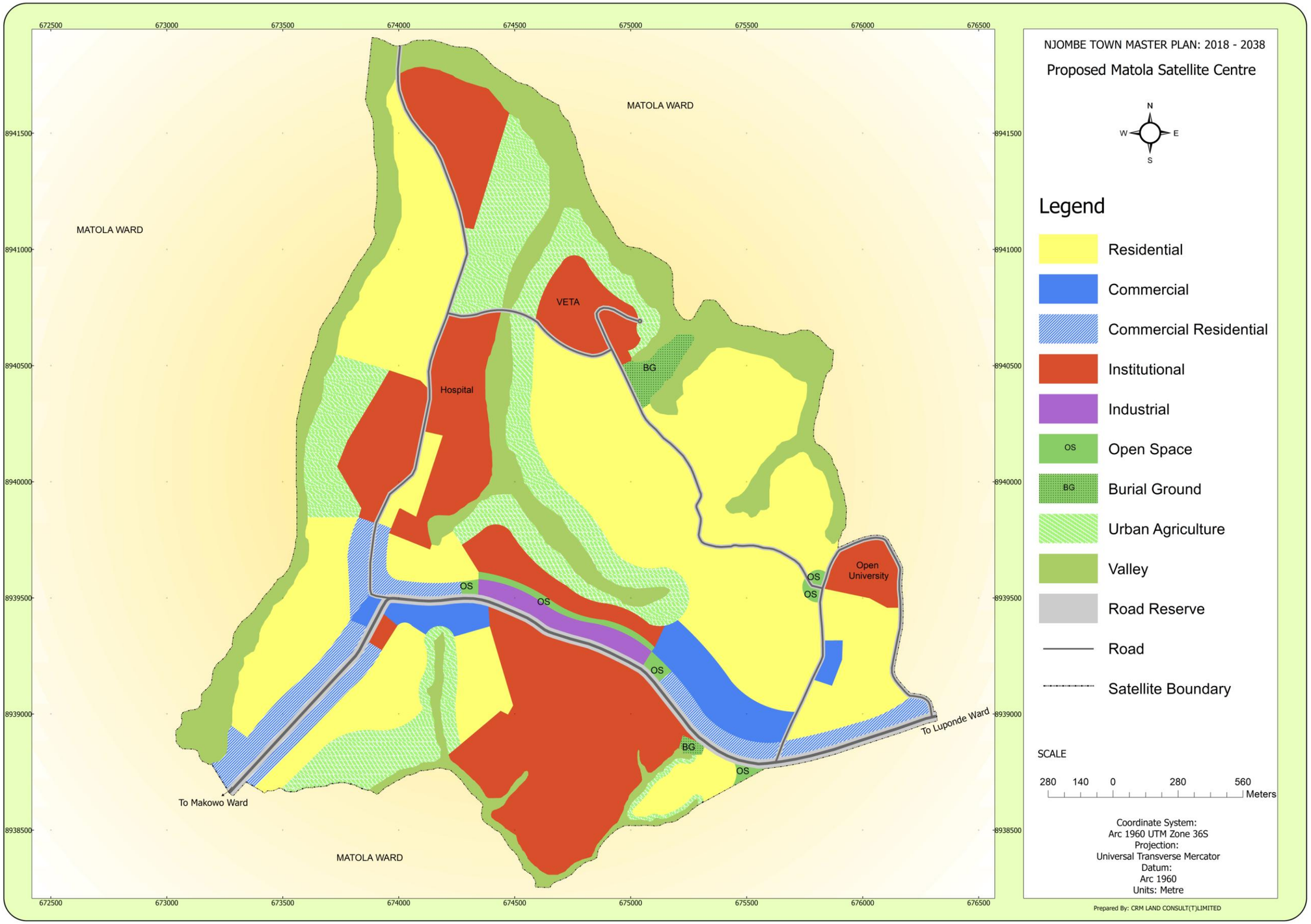
A total of 652 hectares of land has been proposed for the Matola Satellite Centre. Like the Kifanya Centre, the Matola Satellite centre will comprise various services, including and functional land uses including, residential, commercial, commercial residential, institutional, industrial, open spaces, burial grounds recreational, as well as circulation. Urban agriculture has also been recognised as important activity for the residents in Matola and the neighboring wards and thus a total of 85.4 hectares has been set aside for urban agriculture. The Master Plan has maintained the existing residential and institutional land uses as well as proposed the new functional uses in compatibility with the existing ones. The objective and main focus of the proposed satellite centre and the functional uses is to bring services closer to people so as to reduce travel distances to obtain services at the core CBD, given the large size of the Town. The satellite centre will also act as an engine to stimulate urban development of the area and transformation from the current rural settong to urban setting as Njombe Town is now considered an urban area. Map 10.9 and Table 10.4 shows the proposed land uses in Matola Satellite centres. The detailed description of the proposed Matola Service Centre is provided in the Technical Suplement Section 2.10.

Table 10.4 Distribution of Land uses at the proposed Matola satellite centre in Njombe Town

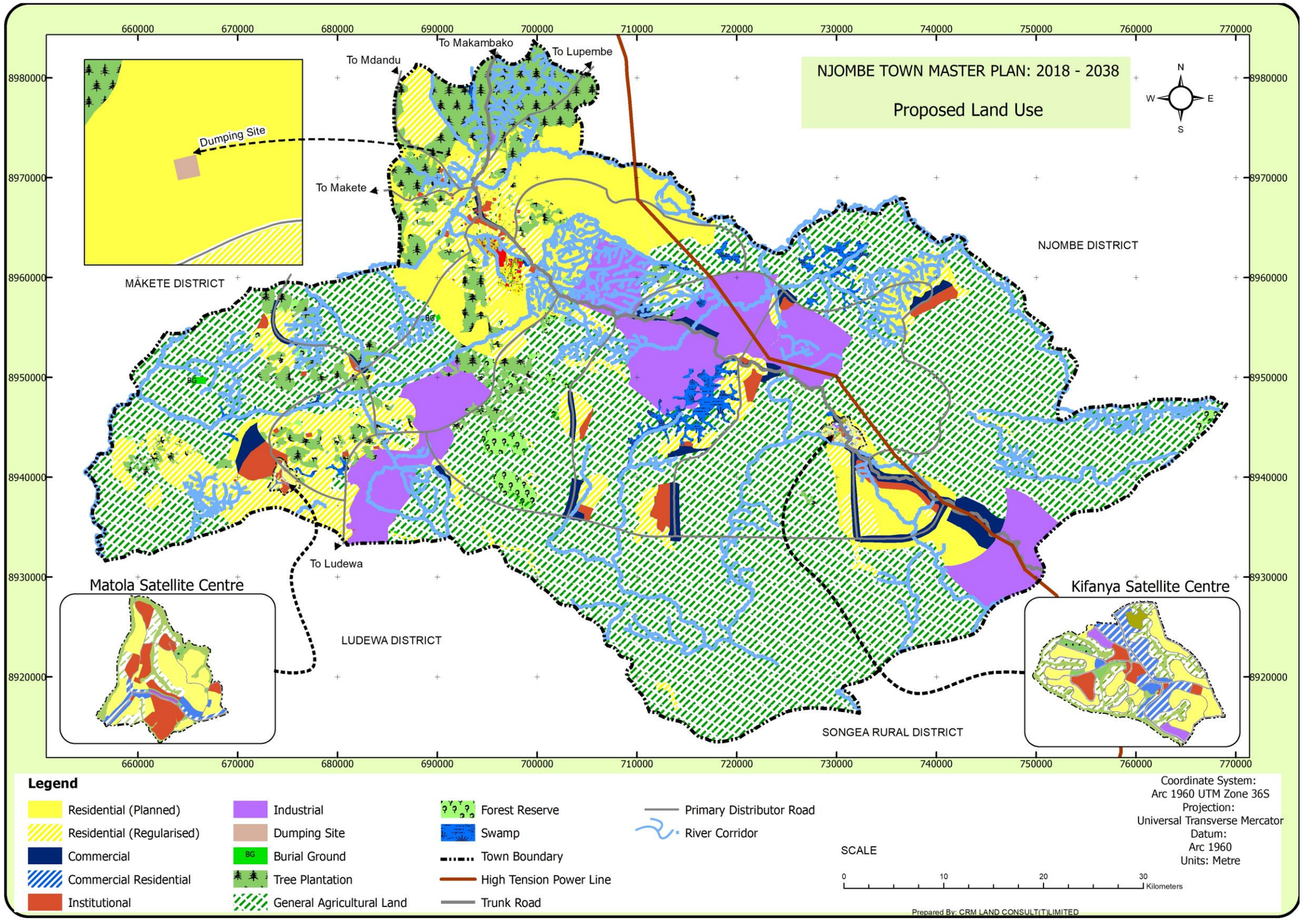
Land Use	Area in Hectares	Percentage
Residential	229.4	35.2
Commercial	18.9	2.9
Commercial Residential	28.2	4.3
Institutional	143.9	22.1
Industrial	5.9	0.9
Open Space	4.6	0.7
Burial Ground	4.7	0.7
Urban Agriculture	85.4	13.1
Valley (conservation areas)	101.8	15.6
Road Reserve	19.1	2.9
Road	10.4	1.6
Total Area	**652.3**	**100.0**

Map 10.11 shows the spatial location of Kifanya and Matola Satellite Towns on the proposed land use plan

Map 10.10 Proposed Land uses at Matola Satellite Centre



Map 10.11 Location of Kifanya and Matola Satellite Centres on the existitng land use plan



CHAPTER ELEVEN

IMPLEMENTATION, DEVELOPMENT PHASING, AND COSTING

The Njombe Town Master Plan 2018-2038 will be implemented for a period of 20 years starting in the year 2018 to the year 2038. The summary of the challenges, objectives and recommendations for implementation given in the previous chapters offer many opportunities for the future development of the Town, with extended impact to the areas around it, the region and the nation at large. The success of its implementation, however, requires collective and integrated efforts of all the development sectors and the appropriate tool pursuant to the outlined objectives. This is a long-term plan, which by its nature has to be flexible and dynamic, ready to incorporate any unexpected community, natural demand, change of lifestyle or political stand of the region of which to town and country as whole belong. Such changes need adjustments of the plan at some interval. This is why the plan recommends mid-term review after a critical evaluation of its progress in implementation based on regular five year monitoring reports or even or year to year basis. This Master Plan gives a general development framework which integrates all aspects of the environment, economy, social and culture pursuant to the present national policies and governance. The aim is to weave all sector policies to be achieved without compromising each other's needs.

11.1 Implementation of the Plan

The Master Plan is scheduled to be implemented in two phases: short term and long term actions. There are recommendations for direct intervention like the preservation of the historical caves and the missionary building, campaign for the improvement of housing in the built up area, the wetland and falls. These may not need further planning. Sector plans can be done further consultation to other sectors. However, establishment of new neigborhoods, subcentres, settlement expansion and the like will call for the preparation of detailed schemes which equally entail more insight technical sector approaches.

As aforesaid in the earlier chapters the plan has adopted the neighborhood as the standard unit for planning, especially for the new expansion areas. Thus, the neighborhood has been used in calculating spatial distribution of the population and the required services and not their exact spatial arrangement because the plan is not dealing with a completely free and open land. In this case the spatial arrangement of a neighborhood will be determined in layout plans. There will be no proposed new neighborhood to be established in a completely new area. Most will be done as expansion of the scattered settlements and some to be implemented in consolidating settlements in and around the CBD.

11.2 Development Phasing and Work Programme

The Town will grow and expand in a radial expansion and direction taking advantage of the existing scattered settlements, which are to be connected to a community centre. The Master Plan expects a slight increase of the rate of development of the Town resulting from its upgraded status of a regional centre yet it will remain to be a gradual trend as opposed to drastic change of the growth rate. As such, a period of about 10 years of the Master Plan implementation is considered adequate to note the dimension of the proposed developments as phase one. After this period, a major review is recommended.

11.2.1 The First Phase: 2018 - 2027

The phase entails undertaking of number of activities in connection with the projects proposed in the Master Plan. The Master Plan proposes the need to include in the Town Medium Roling Strategic Plans, activities and funds which will alow implementation of the following activities:

1) Prepare and implement regularization schemes for existing unplanned settlements;
2) Land acquisition in the peri-urban areas for urban planning;
3) Prepare detailed schemes and survey plots for neighborhoods of in peri-urban areas;
4) Coordinate and implement the CDB redevelopment plan;
5) Designate all major land uses for agriculture and forests which are protected by law, catchment areas and areas for grazing. These have to be gazette for legal enforcement;
6) Take measures to curb soil erosion in the up lands by discouraging cultivation on the hill slopes and encourage further afforestation in all erosion prone susceptible areas;
7) Improve all connector roads at least to murram level to all the scattered settlements;
8) Initiate plans for introducing town bus services for serving the scattered settlements;
9) Develop drainages in the built-up areas (especially the urban proper);
10) Rehabilitation of existing water system and storage tanks.
11) Built a central sanitation system in the existing centre in Ramadhani Ward;
12) Explore and register all tourist attraction sites monuments, buildings and natural features to a standard acceptable by the Tanzania Board of Tourism;
13) Constructtransit lorry terminal, bus terminal, and rehabilitate the existing bus station; and
14) Build a regional sports complex and improve all open spaces existing in the built up areas; and
15) Identify and delineate all botanical gardens and town parks. This shall be supplemented by enactment of by-laws to restrict further proliferation of squatter settlements.

11.2.2 Phase II (2028 – 2038)

The second phase is also for a period of ten years starting 2028 to the end of plan period. The following are recommended to be done:

1) Establishment of proposed satellite towns at Kifanya and Matola;
2) Continue to complete and maintain implemented projects of the first phase;
3) To improve all the connector roads to tarmac level. This will include all the roads that connect the proposed satellite centres and sub-centres;
4) Expand and upgrade the airstrip to regional airport;
5) Construction of the proposed sanitary landfills;
6) To deploy forestry expertise to study and implement measures for replacing eucalyptus tress with other acceptable riverine species along river valley for their protection;
7) To start developing the new neighborhoods, community centres and sub centres; and
8) Continue with implementation of all other proposals mentioned in this master plan. These projects will include the following: -

a) Urban access roads network

i) Improve to tarmac level all local roads within the proposed CBD. This will include construction of urban parking areas;
ii) Construct and improve side drains to all local/access roads/streets (total length 49.9 kilometeres);
iii) Install street lights along the main roads in the Town and all streets in the CBD; and
iv) Construct lorry and bus terminals;

b) Water supply

i) Construct water pipe lines to new residential areas in the proposed satellite towns in the periphery; and
ii) Rehabilitation of existing water system and storage tanks.

c) Sanitation

i) Construction new treatment plants at Ramadhani; and
ii) Expand new central sewer line in the CBD to cover all the urban built area while campaigning for the use of VIP toilets in the periphery settlements/neighborhoods

d) Solid waste

i) Campaign on solid waste collection and separation of organic and non organic waste at source collection points;
ii) Continue to improve existing dumping site;
iii) Procure waste collection containers specifically for the CBD areas and major sub centres; and
iv) Construction of sanitary land fills at Mjimwema, Matola and Kifanya Wards.

e) Land and environment

i) Continue with programmes for reducing soil erosion in the upper lands by conducting, awareness raising seminars to the communities and law enforcement;
ii) Prepare detailed schemes for new residential areas/neighborhoods in the proposed satellite towns; and
iii) Ensure that all parcels of land and lots within the existing developments are surveyed and issued with right of occupancy.

f) Regularization of the existing informal settlements

Regularization projects have started in many settlements in the central areas of the Town as presented in the existing situation of the Town. It is proposed that regularization of the informal settlement be continued to all the existing informal settlements of the Town through public-private partnership as currently conducted.

g) Institutions and administration centre

i) Proposed administrative centre should be developed to improve the Town administration activities;
ii) Build administrative buildings for all Ward Executive Offices; and
iii) Expand existing airstrip.

Tables 11.3 gives detail of the major projects for the master plan implementation, iindicating the main activities under each project, the key stakeholders and sources of funds.

Table 11.3: Master Plan implementation strategies

S/N	Project Name	Activities	Key stakeholders	Source of Funds
1	Prepare and implement regularization schemes for existing unplanned settlements;	Awareness raising Fund mobilization; Property identification; Negotioan of spaces; Preparation of Town Plan drawings;	Residents in the informal settlements Town Director	Njombe Town Council

S/N	Project Name	Activities	Key stakeholders	Source of Funds
		Preparation of survey plans.		
	Land acquisition in the peri-urban areas for urban planning.	Awareness raising to residents; Valuation; Compensation	Town Director Residents Private developers and investors	Private investors; Development partners
	Prepare detailed schemes and survey plots for neighborhoods of in peri-urban areas	Awareness raising to residents for land acquisation; Valuation; Compensation	Town Director Residents Private developers and investors	Private investors; Development partners
	Coordinate and implement the CDB redevelopment plan	Improvement of roads, storm water drainage, water supply, new sewage system, solid waste management system, electricity supply and ICT facilities.	Town Director; TANESCO, TANROAD, NJUWASA, Development Partner	Njombe Town Council Development Partners
	Designate all major land uses for agriculture and forests which are protected by law, catchment areas and areas for grazing.	-Dermacate the agricultural areas Dermacate forestry and catchment areas -Mke gazzementment of the protected areas	Town Director TFS	Njombe Town Council Njombe Town Council
	Take measures to curb soil erosion in the up lands by discouraging cultivation on the hill slopes and encourage further afforestation in all erosion prone susceptible areas	-Conduct awareness campains -Establish tree nurseries -Carry out tree planiting campaigns	Town Director TFS NGO & CBO Community group Indivualds	Njombe Town Council
	Rehabilitation of existing water system and storage tanks		Town Director NJUWASA Development partners	Njombe Town Council Development Partners

S/N	Project Name	Activities	Key stakeholders	Source of Funds
	Upgrade/improde road road network	-Improve all connector roads at least to murram level to all the scattered settlements - Improve all the connector roads to tarmac level	Town Director TARURA	Njombe Town Council
	Constructtransit lorry terminal, bus terminal, and rehabilitate the existing bus station	Feasibility studies and design	Town Director TANROADS TARURA	Njombe Town Council Development partners Private investors
	Develop drainages in the built-up areas (especially the urban proper)		Town Director	Njombe Town Council
	Improve Town Sanitation system	- Construct new treatment plants at Ramadhani; - Expand new central sewer line in the CBD to cover all the urban built area - Carry out campaign for the use of VIP toilets in the periphery settlements/neighborhoods	Town Director NJUWASA Residents	Njombe Town Council Development partners
	Establish tourism information centre	Explore and register all tourist attraction sites monuments, buildings and natural features to a standard acceptable by the Tanzania Board of Tourism Improvement of tourism sector infrastructure and creating public awareness on the importance and role of tourism in community development	Town Director Private investor Development partners	Njombe Town Council Private ivestors
	Improve the open spaces in the Town	- Identify and delineate all botanical gardens and town parks.	Town Director	Njombe Town Council Private investors

S/N	Project Name	Activities	Key stakeholders	Source of Funds
		-Build a regional sports comples -Improve the existing open spaces		
	Construction of the proposed sanitary landfils	Land aquisation Design Construction	Town Director, Contractors, Consultants, Private Sector.	Njombe Town Council Development Partners
	Protect water sources and river valleys	-deploy forestry expertise to study and implement measures for replacing eucalyptus tress with other acceptable riverine species along river valley for their protection	Town Director	Njombe Town Council
	Establishment of proposed satellite towns at Kifanya and Matola	Land acquisition Land survey Prepare neighbourhood plans	Town Director Individual land developers Estate developers. Private investors TANESCO, NJUWASA. TARURA	Njombe Town Council Development partners Individual land developers Estate developers.
	Expand and upgrade the airstrip to regional airport	Carry out feasibility study Land acquisition Compensation Plan and design Improvement of airport infrastructures	Town Dictor Tanzania Airports Authority MLHHSD	DevelopmentPartners Njombe Town Council

11.3 Cost Estimation for implementing the Master Plan

11.3.1 Cost Estimation for the Master Plan Development Project

Cost analysis and estimation is one of the critical activities in the implementation of Master Plan Project, particularly where the town under consideration is as huge as Njombe Town. The estimation for the implementation of the Master Plan allows the town leadership to plan for sourcing financial resources, as well as to effectively plan for sourcing investments for the proposed development projects.

Cost estimation is an attempt to determine the expected cost of proposed development projects, the major objective being informing the developers of the oncoming financial and other resources commitments prior to commencement of the implementation. To arrive at a realistic cost estimate, some of the important information include:

1. How much work is to be done (the methodology);
2. The nature of work to be done;
3. The requirements (resources) that will be needed to carry out such works;
4. The project location;
5. Project duration;
6. Potentials for subsidies;
7. Expected mode of procurement for the works; etc

The construction industry forms a huge proportion of development costs in Master plan due to massive magnitude of physical structures and line infrastructures developments. The initial process prior to cost estimation involves measuring the quantities of works to be carriers out; the quantities are then priced accordingly. A market survey to obtain prices of resources needed is a condition in the process, while other items with cost implication, such as authoritative requirements and site visits are equally important activities.

While pricing and establishing cost estimate, another important aspect is the Value Engineering. Through value engineering and analysis, the cost estimate for the project or a specific project component its compared with the perceived value of the project or a specific project component, all based on clients' needs. During value analysis, costs for different alternatives are compared as a step towards ensuring the most efficient and economic resources are employed for the project. This is a consideration, which follows after ensuring that the designs offer on optimum proposal.

11.3.2 Components of a Cost Estimate

a) Preparatory works

i) Mapping and surveying

The Master Plan proposals include requirements for future development, to which some of the activities will include land acquisition and compensation to present owners (where applicable), detailed planning, land surveying, preparation and issuance of title deeds, and planning for future allocation to various developers. The estimate based on those activities, thus, including land acquisition costs (principally compensation); detailed planning, surveying and infrastructure provision (roads, storm water drainage systems, sewerage disposal systems, solid waste management systems).

ii) Regularization and upgrading of the settlements

Detailed planning, surveying and preparing cadastral maps, surveying existing households for valuation, compensation for a few households expected to relocate to allow passages of infrastructures, carrying out stakeholders' workshops with the communities, and leaders at Mtaa (sub-wards), ward and district levels, including the security communities and costs to cover for the preparation of Certificate of Right Occupancy (CROs). The four (4) priorities by the Ministry of Lands, Housing and Human Settlements Development (MLHHSD) include a directive that all land should be demarcated and registered (URT, 2012).

a. Construction of Buildings and Civil Engineering Works

Physical construction costs form the single, component of the Master Plan implementation; others are land acquisition and surveying.

i) Preliminary costs

Preliminary costs are expenses that will be incurred during construction but they do not form part of the actual project works. They facilitate smooth running of the project and they are not included in the direct costs for the project such as materials, labour, plants and equipment or overhead costs for various companies that will be implementing projects. Some of the preliminary costs include protection of the project sites by fencing, onsite staff facilitates, including accommodation for the consultant and the contractor, project registration to authorities, site security, water for the works, power for the works, processing photographs and laboratory testing for authenticating building materials' quality during construction.

ii) Major construction works

This cost item involves costs, which built directly to form the actual project (buildings, roads, bridges and culverts along the major roads, and, similar built structures). The costs under measured works include costs for building materials, price for labor, and costs for purchasing or hiring plants and equipment. Generally, the costs given considered the following items, setting out the buildings or civil engineered works, excavations, laying foundations, walling, roofing, openings (doors and windows), finishings, fixtures and fittings, electrical and mechanical installations, air conditioning, plumbing and engineering installations, fire equipment installations (fire and smoke detection), ICT and data installations (particularly for office buildings, libraries), and elevators (where applicable). The estimates also include landscaping works such as paving, trees and grass planting and water reticulation. Others are prime costs, which are costs which the procuring entity will incur to cover for expenses carried out by local authorities' services, such as TANESCO, water supply authorities, and any other authoritative body as will be required, be it installations or inspection. Social and welfare facilities include schools, health care facilities and police posts.

*Fire stations: C*ost items include office spaces for officers, parking bays for the fire tenders, a room for officers on duty who may be required in emergencies, a small canteen, a small conference or meeting room and store rooms for fire fighting gears, breathing apparatus and similar items. Others are the gymnasium for officers to exercise and "smoke chambers" where new officers are trained and demonstrations made on possible fire outbreak situations. Sitting officers also get refresher trainings on the same. Underground wells for water reserve are important cost components; these are to ensure water availability and that the fire tenders are filled with water at all times.

Commercial areas, industrial areas, shopping malls, recreational facilities, religious institutions, and other similar institutions which are commercial based have not been considered in the cost estimation for their construction. These are left for investors to develop by the time of their construction, under an arrangement that will be agreed upon with the Njombe Town Council.

Road networks: For the purpose of estimation of the costs include both tarmac and gravel roads within townships, some being new constructions while others are proposed for upgrading or improvement from the present conditions. Pedestrian walkways and storm water drainages on both sides of roads, including storm-water manholes are priced together under this item. Further consideration includes costs for construction or culverts and/or bridges not known by the time of preparation of the master plan, including those, which will be found to be in poor conditions for improvement. Foul water drainage estimate includes costs for construction and improvement of sewer system, mainly along the major roads.

Water supply network: the cost considerations under this component include rehabilitation and construction of additional water supply piping network, pumping stations and water storage capacity through proposed construction of underground water storage tanks.

Solid waste management: Costs involve provisions for construction of designed solid waste collection point (sub stations) before the wastes are collected for disposal at dumpsite. The dumping site has been

proposed to involve a landfill site, which is sufficiently large to serve the Town for about 20 years. The sanitary landfill is eco-designed (environmentally friendly) as it allows natural decomposition of wastes, which are continuously being compacted to reduce volume. The landfill costing includes a provision for construction of the supporting facilities, such as staff washroom, staff lunchroom, first-aid and emergency equipment; and fire-fighting equipment. The cost includes also rehabilitation and general improvement of the existing dumpsite.

*Storm water drainage: E*stimates include construction of open, lined channels directing surface water outside properties. Where culverts and manholes are provided, related costs items are estimated for the same. Along main roads, both tarmac and gravel, storm water drainages are considered in the estimation, provide on both sides of the roads.

Fire hydrants estimates have been considered as provided at a distance of approximately 500 metres along the trunk roads. These are water drawing points for fire tenders form which these tenders can be supplied with water in case of fire outbreaks. Covers for fire hydrants' chambers are normally vandalized by scrap metal dealers if covered with metallic materials. Chambers are, therefore proposed to be of reinforced concrete.

Upgrading and/or provision of infrastructure includes costs for the provision of basic services, such as water drainage systems, roads, electricity and the like for the identified industrial areas.

The cemetery areas are provided whereas light construction are suggested and priced. It is proposed that the cemetery areas are fenced with a chain link fence, about 2.1 metres high galvanized chain – link fencing with precast concrete grade '25' posts reinforced with mild steel bars, set in concrete grade '25' foundation, and straining posts as required and two gates each 10m wide.

c) **Consultation and professional fees; construction of buildings and civil engineering works**

i) **Detailed design and supervision of works**

Professional fees are payments made to various expects involved in the detailed designed of the proposed facilities, and the consequent supervision to completion of the facilities. Some of the consultants will be Project Managers, Town planners, Quantity Surveyors, Land Surveyors, Architects, Civil and Structural Engineers and Services Engineers. These will be engaged throughout the development process, up to and including the Defeats Liability period (DLP), which is the period after project completion and handing over, where the Project Manager is still responsible for any defects that may occur. Special category experts who are normally required at the very beginning of the projects are the Environmental and Social Impact Assessment specialists and the Geotechnical surveyors.

ii) The Environmental and Social Impact Assessment (ESIA)

The Environmental Managemaent Act of 2004 equires that any development projects be assessed of their environmental and social impacts prior to commencement by a person or firms registered by the National Environmental Management Council (NEMC), i.e., Environmental and Social Impact Assessment (ESIA). This includes projects in construction of the built environment. In this view, ESIA will be carried out for the proposed works by the client, and related costs are accordingly provided for. To ensure the value of money for public funds, the Act requires that, a public organization ensures that an ESIA is conducted not only prior to commencement of the project, but before financing any of the projects.

iii) Pre-Construction Geotechnical Investigation

Civil and building construction characteristically require Engineering Design from a variety of disciplines, particularly Civil and Structural Engineers who would need to know the soil bearing capacity information, so as to comprehensively carry out design of buildings or engineered structures. The geotechnical survey involves collection of soil and water samples, laboratory analysis of the collected soil and water samples and preparation of the geotechnical report. The report may include among others, information about groundwater levels; soil consistency and structure; and recommendations for the technical project. A subsurface geotechnical investigation will provide the information necessary for other Engineers to complete their design. This, is, therefore priced for in these proposed works through provision of a cost estimate to cover for professional fees for this expertise.

iv) Insurance for the Works

When embarking on such an expensive nature investment as construction works, it is important to plan in advance on how to protect the investments. The contractor for the works will be obliged to insure the Works (facilities under construction) themselves, plus machinery and equipment to cover against damage. Personnel on site and persons visiting the site (third parties) must also be insured against injury and death, which are all paid for by the client. It is also to meet the Occupation, Safety, and Health Administration (OSHA) requirement of health and safety on site. To further safeguard the interests of the client, consultants for design and supervision of the works shall be required to take a Professional Indemnity insurance in the manner and value agreed with the client at the time of contract negotiations. This is in compliance with Regulation No. 321 f of the Public Procurement Regulations, which requires ensuring Professional Liability of the consultants (professionals) to the entity procuring the consultancy services. This is not priced in this estimate and is covered separately by the consultant's office overhead costs. Performance bonds will be provided through the method prescribed by the procuring entity, which is the sum held to ensure that contractors perform to finish the works. Else, this sum is released from the insurer or the banker (guarantor) for processing the procurement of another contractor.

d) Contingencies in Building and Civil Engineering Projects

A construction contingency is an important cost item for a Master Plan project because of the abstract details used for the cost estimation. Contingencies related to construction and other projects refer to a sum of money which is set aside for unpredicted changes in the scope of the works (the clearer or more detailed the scope of works, the more accurate the project estimate). It covers for construction costs, which are not foreseen during the time of design and up to the contract signature date, but they are important and need to be made available for successful implementation of the project. These include price escalation of products design changes by specifications, design modifications in scope and unavoidable conditions discovered onsite during actual execution. Contingencies are a fundamental cost item, which serves as a risk management tool to financially prepare for any risk facing the project. The amount of contingency is based on historical experience and the expected difficulty of a particular development project.

e) Inflation

The project in the process of cost estimation is at a Master Plan stage, with short, medium, and long term plans rolling over a period of 20 years of incremental development. In each of the implementation terms, there shall be processes for procurement of consultants, suppliers and contractors whilst other procedures are those related to seeking local authority's and regulatory authorities' approvals. With each of those, there would be stages for approvals by the management and processes involving financial and other necessary authorizations. Thus, an element of inflation has been allowed for into this estimation, to cover for possible price increase (or currency devaluation).

f) The Value Added Tax (Tax on Purchases)

As an obligation to pay taxes, as stipulated in the Value Added Tax Act, 2014, all costs/transactions have been subjected to the sales tax, presently valued at eighteen (18) percent of the worth of transactions carried out. This is a consumption tax charged on taxable procurements, such as the works proposed herein. Therefore, contractors are liable for VAT on progress invoices. The tax is subject whenever value is added at each stage of production, including the final stage. VAT is charged by business registered for VAT only.

11.3.3 The Estimated Costs for Implementation of the Proposed Master Plan

The implementation of the proposed Njombe Town Master Plan is estimated at TZS. 15,329,978,083,701.60 (Fifteen Trillion, Three Hundred Twenty-Nine Billion, Nine Hundred and Seventy-Eight Million, Eighty-Three Thousand, Seven Hundred and One, Cents Sixty Only). Table 11.1 depicts the summary of costs for the Master Plan implementation. The details of the cost breakdown are indicated in Appendix 1.

Table 11.1 Summary of costs for the Master Plan Implementation

S/N	**Projct/Cost Item**	Cost (TZS)
1	Prepare and implement regularization schemes for existing unplanned settlements	1,326,000,000
2	Coordinate and implement the CDB redevelopment plan	1,737,036,000,000
3	Designate all major land uses for agriculture and forests which are protected by law, catchment areas and areas for grazing.	2,554,305,500,000
4	Water supply and distribution including rehabilitation of existing water system and storage tanks	32,050,123,385
5	Upgrade/improve road road network including constrction of drainage systems in the central area	436,000,000,000
6	Contsruction of transit lorry and bus terminal and rehabilitate bus station	5,826,000,000
7	Solid waste management construction of sanitary land fill andcampain on solid waste collection and separation	8,700,100,000
8	Improve Town Sanitation system include expansion of the central sewer line, construction of waste treatment systems and campain on the use of VIP toilets	1,366,250,000
9	Protect water sources and river valleys , including establishment of green tsructures	39,624,000,000
10	Establishment of proposed satellite towns at Kifanya and Matola	1,905,725,700,000
11	Expand and upgrade the airstrip to regional airport	14,750,000,000
12	Establishment of economic processing zones including land acquisition, surveying and provisioning of basic infrastructures	980,012,480,000
13	Provision of social, community and administrative facilities in the new neighbourhoods	18,624,000,000
14	**Subtotal**	**9,268,886,053,385**
15	Other costs (design of various projects/proposals, insurance and performance bond, contingency, inflation and VAT)	6,258,092,030,316.60
16	**Total estimated cost**	**15,526,978,083,701.60**

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APPENDEX 1: Details of Cost Breakdown

COST ESTIMATIONS FOR THE PROPOSED NJOMBE TOWN MASTER PLAN 2018 - 2038		
SUMMARY		
S/N	**COST ITEM**	**AMOUNT (TZS)**
1.0	General areas, including the CBD	7,216,770,353,385
2.0	Kifanya and Matola satellite centres	1,905,725,700,000
3.0	Administrative centre	146,390,000,000
3.0	**SUB TOTAL$_1$**	**9,268,886,053,385.00**
	ADD	
	Preliminary Items - 7.5% of Sub-total -1	695,166,454,003.88
	SUB TOTAL$_2$	**9,964,052,507,388.87**
	ADD	
	Professional fees - 12% of Sub-total -2	1,195,686,300,886.67
	-	
	ADD	
	Insurances - 2.5% of Sub-total -2	249,101,312,684.72
	SUB TOTAL$_3$	**11,408,840,120,960.30**
	ADD	
	Contingency - 10% of Sub-total -3	1,140,884,012,096.03
	SUB TOTAL$_4$	**12,549,724,133,056.30**
	-	
	ADD	
	Allowance to cover for inflation - 3.5% of Sub-total -4	439,240,344,656.97
	SUB TOTAL$_5$	**12,988,964,477,713.30**
	-	
	ADD	
	Value Added Tax (VAT) - 18% of Sub-total -5	2,338,013,605,988.39
	TOTAL ESTIMATED COST	**15,326,978,083,701.60**

CBD AND OTHER GENERAL AREAS

	COST ITEMS	Unit Rate (if applicable)	Total
1.0	**Physical infrastructure**		
1.1	**Road networks**		
	Trunk roads, existing: provide storm water drainage system, pedestrian walkways, bicycle passage, street lights, approximately 97 km	650,000,000	45,500,000,000
	Primary distributor roads, new, 355 km, including storm water drainage provisions, street lights provision	1,100,000,000	390,500,000,000
1.2	Construct transit lorry and bus terminal		
	Construction of transit lorry and bus terminal, rehabilitate bus station	5,826,000,000	5,826,000,000
1.3	Improve air strip	14,750,000,000	14,750,000,000

	COST ITEMS	Unit Rate (if applicable)	Total
2.0	**Planning and surveying, approx. 82,716 Ha**		
2.1	Residential, commercial, commercial residential, institutional, industrial, (excluding areas which are already densely developed and in plans for upgrading through regularisation, areas occupied with swamps and forests) - includes secondary distributor roads and issuance of title deeds	Item	1,737,036,000,000
2.2	Open spaces, gravel borrow pit, urban agriculture, the high tension power line and the road network (excluding areas which are already densely developed and in plans for upgrading through regularisation, areas occupied with depressions, hills and swamps, and conserved forests) - includes secondary distributor roads and issuance of title deeds	Item	2,554,305,500,000
-	-	-	-
3.0	**Upgrading/ Regularisation**		
	Regularisation, and upgrading of the settlements, approximately 39,000 Ha	Item	1,326,000,000,000
	Total, Page 1		**6,073,917,500,000**
4.0	**Water supply and distribution**		
4.1	Water supply network, construction of three on ground water storage tanks each approx. 2,500 cubic metres, including all necessary connections	Item	3,450,000,000.00
4.2	Laying pipe network for clean water supply to specification, including all necessary excavations, backfilling, connections and fittings, approximately 430 km, including constructions at intakes	Item	26,114,123,385.00
4.3	Installation of fire hydrants along trunk and primary roads, installed at 500m interval, approximately 904 Nr.	Item	2,486,000,000.00
5.0	**Sanitation system**		
5.1	Solid waste management		

	COST ITEMS	Unit Rate (if applicable)	Total
	Solid waste transfer station, including space for sorting wastes, atleast 1 Nr per neighbourhood	Item	100,000,000
	Improvement and rehabilitation of the existing landfill, including access roads for dumpers	Item	2,000,000,000
	Fencing the landfill approx. 500m long in circumference, including fabrication and fixing gates	Item	50,000,000
	Construction of a sanitary landfill	Item	5,250,000,000
	Construction of a sanitary landfill, approximate 1 million cubic metres, including a weigh bridge and fencing	Item	2,250,000,000.00
	Constructed wetlands grown with selected vegetation for purification of the effluents	1.00	150,000,000
5.2	Foul water drainage		
	Construct waste water treatment system	13	100,000,000
	Expand the central sewer line in the CBD, including excavations, backfilling, pipeworks, inspection chambers and all necessary works, approximately 355 km	Item	266,250,000
	Total, Page 2		**42,216,373,385**
6.0	**Institutional areas**		
	Educational facilities		
	- Nursery and primary school	1,250,000,000	10,000,000,000
	- Secondary school	2,500,000,000	2,500,000,000
	- College	39,000,000,000	39,000,000,000

	COST ITEMS	Unit Rate (if applicable)	Total
7.0	**Health care facilities**		
	- Dispensary	1,400,000,000	2,800,000,000
	- Health centre	2,100,000,000	2,100,000,000
	- Hospital	12,000,000,000	12,000,000,000
8.0	**Library**	Item	500,000,000
9.0	**Community hall**	Item	500,000,000
10.0	**Economic Processing Zone (EPZ), approx. 32,674 Ha**		
	Acquisition, surveying and provision of basic infrastructure for small, medium and large scale industries		
	Electricity	115,012,480,000.00	115,012,480,000.00
	Water supply and sanitation	85,000,000,000.00	85,000,000,000.00
	Roads and storm water drainage systems	780,000,000,000.00	780,000,000,000.00
11.0	**Green structures establishment:** plant and maintain existing trees till well established, approximately 60m from water body banks. Species to be approved	Item	39,624,000,000
12.0	**Municipal, Ward and Sub-Ward offices**		
	- Municipal office	1,500,000,000	1,500,000,000
	- Ward executive offices	200,000,000	200,000,000
13.0	**Police station**	200,000,000	800,000,000
14.0	**Fire station**	350,000,000	3,500,000,000

	COST ITEMS	Unit Rate (if applicable)	Total
15.0	**Cemetery, fencing, approximately 20km girth**	150,000	3,000,000,000
	Total, Page 3		**1,098,036,480,000**
16.0	**Commercial areas, industrial areas, shopping malls, recreational facilities, religious institutions, and the like**		
17.0	**Recreational areas**		
	Construct community sports ground	600,000,000	600,000,000
18.0	**Training and awareness campaigning**		
	Campaigning for the use of VIP toilets in the periphery settlements/neighbourhoods	1,000,000,000	1,000,000,000
	Campaigning on solid waste collection and separation of organic and non-organic waste at source – collection points	1,000,000,000	1,000,000,000
	Total, Page 4		**2,600,000,000**
	Page 1		6,073,917,500,000
	Page 2		42,216,373,385
	Page 3		1,098,036,480,000
	Page 4		2,600,000,000
	GRAND TOTAL		**7,216,770,353,385**

SUB CENTRES: KIFANYA AND MATOLA

	COST ITEMS	Unit Rate (if applicable)	Total
1	**Road networks**		
	Primary roads, approximately 6 km	1,150,000,000	6,900,000,000
	Access & collector roads, approximately 55 km	41,250,000,000	41,250,000,000
2	**Bus stand**	550,000	5,338,850,000
3	**Market**	650,000	13,000,000,000
4	**Surveying, approx. 6596Ha**		820,209,000,000
5	**Water supply**		
	Clean water supply		*...included in Sheet 2...*
	Installation of fire hydrants in main streets		*...included in Sheet 2...*
6	**Sanitation system**		
	Solid waste transfer station - at least 1 Nr per each neighbourhood	75,000,000	450,000,000
	Storm water drainage system		
7	**Educational facilities**		
	- Nursery & Primary school	900,000,000	900,000,000
	- Secondary school	15,000,000,000	15,000,000,000
	- Polytechnic	19,000,000,000	19,000,000,000
8	**Health care facilities**		
	- Dispensaries	1,400,000,000	14,000,000,000
	- Health centre	2,100,000,000	4,200,000,000
	- Hospital	12,000,000,000	12,000,000,000
9	**Ward and Sub-Ward offices**	65,000,000	65,000,000
10	**Police station**	200,000,000	200,000,000
11	**Fire station**	350,000,000	350,000,000
	Sub Total$_1$: Cost for development of 1 Sub-centre		952,862,850,000
	Sub Total$_2$: Cost for development of 2 Sub-centres		1,905,725,700,000
	GRAND TOTAL		**1,905,725,700,000**

	COST ITEMS	Unit Rate (if applicable)	Total
1	Road networks		*...included in Sheet 2...*
2	Surveying		*...included in Sheet 2...*
3	Water supply		*...included in Sheet 2...*
4	Sanitation system		*...included in Sheet 2...*
5	Storm water drainage system		*...included in Sheet 2...*
	Solid waste transfer station	75,000,000	75,000,000
5	**Educational facilities**		
	- Nursery & Primary school	900,000,000	3,600,000,000
	- Secondary schools	15,000,000,000	30,000,000,000
	- College	39,000,000,000	39,000,000,000
	- VETA	45,000,000,000	45,000,000,000
6	**Health care facilities**		
	- Dispensaries	1,400,000,000	14,000,000,000
	- Health centre	2,100,000,000	2,100,000,000
	- Hospital	12,000,000,000	12,000,000,000
7	**Ward and Sub-Ward offices**		
	- Ward office	65,000,000	65,000,000
8	**Police station**		
	- Police station	200,000,000	200,000,000
9	**Fire station**		
	- Fire station	350,000,000	350,000,000
	GRAND TOTAL		**146,390,000,000**