COUNTY GOVERNMENT OF KAJIADO

KAJIADO COUNTY SPATIAL PLAN

2019-2029

FINAL DRAFT PLAN

October 2019

PREFACE

Inadequate planning is one of the major constraints facing regional development in Kenya. This is partly manifested by the numerous unplanned and uncontrolled developments in many of our cities, towns and urban centres. It is regrettable that planning has not kept pace with the development and expansion of our urban centres. The lack of planning in the rural areas has also led to the unsustainability of activities such as agriculture and livestock farming.

The absence of effective planning has resulted in overcrowded urban centres with narrow roads, incessant traffic jams, inadequate public amenities, conflicting land uses and in a state of disorder. Ineffective planning and poor management of urban development has also led to the mushrooming of informal settlements. Such scenarios have serious social and economic implications. Thus, appropriate measures must be formulated to avert negative impacts of urbanization to retain urban centres as the prime movers of socio-economic development in our country while at the same time maintaining balanced rural development.

The Kenya Vision 2030 development blueprint recognizes that there cannot be sustainable development without well planned urban centres. It is anticipated that by 2030, over half of Kenya's population will be residing in urban areas. The migration of rural population to urban areas is expected to increase. Within the context of Vision 2030, Kajiado County is projected to have 60% of the population residing in urban areas. The County Government of Kajiado has therefore prioritized the planning of the entire County as a basis for achieving sustainable development.

The Kajiado County Spatial Plan (CSP) provides a structured framework for coordinating and integrating sectoral plans and activities and support the systematic implementation of county development programmes. In addition, it is going to provide a platform for mobilization of public participation in development initiatives while seeking to optimize resource allocation and utilization. The plan intends to promote individual initiatives and investments while safeguarding the public interest. Above all, it will act as an instrument for initiating, guiding, monitoring and appraising County development activities.

APPROVAL

Certified

I certify that the plan has been prepared as per section 110 of the County Governments Act (2012), Planning standards and guidelines as provided for in the National Land Commission's Exemplar Format for a County Spatial Plan.

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EXECUTIVE SUMMARY

The desire of counties is to have well-managed land space and coordinated land activities. Land is seen as a critical resource in influencing both livelihoods and development. Its exploitation has a bearing on economic performance and progress of a nation. Food security, exports, foreign incomes and sector employment have reference to land exploitation and activities grounded on land use. It is with this gravity that land utilization and exploitation have a serious bearing on national planning.

Increasing population and expansion of settlement influences the manner and forms of land use practiced. Population growth exerts pressure on land and may compel intensive utilization of land, thus degrading its physical qualities and ability to regenerate. Certain human activities cause irreversible damages that degrade and undermine land productivity in the long-run. In cases where the increase has a bearing on physical expansion, the aesthetics and availability of space for economic use is undermined. Competition for space eliminates users that are presumed to have least value. This may interfere with practices that sustain the community at the expense of practices that are presumed to have higher premium and returns. To ensure that space is properly used to support livelihoods and economic development, a proper mechanism must be put in place.

County Spatial Planning is a tool put in place to provide a guide for exploitation and use of land with the aim of achieving the delicate balance to meet development/growth demands and sustainably harness the resource for integration. Planning ensures order, environmental protection, safeguards against depletion and rational methods preferred to sustain landed resources and human activities undertaken. County and national space planning, commonly referred to as spatial planning, navigates a process of balancing rational use of space to achieve order, preference and better use. This is expressed in strategies that take the shape of spatial forms (mapping), statistical projection or policy statements. Therefore, highly priced undertakings that sustain and support community practices (human activities) are protected and nurtured through protective/conservation methods. The aggressive and modern enterprises are equally managed through controlled mechanism. Such practices may include enterprises like urbanization and industrialization that enjoy preference over traditional non-market-oriented enterprises. Planning becomes a medium of selective justice for use and management of land space.

This report presents the CSP (2019 -2029) for Kajiado County. Its preparation was executed by a consortium led by Geomaps who were the lead consultants in association with Habitat Planners and in consultation with the stakeholders. The CSP covers the entire area of the County measuring

approximately 21,900km^2 and comprising of five (5) sub counties: Kajiado Central, Kajiado South, Kajiado West, Kajiado North and Kajiado East. The plan runs for a period of ten years (2019 to 2029) and may be reviewed after this period for a further ten years. This plan has been prepared pursuant to the new Constitution of Kenya 2010, Urban Areas and Cities Act 2011, Physical Planning Act (Cap 286) section 24, 25, 26, 27 and 28 and the second schedule and Physical Planners Registration Act (no. 3 of 1996) and other relevant laws.

The consolidated vision for the county as outlined in the plan was *"A County with sustainable development anchored on livestock, agriculture, tourism, industry and commerce"* (See Section 1.6 – Vision of the Plan). The purpose of the CSP is to improve utilization of land base resources and guide the organization and development of physical development of the human settlement. The plan also promotes the objects of devolution as provided in the County Government Act No 17 of 2012. The preparation of this plan considers the unique features of Kajiado County, including the fast population growth rate, high rate of urbanization, infrastructure development, pastoral way of life of the local community, availability of natural resources and geographical location.

The plan addresses a wide range of issues which can be categorized as spatial, economic, social and environmental. The report commences with the introduction of the planning area to highlight the background information, planning scope and purpose of the CSP. This has been followed by an outline of the legal, policy and institutional frameworks guiding the preparation of the CSP. An analysis of the population and demographic follows, including projections till the end of the planning period. Thereafter, plans for different sectors, including environment and natural resources, agriculture and livestock, physical infrastructure, social infrastructure and economy have been provided. Strategies for each of these sectors are provided. The report finalizes by presenting the structure plan concepts, including the alternative development models and land use structures to be considered.

It is believed that the plan proposals address most of the major planning and development challenges of Kajiado County. Its implementation is expected to provide solutions to most of the concerns that have become critical to development in the County. It is therefore expected that the plan will be given appropriate support by the various actors.

ACRONYMS

AIDs	Acquired Immune Deficiency Syndrome
ARVs	Anti-retroviral
AS	Arterial Street
ASAL	Arid and Semi-Arid Land
BOT	Build, Operate. Transfer
CBD	Central Business District
CBO	Community Based Organization
CDF	Constituency Development Funds
CIDP	County Integrated Development Plan
CIP	Capital Investment Plan
CSP	County Spatial Plan
DMA	Drought Management Authority
DTM	Digital Terrain Model
EA	Environmental Audit
ECD	Early Childhood Development
ECF	East Coast Fever
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
FGD	Focused Group Discussion
GIS	Geographic Information System
GoK	Government of Kenya
GPS	Global Positioning System
HH	Household
HIV	Human Immunodeficiency Virus
ISUDP	Integrated Strategic Urban Development Plan
KCPE	Kenya Certificate of Primary Education
KEFRI	Kenya Forest Research Institute
KeNHA	Kenya National Highway Authority
KFS	Kenya Forest Services
KI	Key Informant
Kms	Kilometers
KPHC	Kenya Population and Housing Census
KPHC	Kenya Population & Housing Census
KSH	Kenya Shillings
LAPPSET	Lamu Port Southern Sudan-Ethiopia Transport
LIMS	Land Information Management System
LPG	Liquefied Petroleum Gas
LS	Local Street
MENR	Ministry of Environment and Natural Resources
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
NHC	National Housing Cooperation
NMT	Non-Motorized Transport

P.A	Per Annum
PHE	Public Health & Environment
PLUP	Physical and Land Use Planning Act, 2019
PPP	Public Private Partnership
SA	Sub- Arterial Streets
SEA	Strategic Environmental Assessments
SEP	Strategic Economic Plan
SIA	Social Impact Assessment
SLF	Sustainable Livelihoods Framework
SME	Small and Medium Enterprise
SSP	Spatial Strategic Plan
TB	Tuberculosis
ToR	Terms of Reference
UHT	Ultra-Heat Treated
UN	United Nation
UNEP	United Nations Environment Program
UNHCR	United Nations High Commissioner for Refugees
VCT	Voluntary Counseling and Testing
VIP	Ventilated Improved Pit latrine.
WHO	World Health Organization
WSPs	Water Service Providers

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PART I: INTRODUCTION & PLANNING CONTEXT

CHAPTER 1: INTRODUCTION

1.1 Background

The County Government Act, 2012, requires that all county governments prepare and implement County Spatial Plans (CSP). These are ten-year plans that are aimed at providing policy and spatial guideline for developments within the County. Further, the CSP provides a basis for the interlinking and coordination of sectoral policies and programmes in the County as well as identifying areas for strategic interlinkage with other counties and actors. The county governments are responsible for the preparation of the CSP. When preparing CSPs, county governments should involve other stakeholders in the county who impact on and/or benefit from development in the county.

Kajiado County is experiencing a high average population growth rate of 5.5% per annum. This population growth is majorly attributed to immigration into the County from population working within the Nairobi Metropolitan Region and natural growth. This has led to increased need for proper planning to guide sustainable development and livelihood. The population increase has further resulted in uneconomical subdivision of pastoral and agricultural land for settlement, hence diminishing pastoral and agricultural land. It has also led to encroachment into ecologically fragile ecosystems and the creation of informal settlements in urban areas and increased pressure on existing infrastructure.

Kajiado County has numerous natural resources most of which are underutilized or un-exploited. Urban areas in Kajiado County are showing strain resulting from high population growth that is not commensurate with infrastructure, service provision and employment creation. Most towns are characterized by urban sprawl, poverty, informality and environmental deterioration, among other negative attributes.

The purpose of the CSP is to improve utilization of land base resources and guide the organization and development of physical development of the human settlement. Besides, the plan promotes the objects of devolution as provided in the County Government Act No 17 of 2012.

1.2 Overview of Planning in Kenya

The physical structure of counties in Kenya is consisted of rural and urban areas. However, most of development and planning interventions have focused on either urban or rural areas. By contrast, empirical studies show that there are dynamic relationships that exist between urban centres and the countryside that if explored and managed can result in sustainable growth of counties as centres of

economic development and environmental management where benefits are shared equitably.

The high population growth rates currently being experienced in Kenyan counties has led to a number of planning issues, including rapid and illegal subdivision of land, poor housing and mushrooming of informal settlements, lack of markets, recreational facilities and parking areas, unemployment, deterioration of health conditions, poor transport and infrastructure services escalation in crime and social distress, and ecological conflicts. Urbanization has reshaped the focus on urban and rural areas given its ability to affected the economy of counties, inclusiveness and sustainable development.

In consideration of the ongoing urbanization, inequality and poverty, the CSP aims at delivering complementary and mutually reinforcing rural, peri-urban and urban areas as an integral part of the plan. Balanced outcomes across urban and rural areas will be a vital objective of sustainable development. Rather than competing for scarce resources, the planning of the County is geared towards building on the synergies that can be obtained from sustainable, balanced investments and setting priorities and identifying the drivers to help reduce disparity.

The County Government of Kajiado initiated the consultative process of preparing the Kajiado CSP for the period 2019 – 2029.The plan identifies priority programmes that will be implemented by County Government and other partners that can make the County a well-planned, living and working environment that can attract investments for enhanced revenue collection, growth and development. The plan also leads to the optimum use of opportunities for pastoralism, agricultural development, conservation and tourism development, sustainable urban development, industrial development and rural-urban linkages.

1.3 Problem Statement

Kajiado County covers an approximate area of 21,900km^2 and is located in the larger Nairobi Metropolitan Region bordering Nairobi, Machakos, Makueni, Narok, Taita Taveta, Nakuru, Kiambu counties. The County also borders Tanzania to the south. Kajiado County is experiencing a high population growth rate which stands at 5.5% per annum. The County is predominantly semi-arid and has agriculture and livestock keeping as the dominant activities, the County has a vast natural resource base that includes wildlife and minerals. Kajiado County is also endowed with abundant water resources, a favourable climate and fertile soils to support agriculture, and a rich cultural heritage favourable for tourism development. Further, the County has a locational advantage being within the Nairobi Metropolitan Region and bordering Tanzania. The vast land

resources in the County and the existing infrastructural developments, such as road connectivity and urban system, offers great opportunity for investment.

The potential of the County has however not been fully harnessed as there are many development challenges such as high population growth rate caused by immigration and natural growth, environmental degradation, unemployment, human-wildlife conflicts, urban sprawl, unplanned settlements, poor urban-rural linkages and unfavourable climatic conditions.

The high population growth rate has resulted to high rates of unemployment, poverty and uneconomical subdivision of land for settlement hence diminishing land for livestock and agricultural development. The semi-arid conditions in the County coupled with unpredictable rainfall has led to diminishing livestock and agricultural production. Despite the existence of various infrastructure in the County, the transport network is in a poor condition and unevenly distributed. Unplanned urbanization and urban sprawl resulting in uncontrolled human activities and land uses also pose a challenge in the development of the County making it hard for proper delivery of services to these areas.

County development efforts particularly in infrastructure and services are hampered by lack of clear, consistent investment framework. There is no framework for sectoral coordination and this has always resulted in duplication of projects. The County also lacks a legal spatial development framework for making decisions.

The CSP provides a spatial framework and sectoral strategies that are aimed at addressing the identified problems. It also gives a framework for the coordination of different development actors within the county to reduce duplication of roles and improve efficiency.

1.4 Planning Focus for Kajiado

The main objective for the CSP is to evaluate the development needs of the people in Kajiado and propose a land use structure that will guide sustainable development. The plan considers the existing land uses, the vision for the County and sub counties, the strategic positioning of the County within the Nairobi Metropolitan Region, and natural resources among other features. Further, the plan provides an integrated road map where the various departments will get projects and programs for implementation.

1.5 Purpose of the CSP

The purpose of the CSP is to improve utilization of land base resources and guide the organization and development of physical development of the human settlement. The plan promotes the objects of devolution as provided in the

County Government Act No 17 of 2012. The CSP shall provide a framework through which vision 2030 shall be implemented. The purpose of the plan is to:

- Define a vision for future growth and development of the area over the next 10 years
- Provide an overall integrated physical framework for growth of the County
- Prepare a realistic implementation plan for all identified projects along with capital investment plan.

The **specific objectives** of the plan include the following key activities:

1. Depict the spatial dimension of the social and economic development programmes of the County as articulated in the integrated county development plan.
2. Present a clear statement of how the spatial plan is linked to the regional, national and other County plans.
3. Clarify the anticipated sustainable development outcomes of the spatial plan.
4. Give effect to the principles and objects contained in sections 102 and 103 County Government Act.
5. Set out objectives that reflects the desired spatial form of the County.
6. Formulate strategies and policies indicating desired patterns of land use within the County while addressing the spatial construction or reconstruction of the County, providing strategic guidance in respect of the location and nature of development within the County and setting out basic guidelines for a land use management system in the County.
7. Planning, re-planning, or reconstructing the whole area of Kajiado County and controlling the order, nature and direction of development
8. Improving the land and providing for the proper physical development of such land, and securing suitable provision for transportation, public purposes, utilities and services, commercial, industrial, residential and recreational areas, including parks, and reserves and also the making of suitable provision for the use of land for building or other purposes
9. Set out a capital investment framework for the County's development programs
10. Contain a strategic assessment of the environmental impact of the spatial development framework
11. Identify programs and projects for the development of land within the County
12. Delineate the urban edges of the urban areas within the County
13. Indicate the areas designated to conservation and recreation.

1.6 Vision of the Plan

The Vision for this CSP is to make Kajiado County *"A County with sustainable development anchored on livestock, agriculture, tourism, industry and commerce"*.

The process of developing a strategic vision was through stakeholder forums that were carried out in all the five sub-counties. Cross cutting visions were consolidated to form one vision for the County.

1.7 Objectives of the Plan

The plan addresses a wide range of issues which can be categorized as spatial, economic, social and environmental. These issues may be further categorized as human settlement; economy which comprises of agriculture, industry, tourism, service, knowledge etc.; integrated transportation comprising of road, railway and air; infrastructure consisting of water and sanitation, energy, ICT, education, recreation and health; and environment comprising of the built and natural such as rivers, wetlands, swamps, forests, hills, open spaces and parks.

The main objectives of work under planning component entails the formulation of the following strategies:

- Undertaking a situational analysis of the current socio-economic, physical, environmental and cultural characteristics of the County,
- Formulation of a vision
- County spatial framework
- County transportation strategy
- County infrastructure and services development strategy
- County environment and resource management and protection strategy
- County human settlement strategy
- County economic development strategy
- County livestock and agricultural development strategy
- Conservation plan
- Development of planning policies and zoning regulations
- Capital investment plan

1.8 Planning Horizon

The planning horizon for the plan is set at 10 years to allow for predictability of key variables and trends over the foreseeable future. It is also pegged to Kenya's Vision 2030. The plan period is 2019-2029.

1.9 Scope of Work

The CSP covers the entire area of the County measuring approximately 21,900km^2 and comprising of five (5) sub counties: Kajiado Central, Kajiado South, Kajiado West, Kajiado North and Kajiado East. The plan shall also cover all urban areas within the County. The planning period is 10 years (2019 to 2029) and may be reviewed after this period for a further ten years.

1.10 Organization of the Plan

Part 1: Introduction

- Chapter 1- This section details the background and scope of the CSP, as well as the objectives and purpose of the Plan.
- Chapter 2- This section presents the contextual information about Kajiado County in terms of its location and administrative units. The chapter also details the methodology used in developing the CSP, as well as the supporting policy and legal framework.

Part 2: Situational Analysis

- Chapter 3- This chapter details the population size, structure, culture, religion, among other demographic characteristics.
- Chapter 4-. This chapter analyses the environment and natural resources found within the County.
- Chapter 5- This chapter discusses livestock and agriculture in the county.
- Chapter 6- This chapter analyses transportation, water and sanitation, solid waste management, energy, ICT
- Chapter 7- This section looks at the social infrastructural facilities found in the County.
- Chapter 8- This chapter describes the human settlements, both urban and rural, within the County.
- Chapter 9- This chapter describes the economic activities within Kajiado County, such as agriculture, mining, tourism, industry, trade, commerce and farm forestry.
- Chapter 10- This chapter discusses land as a resource, looking at elements such as the uses of land, sizes of land and the suitability of land.

Part 3: Plan Formulation

- Chapter 11- This section provides various possible spatial development scenarios and development models.

Part 4: Plan Proposals

- Chapter 12- This section details the policies and strategies proposed for the CSP, responding to the challenges identified in the previous sections.
- Chapter 13- This section presents the structure plan that forms the proposed spatial development framework (proposed spatial form) for Kajiado County.

Part 5: Plan Implementation Strategy

- Chapter 14- This section details the various components necessary for plan implementation such as the institutional framework for implementation.

- Chapter 15- This section details the capital investment plan
- Chapter 16- This section details the monitoring and evaluation

Annex- This section contains the bibliography, copies evidence of public participation in the process of formulation of this CSP and other supporting documents.

CHAPTER 2: PLANNING CONTEXT

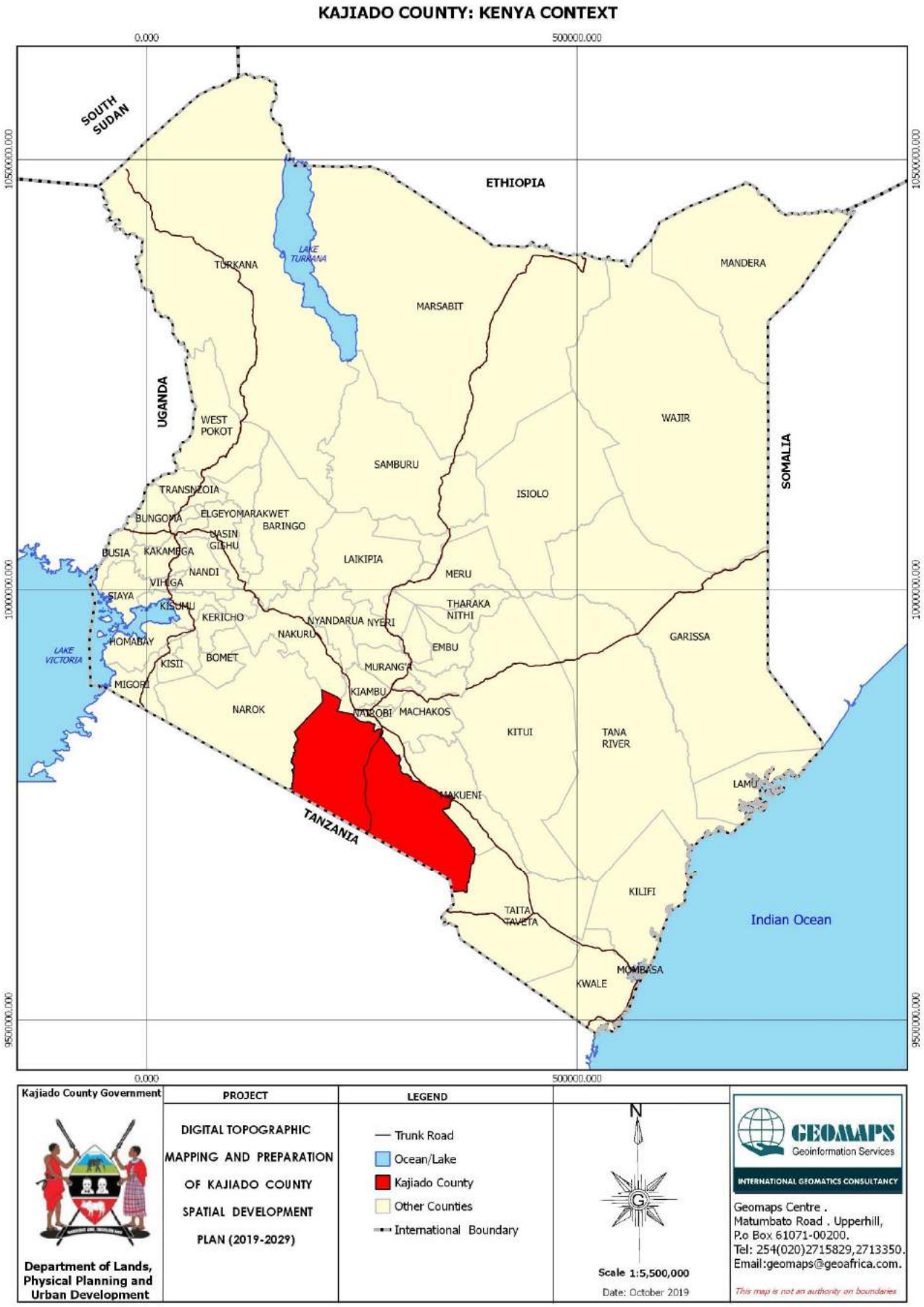
2.1 Location and Size

2.1.1 National Context

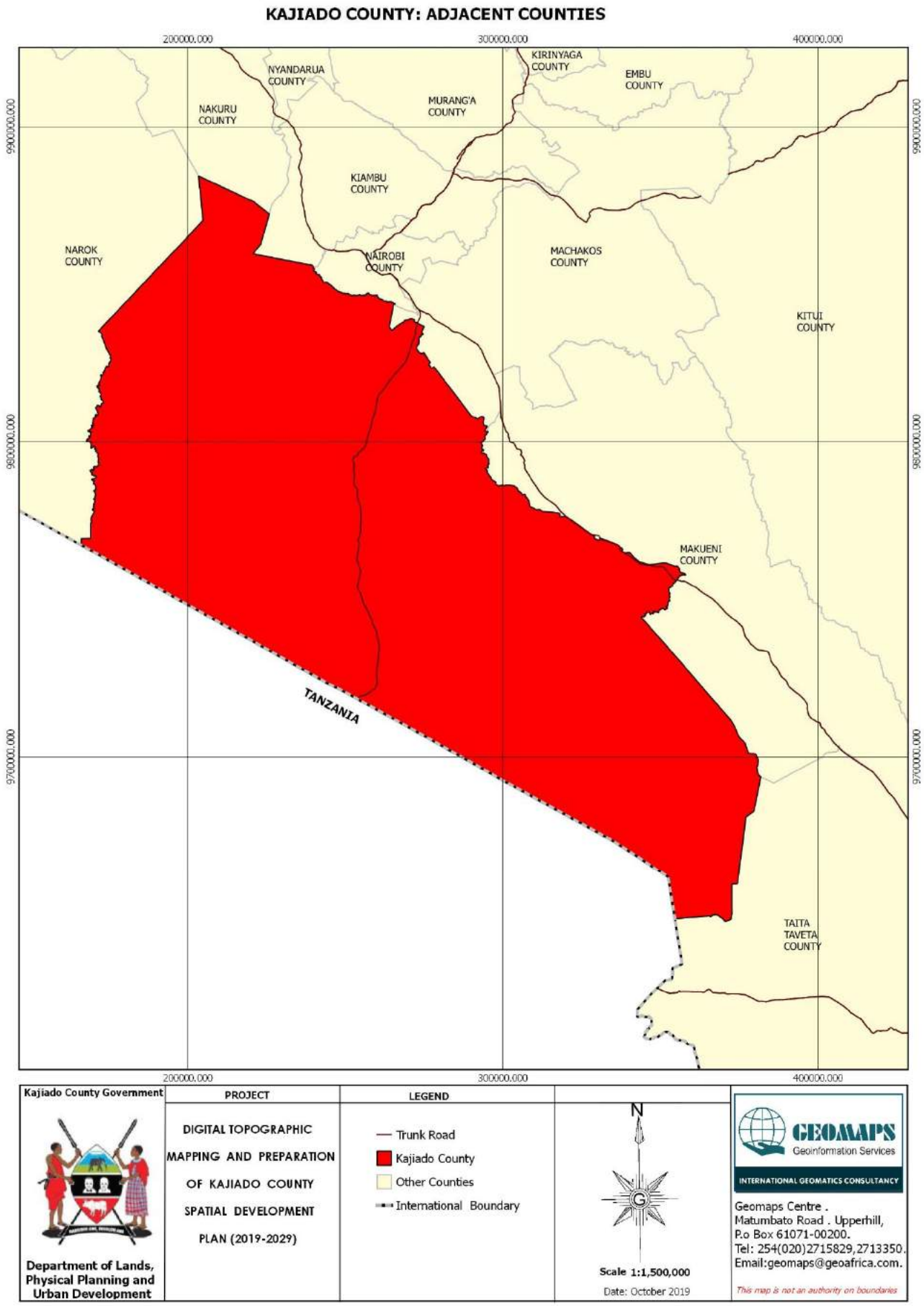
Kajiado County is located in the southern part of Kenya. It borders Nairobi County to the North East, Narok County to the west, Kiambu County to the north, Nakuru County to the north west, Taita Taveta County to the south east, Machakos County to the north east and Makueni County to the east. The County also borders the Republic of Tanzania to the South. It is situated between longitudes 36^0 5" and 37^0 5" east and between latitudes $10^{0"}$ and $30^{0"}$ south. Map 2.1 shows the County on the national context.

2.1.2 Regional Context

Kajiado County is one of the counties in the Nairobi Metropolitan Region and constitutes what is referred to as the Southern Metro. As part of the Nairobi Metropolitan Region the County is poised to play a huge role in management of urbanization in the country and play an important role in the region's development. Map 2.2 the County and neighbouring Counties.



Map 2.1: Location of Kajiado County in Kenya



Map 2.2: Kajiado County and the neighbouring counties

2.1.3 Local Context

Kajiado County has five sub counties: Kajiado Central, Kajiado North, Kajiado East, Kajiado West and Kajiado South. The County is further divided into 25 wards, with each subcounty having five wards.

Kajiado Central

Kajiado Central Sub-County is the administrative centre of Kajiado County covers an area of about 4212km^2. The Sub-County is located centrally within the County and has Kajiado town as the main urban centre. Other major urban centres include Ilbisil and Namanga. The Sub-County borders Tanzania to the South and has Namanga as one of the major entry points to Kenya from Tanzania. It has a locational advantage due to its proximity to Nairobi and central location to play administrative and residential functions. Further, the linkage to Tanzania at the border gives the Sub-County an important border trade function.

Kajiado West

Kajiado West Sub-County is located to the western part of the County and borders Narok County to the West, Nakuru County to the North and Tanzania to the South. The Sub-County has Magadi and Kiserian towns as the major urban centres. It is the largest sub-county in the County having about 8,520km^2. Kajiado West Sub-County is predominantly undeveloped. Mining, livestock development and tourism are the major economic activities in the Sub-County. The Sub-County has the lowest population density and has scattered rural settlements. There is insufficient infrastructure development in the Sub- County.

Kajiado East

Kajiado East Sub-County is located to the Eastern side of the County, bordering Machakos and Makueni Counties. It also borders the Nairobi National Park to the North. Kajiado East covers about 2,610 km^2. The major urban centres in the Sub-County are Kitengela, Isinya, Masimba, Emali and Sultan Hamud. The Sub-County is located near Nairobi and has the proximity to Mombasa road which has spurred developments within the areas around it. The Sub-County has a prime location for industrial and residential developments.

Kajiado North

Kajiado North is the smallest Sub-County within Kajiado County covering 148 km^2. It is located to the North of the County bordering Nairobi and Kiambu Counties. The major urban centres in the Sub-County are Ngong and Ong'ata Rongai. The Sub-County is closest to Nairobi and has the largest population occasioned by people who live in the area and work in Nairobi. Residential and commercial developments are the main land uses, with the increasing land subdivision causing loss of livestock and agricultural land.

Kajiado South

Kajiado South Sub-County is the second largest Sub-County with an area of about 6410 km^2. The Sub-County is located to the Southern part of the County

bordering Tanzania, Taita Taveta County and Makueni County. The major urban area in the Sub-County is Oloitokitok, Rombo and Kimana. The Sub-County is predominantly rural having scattered settlements with agriculture, livestock development and conservancy as the main land uses.

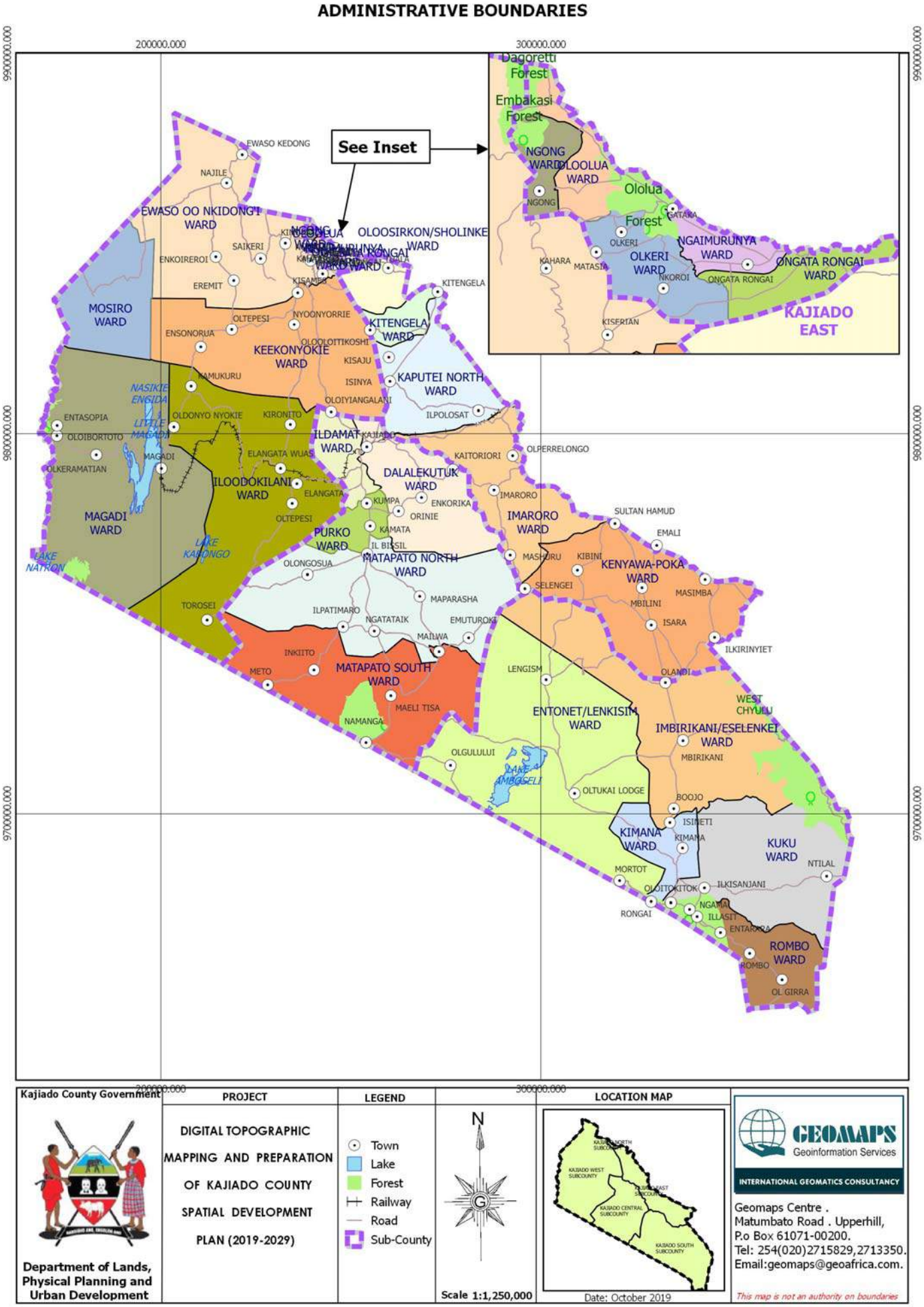
2.1.4 Administrative Units

Kajiado County is divided into five sub counties. Table 2.1 shows the areas occupied by sub-counties and wards in Kajiado County. The local context of Kajiado County is illustrated in Map 2.3.

Table 2.1: Sub-Counties in Kajiado

Sub County	Wards	Area in km²
Kajiado Central	Dalalekutuk	757.8
	Ildamat	274.3
	Purko	209.5
	Matapato North	1659.6
	Matapato South	1311.4
Sub County Total		**4,212.6**
Kajiado West	Keekonyoike	807.6
	Mosiro	486.7
	Ewuaso Nkidong'	2129.4
	Iloodokilani	2010.6
	Magadi	3085.5
Sub County Total		**8,519.8**
Kajiado East	Kaputiei North	88.7
	Kitengela	102.9
	Oloorsirkon/Sholinke	287.4
	Kenyawa Poka	1340.4
	Imaroro	790.9
Sub County Total		**2,610.3**
Kajiado South	Rombo	526.7
	Kimana	358.8
	Kuku	1280.3
	Imbirikani/ Eselenkei	1923.4
	Entonet/ Lenkism	2321.0
Sub County Total		**6,410.2**
Kajiado North	Ngong	42.6
	Oloolua	19.3
	Olkeri	59.7
	Ong'ata Rongai	16.5
	Nkaimurunya	9.9
Sub County Total		**148**
County Total		**21,900.9**

Source: Kajiado County CIDP 2018-2022



Map 2.3: Local Context of Kajiado County

2.2 Planning Methodology

An integrated and inclusive approach was used in the preparation of this CSP to yield a relevant, effective and implementable policy document. A mixed method approach allowing active participation of the mapped stakeholders was utilized as part of the process while considering guidelines provided in various statutes. Figure 2.1 shows the summary of the methodology.

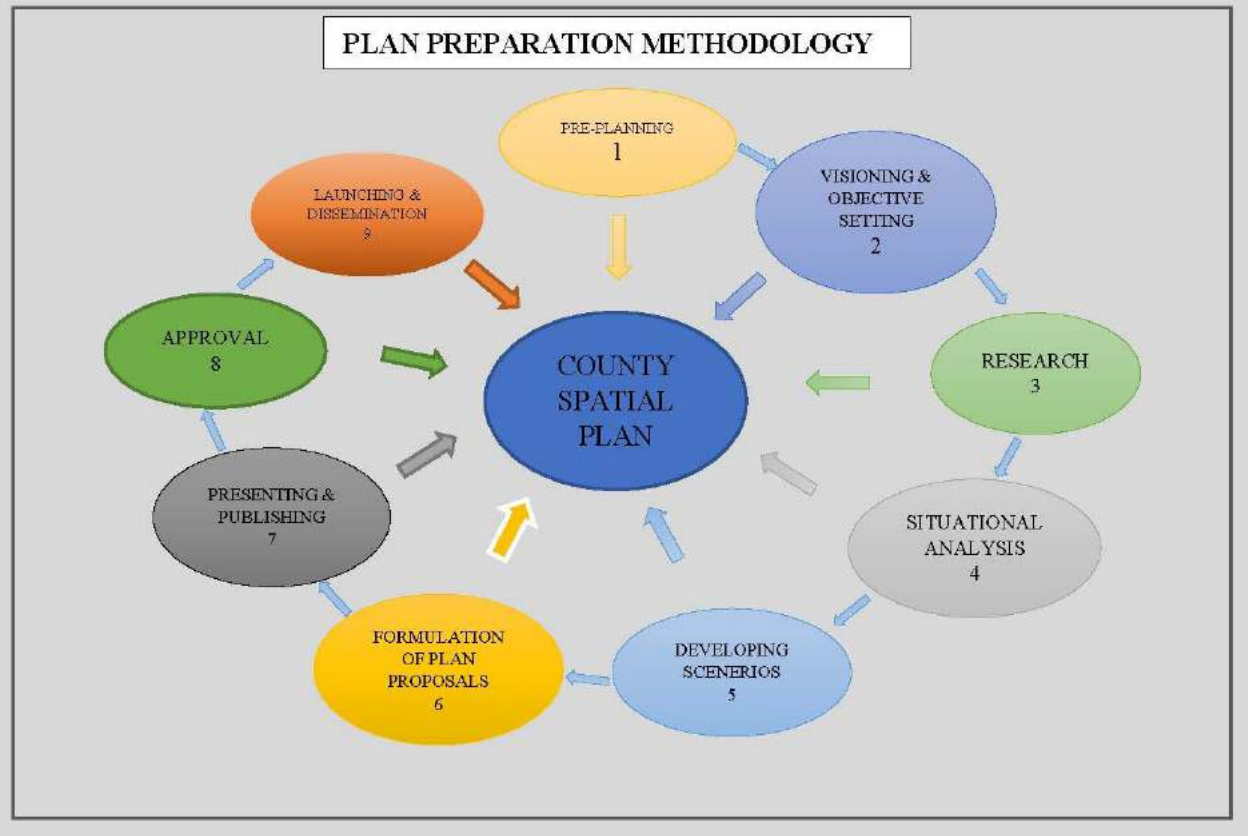


Figure 2.1: Plan Preparation Methodology
Source: *Geomaps Enhanced Project Proposal, 2018*

2.2.1 Pre- Planning

This was the first stage of the CSP work and it involved definition of scope of the activity, the formulation of the Terms of Reference (ToR) and the preparation of resource mobilization strategies. The stage involved the following activities: -

Scoping and Profiling:
This stage captured the key features of the physical, administrative, and social-economic, and environmental factors in the County. It involved the identification of all the stakeholders of Kajiado County, the drafting of the work-plan and the designing of the framework for stakeholder participation.

Reconnaissance Survey:
This stage involved a reconnaissance visit of Kajiado County and the identification of the planning issues within all the sub-counties. This stage

set the platform for the design of the data collection instruments that needed to be prepared for gathering the pertinent information to be used for the preparation of this CSP. After this survey, an inception report was handed over to the County government at the launch of the project.

***First Stakeholders' Consultation*:**
A public participatory method was used when preparing this plan. Participants were recruited from all sub-counties and asked to articulate the development issues of their areas and to assist the planning group in visioning and formulating strategies to mitigate these issues. The participants included community representatives, as well as representatives of key line ministries, institutions relevant to the planning process, and the relevant County government officials. The purpose of the consultation with all these actors was to draw from their long-term specialized knowledge, experience and expertise that assisted the planning group in focusing and interpreting the key development issues relevant to the study in a holistic manner.

2.2.2 Visioning and Objectives Setting

This stage involved the setting up of general and specific objectives associated with each thematic area of the CSP, and the development of a research framework that assisted the planning team in data collection.

The vision for this CSP was developed by considering the physical and socio-economic characteristics of the planning area, its strengths, potential, issues, future focus areas and preferences of the residents of the County. The process of developing a strategic vision was through stakeholder forums that were carried out in all the five sub-counties. Cross cutting visions were consolidated to form one vision for the County. The consolidated vision for the county was *"A County with sustainable development anchored on livestock, agriculture, tourism, industry and commerce"*.

2.2.3 Research

This activity involved identifying primary and secondary data, identifying sources of that data, preparing data checklist, and identifying the appropriate data collection methods.

2.2.4 Situation Analysis and Socio-Economic Survey:

The preparation of the CSP involved the collection of both primary and secondary data from the County. The primary data was collected through field visits, aerial mapping, socioeconomic household survey, key informant interviews, focused group discussions, and stakeholder workshops. Enumerators used in the socioeconomic survey were recruited from 14 wards (rural and urban) from all the five sub-counties. Secondary data was obtained through the review of previous plans, policies, and legislation. Appendix 2 shows photos of the public consultations.

The data collected was subjected to analysis and interpretation. Spatial data was analyzed using GIS software (ArcGIS, GeoManager and Adobe Illustrator).

Quantitative data was analyzed through the use of statistical software (SPSS and Ms. Excel). Qualitative data was analyzed using thematic coding and logical interpretation. The output of this analysis was presented in the form of maps, graphs, tables, images and text.

2.2.5 Developing Scenarios

On the basis of the data analysis, the challenges and opportunities associated with each thematic group were collated. They formed the basis of a conceptual framework of the CSP. This framework was used to generate alternative development scenarios and strategies that were used as pathways for development of the planning area. The alternative development scenarios indicated the strategies that will steer Kajiado County to high and sustained levels of economic growth and development. Economic development models and strategies adopted during this exercise were integrated in formulating a spatial framework for sustainable development within the spatial planning area.

2.2.6 Formulation of Plan Proposals

Following the finalization of the alternate planning concept/development scenarios, sectoral strategies and proposals to realize the aims of Kajiado County were formulated. Sectoral policies were framed within the existing regional development policies-framework and interpreted in the context that was appropriate to Kajiado County.

The CSP includes sector-wide proposals for all sectors, including environment and natural resources, livestock and agriculture, transport and physical infrastructure, social infrastructure, human settlement, economics and land use planning. The proposals were presented to the County Government.

2.2.7 Presentation and Publishing

The comments from the stakeholders will be incorporated in the plan, and then presented to them for validation. At this stage notice of completion of the plan will be published and members of public will be invited to make comments within 60 days (PLUP, 2019). Period allocated for submission of views and comments will be clearly indicated. With these comments from the public the final draft plan will be prepared.

2.2.8 CSP Approval

The final draft plan shall be presented to the CECM for Lands, Physical planning and urban development for forwarding to the County Assembly for approval. The Clerk of the County Assembly will then present the approved plan to the governor for signing on behalf of the County government.

2.2.9 Launching and Dissemination

The approved CSP shall be launched by the County Governor upon approval by the County Assembly.

2.3 Stakeholders' Engagement

2.3.1 Background

Public involvement is a requisite step when carrying out research. This step provides critical information during the formulation of the spatial plan. Stakeholders play a vital role in providing a directive during the formulation of a spatial plan as they facilitate proper planning of the project. Stakeholders' involvement is a paramount tool to avoid conflicts especially during the approval and implementation phases.

2.3.2 Objectives of Stakeholders' Participation

Stakeholders' consultative forums were held in the five sub-counties, with the participation of the residents, county government official and national government officials and views and opinions documented. The objectives of the stakeholders' participation were:

1. To create awareness to the public of the plan to undertake the proposed project.
2. To provide adequate information to the relevant stakeholders and the public at large. This enabled a one-on-one kind of interaction whereby objective and elaborate information was dispensed to understand the strengths and weaknesses of the project.
3. To ensure that various views and needs raised are understood for better policymaking.
4. To provide a platform where key informants and professionals collaborate and consult to strike a balance in decision-making.
5. To reduce any chances of disharmony that may arise during the implementation period.

2.3.3 Socio Economic Survey

The approach to this survey was participatory and consultative. A total of 1,265 households were interviewed in selected wards and a total of over 16,000 questionnaires administered. Three focus group discussions were held for youth. Women and men comprising of at least 12 members per group. A detailed semi structured FGD guide was applied in all cases. This covered 120 persons overall. The data and information collected is the basis of this socio-economic report. The socioeconomic survey involved five steps:

Step 1: Meeting with the client

The Consulting Team met the Client at sub-county level and agreed on the modalities and work plan of collecting the socioeconomic and households' data. In principle the county government facilitated the data collection using three tools: household questionnaire, key informant interview guide and focus group discussions. All logistics were coordinated by the county government with the support from area chiefs.

Step 2: Mobilization and recruitment of enumerators

A total of 45 enumerators were recruited from at least 2 wards from each of the five sub-counties to administer the questionnaires.

Step 3: Training of the enumerators

A training session was organized and carried out at Kitengela. The training focused on ensuring that the enumerators are well informed on the purposes of enhancing data quality, it entailed the following

- Reasons for the survey: why the survey was being carried out, context of the survey within the "preparation of the spatial plan for Kajiado County.
- Presentation of the tools- Household questionnaire, Focus group discussions (FGDs) and Key informants' checklist.
- Question and Answer session and group discussions
- Brief on how to record outcome of household visits and FGD data and information.
- Pilot testing in the fieldwork followed by review by supervisor/coordinator
- Other logistics

Step 4: Sampling of the households

The household sampling frame determined on a number of factors that include and not limited to the population size of the wards, equal chances of representation of each ward was applied After applying the above factors and formula, an overall sample size of 1,265 households detailed in the table below

Sub-county	No. of Wards	Sampled Wards (Rural & Urban)	Households	Population	Households Sample (estimate)	No. of respondents in selected wards
Kajiado North	5	Ong'ata Rongai and Nkaimurunya	44,231	191,565	89	208
		Ngong	17,849		36	
		Olkeri	41,162		83	
Kajiado East	5	Imaroro	17,028	133,179	49	220
		Kaputei North	28,874		83	
		Kitengela	30,453		88	
Kajiado Central	5	Purko	29,590	102,819	111	364
		Ildamat	9,472		35	
		Dalalekutuk	27,554		103	

Sub-county	No. of Wards	Sampled Wards (Rural & Urban)	Households	Population	Households Sample (estimate)	No. of respondents in selected wards
		Matapato South Ward	30,868		115	
Kajiado West	5	Kiserian	38,361	143,240	129	303
		Keekonyokie	18,782		23	
		Magadi	24,791		83	
		Ewuaso Nkidong'	10,010		34	
Kajiado South	5	Kuku Ward	36,523	134,748	104	170
		Entonet-Lenkism	23,043		66	

Source: Field Survey

Step 5: Data entry

The household data was keyed into the computer using MS Access software. To ensure quality of data, the data entry personnel cross-checked the primary questionnaire with the keyed in data.

2.3.4 Stakeholder forums

As part of stakeholder engagements, the following workshops were conducted. (Refer to Appendix 1 and the workshop report). Table 1.3 indicates the stakeholder engagement forums schedule.

Table1.3. Stakeholder Engagement Forums

Date	Meeting	Venue	Attendants	Purpose
30th Nov 2017	Project Launch	Kajiado Town – Masai Technical Institute	-Governor Joseph Ole Lenku. -County Officials. -Locals	Official launch of the Kajiado CSP preparation.
27th March 2018	Sub-county stakeholder meeting	Kajiado Central – Kajiado Town	- 27 Locals - 14 County government officials - 2 National government officials	Stakeholder engagement and visioning. Data collected from participants.
28th March 2018	Sub-county stakeholder meeting	Kajiado West – Kiserian	- 39 Locals - 14 County government officials	Stakeholder engagement and visioning. Data collected from participants.

Date	Meeting	Venue	Attendants	Purpose
			- 3 National government officials	
4th April 2018	Sub-county stakeholder meeting	Kajiado South – Oloitokitok	- 42 Locals - 14 County government officials - 1 National government official	Stakeholder engagement and visioning. Data collected from participants.
5th April 2018	Sub-county stakeholder meeting	Kajiado East - Isinya	- 26 Locals - 15 County government officials - 1 National government official	Stakeholder engagement and visioning. Data collected from participants.
6th April 2018	Sub-county stakeholder meeting	Kajiado North – Ngong Town	- 35 Locals - 20 County government officials - 2 National government officials	Stakeholder engagement and visioning. Data collected from participants.
19-24th August 2018	Socioeconomic household survey	14 wards in all 5 sub counties	-1265 Households - 70 key informants	Data collection at the household.

2.3.5 Visioning

One of the critical elements that was done during the stakeholder engagements was the identification of the development vision for the sub-counties and the County. The following visions were identified by the stakeholders for their sub-counties.

Sub-County	Visions
Kajiado Central	• To be a world class agricultural hub
Kajiado West	• Being a livestock and agriculture hub • To be Kajiado's cultural hub • To be leading in agriculture production • To be a centre for tourism attraction • A united, peaceful, developed, just and prosperous ward • Well planned county

Sub-County	Visions
Kajiado South	• To be a food basket in Kajiado county and Kenya at large • Centre of tourism • A place where environment conservation, livestock production and modern farming is practiced to improve the living standards of the people
Kajiado East	• To become an agri-business hub ward • County learning hub • To have good road networks, closer services to everyone and good health facilities closer to people
Kajiado North	• A leading eco-town • To have a modern town that offers services of international standards

From the above, a vision for Kajiado County Spatial Plan was formulated as:

"A County with sustainable development anchored on livestock, agriculture, tourism, industry and commerce"

2.4 Policy and Legal Framework

The preparation of this plan is anchored on the provisions of the constitution of Kenya 2010, The County Government Act 2012(section 104,105,106,107 & 110) and the Physical Planning Act Cap 286 of 1996. Other laws and regulations that govern land use and development in Kenya were also considered. These were:

- Urban Areas and Cities Act, 2011
- National Land Commission Act 2012
- Community Land Act, 2017
- Environmental Management and Coordination Act, EMCA (Amended 2015)
- Water Act, 2002
- Public Health Act, Cap 242
- Survey Act, Cap 299
- Land Registration Act (No. 3 of 2012)
- Agriculture, Fisheries and Food Authority Act, (2013)
- Forests Act, No. 7 of 2005
- The Land Act, 2012
- Wildlife Conservation and Management Act, 2013
- Mining Act, 2016

The policies considered in the preparation of this spatial plan include:

- Kenya Vision 2030
- National Spatial Plan (NSP),2017
- Spatial Planning Concepts for Nairobi Metropolitan Region, 2012
- Nairobi Metro 2030
- The Big 4 Four Development Agenda, 2017
- National Housing Policy 2004
- Integrated National Transport Policy Sessional Paper No. 2 of 2012
- National Land Policy (NLP),2009
- Agricultural Sector Development Strategy 2009-2020
- National Tourism Strategy 2013-2018
- Kajiado County Integrated Development Plan, 2013-2017
- Kajiado County Integrated Development Plan, 2018-2022
- National Climate Change Response Strategy, 2010

2.4.1 Policy Framework

The policy framework context describes the key national and sectoral policies that must be put into consideration in preparation of CSP with a view to interpret, translate and ground them for implementation going forward. Some of these policies are as discussed below:

Kenya Vision 2030

Kenya Vision 2030 is the country's economic blueprint. The Vision has three key pillars; economic, social and political, aimed at making Kenya a globally competitive and prosperous nation with high quality of life as explained below:

The economic pillar recognizes the importance of tourism, agriculture, retail and wholesale trade and financial services as among the sectors that have a great potential in spurring economic growth. Kajiado County has all sectors that play an important role. The plan ensures that these sectors are well planned for and given adequate space for expansion. The government will also ensure that infrastructural services are available to support these sectors.

The social pillar recognizes the importance of education in creating a skilled workforce. The plan provides for the sector's continued growth. Several flagship projects were identified under land reforms. Key among them and related to sustainable land use planning is the preparation of the first National Spatial Plan (NSP). The Plan is supposed to form the foundation for implementation of national projects by providing a spatial illustration of the projects and identifying a strategy for land development. The Vision is very clear that the Plan will form the basis on which development activities in support of its proposals will take place.

Closely related to NSP and also prioritized in the MTP, 2013 are the CSPs which are guidelines to ensure that all counties follow the same standards in implementing development projects in the country.

National Spatial Plan (NSP), 2017

The Plan forms the foundation for implementation of national projects by providing a spatial illustration of the projects and identifying a strategy for land development. The Vision is very clear that the Plan will form the basis on which development activities in support of its proposals will take place.

Closely related to NSP and also prioritized in the MTP, 2013 are the CSPs which are guidelines to ensure that all counties follow the same standards in implementing development projects in the country. The CSP is therefore prepared against a backdrop of the implementation of the Vision 2030 MTP, 2013.

Spatial Planning Concept for Nairobi Metropolitan Region, 2012

The Ministry of Nairobi Metropolitan Development, initiated the study on the preparation of a Spatial Planning Concept for the Nairobi Metropolitan Region (NMR) after having undertaken an International Spatial Planning Competition. The NMR covers four counties; Nairobi, Kiambu, Machakos and Kajiado.

The mandate to prepare the SPC emanated from the Presidential Circular No. 1 of May 2008 which apart from outlining the organization of the Government and functions of its various agencies, mandates the Ministry to ensure the preparation and enforcement of an integrated spatial growth and development strategy and actualization of integrated strategic programmes for the provision of social, economic and infrastructural services. Therefore, Kajiado County been a region within the NMR is guided by the document.

Nairobi Metro 2030

Nairobi Metro 2030 is part of the overall national development agenda for Kenya which is encapsulated in Kenya Vision 2030

The Nairobi Metro 2030 Strategy document aims at optimizing the role of the NMR in the national development effort. The document was used to guide the effective and efficient utilization of the NMR's resource endowments as well as effectively integrating the region into the national fabric. Most importantly it was applied as an instrument for developing the County through effective economic and other structural linkages to the rest of the country. Kajiado County lies within the NMR so its planning relies heavily on this document.

Big 4 Agenda

The spatial plan seeks to harmonize its objectives with the 'Big 4 Agenda' as proposed by the national government. The Big 4 Agenda is anchored on the promotion of four areas, namely manufacturing, universal healthcare, affordable housing and food security. This plan seeks to contribute to the manufacturing pillar of the agenda by proposing strategies on how to improve the industrial sector in the County. The food security pillar also features

predominantly in the plan through the proposal of initiatives targeted at increasing the productivity of the agricultural and livestock sectors. In particular, the spatial plan provides strategies related to irrigation and value addition. The universal healthcare and housing pillars were addressed through the planning for health infrastructure and proposing land for residential development, respectively.

National Housing Policy 2004

The goal of the housing policy is to facilitate the provision of adequate shelter and a healthy living environment, at an affordable cost to all socio-economic groups in Kenya in order to foster sustainable human settlements. The policy recognizes comprehensive land use planning as a major component of housing. The policy aims at promoting planning of human settlements, which includes re-planning, and re-development of areas with inadequate infrastructure and services. Kajiado CSP also considers those aspirations especially in the planning of the neighbourhoods and informal settlements by ensuring provision of basic services.

Integrated National Transport Policy Sessional Paper No. 2 of 2012

The Integrated National Transport Policy aims to develop a world-class integrated transport system that is responsive to the needs of people and industry. The Government recognizes the transport sector as one of the critical enablers in achieving Vision 2030.

The Policy identifies challenges besetting the transport sector in Kenya. In relation to this policy vision, the project seeks to incorporate it within the County's vision when preparing the transportation strategy for Kajiado County. The national transportation master plan is aimed at addressing existing local challenges and opportunities and to provide vital regional linkage with neighbouring countries.

Draft National Urban Development Policy

This policy also provides the legal framework for urban planning and development. According to this policy, urban areas face numerous challenges which are a threat to sustainable urbanization and urban planning: unbalanced urbanization and haphazard designation of urban centres, uneven and skewed distribution of infrastructure, urban sprawl and decay, high costs of provision of infrastructure and services, degradation of the environment and heritage sites, non-compliance with approved plans and mushrooming of informal settlements, and insecurity.

National Land Policy, 2009

The NLP served largely as the precursor to Chapter Five of the Constitution on land matters. Besides coming up with land policy principles and guiding values, the policy sets out the goals and direction for the administration and

management of land and sets out measures and guidelines to be adopted to achieve optimal utilization and management of land.

Agricultural Sector Development Strategy 2009-2020

This Strategy recognizes that the agricultural sector is not only the driver of Kenya's economy, but also the means of livelihood for the majority of the Kenyan people. The Strategy aims to position the agricultural sector strategically as a key driver for delivering the 10 percent annual economic growth rate envisaged under the economic pillar of Vision 2030.

ICT Policy, 2016

The National Information & Communications Technology (ICT) policy seeks to improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services. It envisions a prosperous ICT-driven Kenyan society. The policy seeks to facilitate sustained economic growth and poverty reduction; promote social justice and equity; mainstream gender in national development; empower the youth and disadvantaged groups; stimulate investment and innovation in ICT; and achieve universal access.

National Tourism Strategy 2013-2018

The Strategy seeks to make Kenya the preferred destination of choice by developing, managing and marketing sustainable tourism in Kenya. This is due to the important role played by the sector in economic development. The Government therefore, earmarked tourism as one of the six key growth sectors of the economic pillar of Vision 2030, and charged the sector with the task of making Kenya one of the top ten long-haul tourist destinations globally.

National Climate Change Response Strategy, 2010

In response to the climate change, Kenya has developed the National Climate Change Response Strategy. The vision of the strategy is for a prosperous and climate change resilient Kenya. The mission is to strengthen and focus nationwide actions towards climate change adaptation and GHG emission mitigation.

National Climate Change Framework Policy, Sessional Paper no 3 of 2016

The goal of this framework Policy is to enhance adaptive capacity and resilience to climate change, and promote low carbon development for the sustainable development of Kenya.

The objectives of this Policy are to:

(i) Establish and maintain an effective and efficient institutional framework to mainstream climate change responses across

relevant sectors and into integrated planning, budgeting, decision-making and implementation, at both the national and County levels.

(ii) Reduce vulnerability to the impacts of climate change by building adaptive capacity, enhancing climate change resilience and strengthening capacities for disaster risk reduction.

(iii) Catalyse Kenya's transition to cleaner, lower emission and less carbon intensive development.

(iv) Incentivize private sector involvement in building climate change resilience and engaging in low carbon development opportunities.

(v) Facilitate widespread public awareness, participation, ownership and oversight of Kenya's climate change response efforts and Action Plans.

(vi) Provide a framework to mobilise resources for Kenya's climate change response and ensure effective and transparent utilisation of the resources.

(vii) Adopt intergenerational, special needs and gender mainstreaming approaches across all aspects of Kenya's climate change response.

(viii) Provide the policy framework to facilitate effective implementation of regularly updated and scientifically informed Climate Change Action Plans.

(ix) Enhance research and use of science and technology in policy decisions and sustainable management of resources.

(x) Kenya's economy is highly dependent on the natural resource base, and thus is highly vulnerable to climate variability and change.

Rising temperatures and changing rainfall patterns, resulting in increased frequency and intensity of extreme weather events such as droughts and flooding, therefore threatening the sustainability of the country's development. In order to safeguard sustainable development, the Government of Kenya has developed this National Climate Change Framework Policy to provide a clear and concise articulation of overall response priorities to climate variability and change.

National Climate Change Action Plan 2018-2022

The National Climate Change Action plan is a tool to enhance adaptation to climate change and reduce greenhouse gas emissions. Kenya is vulnerable to the impacts of climate change because the key drivers of the economy (agriculture, livestock, forestry, water, tourism) are climate-sensitive. Climate change has the potential to reverse the progress made toward the attainment of Vision 2030 and to negatively impact the achievement of the Big Four agenda.

Kajiado County Integrated Development Plan, 2013-2017

The Kajiado County Integrated Development Plan is a blue print that guides the National, County Government and development partners' engagement in Kajiado County in the realization of social economic transformation of the residents. The plan gives details of the plans and projects as suggested by the residents of the County. These projects seek at promoting economic, social and physical development of the County.

Sustainable Development Goals

The preparation of this CSP is similarly guided by the Sustainable Development Goals (SDGs) by the UN Habitat. These goals embody a universally shared common global vision of progress towards a safe, just and sustainable space for all human beings to thrive.

These goals are:

Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and equitable quality education and promote life-long learning opportunities for all
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure availability and sustainable management of water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable, and modern energy for all
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17	Strengthen the means of implementation and revitalize the global partnership for sustainable development

The implementation of this plan aims at achieving these goals.

2.4.2 Legal Framework

Kenya Constitution 2010

The Constitution outlines national values and principles of governance (Article 10) that guides all activities including making and implementing public policy decisions. Key among the values and principles that impact on the CSP are social justice, inclusiveness, protection of marginalized and attainment of sustainable development. The Constitution also outlines the principles of land policy (Article 60) implementable through the National Land Policy. Key among these principles is the sustainable and productive management of land resources which is a pointer to optimization of land. The State is given powers to regulate use of any land and property (Article 66) in the interest of land use planning among others. This gives preparation of the CSP constitutional grounding. Schedule 4 of the constitution further gives the distribution of roles between the two levels of Government and places the County Governments as the agents responsible for the preparation of all County plans.

County Government Act, 2012

The County Government Act 2012 gives power to the County government to determine how the counties are run. The key elements in the Act in regard to the region's management are summarized include;

- Section. 104. (1) A County Government shall plan for the County and no public funds shall be appropriated outside a planning framework developed by the County Executive Committee and approved by the County Assembly.
- Section 105: County planning unit shall be responsible for coordinating integrated development planning, ensuring integrated planning, ensuring linkages between county plans and national plans, and establishment of a GIS based database system.
- Section 106: County plans are guided by the activities of the county government.
- Section. 107. (1) To guide, harmonize and facilitate development within each County there shall be the following plans;
    - County Integrated Development Plan;
    - County sectoral plans;
    - CSP; and

- Cities and Urban area plan as provided for under the Urban Areas and Cities Act

- Section 110: There should be a 10-year county GIS-based database system spatial plan.

As summarized above the Act provides for preparation of the CSP by the County governments. It also details out the composition of the same. It is in line with this Act's provisions that this CSP is being Prepared.

Physical Planning Act (Cap 286), Repealed to Physical Planning and Land Use Act (2019)

The Act provided for guidelines for land use planning. Its entrenched stakeholder participation and institutional linkages within the spatial disciplines. Essentially, it provided for the preparation and implementation of Physical development plans.

Further, it empowered the Director of Physical Planning to prepare various types of Physical Development plans. The Director of Physical Planning performed functions such as the formulation of development policies, guidelines and strategies for preparation of national, regional and local physical development plans. Section 29 empowered the County Governments to prohibit or control the use and development of land and buildings.

Physical Planning and Land Use Act (2019)

The Physical and Land Use Planning Act (PLUPA) which came to effect in August 2019 repealing the Physical Planning Act (Cap 286) is the framework law guiding the preparation of plans and development control in the country. Section 36 of the Act provides for the preparation of County Physical and Land Use Plans which are 10-year plans to be prepared in every County. Section 37 provides the objectives of the plan as;

a) To provide an overall physical and land use development framework for the county
b) To guide rural development and settlement
c) To provide a basis for infrastructure and service delivery
d) To guide the use and management of natural resources
e) To enhance environmental protection and conservation
f) To identify the proper zones for industrial, commercial, residential and social developments
g) To improve transport and communication networks and linkages
h) To promote the safeguarding of national security and

i) Any other purposes that may be determined by the planning authority.

Section 41 provides for the process of approval of the plan and a grounding for the County Plan being the basis for preparation of sectoral plans and programmes. The Act provides for the revision of the plan after eight years since approval. Section 54 provides that all plans prepared under the Urban Areas and Cities Act, 2011 shall with necessary modifications be prepared and approved in accordance with this Act, and this therefore means that while as this plan was started under the repealed Cap 286 and UACA, 2011, it will be approved in accordance with the PLUPA, 2019. Further, the first schedule of the Act provides for the structure of the contents of the plan.

Urban Areas and Cities Act (Amended 2019)

The Urban Areas and Cities Act of 2011 was enacted precisely to guide the development process and governance of urban areas and Cities. Among the objectives of the Act is to establish a legislative framework for Governance and management of urban areas and cities. Participation by the residents in the governance of urban areas and cities are included in the Act.

In accordance with this Act, every city, County and town are expected to operate within the framework of an integrated development planning.

National Land Commission Act 2012

This is an Act of Parliament that makes further provision to the functions and powers of the National Land Commission, qualifications and procedures for appointments to the Commission; gives effect to the objects and principles of devolved government in land management and administration, and for connected purposes. The Act provides for the roles of Lands Commission and those that are related to regional development and management are:

- To manage public land on behalf of the national and County governments; to conduct research related to land and the use of natural resources, and make recommendations to appropriate authorities;
- To monitor and have oversight responsibilities over land use planning throughout the country.
- Ensure that public land and land under the management of designated state agencies are sustainably managed for their intended purpose and for future generations;
- Develop and maintain an effective land information management system at national and County levels;

- Manage and administer all unregistered trust land and unregistered community land on behalf of the County government;

Kajiado County is endowed with a number of natural resources starting from both public and private land, lakes to minerals amongst other. The implementation of this plan requires use of these resources and especially land. This will call for constant coordination of the County government with Lands Commission

Environmental Management and Co-ordination (Amendment) Act, 2015

This Act is an amendment of the EMCA Act of 1999. It gives guidance to the constitution on the right to access clean and healthy environment. It provides legal and Institutional framework of Environment Management. General principles of the Act are that every person in Kenya is entitled to a clean and healthy environment in accordance with the Constitution and relevant laws and has the duty to safeguard and enhance the environment.

The entitlement to a clean and healthy environment includes the access by any person in Kajiado County to the various public elements or segments of the environment for recreational, educational, health, spiritual and cultural purposes. It also provides for environmental assessments, auditing and conducting of social environmental impacts.

Water Act, 2016

This Act of Parliament provides for the management, conservation, use and control of water resources and the acquisition and regulation of rights to use water. Further, it provides for the regulation and management of water supply and sewerage services. It also provides guidelines for the establishment and running of institutions involved in the management and provision of water services.

Further, the fourth schedule of the Constitution (2010) part 1 section 22(*c*) spells out the function of the national government in relation to water as "water protection, securing sufficient residual water, hydraulic engineering and the safety of dams". Part 2 of the schedule of the constitution section 11(b) list water and sanitation as one of the functions of the County government. This in effect means that the national government is responsible for water resources development while the County government will oversee the operations of water service providers including water and sanitation companies.

According to Kajiado's County Integrated Development Plan (CIDP), emphasis is given to rain water harvesting and ground water abstraction. Through the Water Act 2016, administrative centers such as Water Resources Management Authority (WRMA), Water Services Regulatory Board (WSRB), Water Services Trust Fund (WSTF) and Water Appeal Board (WAB) have been established to ensure harmony and form a bridge between the National

planning effort and the water development and management agencies within Kajiado County.

Public Health Act, Cap 242

This Act makes provision for securing and maintaining the health of the public. It provides standards and guidelines to clean environment, effective ventilations and liveable developments in an area. Occupational licences are given under these provisions.

Survey Act, Cap 299 Revised Edition [2012] 2010

The Survey Act makes provision in relation to surveys, geographical names and the licensing of land surveyors, and for connected purposes.

The Department of Surveys, under the Director, provides and maintains plans for property boundaries in support of the Land Registration throughout the country. In preparation of this plan, existing survey data was used to prepare the plans.

The surveying and mapping work done under this project do not override the role of the Director of Surveys. The maps produced during the preparation of the plan are not an authority on boundaries.

Land Registration Act (No. 3 of 2012)

This Act gives the process of land registration for the different land categories. It gives the process for establishment of land registration units and for the establishment of land registries. Though the survey output of this project will not be regarded as an authority on boundaries, it will yield important data.

Agriculture, Fisheries and Food Authority Act, (2013)

This Act provides the confines within which to make proposals on agriculture promotion and conservation of soils and fertility for sustainable agriculture and optimization of land use.

Forests Act, No. 7 of 2005

An Act of Parliament that provides for the establishment, development and sustainable management, including conservation and rational utilization of forest resources for the socioeconomic development of the country. It recognizes that forests play a vital role in the stabilization of soils and ground water, thereby supporting the conduct of reliable agricultural activity, and that they play a crucial role in protecting water catchments in Kenya and moderating climate by absorbing greenhouse gases. It further recognizes that forests provide the main locus of Kenya's biological diversity and a major habitat for wildlife.

This Act guided the plan in preparation of development guidelines for areas with forests.

Community Land Act, 2016

The Community Land Act 2016, provides guidelines for the protection, registration, management and conversion of community land to either public land or private land and vice versa and the role of the County government with regard to unregistered community land.

This act is important in the implementation of the plan since most Land in Kajiado County is characterized as community land. The following are important provisions from the act crucial with regard to this plan:

Part II 5. (5) Subject to the provisions of section 46 of this Act, any person who immediately before the commencement of this Act had a subsisting customary right to hold or occupy land shall upon commencement of this Act continue to hold such right.
6. (1) County governments shall hold in trust all unregistered community land on behalf of the communities for which it is held.
13. (2) Any land which has been used communally, for public purpose, before the commencement of this Act shall upon commencement of this Act be deemed to be public land vested in the national or County government, according to the use it was put for.
13. (3) A registered community may reserve special purpose areas including areas for-

a) farming;
b) settlement;
c) community conservation;
d) cultural and heritage sites;
e) urban development; or
f) Any other purposes as may be determined by the community, respective County government or national government for the promotion or upgrading of public interest.

Part III 15. (4) The functions of the community land management committee shall be-

a) have responsibility over the running of the day to day functions of the community;
b) manage and administer registered community land on behalf of the respective community;
c) coordinate the development of community land use plans in collaboration with the relevant authorities;
d) promote the co-operation and participation among community members in dealing with matters pertaining to the respective registered community land; and

e) Prescribe rules and regulations, to be ratified by the community assembly, to govern the operations of the community.

Part V 22. (1) Community land may be converted to public land by-

a) compulsory acquisition;
b) transfer; or
c) Surrender.

Part VII 38. (2) Despite the provisions of Part 1 and pursuant to section 22 of the Fourth Schedule to the Constitution, the management of community land shall be subject to national and County government laws and policies relating to-

a) Fishing, hunting and gathering
b) Protection of animals and wildlife;
c) Water protection, securing sufficient residual water, hydraulic engineering and safety of dams;
d) forestry;
e) Environmental laws;
f) Energy policy; and
g) Exploitation of minerals and natural resources.

The Land Act, 2012

The Land Act, 2012 gives effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land-based resources, and for connected purposes.

The guiding values and principles of land management and administration in the Land Act include:

a. Equitable access to land; security of land rights;
b. Security of land rights;
c. Sustainable and productive management of land resources;
d. Transparent and cost-effective administration of land;
e. Conservation and protection of ecologically sensitive areas;
f. Elimination of gender discrimination in law, customs and practices related to land and property in land;
g. Encouragement of communities to settle land disputes through recognized local community initiatives
h. Participation, accountability and democratic decision making within communities, the public and the Government;
i. Technical and financial sustainability;
j. Affording equal opportunities to members of all ethnic groups;
k. Non-discrimination and protection of the marginalized; and
l. Democracy, inclusiveness and participation of the people; and
m. Alternative dispute resolution mechanisms in land dispute handling and management.

The act is important in the CSP as it gives guidance in case of land issues such as land disputes as most of the land in Kajiado County is communally owned and therefore highly prone to land disputes.

Wildlife Conservation and Management Act, 2013

Wildlife Conservation and Management Act (2013) governs wildlife conservation and management in Kenya. This law is enforced primarily by the Kenya Wildlife Service (KWS) with support from the police and other government agencies.

The main functions of KWS is to -

(a) conserve and manage national parks, wildlife conservation areas, and sanctuaries under its jurisdiction;
(b) provide security for wildlife and visitors in national parks, wildlife conservation areas and sanctuaries;
(c) set up a County wildlife conservation committee in respect of each County;
(d) promote or undertake commercial and other activities for the purpose of achieving sustainable wildlife conservation;
(e) collect revenue and charges due to the national government from wildlife and, as appropriate, develop mechanisms for benefit sharing with communities living in wildlife areas;
(f) develop mechanisms for benefit sharing with communities living in wildlife areas;

Amboseli National and several conservation areas are located in Kajiado County. The Act is important for the conservation and management of these sanctuaries.

Mining Act, 2016

The Mining Act 2016 establishes a state mining corporation to undertake commercial activities on behalf of government. It also establishes the Directorate of Mines to regulate the sector and the Directorate of Geological Survey to develop the national geological database and promote interest in the mining sector.

In the interest of enhancing commerce and trade in minerals, the Mining Act also provides for the Ministry of Mining to establish a commodities exchange. The law also provides structures for negotiating mineral agreements and stipulates that mineral agreements include terms and conditions for minimum activity and spend for work programs, structure for payments (i.e. royalties, fees, etc.), and other provisions. The law also recognizes artisanal and small-scale mining operations and stipulates clear processes for establishing safe operations, unlike the previous legislation which outlawed artisanal mining. These changes provide an important platform that allows

communities to undertake mining activities in safer environments while allowing them greater opportunity to benefit from minerals within their lands. County governments have a role under the new legislation and will be involved in the provision of consents for licensing operations and surface rights, promoting community engagement in mining operations and selection of the mining sector operators.

2.4.3 Linkages to Other Plans & Strategies

Vision 2030

Vision 2030 is the blueprint for Kenya's long-term national development. It is anchored on three main pillars: Economic, Social and Political. The Kajiado CSP should be linked to the Vision 2030 so as to be part of Kenya's transformation into "a newly industrializing, middle income Country providing a high quality of life to all its citizens in a clean and secure environment" through improvement of key thematic sectors such as Infrastructure; Energy; Security; Tourism; Agriculture; Wholesale/Retail Trade; Manufacturing; Financial Services; and Business Process Outsourcing.

The National Spatial Plan

The National Spatial Plan (NSP) defines the general trend and direction of spatial development for the country by providing a framework for better national organization and linkages between different activities within the national space hence informing the future use and distribution of activities.

The national spatial plan seeks to provide a framework for functional human settlements, enhanced agricultural productivity, planning and managing natural resources and the environment, providing a framework for infrastructure provision, promoting industrial and commercial development and the enhancement of good governance.

Big Four Agenda

From December 2017, the national government announced the Big 4 Agenda that would be prioritized in resource allocation. The four sectoral areas mentioned included:

a) Affordable Housing.
b) Food Security
c) Manufacturing, and
d) Universal Healthcare

Nairobi Metropolitan Strategies

Nairobi Metro 2030 is part of the overall national development agenda for Kenya which is encapsulated in Kenya Vision 2030. It is a guiding framework for the developments within the NMR which Kajiado County is part.

The Nairobi Metro 2030 Strategy document aims at optimizing the role of the NMR in the national development effort. It will be targeted at ensuring that it facilitates the effective and efficient utilization of the NMR's resource endowments as well as effectively integrating the region into the national

fabric. Most importantly it will be applied as an instrument for developing the other regions of the country through effective economic and other structural linkages to the rest of the country. Kajiado County lies within the NMR so its planning borrows and is interlinked to the developments of the NMR.

2.5 Institutional Arrangement

Kajiado County has several institutions that will play key roles in the successful implementation of the CSP. Various departments/ ministries at the County government will have to work closely with other respective agents of the National Government, private and non-governmental organizations within the County.

2.5.1 National Government

The National Government has several ministries that are involved in regional development across the country. The key ministries will have roles to play in successful implementation of the spatial plan. These ministries will include:

Ministry of Transport, Infrastructure, Housing and Urban Development: This ministry's mandate broadly covers issues related to transportation, infrastructure development, housing and management of urban areas. The Directorate of Nairobi Metropolitan Region within this ministry is a key stakeholder that will instrumental in the planning and implementation phases. This department is in charge of supporting planning and developments within the Nairobi Metropolitan Region that covers Nairobi, Kajiado, Machakos, Kiambu and Murang'a counties.

Ministry of Devolution and ASAL: This ministry is mandated to support the County Governments and the ASAL regions. The ministry will be instrumental in developments within Kajiado in a way to support devolved governments and also support Kajiado as one of the ASAL regions.

Ministry of Environment and Forestry: The Ministry's mission commits it to facilitate good governance in the protection, restoration, conservation, development and management of environment, water and natural resources for equitable and sustainable development.

Other ministries include:

- Ministry of Water and Sanitation
- Ministry of Lands

2.5.2 County Government

The County government has the responsibility to plan for the County and no public funds can be appropriated outside a planning framework developed by the County Executive Committee and approved by the County Assembly.

The County government designates County departments, cities and urban areas, sub-counties and Wards as planning authorities of the County. County planning unit is responsible for

(a) Coordinating integrated development planning within the County;
(b) Ensuring integrated planning within the County;
(c) Ensuring linkages between County plans and the national planning framework; and
(d) Ensuring meaningful engagement of citizens in the planning process;

Amongst the objectives of County planning are to facilitate the development of a well-balanced system of settlements and ensure productive use of scarce land, water and other resources for economic, social, ecological and other functions across a County; develop urban and rural areas as integrated areas of economic and social activity; and provide the preconditions for integrating underdeveloped and marginalized areas to bring them to the level generally enjoyed by the rest of the County. The administrative structure of Kajiado County government is as shown in figure 1.1:

The coordinating department for the implementation of the CSP is currently the department of Lands, Physical Planning and Urban Development through the office of the CECM in charge. For the full execution and proper implementation of this plan it is imperative that the capacity building of this department be strengthened. This will entail establishment of operational line sections at Sub-County levels. This would facilitate coordination of implementation of CSP at lower levels. Figure 1.2 shows the proposed organogram.

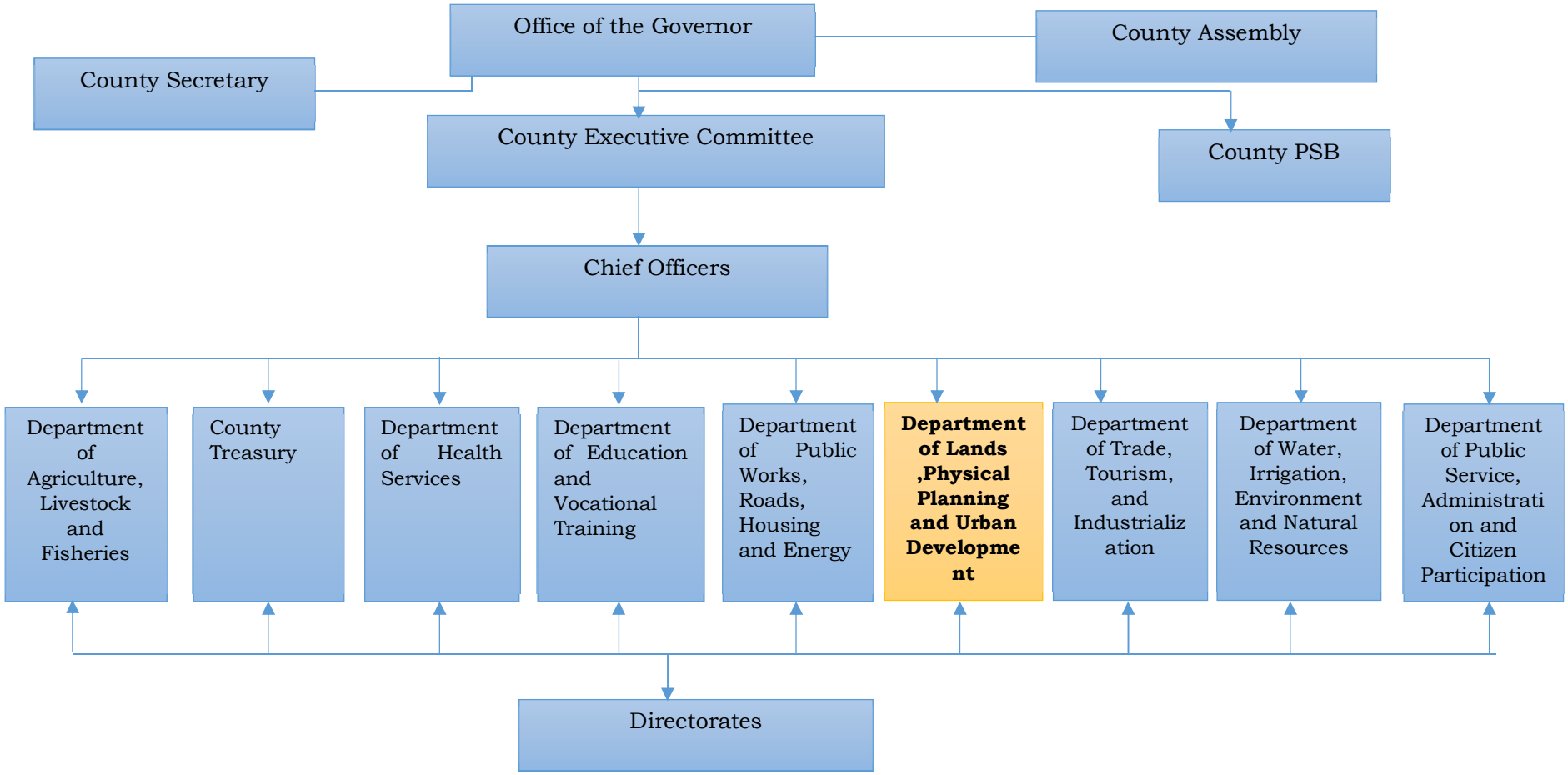


Figure 2.2: County Organogram

Source: County Government of Kajiado

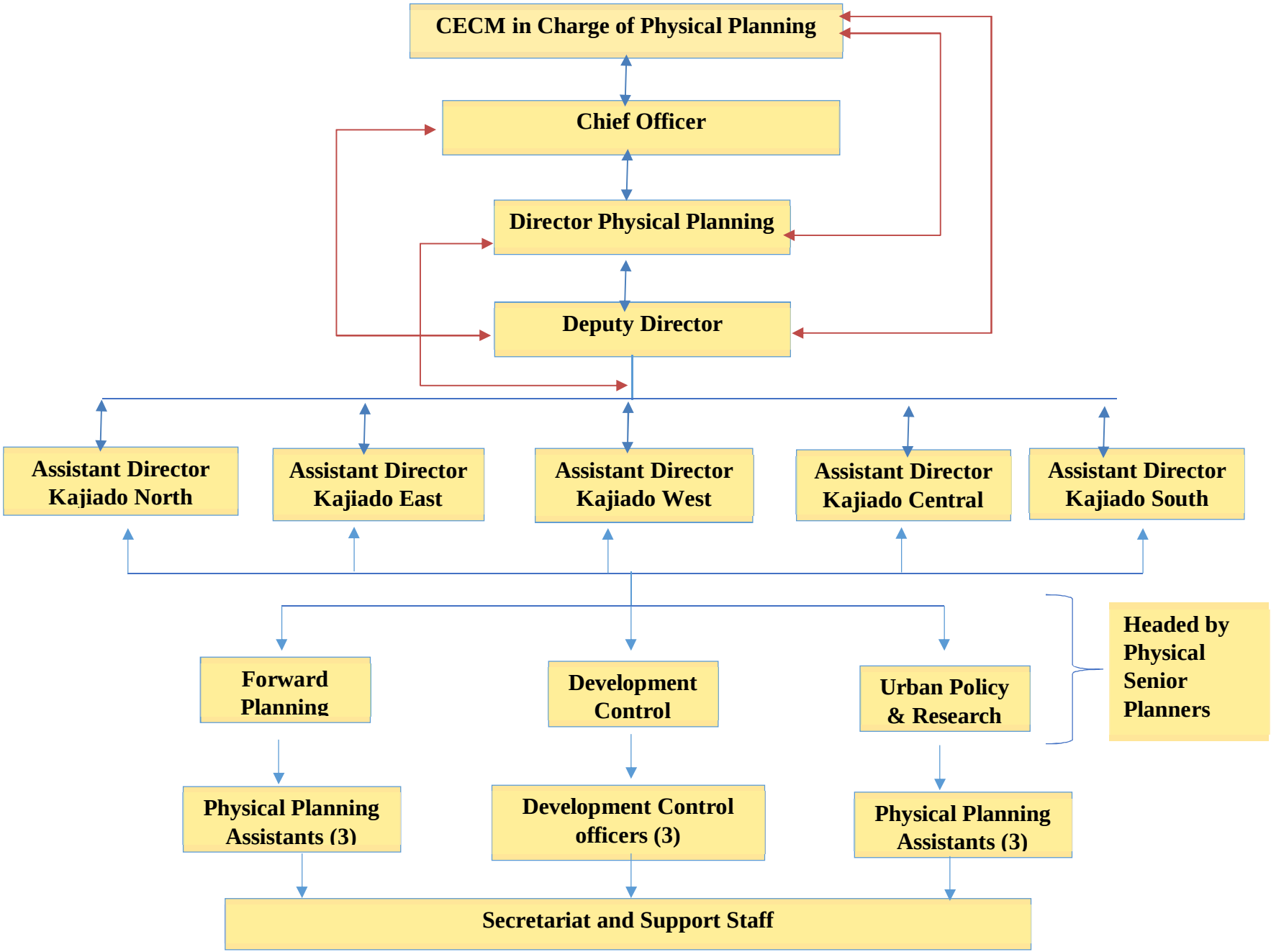


Figure 2.3: Proposed Organogram

PART II: SITUATIONAL ANALYSIS

CHAPTER 3: POPULATION AND DEMOGRAPHY

3.1 Introduction

All planning efforts done by governments are done for the betterment of the lives of the people. As such, the understanding of the population and population dynamics is important in that it enables the government to know and project the needs of the people and plan for their provision. This section shows the population and demographic characteristics of Kajiado County.

3.2 Population Size

According to the 2009 census, Kajiado County was estimated to have a population of **687,312.** The County is estimated to have a high population growth rate of about 5.5%. Table 3.1 shows the population (per age cohort) of the County in 2009 and the projected population for 2017.

Table 3.1: County Population

Age Cohort	2009 Census			2017 Projections		
	Male	**Female**	**Total**	**Male**	**Femal e**	**Total**
0-4	56172	54591	**110763**	81712	79412	**161124**
5-9	48440	47402	**95842**	70465	68955	**139420**
10-14	40160	39366	**79526**	58420	57265	**115685**
15-19	32318	34114	**66432**	47012	49625	**96637**
20-24	33929	43374	**77303**	49356	63095	**112451**
25-29	35722	36250	**71972**	51964	52732	**104696**
30-34	26909	24084	**50993**	39144	35034	**74178**
35-39	21693	18752	**40445**	31556	27278	**58834**
40-44	15178	12571	**27749**	22079	18287	**40366**
45-49	10912	9402	**20314**	15873	13677	**29550**
50-54	7460	6382	**13842**	10852	9284	**20136**
55-59	5161	4079	**9240**	7508	5934	**13442**
60-64	3716	3508	**7224**	5406	5103	**10509**
65-69	2305	2255	**4560**	3353	3280	**6633**
70-74	1885	2003	**3888**	2742	2914	**5656**
75-79	1083	1159	**2242**	1575	1686	**3261**
80+	1939	2718	**4657**	2821	3954	**6775**
N/S	164	156	**320**	239	227	**466**
Total	**345,146**	**342,166**	**687,312**	**502,077**	**497,742**	**999,819**

Source: Kajiado County CIDP, 2013

Table 3.2: County Population Projection

POPULATION PROJECTIONS								
Year	**2009**	**2010**	**2015**	**2018**	**2020**	**2025**	**2028**	**2030**
Population	687,312	725,114	947,695	1,112,823	1,238,600	1,618,800	1,900,862	2,115,707

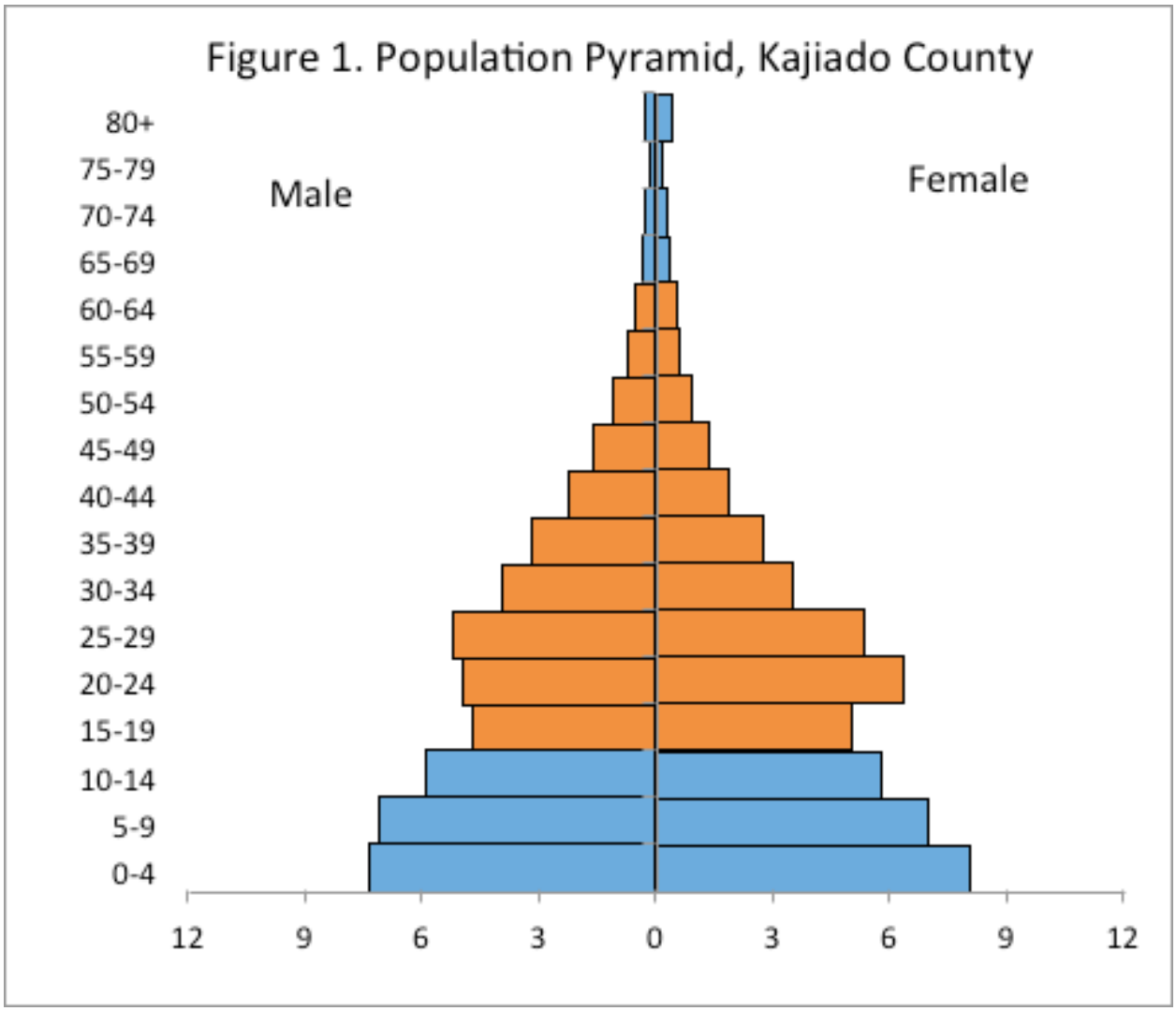


Figure 3.1: Population Pyramid

3.3 Population for Selected Age groups

The County population of selected age groups which include under 1s; under 5s; 6-13 (primary school-going); 14-17 (secondary school-going); 15-49 youthful population 15-29, (female reproductive; and 15-64 (labour force).

Under 1 year: The County had 43,901 children in 2009. This population is estimated at 51,539 children in 2012 and is projected to grow to 57,379

children and 63,876 children in 2015 and 2017 respectively. This age cohort accounts for 6.3% of the total population of the County. The population of male children at 50.6% is higher than that of the female children at 49.4%.

Under 5 years: Population of children below five years was 131,988 in 2009 and is projected to reach 192,042 in the year 2017. It constitutes 19.2% of the total County population. Male children are more at 50.8% than females at 49.2% in this cohort. This calls for planning for a proper educational foundation by strengthening early childhood education. However, these should be integrated with existing primary schools.

Primary School Age (6-13): The school going population between 6 to 13 years was 140,149 in 2009 and is estimated to reach 203,917 in 2017. This age group constitutes 20.4% of the total County population. The population of male and female in this group is 50.5% and 49.5% respectively. This calls for an increase in the number of classrooms in existing schools and establishment of new primary schools, employ more teachers, provision of adequate teaching materials and awareness creation on the importance of education

Secondary School Age (14-17): For secondary school age going children, the County had a total population of 53,743 in 2009. This constituted 7.8% of the total County population. This population is projected to reach 78,196 in 2017. This age group constitutes 50.15% male and 49.85% female. This is the group which is currently the potential labour force. This calls for strategies to improve access to secondary education by both boys and girls.

Youthful Population (15-29): The youthful population was 215,707 in 2009 making 31.4% of the total County population. Females are more in this group at 52.7% compared to males at 47.3%. Population in this cohort is projected to reach 281,929 in 2015 and 313,854 in 2017.

Female Reproductive Age (15-49): This is the childbearing age group. There were 178,547 females in the year 2009 in this age group and is projected to reach 259,786 in the year 2017. The females of reproductive age are 52.2% of the total female population in the County. Adequate resources will need to be allocated to provide quality reproductive and other health-related services so as to reduce maternal and infant mortality.

Labour Force (15-64): The County productive population stood at 385,514 in 2009 and is projected to reach 560,923 in the year 2017. The group constitutes 56.1% of the total population. Male are more (50.06%) compared to females (49.94%). Currently, there are limited employment opportunities in the County and efforts need to be intensified to create off-farm employment through the establishment of small-scale enterprises and livestock diversification.

Aged population (65+): The aged population was 15,347 in the year 2009 and is projected to reach 22,329 in the year 2017. The group constitutes 2.2%

of the total population. Most of the aged are females constituting 53% of the total. This large increase in the aged population may increase the dependency ratio. The government initiative of funding the old (old persons transfer fund) may ease this but an increase of employment opportunities and incomes to the labour force may be necessary to cushion families of the added burden of taking care of the aged parents.

3.4 Rural and Urban Population

The County has a higher rural population than the urban population. The County had an urban population of **282,722** accounting for **40%** and a rural population of **404,590 (60%)** as per the 2009 census. The County has among the highest urban growth rate in the country at **7.53% and a rural growth rate of 2.56%** as calculated from the intercensal data by 2009. The County has an average growth rate of **5.5**%. With the current urbanisation trend in the County, it is projected to have over 60% of the County population in urban areas by 2030 as shown in the table below. Therefore, this high population growth calls for proper planning with a view to obtain sustainable development.

Table 3.3: Rural and Urban Population Projection

Pop.	**2009**	**2019**	**2020**	**2025**	**2029**	**2030**
Urban	282,722	584,083	628,035	902,674	1,206,615	1,297,413
Rural	404,590	520,949	534,285	606,266	670,773	687,944

Source: Spatial Planning Concepts for Nairobi Metropolitan Region, 2012

Table 3.4: Projected Population of Urban Areas in Kajiado

	2009	**2019**	**2020**	**2025**	**2029**	**2030**
Kajiado	18,281	34,721	37,021	51,020	65,945	70,314
Ngong	107,188	203,581	217,068	299,151	386,658	412,274
Kitengela	58,167	110,476	117,795	162,338	209,825	223,726
Ong'ata Rongai	40,178	76,310	81,365	112,133	144,934	154,535
Kiserian	18,096	34,369	36,646	50,504	65,277	69,602
Namanga	9,066	17,219	18,360	25,302	32,704	34,870
Isinya	8,670	16,467	17,558	24,197	31,275	33,347
Ilbissil	5,376	10,211	10,887	15,004	19,393	20,678
Oloitokitok	11,064	21,014	22,406	30,879	39,911	42,555
Sultan Hamud	6,636	12,604	13,439	18,520	23,938	25,524

Source: Integrated from Spatial Planning Concepts for Nairobi Metropolitan Region, 2012

3.5 Population Density

The County had a population density of 31 persons per Km^2 in 2009 and is expected to increase to 54 and 92 persons per Km^2 by 2019 and 2029, respectively. Urban areas have relatively high densities compared to rural ones, hence differences in the Sub-Counties as shown in Table below. Kajiado North is the most densely populated area while Kajiado West is the least densely populated. This can be attributed to the fact that Kajiado North is more urbanised while Kajiado West is predominantly rural.

Kajiado North

Kajiado North Sub-County is the most densely populated in the County with a population of 202,651 and density of 1,369 persons per Km^2 as of the 2009 population census. The Sub-County is closest to Nairobi and has seen an influx of the population and urbanization from people working in Nairobi. The urban areas in the Sub-County such as Ngong and Ong'ata Rongai have the highest urban growth rate within the NMR and have resulted in increased subdivision of land in the area, pressure on existing infrastructure and services and encroachment into environmentally sensitive areas such as Ngong forest.

Kajiado North Sub-County is projected to have a population of about 620,000 by the year 2030 with the current urban growth. The increased population thus calls for better urban management and detailed plans for the urban areas.

Kajiado Central

Kajiado Central Sub-County is among the fast urbanizing parts of Kajiado County. In 2009, the Sub-County was estimated to have 102,978 people and a population density of 24 persons per Km^2. The urban areas in the Sub-County such as Kajiado and Namanga towns have the highest population while the urban areas have scattered settlements. The Sub-County is projected to have about 316,900 people by 2030. The increased population has resulted in urban sprawl, subdivision and encroachment into environmentally sensitive areas. Detailed planning is proposed in urban areas to ensure sustainable urbanization.

Kajiado East

Kajiado East has a fairly high population with the second-highest population density in the County. At 2009, the Sub-County was estimated to have a population of 137,254 and a population density of 54 persons per Km^2.

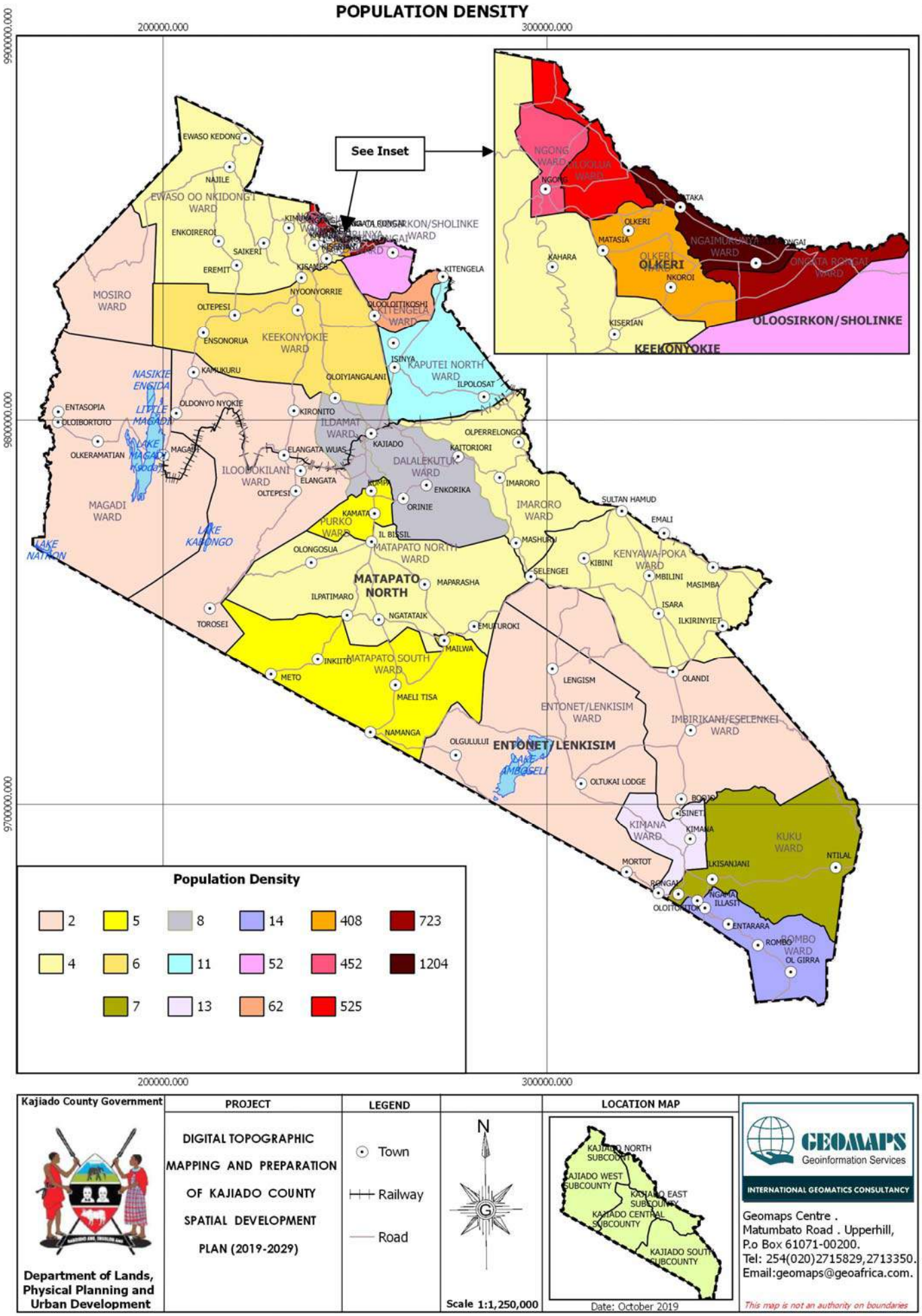
Kajiado West

Kajiado West Sub-County is the most sparsely populated of the five sub-counties in Kajiado. The Sub-County had a population of 106,933 and population density of 14 persons per Km^2 in 2009. The low population in the Sub-County could be attributed to the low urbanization and scattered settlement within the Sub-County. By the year 2030, the population within the Sub-County is projected to be about 329,000.

Kajiado South

Kajiado South is expansive and had a population of about 137,496 as of 2009. It had a population density of 21 persons per Km^2. The sub-county is characterised scattered rural settlements with only concentrated settlements in the urban areas. By the year 20130, the sub-county is projected to be having a population of 423,245 thus necessitating proper urban and rural planning.

Map 3.1 shows the population density in the sub-counties.



Map 3.1: Population Density

Table 3.4: Population and Population Density Projections per Sub-County

Year	Kajiado North		Kajiado Central		Kajiado East		Kajiado West		Kajiado South	
	Pop.	**Den**	**Pop.**	**Den**	**Pop.**	**Den**	**Pop.**	**Den**	**Pop.**	**Den**
2009	202,651	1,369	102,978	24	137,254	53	106,933	14	137,496	21
2010	213,797	1,444	108,642	25	144,803	56	112,814	15	145,058	22
2015	279,424	1,888	141,990	33	189,252	73	147,444	19	189,585	29
2018	328,111	2,217	166,731	39	222,227	86	173,135	23	222,619	34
2020	365,196	2,467	185,576	43	247,344	96	192,703	25	247,780	38
2025	477,296	3,224	242,540	57	323,269	125	251,855	33	323,839	49
2028	560,461	3,786	284,801	66	379,596	147	295,739	39	380,265	58
2030	623,807	4,214	316,990	74	422,500	163	329,165	43	423,245	65

Source: KNBS, 2009

3.6 Emerging Planning Issues and Opportunities

Challenges	Opportunities
• The population of Kajiado is growing at a very high rate. • High rates of urban growth • High unemployment rates • Emergence Of unplanned centers	• Improved literacy levels. •

CHAPTER 4:ENVIRONMENT AND NATURAL RESOURCES

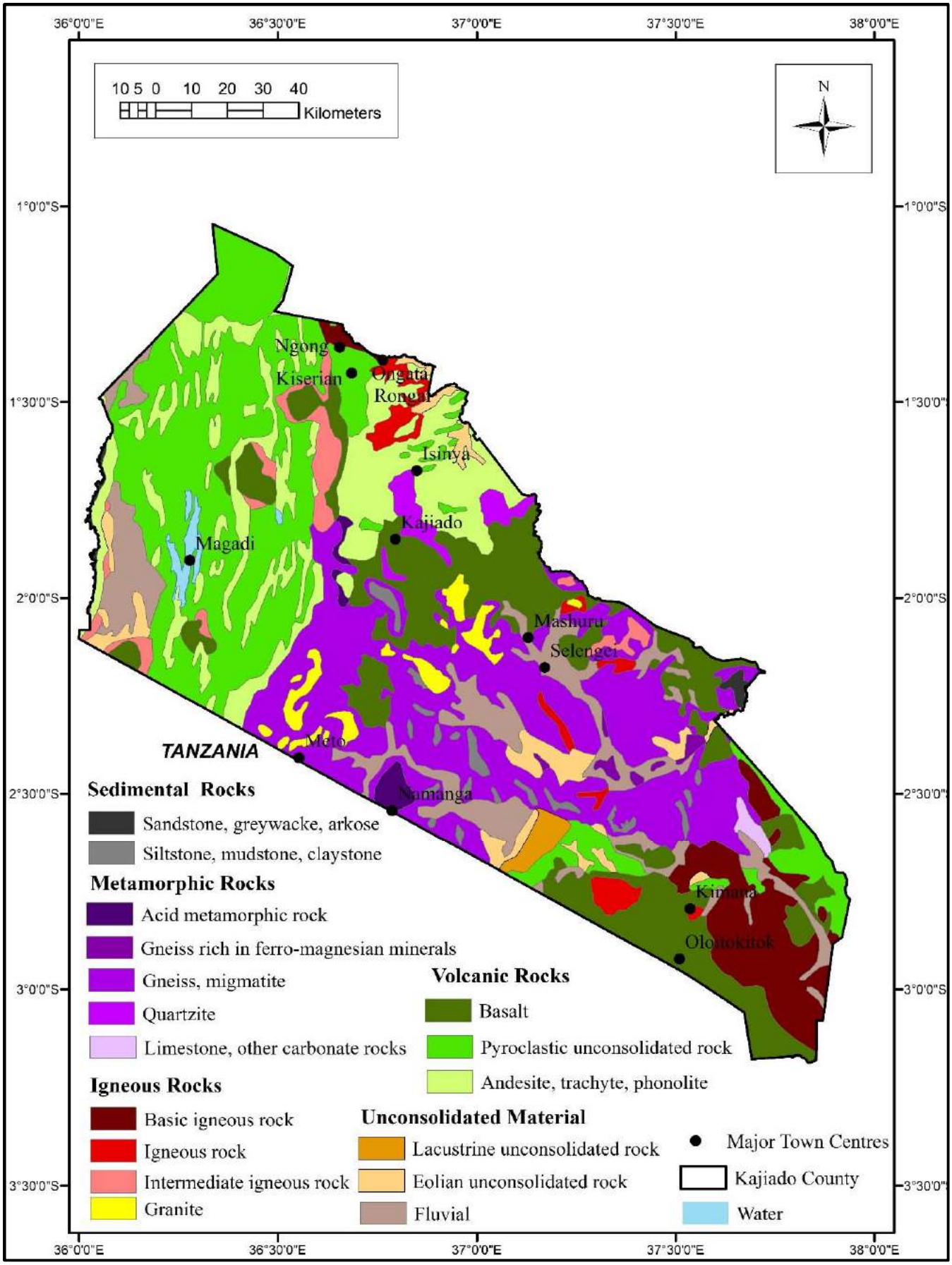
4.1 Overview

This section analyses the natural features and physical characteristics of Kajiado County and demonstrates that the environment and natural resources form the base for sustainable development. The chapter outlines the natural features and resources, climate and environment of the County. It concludes that water is the most significant limiting factor in spatial development, followed by preservation and protection of biodiversity and tourist sites and mineral resources exploitation including renewable energy.

4.2 Geology

The general geology of the County consists of the metamorphic rocks of the Basement System, which outcrop in the southern and south-eastern parts of the area, consisting of crystalline limestones, quartzites, gneisses and granulites (Turoka Series). They are entirely sedimentary in origin having been laid in a quieter depositional environment of a relatively shallow geosyncline (Matheson, 1966). Orogenic folding accompanied by metamorphism followed. Consequent erosion levelled the surface to the extent that the present raised hills are only remnants of much higher relief. Minor igneous activity following the deposition of the sediments is represented by amphibolites which are thin and concordant cut by minor acid and basic intrusions (Matheson, 1966; Nyamai et al, 2004; Guth and Wood, 2013(a)).

The Tertiary and Pleistocene volcanics followed pouring lava covering the remaining two-thirds of the area. The Tertiary volcanics occurred in intermittent succession starting with the Kapiti Phonolite that dates between 12 and 13 million years (Upper Miocene – Lower Pliocene), followed during the Miocene period by the Olorgesailie phonolitic nephelinite volcanics outpouring from Loitigoshi between 5 and 8 million years (Middle Pliocene) indicating a long period of quiescence (Matheson, 1966, Guth and Wood, 2013). During this period of quiescence, weathering and erosion occurred which presently form unconformity suitable for groundwater exploration. The phonolite, tephrite and trachyte flows from an eruption centre at Esayeti (5.64-5.85Ma) partially overlies early Ngong eruptives to a maximum elevation is 2085m, but since has been eroded (Baker et al., 1971, Saggerson, 1991). Similar Mbagathi phonolitic trachyte feature feldspar laths in a grey-brown matrix comprised of 2-3 flows with a minimum total thickness of 60m and is overlain by the Narok agglomerate and Ngong volcanics (Matheson, 1966).



Map 4.1: Geological Map of Kajiado County
Source: Kenya geology map, 2017

Olorgesailie Athi tuffs, that are sometimes welded, were deposited both subaerially and as lake beds reaching a maximum thickness of about 300m. The pre-historic site demonstrates that the deposition occurred in an old lake forming lake beds that are now being used as a tourist site. The eruption of the Ngong Hills (2.53-2.58 Ma) constitute remnants of an old volcanic cone which had an estimated original diameter of 11km prior to being cut by the rift escarpment. The current summit is 2430 m, and eruptive materials include basanite, tephrite, and some nephelinite. The formation, therefore, was a combination of faulting, tectonics and volcanicity in which fractures that influence groundwater occurrence are present. Some lavas contain megascopic fragments of gneiss, which are not known from other volcanics in the area (Saggerson, 1991). The Singaraini Basalts (2.31 - 2.33 Ma) consists of olivine basalts featuring bouldery outcrops and occasionally, small visible feldspar phenocrysts. The Limuru Trachyte (1.94 - 2.64 Ma), on the other hand, has a total exposed thickness of 400m in the eastern rift escarpments also flowed over the escarpment (Baker et al. 1988).

The Olorgesailie (2.2 - 2.7 Ma) – the main volcanic cone – is located to the west of Kajiado Town and is composed predominantly of lavas with some agglomerates. Erupted lavas included trachytes, augites and olivine basalts, with nephelinites found at the summit. Pliocene Narok agglomerates grade into tuffs towards the Nairobi region to the north, light brown in colour with numerous lithic clasts, including blocks of trachyte and phonolite. Ol Doinyo Narok and Arau have been suggested as possible source vent locations, and total thickness may reach over 200m (Matheson, 1966). Alkali trachytes from the Magadi area have an age of 1-7 million years thus placing them near the Pliocene-Pleistocene boundary. Pumice from the Olorgesailie prehistoric site lake beds agrees with the fossil evidence of 0-4 million years.

The Pleistocene volcanic is represented by the Plateau/Magadi Trachyte (0.8-1.4 Ma) consisting of peralkaline trachyte that is very prominent in the Rift Valley between Lake Magadi and Suswa. This is one of the several expansive "flood trachytes" that cover the rift floor. The Ol Tepesi basalts (1.4-1.65 Ma) and Benmoreites (1.42Ma), the latter being at least 150m thick and features distinctive tabular and rhombic feldspar phenocrysts in a granular matrix. Pleistocene to Recent age superficial depositions are represented by soils, sands and gravels (Guth and Wood, 2013).

4.3 Structural Geology

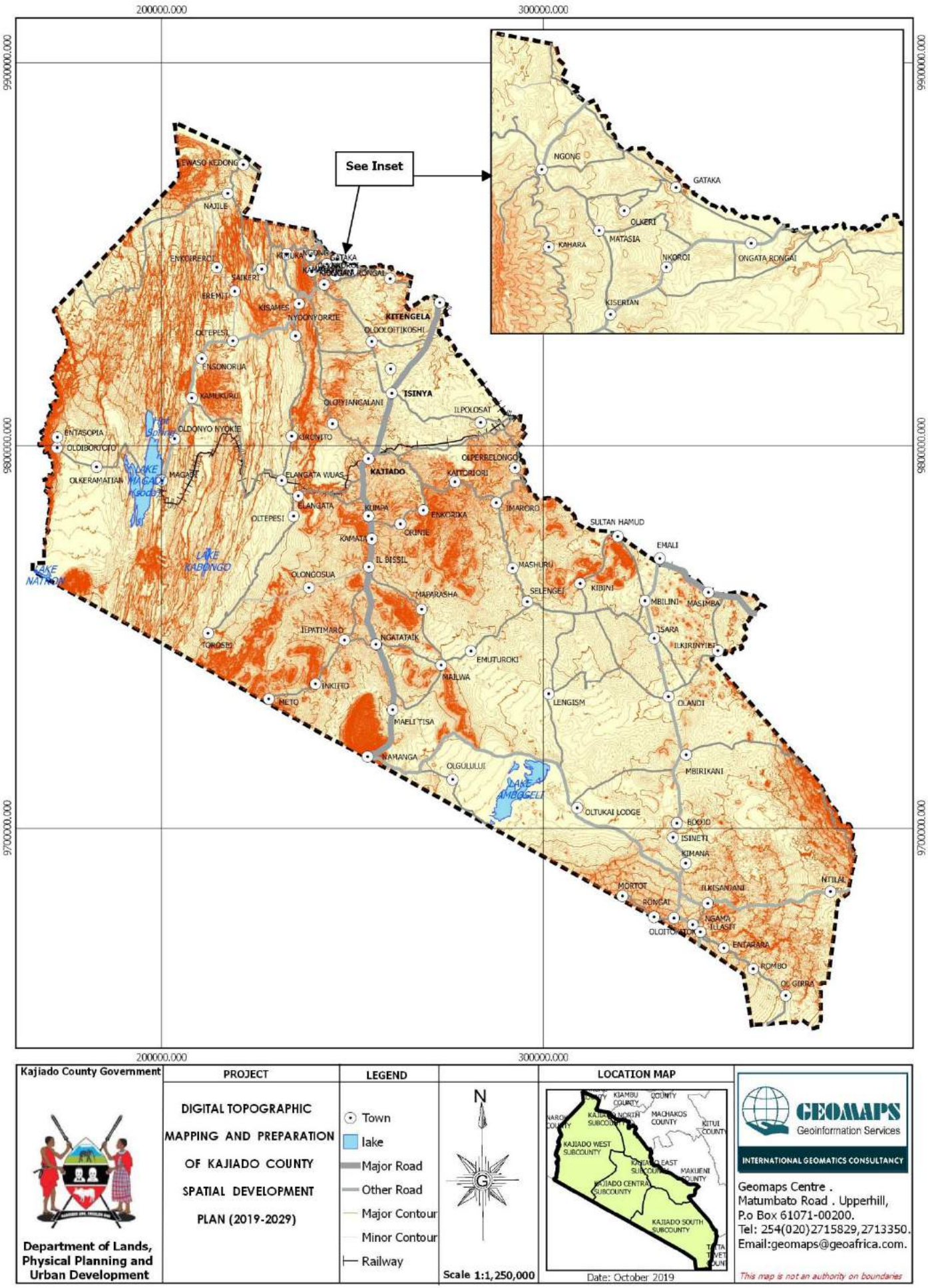
Kajiado County has gone through periods of folding and metamorphism, rift faulting and volcanicity and erosion and lacustrine deposition. The metamorphosed sediments of the Basement series exposed in this area were

affected by several stages of deformation (Warden & Horkel, 1984) that produced a general NNW-SSE foliation but the lineation and minor folds trend ENE-WSW whereas it is usual for them to roughly parallel the strike of the foliation. This feature appears to indicate that the structure is abnormal. All the minor structures in this region trend ENE-WSW the major folds probably also trend in the same direction (Nyamai, et al, 2004). The orientation of minor structures NNW-SSE folds are thought to control the structure along the river Kajiado and ENE-WSW folds than to the east of it.

4.4 Topography

Topography influences drainage of soils and water resources availability, climate and in general, human activities including settlement patterns, and therefore remains a significant pillar in spatial planning. The dominant topographic features of the County include the Central Broken Ground, an area stretching 20-70 kilometres wide from the north-eastern border across the County to the southwest where the altitude ranges from 1220 to 2073 m. above sea level. The dominant hills in the Central Broken region such as the Ngong hills, Chyulu hills and Nguruman hills and Loitokitok. These hills are the major recharge zones for both rivers and groundwater. The altitudes range between 600 m (metres above sea level) in the plains to about 2500 m in the hills. Ngong Hills are peaks in a ridge along the east of the edge of the Great Rift Valley, Chyulu Hills consist of an upper-level plateau rising to an altitude of 2000 m, which is surrounded by lava flows and a mixture of smaller lava ridges, uplands and foot slopes all of which influences water resources availability in the County. The volcanic uplands are prominent to the west, rising to an altitude of about 1200 m with cones and hills. Further south the Nguruman Escarpment is around 50 km long and elongated in NW direction.

The Rift Valley is a spectacular and dominant landscape lying on the western side of the County that runs from north to south and is generally 50 to 60 km wide. The floor of the valley is step-faulted and comprises a series of horsts running north and south with flat bottomlands between them. The altitude ranges between 600 and 1740 m. above sea level. Lake Magadi is the most southern rift valley lake in Kenya, although the northern end of Lake Natron in Tanzania reaches into Kenya. The Magadi Lake, being one of the Kenya Rift Valley Lake system, is a key location on the West Asian-East African Flyway, a route followed by huge numbers of birds in their annual migration from breeding grounds in the north to wintering places in Africa. The Rift System influences drainage, climate and consequently influences land use especially human settlement and infrastructure development.



Map 4.2: Relief of Kajiado County
Source: Geomaps 2017

The upland plains consist of the Athi-Kapiti plains, rolling south eastern including Amboseli plains. The upland Athi-Kapiti Plains have altitude range from 1580 to 2460 m. above sea level. The outstanding hills in this area form the catchment areas for Athi River, which is fed by Mbagathi and Kiserian tributaries. At the south-eastern edge of the Athi-Kapiti Plains, the land falls away more steeply to the east forming the Central Hills rising to 2800 m. On the other hand, the in the western lee of the Chyulu Range much of the land is covered by lava flows that are porous and allow much rainfall infiltration thus recharging groundwater draining into Kiboko River while on the eastern plains drain south-eastwards forming the headwaters of the Tsavo River.

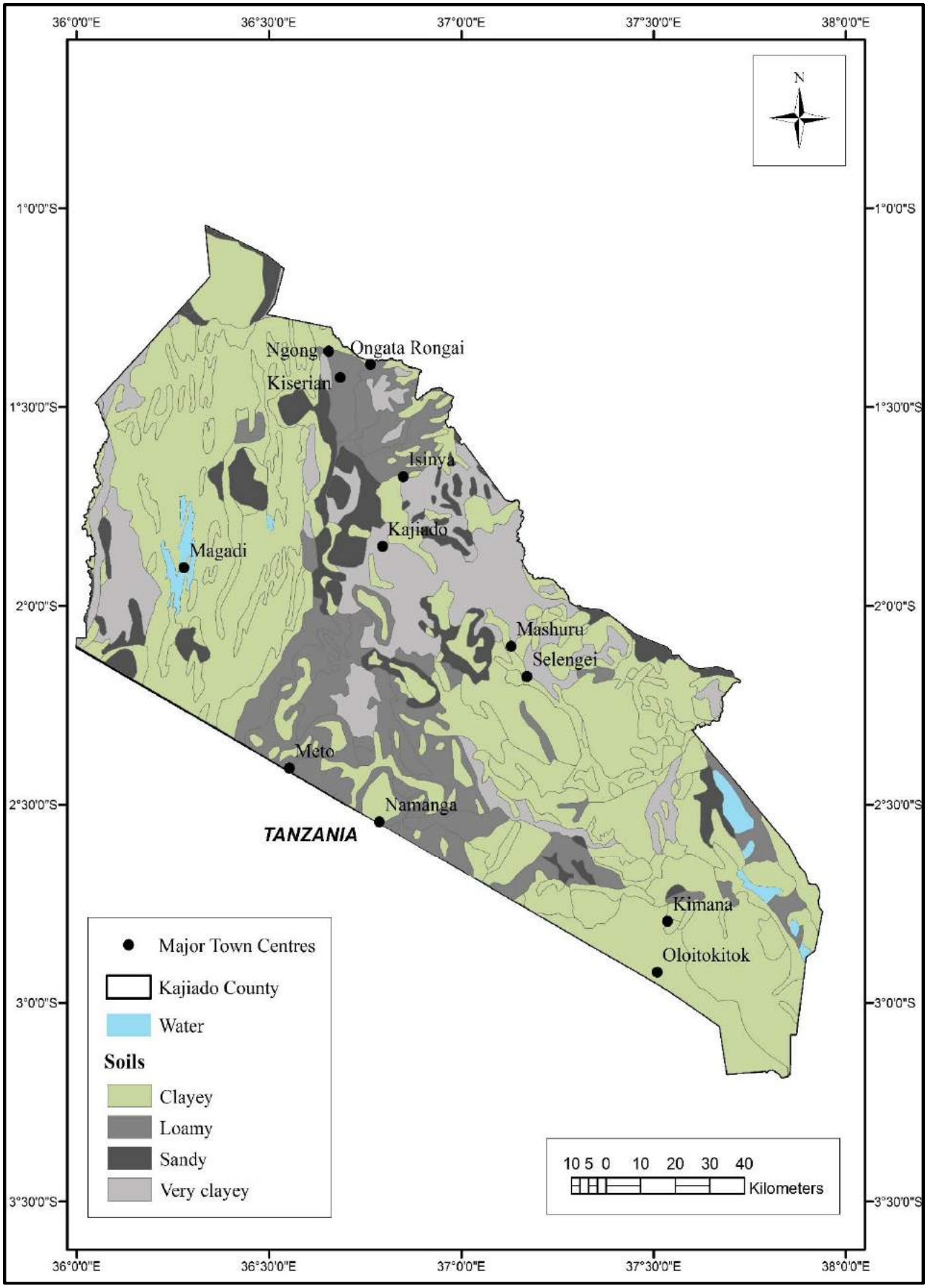
4.5 Soils

Factors that determine the characteristics of soils are topography, geology and climate. Most of Kajiado County is semi-arid with poorly developed and shallow black cotton soils (vertisols) that have high clay content and are susceptible to waterlogging and flooding. These conditions, which result in impeded drainage, because the soils overlie impervious rocks, also occur in most of the wetlands which are generally shallow and highly seasonal. Black-cotton soils are typical on the Basement System rocks and to the east and north-east of Kajiado where the overlying basalt lavas generally impede drainage.

Reddish-brown sandy soils are best developed on the sub-Miocene surface and around hills with ample drainage. Chemically, red soil is siliceous and aluminous, with free quartz as sand, but is rich in potassium, ranging from sand to clay with the majority being loamy. The lowermost area of red soil is dark in colour and very fertile, while the upper layer is sandy and porous. Red volcanic soils are found on the Ol Doinyo Narok Agglomerates and the first step of the Rift Valley in the northern part of the area.

Sandy alluvium soils associated with the Basement system rocks and made of coarse and or contain pebble beds forming cliffs reaching a height of 10m in some places occur along river Turoka. The alluvium grades into a grey sandy soil overlying the first step of the Rift Valley. These sandy soils are well-drained. The numerous rocky scarps and slopes of the Rift Valley have shallow, reddish-brown, stony clay-loams. The bottomlands have deeper and more varied soils, including alluvial deposits.

Limestones areas yield a poor thin soil with abundant limestone fragments, while kunkar deposits cover much of the parent limestone and neighbouring rocks. When kunkar is formed from hornblendic rocks they often have a reddish tinge instead of the off-white colour indicating derivation from crystalline limestone.



Map 4.3: Soil Map of Kajiado County
Source: Sombroek , et al, 1982

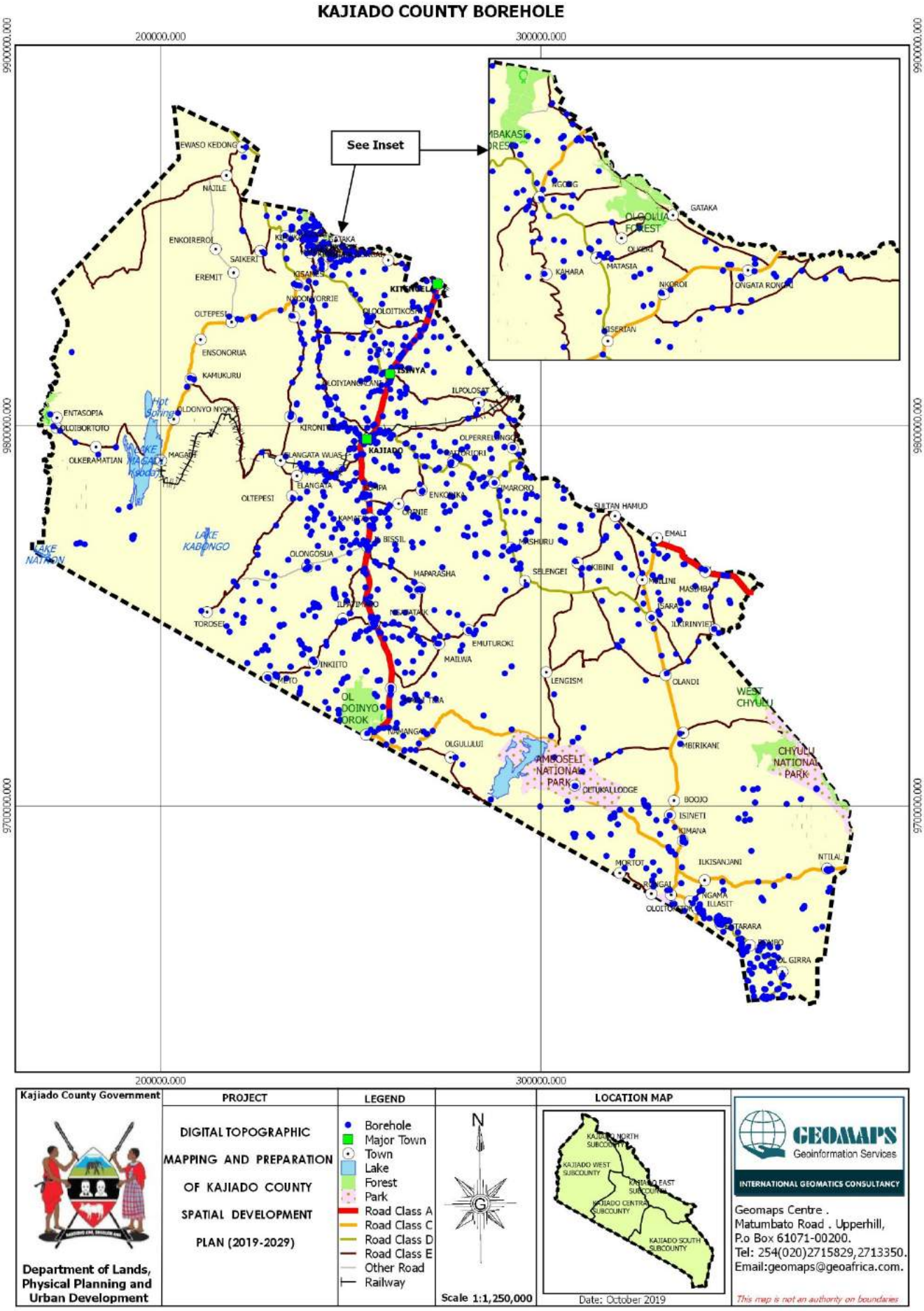
The soils in the Amboseli Plains are divided into two distinct parts of which the western half is geologically an extension into the Central Broken Ground. It is an area of gently undulating plains with deep, reddish-brown clay loams and a variety of poorly drained vertisols. In the eastern part of the plains, the geology changes abruptly to quaternary volcanics with deep, well-drained soils, many of which are very rocky.

4.6 Hydrogeology and Groundwater Potential

The groundwater occurrence depends on geology, topography and secondary structures such as interstices, fractures, faults and or weathered surfaces. The most accessed horizons are the biotite gneisses or the contact between the metamorphic rocks and the volcanics. The weathered or fractured rocks allow for percolation of water. The major aquifers in the area are in Upper Athi Series due to the availability of tuffs, lake beds and sediments in between the phonolites. Other aquifers are found in basement rocks due to fracturing and exposure of the rocks due to erosion. Underground water yields vary from 0.01 to 35.7 m^3 per hour. In areas close to wetlands the underground water table is shallow and hence shallow wells provide adequate water supply.

The undulating topography allows meandering of the river flow from the general west to the northeastern. Major rivers are Athi and Kitengela Rivers and they are the only ones that contain water in the dry season. The rest are seasonal and thus lack water during the dry season. Lack of permanent sources of surface water led to the construction of several small dams and the drilling of a large number of boreholes. At least 290 boreholes were drilled between 1938 and 1982, 43% of them between 1970 and 1982. Most of the boreholes in the Rift Valley are in the eastern half of the Valley; the Uaso Nyiro River provides water to the western side of the Valley. In the Athi-Kapiti ecozone, most boreholes are clustered at the northern end, where general development has been greatest. In the Central Hills, the greatest density of boreholes is close to the railway, again where development is furthest advanced.

Most boreholes in the Amboseli area are in the western part, where there is no permanent source of surface water. The volcanic plains have permanent surface water from springs and thus have fewer boreholes. The most important single structure for the provision of water is the pipeline that cuts through the Nol Turesh pipeline from the Kilimanjaro foothills to Sultan Hamud on the Nairobi-Mombasa road. There is a second, much smaller, pipeline system in the north of the Amboseli National Park; this was built in the mid-1950s to compensate the Maasai for loss of grazing land when the Park was demarcated.



Map 4.4: Borehole distribution in Kajiado County
Source: Geomaps 2017& KCG

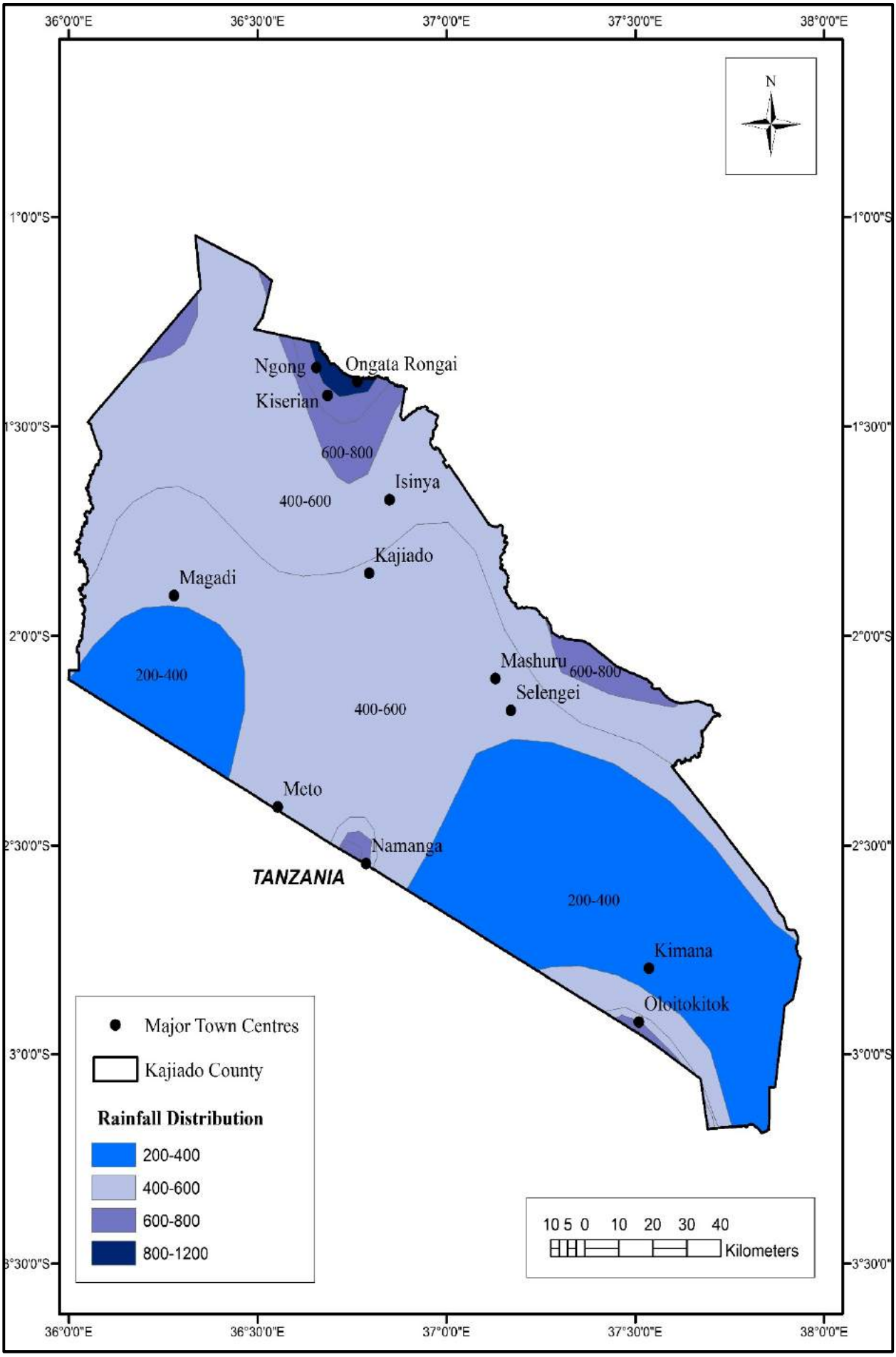
Within the County also a number of individually owned boreholes are operating, but it seems obvious that the existing and functioning water facilities are far too few to serve the population and their livestock. Running costs and maintenance are major problems for community-managed facilities. Most boreholes are equipped with electric pumps and, thus, have high running costs. Another problem seems to be that the local people have not been sensitized on the need to pay for water services.

Recently, China Road and Bridges Corporation (CRBC), while constructing a tunnel buried at a depth of 108 m; and another 46 m. discovered underground water approximately 1,700 m3/hour. The water is currently being directed to the Oloshoibor dam for distribution and local consumption. Plans are also underway to build livestock troughs along the new water channel. The water will be collected and treated in two tanks of 1.6 million litres before being released to the community for use.

4.7 Climate

Kajiado County is primarily semi-arid. The climate is influenced by altitude, especially Mount Kilimanjaro, Ngong Hills, Chyulu Hills, Loita Hills and Mau Hills. The mean annual rainfall ranges between 300mm and 800mm but increases in Ngong Hills, Chyulu Hills and Nguruman Hills to about 1250mm per annum. The rainfall occurs in two seasons, the magnitudes of which varies from the east to the west. The long rains occur in the months March-May and the short rains in October-December. Rainfall records at Kajiado County Office (27 years, Magadi representing the arid climate of the Rift Valley, and Stony Athi within the Kapiti plains in the north-east, and Ilbissil representing the effect of the Lemelepo Hills.

Most of Kajiado County lies in the semi-arid and arid zones (Agroclimatic zones V and VI). Only 8% of the County's land is classified as having some potential for rainfed cropping (zone IV), and most of this is in the Athi-Kapiti Plains such as around Ngong, Kiserian, Kitengela and Ong’ata Rongai close to Nairobi, and in the south in Oloitokitok, along the Kilimanjaro foothills. Mean annual rainfall ranges from 300 to 800 mm. Rainfall is bimodal, with "short rains" from October to gradually from east to west across the County. In the eastern part of the County, especially in Oloitokitok, Ong’ata Rongai and Kitengela more rain falls during the "short rains" than during the "long rains". In western Kajiado the majority of rain falls during the "long rains".



Map 4.5: Rainfall Distribution in mm/pa

Source: Kenya Meteorological Department, Nairobi

Table 4.1: Distribution of agro-climatic zones of Kajiado County

Ecozone	**Percent of land area in each agroclimatic zone**			
	IV	**V**	**VI**	**Total area (km^2)**
Rift Valley	7	71	23	6850
Athi-Kapiti	31	69		2040
Central Hills	14	69	27	4400
Amboseli	15	26	69	6270
Kajiado County	8	56	36	19560

Source: Jaetzold et al *(1982) Farm Management Handbook*.

The distribution of rainfall in Kajiado has an impact on primary productivity and grazing resources and water for humans and livestock as far as water sources are concerned.

Table 4.2: Mean monthly rainfall (mm) for major rainfall stations in Kajiado County

Month	**Kitengela**	**Mashuru**	**Kajiado**	**Namanga**	**Magadi**	**Ngong**	**Amboseli**	**Oloitokitok**	**Rongai**
Jan	35	38	40	64	40	42	21	72	55
Feb	39	36	26	63	43	53	31	66	46
Mar	69	63	60	93	64	91	26	134	84
Apr	138	129	117	160	104	190	62	140	185
May	80	64	56	68	56	144	15	40	155
June	1	9	12	10	8	37	0	6	31
July	6	4	6	2	3	15	0	5	12
Aug	7	3	3	3	3	19	0	5	16
Sept	5	3	9	6	6	25	1	7	18
Oct	10	23	22	22	16	43	15	54	45
Nov	35	66	65	68	37	91	71	199	117
Dec	57	67	55	89	47	63	50	166	80
Annual total	482	505	302	647	427	812	291	894	727

Source: *climate data.org*

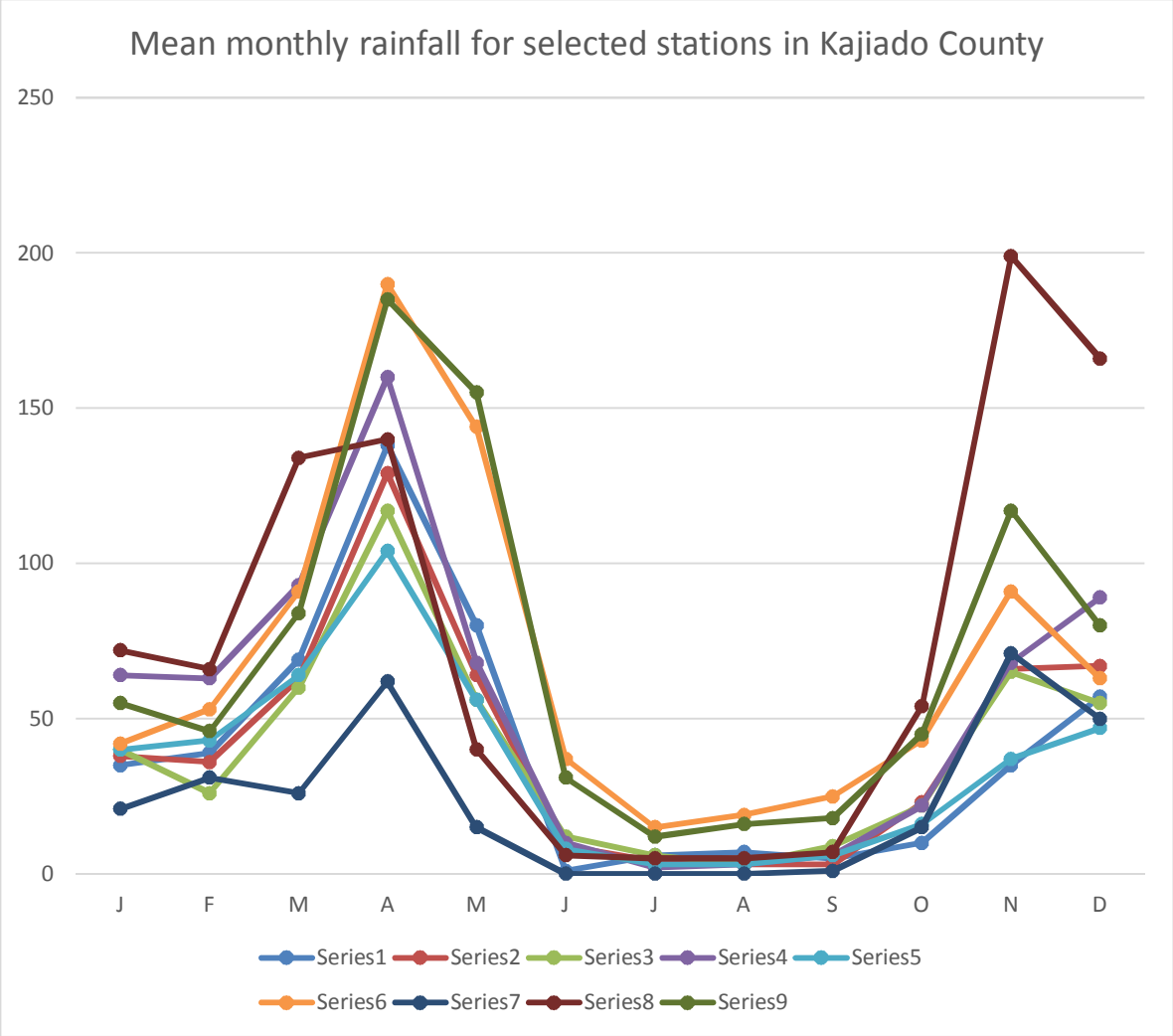


Figure 4.1: Mean monthly rainfall for selected stations
Source: *climate data.org, https://en.climate-data.org/africa/kenya/kajiado-1732/*

1—Magadi Company 2—Kajiado DO 3—Mashuru 4—Namanga 5—Amboseli 6—Ngong DO 7—Kitengela 8—Oloitokitok 9—Ong'ata Rongai

The average annual temperature in the County is 18.9°C. Temperatures and potential evapotranspiration vary with altitude and range from 12°C and 1700 mm in the highlands to 34°C and 2500 mm in lowlands respectively. It can be noted that the County experiences moisture deficit as a result of high evapotranspiration.

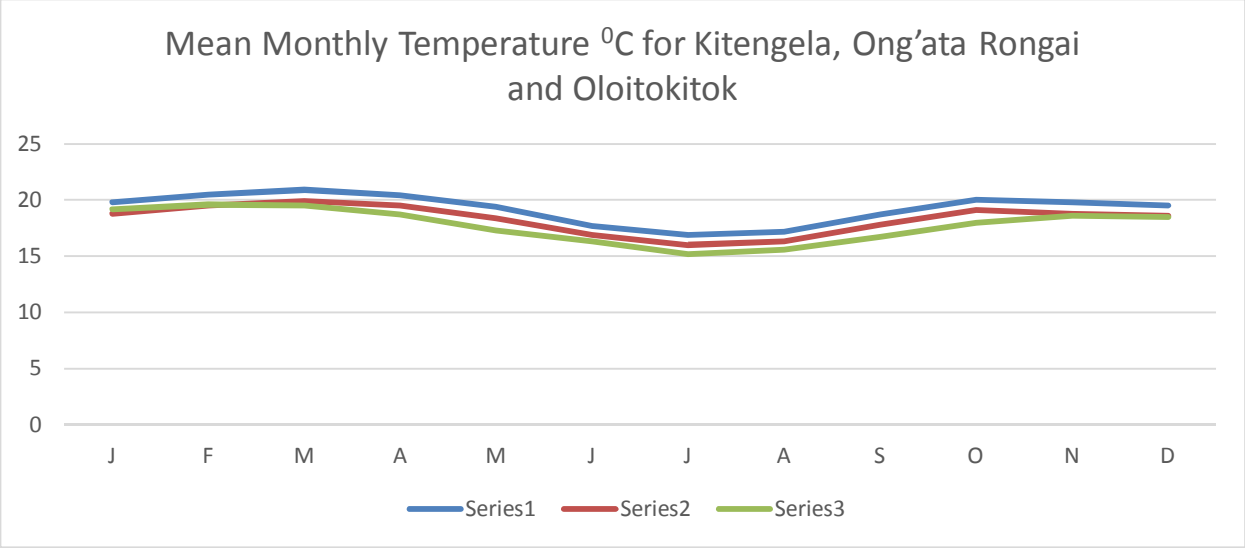


Figure 4.2: Mean Monthly Temperature ⁰C for Kitengela, Ong'ata Rongai and Oloitokitok
Source: *climate data.org, https://en.climate-data.org/africa/kenya/kajiado-1732/*

KEY: Series 1—Kitengela 2—Ong'ata Rongai 3--Oloitokitok

4.8 Ecological Zones

Relationships between climate, vegetation and land-use potential have long been used to assess the suitability of land for different uses. The major elements of climate that determine land use are the intensity and duration of rainfall, the ratio between annual rainfall and potential evapotranspiration, and the year-to-year variation in rainfall (Pratt and Gwynne, 1977; Sombroek et al (1982). The average annual transpiration rate is 1975 mm showing a rainfall deficit of more than 1300mm per annum.

Table 4.3: Moisture availability zones in the Kenya rangelands.

Zone	Classification	Moisture Index (%)	Annual rainfall (mm)	Percent of County area
IV	Semi-humid to semi-arid	40-50	600-1100	
V	Semi-arid	25-50	450-900	
VI	Arid	15-25	300-550	
VII	Very arid	<15	150-350	

Source: Adapted from Sombroek et al (1982).

Using a moisture index (Sombroek et al, 1982) of annual rainfall expressed as a percentage of potential evaporation (E_o), an index of greater than 50% have a high potential for cropping and are designated zones I, II and III. The semi-

humid to arid regions (zones IV, V, VI and VII) have indexes of less than 50% and mean annual rainfall of less than 1100 mm.

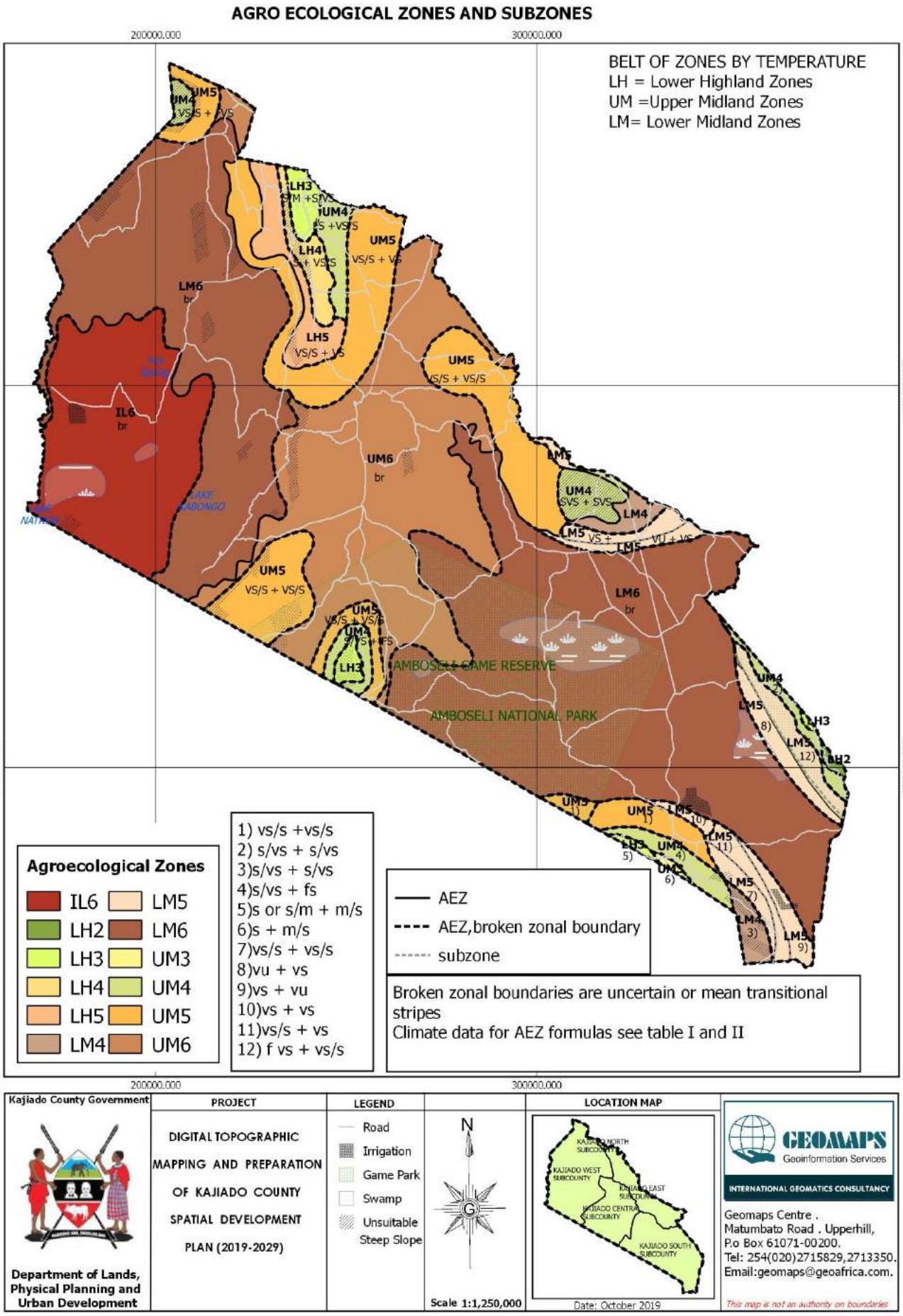
Most of the high-potential areas are located above 1200 m altitude and have mean annual temperatures of below 18°C; 90% of the semi-arid and arid zones lie below 1200 m and have mean annual temperatures ranging from 22° to 40°C. Although potential grazing resources are largely associated with the overall climatic and edaphic conditions, the actual resources available at any particular time are a product of current seasonal rainfall patterns (both spatial and temporal), modified by the extent to which they have been grazed by both domestic and wild herbivores in the recent past. Thus, actual biomass production is much influenced by the current plant cover density, the spatial distribution of which is largely a function of the past. In addition, the intensity with which grazing resources are used is directly related to the location of water points and the rate at which these supply water, factors that, to a large extent, determine the siting of settlements and the grazing areas of the livestock-associated with them.

The County land use is a function of various factors, including location, ecological factors, geology and cultural factors. These four aspects combine to determine the geographical spread of land use activities in the County. In the recent past, land use has had three key drivers, namely, population, proximity to Nairobi and road corridors. Whereas population affects the size of land units, proximity to Nairobi dictates preference for land use and perceived economic gains. Road corridors on the other have created vantage opportunities that influence urbanization. Land fronting key transport corridors is slowly and consistently undergoing transformation. Without clear policies to regulate, key practices that sustain the County economy run the risk of extinction. The plan period shall prepare policy guidelines to guide land use and enhance the rational use of space.

The most predominant land use is agriculture. This is characterized by both livestock and crop farming both occupying a great proportion of the County. Crop production is restricted to small areas in near Ngong hills and Oloitokitok because of their ample rainfall and low temperature. The patterns of agriculture, however, have been transformed because of groundwater that has helped improve crop production through irrigation. Secondly, wildlife conservation is an important land use as it contributes to a large proportion of County trade and revenue. Amboseli National park contributes strongly to the overall aggregate, with other conservancies and sanctuaries accounting for the rest.

Urban land use is yet another pervasive category. The County borders Nairobi City County and has acted as an offloading zone for urban projects. Housing, commercial and industrial developments have registered great investments within the County. The development poses potential danger to traditional

practices such as livestock keeping. The urban sprawl diminishes the land under livestock keeping. Besides these three, land in the County has also is used for mining and quarrying. Quarrying provides both stones for construction and raw materials to cement factories.



Map 4.6: Agro Ecological Zones

Source: Jaetzold et al *(1982) Farm Management Handbook*

4.9 Water Resources

Kajiado County is considered as a water-scarce County. There are few permanent rivers, shallow wells, springs, dams, water pans, and borehole. There is acute demand for freshwater, especially in rapidly growing urban towns. The main rivers are the Ewaso Ng'iro in the Rift Valley, two streams in the northern part of the Athi-Kapiti Plains, the Kiboko River, which drains much of the Central Hills and the northern part of the Amboseli area. Several springs in the southern part of the Amboseli zone. The Kiboko River is not strictly a permanent source of surface water, but water is available year-round from shallow wells in the river bed. The main tributaries of Nolturesh, Mokoine and Rombo, which flows from the eastern slopes of Mt. Kilimanjaro, provides water to Oloioitokitok Sub-County. This river is perennial in the upper parts. Ngong hills springs also provide water in some parts of Ngong and Kiserian towns.

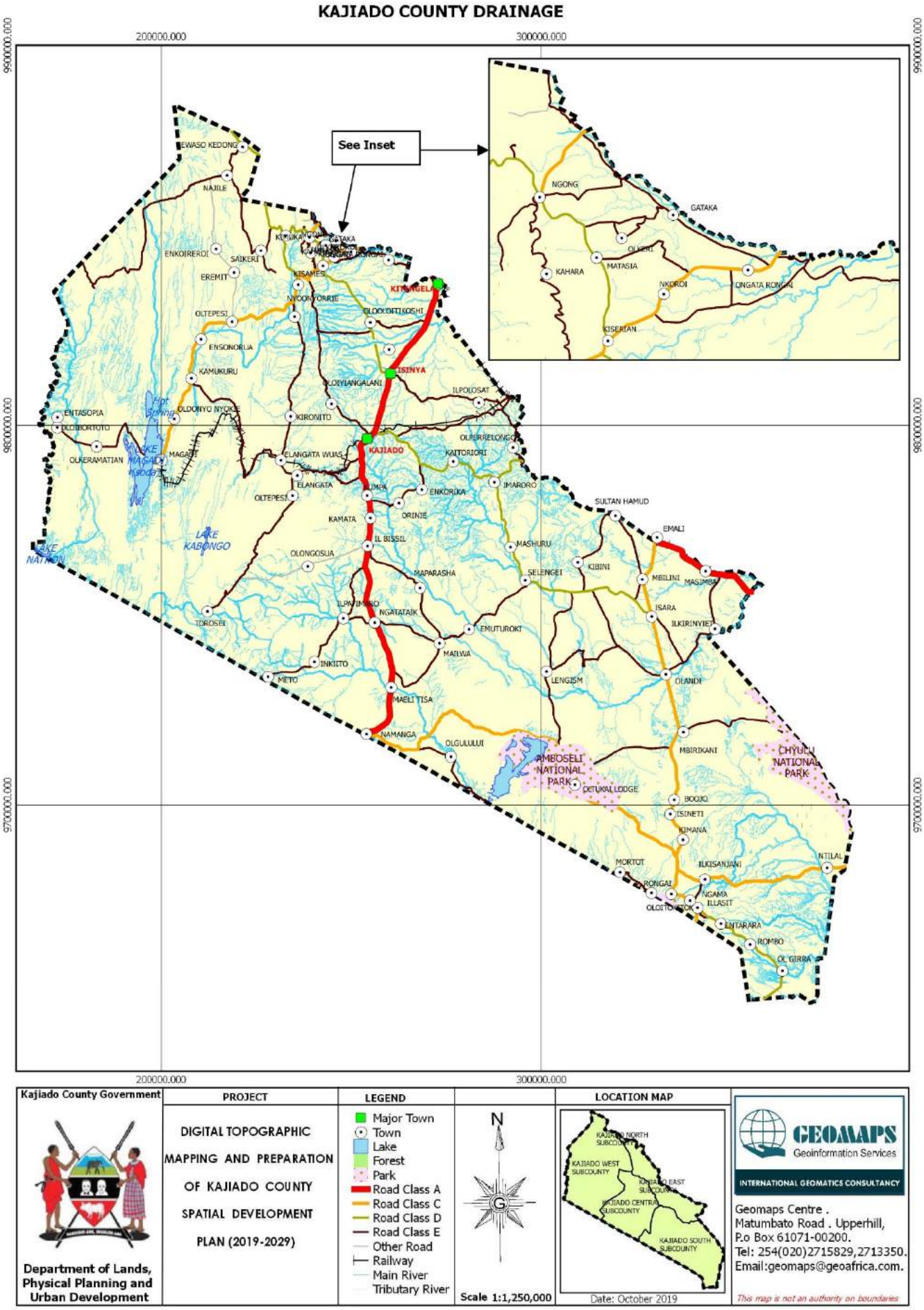
Water can be obtained from the river bed of the Kajiado River. Several dams (Kiserian dam) have been constructed for both water supply and for livestock. Sand dams have been constructed in some river beds.

Table 4.4: Existing and proposed dams for Kajiado County

	Name	**River catchment**	**Capacity m3**	**Sewerage Treatment works**	**Stage of development**	**Estimated cost(KES)**
1.	Kiserian dam	4 seasonal rivers from Ngong Hills	15,700		Completed	2 billion
2.	Oloolotikoshi (Kitengela) dam	Kitengela	102,245,507	Yes	Feasibility completed	14 billion
3.	Kisaju*	Olkejuado	90 million	Yes	Planned	116 billion
4.	Partai*	Enkojorwa	NA	Yes	Planned	
5.	Airfield dam*	NA	120 million	Yes	Planned	

* *Detailed designs not completed*
Source: KCG Water Department

Additionally, there are also some springs located on the Ol Doinyo Narok Plateau, Nkuruman escarpments. The headworks on the south-eastern slopes of the Ngong hills consist of springs, reservoirs, and wells.



Map 4.7: Drainage in Kajiado
Source: Geomaps, 2017

Groundwater is available although it contains high salt levels making it unsafe for drinking. Others such as the ones in Ong'ata Rongai are polluted as a result of the impact of unregulated urbanization and population pressure (Wahome, 2013). Most of the boreholes in the area are situated in natural drainage basins, obtaining water from permeable rock bands such as biotite gneisses, within the Basement System. In volcanic areas the best supply comes from the junction of volcanic rocks and the Basement System, the weathered surface of which acts as an aquifer. Boreholes yielding between 75 m^3 and 100 m^3 per day are common. Water from several of these boreholes has been analysed, and the results show that the water is somewhat hard but suitable for domestic consumption, but the fluorine content is usually on the high side. Most of the water analysed is from bore-holes in the Basement System, and the fluorine content is appreciably lower than water found in volcanic parts of the country. Total water supply for the 4 towns is 3,560m^3/day against a demand of 11,560m^3/day.

Several small dams retain some of the flow. More dams have been constructed in various parts for livestock. Water pans have been constructed in various parts of the district to provide water to people, livestock and wildlife. Rainwater harvesting pans have been introduced in a few places, especially in schools and other institutions.

Table 4.5: Yields of selected boreholes in the County.

No.	**Type of source**	**Potential Capacity (m^3/day)**
Kajiado Town	Olosuyani B/H	560
	Water Offices	80
	Private supply	80
Isinya Town	4 B/H	400
	Private B/H	80
Kitengela	EPZ	1600
	Private	400
Ibisil	2 B/H	100
Maili 46	B/H	60

Source: KCG Water Department

Water is likely to be a limiting factor in the development of the County since the trekking distances to water sources of more than 50% of the households is between 15 minutes to more than 2 hours to the current water source and the proportion of the households that queue for water is 35% with Kajiado East and Central having the largest proportion at 44.0% and 51.7% (Murage, 2018)

4.10 Rainwater Harvesting

Rainwater harvesting is one way of mitigating the impact of climate change in the County. There is ample potential for the harvesting of rainwater and storing it in suitable reservoirs. This would likely reduce pressure on wetlands, especially in areas where zonation of wetland usage is unfeasible. Water harvesting for food security is common in areas of Isinya where farming has been adopted as a major livelihood source. In order to increase irrigated land area and improve water harvesting for crop and livestock production, the County needs to embark on construction of earth dams in each Sub-County, mobilisation and training of farmer groups and encouraging drip irrigation.

4.11 Vegetation

Forest is rare and mostly confined to isolated remnants on hill crests such as Ngong Hill, Ngurumani Hills and Chyulu range. The natural forest areas experience moderate rainfall and this decreases towards the bush and woodland vegetation. Bush and woodland are found mostly in the Central Hills and in the western part of the Amboseli area. There are four main types of bush and woodland, namely, *Tarconanthus* types on shallow soils in the northern Rift Valley. Semi-deciduous bushland with *Combretum, Grewia, Acacia, Rhus* and *Premna* species on hill slopes in wetter areas (zone IV). ·*Acacia-Commiphora* bush and woodland in the Central Hills and western Amboseli where shallow soils overlie basement complex parent material. ·Open *Acacia tortilis* woodland on lacustrine plains in part of the Amboseli ecozone (de Leeuw et al, 1986). The semi-deciduous bushland has many species in common with *Acacia-Commiphora* bushland, of which it can be considered a variant found in moister areas.

Open grasslands predominate in the Athi-Kapiti Plains and many parts of the Amboseli area. Several grassland types have been distinguished, namely, *Themeda* and *Chloris* types (Rattray, 1960). *Pennisetum* species on floodplains and bottomlands with Vertisols while *Sporobolus* types grow on saline-sodic clays in the Amboseli area.

Both of these used data (table 4.6) collected in the early 1970s, before the 1974-76 drought. Woody cover fell substantially during and after the drought and Touber (1983) gave much lower estimates of the proportion of bush and woodland in the Amboseli plains.

Table 4.6: Percentage of land area under vegetation of different types in the four ecozones of Kajiado County.

Woody cover (%)	Percent of the area					
	Vegetation type	**Rift Valley**	**Athi-Kapiti Plains**	**Central Hills**	**Amboseli Plains**	**Total**
0-2	Open grassland	9	71	14	37	26
2-20	Wooded and bushed grassland	74		10		26
20-40	Bush and woodland	16	29	75	59	44
> 40	Forest and other types	1		1	4	2

Source: Based on Croze (1978) and the Republic of Kenya (1982).

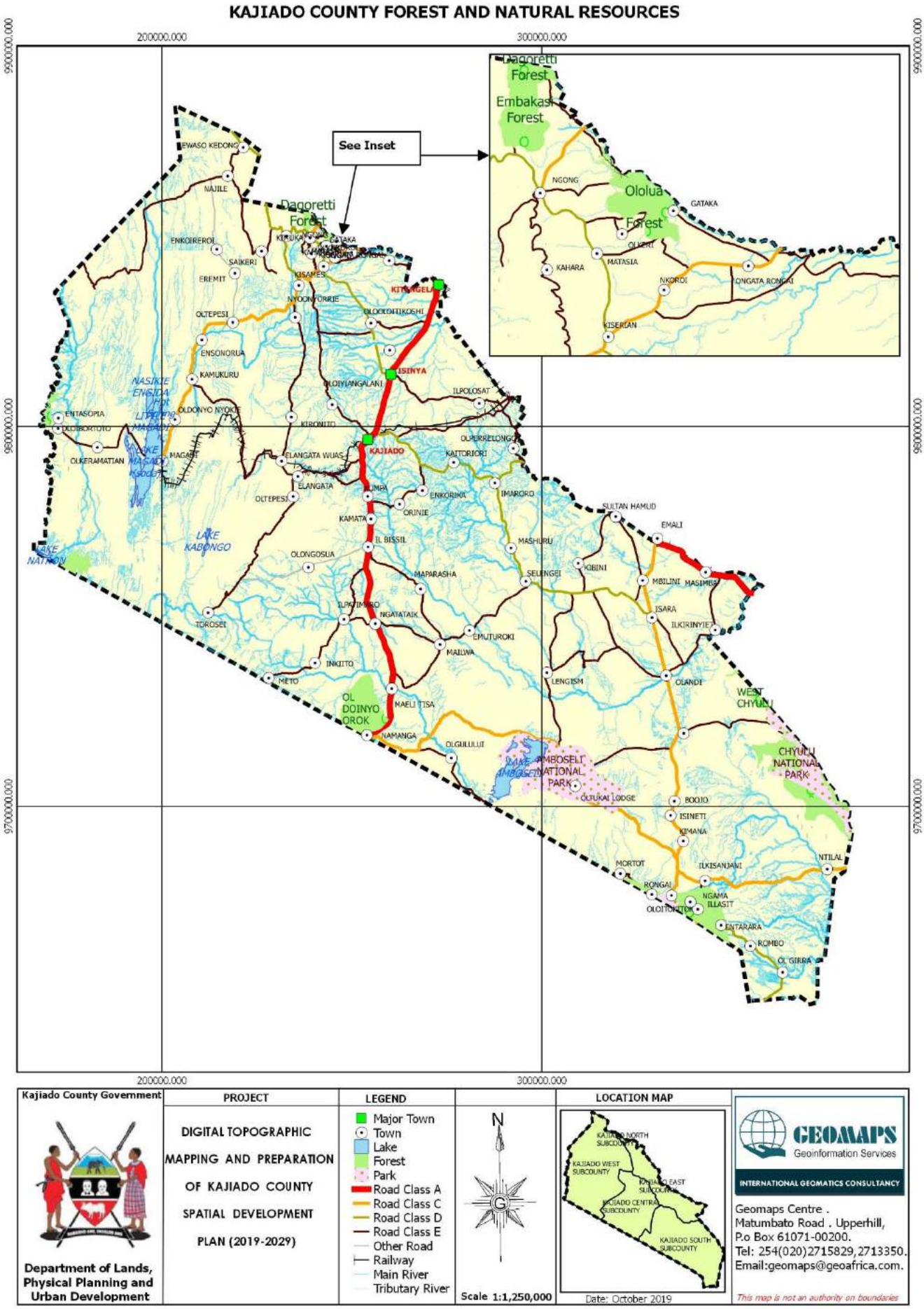
4.12 Biodiversity Resource

Kajiado County is rich in wildlife, particularly the large mammals such as elephant, buffalo, hippopotamus, lion, leopard as well as zebra, giraffe and wild beast. The potential for wildlife conservation and development of eco-tourism is due to optimal climate, agro-ecological zones and topography. Among the wetland areas that presently support eco-tourism are Amboseli Swamps, Shombole swamp, Lake Magadi and the associated hot springs. Spot fishing is a popular activity in Rivers Kiboko and Ewaso Ng'iro, as well as in an-made dams with introduced species of fish.

4.12.1 Forestry

The County has a total forest area of 16,866.9 ha comprising of indigenous and exotic forests. A total of 15,626.8 ha of the forest land is gazetted forest while 1,240 ha is community land. The gazetted forest areas are found at the border areas of the County, mainly Ngong hill, Posimoru forests and Oletukat (3,077 ha), Oloitokitok (765.8 Ha), and Namanga (11,784 ha). Forest in trust land includes Embakasi (573 ha) and Oloolua (667 ha) (Map 4.8). The forest resources available in the County include timber, firewood and charcoal. Trees and other plants are a source of the widely used traditional medicines. The local forest area has been diminishing rapidly because of excessive logging for firewood and also heavy destruction by wild animals congested in the parks and animal conservation centres.

Forestry devolved functions have been taken by the signing of TIPS from County forestry office to County department of environment. Current interventions to curb reduction of forest cover includes reafforestation in which over 150,000 tree seedlings were planted in 2017 Countywide through donations to institutions, planting in County forests and public parks. Delineation of boundaries and afforestation of water towers such as the Entarara forest and forest guards have been recruited to deter encroachment.



Map 4.8: Natural resources in Kajiado
Source: Geomaps, 2017

4.12.2 Wetland Conservation and Management

Wetland and are widespread in Kajiado because of rolling terrain coupled with seasonal rainfall. The hydrological conditions of wetlands in the County vary from permanent inundation by shallow water permanent soil saturation or periodic soil saturation. Wetlands are closely associated with permanent rivers, springs and lakes and are characterised by large seasonal variations in size. Wetlands occur in the form of swamps, marshes, springs, seasonal and temporary pools.

Wetlands are therefore important focal points for human activities and animal habitat being refugia for wildlife and livestock, especially during prolonged dry periods. Pastoral communities that live in the drylands depend on wetlands for water, forage and minerals. Wetlands also play a vital role in the hydrological cycle and in stabilizing the underground water table, thus making underground water accessible to people through shallow wells and boreholes.

Wetlands in Kajiado County covers about 2% of the total area, most of them occurring in the high-water potential areas of Ngong Hills, Mau-Nguruman escarpments and Mt. Kilimanjaro (Gichuki, et al, n.d). Fifteen wetlands ranging in size from 10 to 15 000 ha comprising of lakes, rivers, swamps, marshes, floodplains, natural springs, man-made dams, ponds and pans. Permanent freshwater wetlands provided water for domestic and livestock consumption and for irrigation. Subsistence fisheries and livestock grazing took place in some permanent freshwater wetlands. Aquaculture for fish production and control of water-based disease vectors was a rapidly growing community activity. The primary threats to wetlands are due to pollution, siltation and colonisation by exotic species.

The permanent wetlands of Kajiado County cover approximately 421 km^2 (equivalent to 2% of the total surface area). The two main lakes are Magadi, and Amboseli. Lake Natron which is at the Kenya-Tanzania border supports Shomplole conservancy. Lake Magadi is 32 km long and 3 km wide that lies in an endorheic basin formed by a graben, it occupies the lowest level of a vast depression, and its bed consists almost entirely of solid or semi-solid soda. The lake offers a beautiful landscape and rewarding bird watching opportunities. There is one species of fish that is found in the Lake Magadi. Tilapia grahami, a type of small tilapia, have adapted to living in the harsh conditions, and are normally found in the lagoons on the lake's periphery.

Figure 4.3: Lake Magadi

Lake Amboseli (1,125 m above sea level) is a seasonal lake with very alkaline water, usually dry and extremely dusty. The lake is recharged by diffuse flows from groundwater seepage and minor surface flow from the Namanga and Sinet Rivers Most of the "lake" is inside Amboseli National Park, although the southwestern end is outside park boundaries. The upper tip of Lake Natron is in Kajiado County fed principally by the River Ewaso Ng'iro South and therefore qualifies as a transboundary resource and a significant flyway path for migratory birds and many other species. Lake Natron is within the Lake Natron Basin, a Ramsar Site wetland of international significance and famous as a breeding ground for 2.5 million lesser flamingoes in East Africa. The lake is threatened by the planned hydroelectric power plant on the Ewaso Ng'iro in Kenya that would cause dilution to this breeding ground may still be serious and the proposed development of a soda ash plant on its shores.

The County has 5 shallow lakes, 59 permanent streams and springs, 135 water storage dams and pans and 381 shallow wells and boreholes, Map 4.4 & Map 4.7. Permanent wetlands play a vital role in recharging with water underground aquifers. Most of the water resources are underground and hence, the local population depends largely on shallow wells and boreholes for their domestic and livestock water needs. Seasonal wetlands were widely scattered and tended to vary considerably both in size and location. The distribution of all wetlands, however, was strongly influenced by the drainage pattern, local topography, soil and geological characteristics (Gichuki, Oyieke and Ndiritu, n.d.).

The spatial distribution of wetlands is within three major drainage basins, namely, the Athi (10 553 km^2), Rift Valley (7260 km^2) and Amboseli (3292 km^2). The wetlands in the Athi basin are associated with River Mbagathi which originates on Ngong Hills (2459), River Kiboko which originates on Endoinyo Narok (2025 m) and River Tsavo which originates on the northern slopes of Mount Kilimanjaro (5895 m). These rivers supply water into River Athi, one of Kenya is two major rivers that drain into the Indian Ocean.

The Rift Valley wetlands are the alkaline Lake Magadi (95 km^2), moderately alkaline Kwenia (4 km^2), Kapongo (3.6 km^2) and Loonkujit (1.8 km^2). There are also hot springs, especially south of Lake Magadi and on the northern shores of Lake Natron. Apart from shallow lakes, the mean depth being 40 cm, and pans, there are also freshwater marshes, mudflats and a floodplain associated with the River Ewaso Ng'iro (South). That floodplain (80 km^2) has abundant tall grass and marshes that regulate river flow and reduce sediment load into Lake Natron. The River Ewaso Ng'iro receives water from the Mau Hills (3098 m), the Loita Hills (2249 m) and the Nguruman escarpment located on the western shoulders of the Rift Valley. Amboseli basin, on the other hand, is an internal drainage basin situated north of Mount Kilimanjaro. Lake Amboseli (140 km^2) is the main wetland, which though seasonal, receives regular water supply from River Namanga. The river originates on Meto Hills (2200 m) and flows through a marsh at Namanga town and through dry woodland before it enters the lake. The basin also receives both surface runoff and underground water supply from Mount Kilimanjaro. The seepage of underground water in the basin maintains a series of freshwater marshes, swamps and springs on the eastern shores of the lake. In addition, there are also seasonal wetlands, such as Kimana pans which fill with water during the long-wet season.

Man-made wetlands are common features that provide domestic and farm water supply, fish rearing and wastewater treatment. Their water quality is associated with local differences in water source, rock type and dam sizes. Pokeny dam in central Kajiado and Entosopian fishpond near Nguruman escarpment contain freshwater and fish. Serena lagoon is constructed in Amboseli National Park and Sampu lagoons located on the outskirts of Kajiado town were constructed for wastewater treatment. The lagoons supported emergent aquatic plants, particularly at the edges that could be used as cattle feed.

4.12.3 Geomorphosites

Geomorphosites are geomorphological landforms that have acquired a scientific, cultural/historical, aesthetic and/or social/economic value due to human perception or exploitation. Geomorphosites are becoming great tourist and recreational assets. Located about 22km southwest of Nairobi, Ngong Hills are a popular weekend destination for visitors from Nairobi and beyond. There is a walking trail along the peaks of Ngong Hills - which offer a great

walking safari experience. Athletes can be spotted in the mornings running up and down the slopes. Additionally, Nyiri Desert lies some 80km east of Lake Magadi between Amboseli, Tsavo West and Nairobi national parks. Parts of the desert, which is on the rain shadow of Mt. Kilimanjaro have dense growth of thorny trees that provide shelter to a sizeable population of elephant, rhino, leopard, lion, impala and other animals.

4.12.4 Wildlife Management

Wildlife areas are in Athi-Kaputiei ecosystem; the South Rift (Magadi and Natron lakes region); the Amboseli and West Kilimanjaro ecosystem Most of the wildlife in the County are concentrated in the Amboseli National Park, and animal conservation areas of Chyulu hills and Kimana. The main wild animals are elephants, zebra, gnu, hippopotamus, buffalo, spotted hyena, waterbuck, Maasai giraffe, bushbuck, Thompsons and grant gazelle, impala, lion and cheetah. There is also rare presence of the gerenuk and the fringed-eared Oryx in the arid northern part of the park. There are also about 420 different species of birds in the park, the largest being the Ostrich. Amboseli National Park is one of Kenya's most popular safari destinations. The park is located about 260km from Nairobi at the foot of Mt. Kilimanjaro. It offers rewarding opportunities to view African lions, elephants, zebras, hyena and other wild animals.

Amboseli ecosystem has an elephant population of about 1400 individuals. These elephants have been a major driving force in the ecology of the Amboseli Ecosystem and are closely associated with habitat changes in the Amboseli National Park. The elephants have been the subject of one of the longest elephant studies in Africa and as a result of the long and close interaction with researchers, the elephants are approachable giving visitors' excellent opportunities for watching them at close range. They further attract a lot of interest from wildlife researchers. Though a semi-arid environment, Amboseli ecosystem supports a wide range of ungulates, which in turn support carnivores such as lion, leopard, cheetah, hyena, jackals, civets, and servile cats. This agglomeration of ungulates makes Amboseli an important wildlife conservation area in Kenya. The ungulates habitat utilization pattern is similar to that of the Maasai livestock and thus, Amboseli Ecosystem is a test case of how wildlife conservation and pastoralism can coexist.

Amboseli National Park is one of the 60 Important Bird Areas (IBAs) in Kenya and thus it is recognized as globally significant for bird conservation. The ecosystem has a rich birdlife, with over 400 species recorded, of which 40 are birds of prey. It has globally threatened bird species (e.g. Lesser Kestrel), restricted-range birds that are found only in a very small area such as the Taveta golden weaver, bird species that live only in a particular vegetation type such as the Grosbeak weaver, and regionally threatened bird species

such as Martial eagles. The bird life in Amboseli is diverse due to the varying habitats. In October-December when the rains are on or about, the local birds are joined by migrants such as European storks from the Northern hemisphere, sometimes in fairly large numbers. Most of the carnivore species, including leopard, lion, cheetah, and caracal, hyena, and serval cat can be seen easily in the Amboseli Ecosystem. These carnivores rank high as a tourist attraction in the Park and adjacent areas. They also play a significant role in controlling the herbivore populations (Amboseli Ecosystem Management Plan 2008 – 2018).

Athi-Kapiti ecosystem witnesses numerous conflicts because of its closeness to major settlements areas of Nairobi city, Ong'ata Rongai, Kiserian, Kajiado, Kitengela and Ngong townships. The area has several Group Ranches, namely adjacent group ranches, namely Kimana/Tikondo, Olgulului/ Olararashi, Selengei/Lenkism, Mbirikani, Kuku, Kapiti, Osilalei, and Mailua.

The South Rift ecosystem includes Lake Magadi and surrounding areas in Kenya, extending southward to Lake Natron in Tanzania. The ecosystem extends as far north as the Ngong Hills, and as far west as the Nguruman Range. The Namanga-Magadi area (5,513 km^2) includes the ranches of Meto, Torosei, Mbuko, Elang'ata Wuas, Olkiramatian, Lorng'osua, and Shompole. The area consists largely of gently undulating plains and of hilly landscapes flanking the Rift Valley.

4.12.5 Wildlife Conservancies in Kajiado

Kajiado County is richly endowed with wildlife. Since most of the wildlife is in private land, groups of landowners have organized themselves into conservancies. The conservancy concept is organized in terms of ecosystems, and the one covering Kajiado County is the Athi-Kapiti Conservancies and Amboseli Ecosystem Trust. The Athi Kapiti Wildlife Conservancies occupy the expansive dispersal area around the Nairobi National creating a key corridor for wildlife movements between the park and the Kajiado and Amboseli plains. Table 4.7 shows the 17 conservancies and their area of coverage.

Table 4.7: Conservancies under Amboseli Ecosystem Trust

No	Name	Year established	Area ha.	No. Households
1.	Kanzi	2002	2,400	17,000
2.	Kitirua	1984	12,140	11,485
3.	Sidai Oleng (Kimana)	1992	2601	844
4.	Satao Elerai	2005	2023	3,000
5.	Eselenkei	1997	4300	3,000
6.	Tawi-Kilitome	2008	2428	100
7.	Oldonyo Waus	1996	243	4,667
8.	Kitenden	2013	10,400	2,600

No	Name	Year established	Area ha.	No. Households
9.	Motikanju	2010	2832	6064
10.	Osupuko	2008	1008	42
11.	Nailepu	2009	1656	64
12.	Oltiyani	2012	2023	736
13.	Nalarami	2013	2428	10,000
14.	Ilaingurunyoni	2010	12,000	11,485
15.	Olenarika	2010	10,000	11.485
16.	Olepolos	2008	1080	6
17.	Rombo Emampuli	2010	10,000	3684
	TOTAL		79,562	86,811

Source: KWCA, 2016. Study of Wildlife Conservancies in Kenya. 2016.

The Athi-Kapiti Ecosystem has witnessed the greatest HWC resulting from increased urbanisation and irrigated farming in the area.

Table 4.8: Conservancies under Athi-Kapiti Conservation Area

No	Name of Conservancy	Year established	Area ha.	No. Households	Locality/ County
1.	Ereto Kipeto	2014	121	300	Kajiado
2.	Olerai Wildlife Community	2007	3520	1440	Kajiado
3.	Rimpa	NA	NA	NA	Kajiado
4.	Silole	NA	NA	NA	Kajiado
5.	Kwa Kyelu Sanctuary	NA	809	NA	Machakos
6.	Lisa Ranch	1988	2428	7	Machakos
7.	Machakos	NA	4047	NA	Machakos
8.	Kipwa	NA	122	1	Machakos
9.	Nanapa	NA	3600	29	Konza
10.	Ulu	NA	NA	NA	Makueni

Source: KWCA, 2016. Study of Wildlife Conservancies in Kenya. 2016.

4.13 Energy Resources

4.13.1 Geothermal Energy

Currently, Kenya is number seven on the world and Africa's number one amongst the geothermal energy producers with a total of 657 MWe. Kajiado County belongs to the south Rift group of centres of potential geothermal power. There exists potential to generate electricity from geothermal resources specifically in Lake Magadi and Shompole area in Kajiado County. A Chinese company Kaishan Holding Group Limited, has received a license to explore geothermal power in Magadi area. Investment in this source requires

comprehensive feasibility studies to establish its respective capacities as well as supervisory mandate to safeguard community interest.

4.13.2 Petroleum and Natural Gas

A water drilling contractor had struck gas at a shallow depth of about 200 m. at Kipeto (Business Daily, October 2017). The find is located in the eastern branch of the Rift Valley where geological fissures may have led to hydrocarbons seepage to near the surface. The Kajiado gas-strike location is in the oil exploration block T14 called the Magadi Basin, which hitherto was allocated to the National Oil Corporation of Kenya (NOCK) and stretches from the Tanzania border at Lake Natron to the upper parts of Nakuru County. The investigation is not complete but the find is able to generate speculation.

The analysis of the gas indicates that the methane concentrations were 38% and likely of thermogenic origin while the lack of longer chain alkanes indicates possible biogenic source. Further analysis to differentiate between multiple thermogenic source to analyze the carbon of ethane in at least one of these samples as well as the geological and geophysical field studies to identify the potential source rocks, possible migration pathways and time of organic matter maturation.

The gas sample will likely test positive for either methane gas — the simplest form of hydrocarbons — or natural gas which includes methane and larger molecules. Deep in the ground, the gas could also be accompanied by crude oil. NOCK and other investors have embarked on some high yield boreholes in Magadi and erected 10,000-litre tanks, opening of roads and establishing health centres to serve the community as their Community Social responsibility

4.13.3 Wind and Solar Energy

The wind energy is a key renewable resource that will mitigate the country from the impact of climate change. The proposed Kajiado Wind Power Station, also Kipeto Wind Power Project, is a potential 100 megawatts (130,000 hp) wind-powered electricity power station. The power station is located in the foothills of Ngong Hills. The power station is owned by a consortium of investors, financiers and interest groups, including the International Finance Corporation, and local community trust. In July 2015, KEL, the owner/operator of the power station, signed a renewable 20 year power purchase agreement with Kenya Power and in January 2016, Kipeto Energy Limited Company 9KEL) contracted the Chinese company "China Machinery Engineering Corporation" to perform engineering design, procurement and construction (EPC) of the wind farm, at a contract price of KSh 22.6 billion (approx. US$225 million).

4.14 Minerals

The important minerals (Map 4.9) are associated with Mozambique (basement) complex that involved deposition, folding and metamorphism creating a complex of mineral formation including petroleum and natural gas. The other formation includes sediments of middle Pleistocene typified as the Olorgesaillie lakebeds, a lacustrine series with much diatomite, mammalian fossils and artifacts, comparable to the Kariandusi sediments near Gilgil and the Kanjera Beds in the Kavirondo Gulf off Lake Victoria, all associated with Rift Valley formation. The main minerals in Kajiado County include petroleum and natural gas, limestone and marble and gypsum; other extractive resources are sand, ballast, gravel and soda ash. In spite of their economic contribution, these activities have a potential to socially and economically destroy and degrade the environment, thus need for sustainable use of resources.

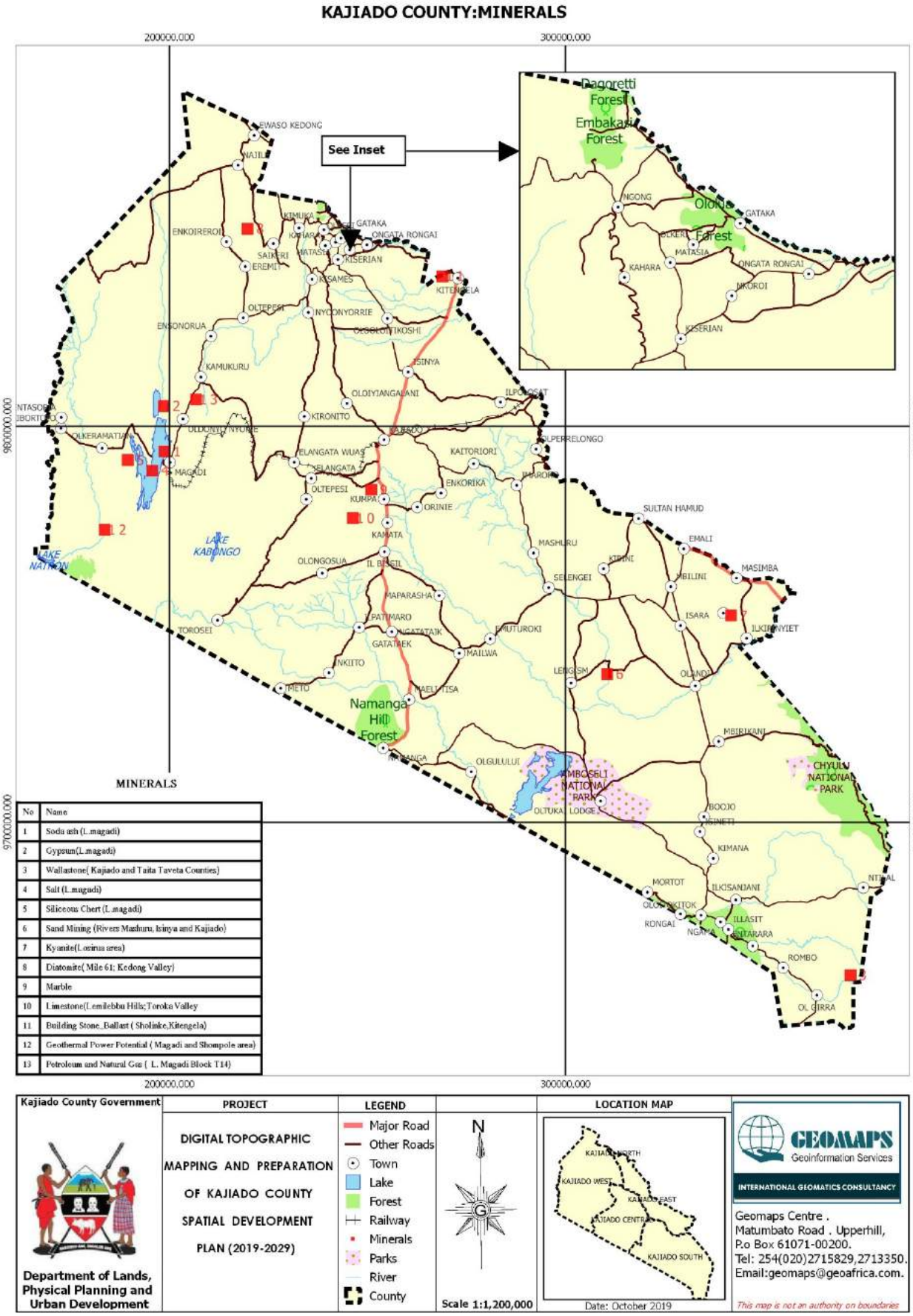
The major mining companies are Tata Chemicals, Simba Cement, SpareTech Quarry, Kisumu Concrete, Kenya Marble, High Tech Concrete, Athi River Mining, Athi Minerals, Kibini Quarry, Karsan Ramji and Shivdham Enterprises among others.

4.14.1 Soda ash

Mining of minerals is an important economic activity in Kajiado County. The most important mining activity is the exploitation of soda ash in Lake Magadi. The lake has large quantities of solid purest trona (sodium bicarbonate, sodium chloride and other derivatives). Tata Chemicals Limited which is the sole miner of soda ash has led to the improvement of the standards of living of people living around the lake by providing employment directly or indirectly and through corporate social responsibility initiatives. Approximately 720,000 tons of soda ash are harvested per year in Magadi and this makes it the largest producer both in the country and in Africa (ASDSP, 2014) and this makes it the largest producer both in the country and in Africa. Soda ash accounted for nearly 51% of mineral exports in 2001. The raw materials produced by the company are used in the manufacture of table salt, glass, industrial acids and food preservatives.

4.13.2 Limestone

Quarrying provides both stones for construction and raw materials to cement factories. Limestone occurs in four main areas; the Lemilebbu hills, Lundiro, the Turoka Valley where the Kenya Marble Quarries are situated, and best developed in the limestone bands on the western side of Martiolkimbai, *Matheson, 1966*. The outcrop of kunkar descends 30m further down the side of the Turoka valley than the limestone. Northern and central Lemilebbu hills respectively contain no appreciable impurities while smaller outcrops of limestone within the gneisses have relatively higher impurities.



Map 4.9: Minerals in Kajiado
Source: Geomaps, 2017 & Matheson (1966)

The most frequent colours are grey and brownish-grey, while blue is less common but occurs sporadically throughout the area.

Besides the large-scale miners, a group of miners called Oloibor Soit established a cooperatives "chama' which, with the assistance of the Kajiado County Government, facilitated them to acquire a mining permit. The limestone is mined to produce various products including preparation of calcium stock feed, building stone, stone tiles and chipping ballast. Farmers also to use lime-based fertilizers to improve soil fertility, reduce soil acidity and improve nutrient uptake by crops for higher crop production.

4.14.3 Marble

Marble is a rock composed of recrystallized carbonate minerals. In geology, the term "marble" refers to metamorphosed limestone. Marble is commonly used for sculpture and as a building material. The Kenya Marble Quarries Ltd is the oldest company located in Mile 46, Kajiado County.

4.14.4 Wollastonite

Kenya has one of the most important deposits of wollastonite in the world. Kajiado County also has economic pockets of wollastonite (Nyamai et al. 2003). Formed as a result of regional or thermal metamorphism raising temperatures between 400 to 450^{0}C, it is composed as a mixture of calcium (Ca) and silicon and oxygen (SiO2, silica) forming CaSiO3. Pure wollastonite is bright white; the type and amount of impurities can produce gray, cream, brown, pale green, or red colours.

Wollastonite, first, acts to reinforce products such as plastics, paint films, and green ceramic bodies much like reinforcing rods do in concrete and secondly, promotes early release of gases in ceramic production. Its production in the County is currently unexploited.

4.14.5. Sand Mining

Sand for the construction industry has become big business, especially with the rapid urbanisation and some counties banning the trade. Sand is dug from the rivers such as the Kajiado, Turoka and Mataraguesh. Sand harvesting is active in Mashuuru, Sajiloni, Eselenkei, Turoka stream, Isinya and Kajiado central sub-counties in all rivers which are seasonal. The upgrading of quartz-rich sand especially in rivers draining the quartzites may be used for glass making.

Sand harvesting has very grave environmental consequences including depleting water buried in river channels, destruction of riparian land and pollution of water. The National Environment Management Authority (NEMA) has drafted National Sand Harvesting Guidelines which requires miners to obtain licenses from NEMA after an environmental impact assessment, demonstrate technical know-how and use an open-cast method, without underground extraction. Makueni County has passed a Sand Conservation

and Utilisation Act of 2015 to ensure that there is control on the manner sand harvesting is done. The County Government has insisted on compliance on sand harvesting regulations to conserve river line ecosystems and access roads through the ban on overloading. County Sand Policy is at advanced stage of discussion by stakeholders.

4.14.6 Building stone

Building stone is being quarried in Kipeto, Sholinke, Ngurunga and Noompopong, and ballast mining around Kitengela. Much of the quarrying is unregulated with adverse environmental consequences (Mbandi, 2017). With proper planning, Kajiado County is posed to tap the growing construction industry that continue to attract foreign investments (Mwende, 2016).

4.14.7 Graphitic Gneisses

The largest outcrop of graphitic gneiss is found in the Lemilebbu hills, underlying the main quartzite horizon. Its formation is due to metamorphism of organic-rich muds and carbonates accompanied by localized fluid flow associated with the development of anatectic pegmatites. Potentially economic quantities of kyanite are associated with the gneisses in the Losirua area, and the same area also contains a source of graphite (Baker 1963), the latter occurring in other rock types but never attains the status of a major constituent. No estimates of the crystals have been done in the County.

4.14.8 Siliceous chert

Lake Magadi is also well known for its extensive deposits of siliceous chert. Chert is the second most abundant chemically precipitated rock after limestone. There are many varieties including bedded cherts that formed in the lake and intrusive dike-like bodies that penetrated through overlying sediments while the silica was soft. Most famous is "Magadi-type chert", which formed from a sodium silicate mineral precursor *magadiite* ($NaSi_7O_{13}(OH)_3$ $4H_2O$) that was discovered at Lake Magadi in 1967 but is thought to have little value.

4.14.9 Garnet Gneisses

Garnetiferous bands occur throughout the Turoka Series but are best developed along the eastern side of Martiolkimbai. The garnets stand out from the surface of the rock giving it a knobbly appearance, but in thin section are seen to be often altered to chlorite with the separation of iron ores. The garnets vary in size from half an inch across to almost a pin-head. Some of the larger garnets contain inclusions of quartz and hornblende but are not arranged in a helicitic fashion. The internal structure of the garnet consists of extremely large crystals since almost the entire band is formed of garnet with very little interstitial material.

Other associated gems include pegmatites, magnetites and tourmaline are frequent throughout the Basement System; the discordant types are usually composed of large crystals of perthite. This potassic felspar is suitable for use in the manufacture of china and glass.

4.14.10 Diatomite

Diatomite deposits are found on the rift floor at the sites of ancient lakes, first identified at Mile 61 on the Magadi railway in 1916. The deposit is situated at the boundary of the Kajiado and Magadi areas, where the Rift Valley floor is formed by a number of north-south faults. The diatomite occurs in two fault troughs formerly occupied by lakes where the diatoms, whose skeletons form the deposit, lived. Many other diatomite outcrops are found in similar fault troughs in various parts of the Rift Valley such as Kedong Valley further north. The deposit extends one and a half kilometers from north to south, with a breadth of some 100m., and is bounded on both sides by volcanic scarps.

The diatomite varies from a coarse, green type, through a dark, blue-grey rock, to greenish and yellowish mixtures of diatomite and clay. This becomes whiter before finally grading to the best, light and porous, white diatomite. The larger eastern deposit attains a depth of 3.0m at the railway embankment, and about 1,200m. It is estimated that the diatomite covers an area of 30 ha and contains some 425,000 tons of diatomite. The northerly extension is very shallow, covering some 3 ha which contains 16,000 tonnes. The isolated patches south of the main outcrop have a combined area of 1.2 ha, with about 16,000 tons. In the western deposits, covering 11ha, there might be 161,700 tons of diatomite, which reach a depth of 2.8m at the northern extremity. The total has been estimated to be about 620,000 tonnes.

4.14.11 Quartzite

The massive, well-jointed pure quartzites of the northern and central Lemilebbu hills and also from a hill adjoining the Kajiado-Namanga road are the most resistant rocks. They are virtually homogeneous and coarsely crystalline; in colour they are white or grey on exposed surfaces but translucent in thin splinters. Pitting would be necessary to ascertain the depth of iron-staining. Once a quarry has been established at a suitable site the tonnage available may be estimated.

4.14.12 Gypsum

There is potential of gypsum mining in Lake Magadi. Research done in Kajiado East Sub County covering Enkirigirri, Olturoto, Ilpolosat and Nkama locations demonstrated that the bacteriological concentration in groundwater indirectly arising from gypsum mining expose the public to waterborne diseases (Omoti et al, 2016).

4.14.13. Radioactive minerals

These include rear earth such as tourmaline and zircon, which are not sufficiently radioactive or abundant to work profitably, or the potash felspars. The thick non-radioactive soil cover over much of the Basement System tends to blanket the location of radioactive minerals beneath it.

4.14.14 Copper

Copper staining was seen in gneisses of the Basement System but consists of small films of chalcopyrite along the foliation and is infinitesimal in amount.

4.14.15 Road-metal and railway ballast

A cross the Kapiti Plains, the Upper Athi Tuffs are used as road metal and railway ballast from pit mining and used for giving a stony surface which is rough but passable in wet weather. Further south where the road lies on the Basement System, murram is preferred. In the Rift Valley the olivine basalts and alkali trachytes are also used for these purposes.

4.15 Emerging Risks to Exploitation of Natural Environment

4.15.1 Climate Change

Change in altitude, and seasonal variation in surface area and water temperature between wet and dry periods in major wetlands of Kajiado County reflects the seasonality of the availability of moisture (MoALF. 2017). Assessment of historical temperature trends over 25 years (1981 to 2005), indicate that mean first season temperatures have increased by approximately 0.5°C, while second season temperatures decreased slightly ≤0.1°C. Analysis of precipitation trends over a 35-year period (1981-2015) showed that average long seasonal rainfall had decreased moderately, while that of the second season had increased by more than 50mm particularly since 2000. Because of these changes in temperature and rainfall, the first season has experienced a large increase in the number of heat stress days affecting water resources and crop productivity, while flood risk in both seasons has increased (MoALF. 2017).

Water surface temperature was higher in Lake Magadi and Lake Amboseli than the other wetlands surveyed in both wet and dry periods. Marginal increases in water surface temperature were noted during the dry period at Lakes Kwenia (3°C), Lakes Magadi (2°C) and Kapongo (2°C). Fluctuations in wetland size were attributed to high ambient temperature and the associated high rates of evaporation and evapotranspiration. Seasonal wetlands that occurred in shallow depressions or flat areas without drainage outlets, were

widespread in Climate projections for the period 2021-2065 based on two representative concentration pathways (RCPs16) indicate that under the low emissions scenario mean temperatures will decrease moderately. However, under the high emissions scenario temperatures increase significantly. Under both scenarios, flood risk is expected to increase in both seasons, however, erosion risk is not expected to change significantly (KCSAP/ROK/WB, n.d.). Climate change adaptation and mitigation measures need to be embedded in all programmes. Carbon markets, forestry development, green energy development and awareness creation go hand in hand to reduce community vulnerability to climate change. The County requires to implement and or adapt the national climate change response strategy.

4.15.2 Natural Disasters

Disasters induced by natural and anthropogenic hazards have effects on development. Because of the seasonality of rainfall, flat river valleys and soil characteristics, flash floods is the most common natural disaster in the County. Drought is common in the southern portion of the County. Here the possibility of rainfall failure is high and drought affects livelihoods and generally leads to famine. These disasters generally lead to spread of communicable diseases, population displacement, and climate exposure, damage to physical infrastructures, poor sanitation and human-wildlife conflict.

There have been several cases of different disasters causing damage to infrastructure, destroying livelihoods and killing people reported in the County. For example, at least seven people have died and 11 missing after being swept away by raging floods at Fatima South Bridge on River Kandisi in Ong'ata Rongai, Shompole after River Pakase bursts its banks. The March–May long rains of 2017/18 countrywide were 145% greater than those of the long-term averages.

4.15.3 Human-wildlife conflicts

Due to poor land use planning and encroachment of conservancies and wildlife migratory corridors and dispersal areas, human-wild life conflicts are reaching alarming proportions. Human-wildlife conflict (HWC) is a problem that causes suffering both to people and wildlife. Human-wildlife conflict in Kenya takes various forms, including crop damage, livestock predation, human injury or even death, and zoonotic disease transmission. There was an increase of 86% in HWC between the years 2011-2015 (KWCA, 2016). Although the Kajiado County has reiterated its commitment and cooperation for living in harmony with the wildlife, and the Maasai community has been considered as the greatest friends of wildlife, the County has the highest numbers of wildlife (80 %) found outside protected areas.

The conservationist gesture shown by the community towards the wildlife is being eroded by HWC. The challenges of HWC need to be seen in context that the Maasai lost dry-season water and grazing areas to parks and reserves during the demarcation of the parks and reserves, there has been expansion of cultivation, the livestock numbers have increased thus reducing access to dry-season water and pasture Herbivores destroy large tracks of croplands while large carnivore species depredate on livestock. Other problem animals include; monkeys, baboons, giraffes, crocodiles, hippopotamus, and buffalos. Additionally, these animals kill people and destroyed property. In the absence of consultation and participation of the local population, Kenya Wildlife Service (KWS) are viewed as fuelling the conflict by continuously harassing herdsmen. The cost of conserving large and sometimes dangerous animals is often born disproportionately by farmers and others living closest to wildlife (Nyhus *et al.*, 2005).

There have been accusations towards KWS on issues of sharing the 5% from wildlife revenue with the Maasai community as contained in the Wildlife Act 2013. This asymmetrical relationship has been expressed by Hemson, et al (2003) that most benefits from wildlife accrue to employees while losses accrue to livestock owners. About seventy percent of wildlife in Kenya lives outside National Parks and Reserves (Obunde *et al.*, 2005). The wildlife numbers have been declining partly due to exponential human population growth, increasing livestock numbers, and declining rainfall.

The main drivers of HWC is increase in human population, competition for land between wildlife and human beings, putting pressure on the land surrounding parks and reserves, dispersal area, leading to crop-raiding, predation on livestock and attack of humans. The competition is caused by the need for land for agriculture, industrialization and human settlement. Besides land use change, there has been deterioration in wildlife and livestock habitats caused by major land use and cover changes is exacerbated by climate change and variability, piling enormous pressures on pastoralism, ranching and wildlife conservation in African rangelands and protected areas. The Wildlife Conservation and Management Act (2013) devolves wildlife conservation and management rights, opportunities and responsibilities to County governments, landowners and land managers where wildlife occurs outside public conservation areas and sanctuaries. The fundamental causes of conflicts in wildlife areas appear to be policy, institutional and market failures.

While promoting wildlife conservation it is prudent to demarcate and conserve all the wildlife migratory corridors/dispersal areas and enforce the Wildlife Act 2015; fence protected areas; and enhance education and awareness

initiatives in the County. Some of the strategies that have been used to manage HWC include use of livestock guarding dogs, fencing of conservation areas/protected areas, use of chain-link fences around homesteads, education and awareness creation, livestock compensation schemes, improving livestock husbandry and relocation of problem animals among other methods. Effective community-based conservation is central to the future of wildlife in Kajiado because it is crucial to obtain goodwill, effective engagement and collective action of local communities, working in partnerships with various organizations.

4.15.5 Increased Deforestation

Kajiado County is one of the counties that have been affected immensely by deforestation because of its proximity to Nairobi City County and the recent banning of charcoal burning in Makueni. One of the key interventions are, therefore, to curb illegal logging and charcoal burning so as to save the environment from further destruction as well as to increase farm-forestry involves planting trees alongside crops. Kenya Forests Service is promoting this concept in the County to increase forest cover and act as windbreakers. However, forestry is a devolved mandate to the County Government. The County Government plan to partner with solar kiosk and is currently distributing solar power to the community members. Additionally, the County will put in place the necessary legislation and policy to protect the environment.

4.15.6 Protection of existing water catchment areas.

The Kajiado County Environmental Management Bill, 2015 provides for control and management of environmental matters and for connected purposes is the first step to stopping environmental deterioration in the County. Plans are underway for the protection of Ngong hill and Oloitokitok hills (Entarara, Maroroi and Rombo) existing water catchment areas. The protection of existing forests and water catchment areas through patrols and community participation in management and protection activities have also been initiated while enrichment and rehabilitation of existing indigenous forests is being undertaken.

4.15.7 Solid Waste Management

Solid waste management is becoming one of the greatest threats in urbanising areas and especially due to transit vehicles. Pollution by solid waste is noted in all urban areas in Kajiado County. Selection of potential areas for suitable solid waste dumping for Kajiado County, may be determined using an objectively designed model using eight input map layers including topography, urban settlement, roads, wetlands, rivers, forests and protected areas.

The County lacks a proper solid waste management plan or framework. Most urban areas have no dumping sites. The few dumping areas at Kitengela and Ngong town have degenerated to environmental and public health hazards.

Ngong dumpsite, Ngong town
Source: The Star newspaper, September 2019

Noonkopir dumpsite, Kitengela
Source: Abdirizaq Eddle Ibrahim, 2018

4.15.8 Sanitation and Sewerage System

Most urban centres in Kajiado do not have proper sanitation and wastewater treatment plants. There is inadequate sewerage and stormwater drainage systems in most urban centres. These centres drain their wastewater in cess tanks and small natural streams and swamps. Tourist lodges have developed constructed wetlands after it is discharged from conventional water treatment systems. The wetlands purify wastewater making it fit for consumption by wildlife and livestock. Good practices exist that can be emulated in the County.

4.15.9 Environmental pollution and degradation

Threats to wetlands are due to siltation, water abstraction and pollution. Improper activities such as vegetation destruction, heavy grazing and trampling were noted in many wetlands. Unplanned settlements in water catchment areas were noted around Posimoru forests and Oletukat areas. Unplanned water abstraction for agriculture was common along the Entasopia, Embakasi, Rombo, Noolturesh, Onasulu-Muna Rivers and Olpusare wetland areas

The impact of environmental degradation can be devastating on the social, economic, and environmental systems. Environmental degradation is contributing to water pollution and will worsen the quality of the already scarce freshwater. The increase in degraded areas has resulted to decrease of pasture for livestock and low productivity of agricultural land. This has led to resource conflict due to competing demands. Air pollution from industrial activities in Kitengela and flower farms in Isinya poses a health risk and has

made Upper Respiratory Tract Infection (URTI) a common disease in the affected areas.

The mining industry is poised to grow rapidly during this quarter. The effects of dust produced in the mining and processing of diatomite, air pollution from escaped volatiles from the production of soda ash at Lake Magadi, and habitat destruction from quarries and investments in various parts of the County will require strict regulations by the County Government. Additionally, the prevalence of sanitation-related diseases, lack of sewerage system in major towns, lack of adequate safe and clean water; and high rate of open defecation must receive the attention of NEMA and other regulatory agencies. Through stakeholder workshops in each Sub-County and ward, various issues concerning the environment and physiographic characteristic of Kajiado County which were raised by the stakeholders during this process will be resolved. Table 4.9 below provides a summary of the environmental issues that were harvested from stakeholders' consultations.

Table 4.9: Environmental issues identified by stakeholders

Sub-County	Issues
Kajiado Central	• Excess charcoal burning • Rapid soil erosion • Encroachment of fragile ecosystems • Unregulated sand harvesting • Untapped water resources • Inadequate piped water • Inadequate boreholes • Inadequate water for human and domestic animals • Increased land subdivision • Change of land use patterns • Non- adherence to by-laws • Lack of awareness • Poor waste collection & management

Sub-County	Issues
Kajiado West	• Rapid deforestation • Unregulated sand harvesting • Quarry and mining • Untapped water resources • Inadequate piped water • Inadequate boreholes • Inadequate water for human and domestic animals • Excessive charcoal burning • Rapid soil erosion • Encroachment of fragile ecosystems • Unregulated sand harvesting
Kajiado South	• Overgrazing • Encroachment on water sources • Rapid deforestation • Human-wildlife conflict • Water scarcity • Lack of exploration • Human-wildlife conflict • Lack of compensation • Encroachment into natural resources
Kajiado East	• Environment degradation • Rapid deforestation • Pollution from agrochemicals • Air pollution • Noise pollution • Environmental hazards • Lack of sewer system • Poor waste management • Water shortage • Prolonged drought • Overexploitation of natural resources

Source: Report on Stakeholders' consultation (2018)

CHAPTER 5: AGRICULTURE AND LIVESTOCK

5.1 Overview

Kajiado County is one of the most important rangeland districts in Kenya. It covers approximately 21,900 km² (or 3.4% of the surface area of Kenya) (Statistical Abstract, 19 90). Agriculture and in particular the livestock sub-sector is the mainstay of Kajiado County. The agriculture sector plays a critical role in the provision of food, livelihoods and wealth creation including employment opportunities. Land is a major factor in agricultural production. Kajiado County is part of the Arid and Semi-Arid Lands (ASALs) in Kenya which comprise 89% of Kenya's land area. Aridity is the defining feature of the ASALs. The rainfall in the ASALs ranges from 150 mm to 850 mm per year. High temperatures throughout the year lead to high rates of evapotranspiration.

Ecologically, the County has approximately 26,000 ha (1.2%) of land area in ecological zones II and III, 141,000 ha (6.4%) in ecological zone IV and the rest in ecological zones V and VI (refer to Map 4.6). Only 1670 km² in ecological zone II, III and IV receive more than the 500 mm of annual rainfall which can support rainfed agriculture. It is estimated that about 1,989,200 ha (90% of the County) is under natural forage and is used for extensive livestock production in group and individual ranches. This area supports 70% of the human population estimated at 224,560 people, nearly all the wildlife in the district and an estimated 513,633 stock units. There are 51 group ranches and over 375 individual ranches (Kajiado district, 1988). The group ranches occupy 1,520,917 ha (68.8%) of the grazing land and individual ranches occupy 468,283 ha (21.20%) of the grazing land area.

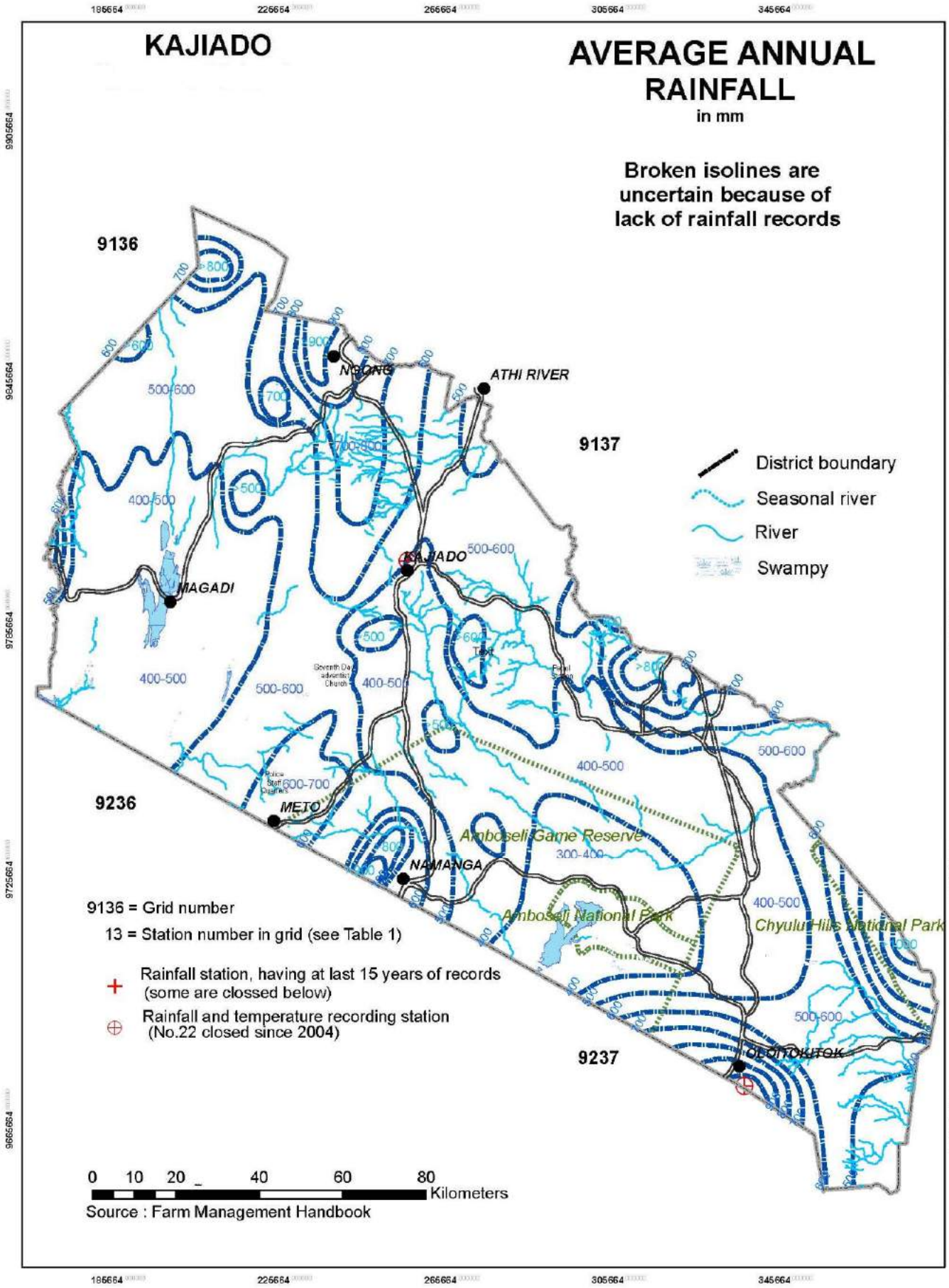
By their nature, arid and semi-arid environments are vulnerable to drought which is becoming more challenging as climate change effects bring more extreme weather events. In such circumstances, the primary challenge is sustainable food security and livelihoods. The County is largely in semi-arid ecological zones IV and V with a majority of its inhabitants being pastoralists. All development in the ASALs must be built on a sound understanding and management of the natural resource base. Protecting the environment, managing drought and enhancing adaptability to climate change is the basis of all development interventions in the ASALs.

The Agriculture sector comprises of the following sub-sectors; livestock keeping, and food and cash crops farming including horticulture and floriculture. Kajiado County has two agricultural production systems: rain-fed and irrigated agriculture. Agriculture in Kajiado County is mainly rain-fed and is dependent on the bimodal rainfall. Irrigation agriculture is carried out mainly in small irrigation schemes. The County targets to “make farming a business enterprise by encouraging people to do value addition in agriculture,

livestock, and fisheries." Livestock herd sizes are considerably large because of communal grazing with low use of purchased inputs like feed, drugs and artificial insemination. The main livestock reared include Dairy cattle, poultry, sheep, goats, beekeeping and rabbits. Aquaculture is also gaining a foothold in the County. The agriculture sector plays a critical role in the provision of food and the creation of employment.

5.2 Crop Production

Only 1670 km^2 or 167,000 Ha in ecological zone II, III and IV which receive more than the 500 mm of annual rainfall can support rainfed agriculture. This is 7.6% of the County which can support crop agriculture. Currently, this is still not possible due to the effects of climate change. Small scale farms have an average of 9 ha while large scale farms average size is 70 ha. The total acreage under food crops is 1,067 ha and the acreage under cash crops is 60 ha. Most people have small farms that are irrigated in productive areas of Loitokitok, Isinya, Nguruman, and Ngong. Large farms of more than 50 acres are mostly for rain-fed agriculture although this is slowly becoming unpopular because of irregular rainfall patterns. Map 5.2 shows the rainfall distribution in the County.



Source: Farm Management Handbook

Map 5.1: Rainfall Distribution in the County

5.2.1 Size of land under Agricultural Production

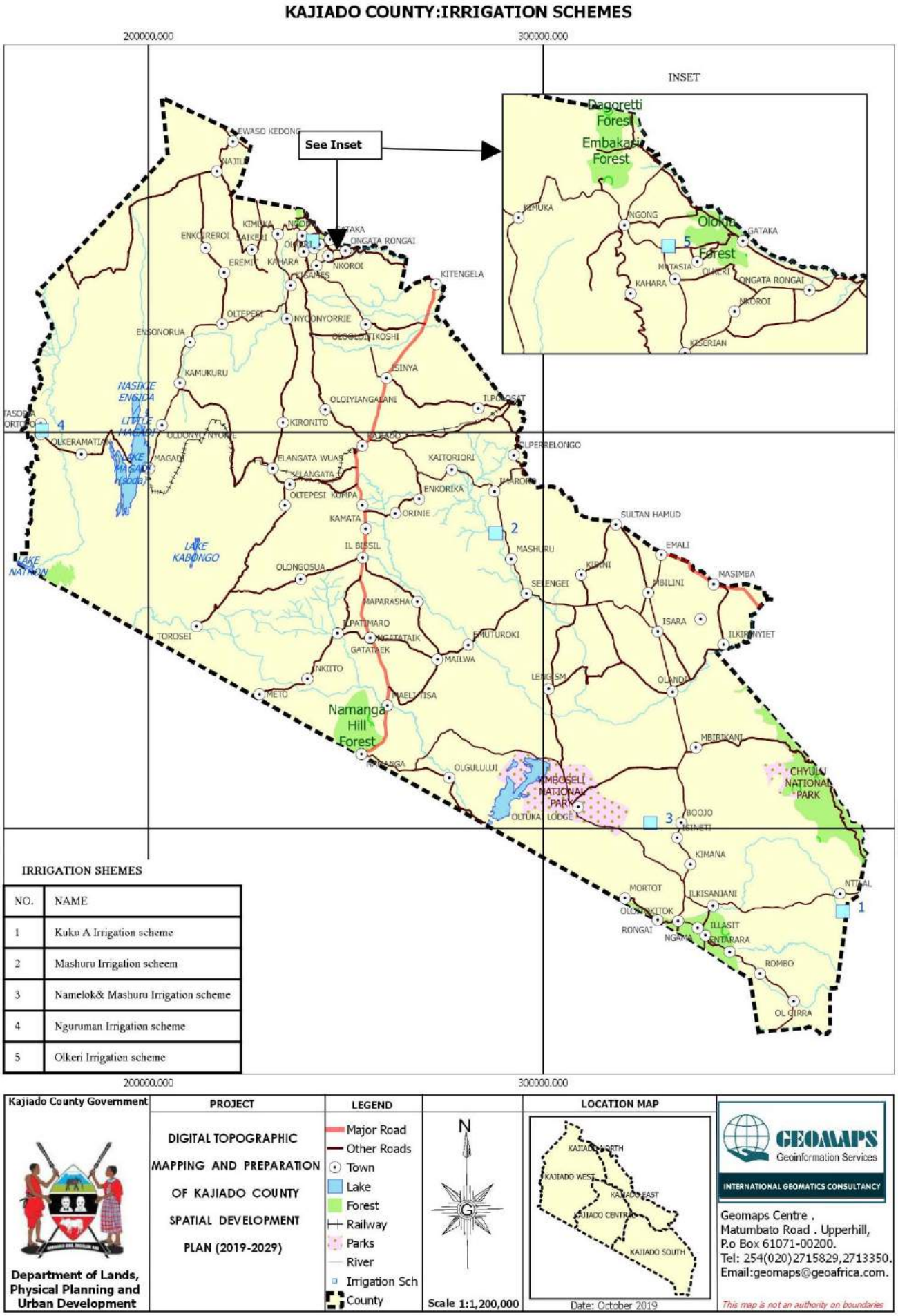
Majority of the people (21.6%) have less than one acre of land under agriculture. In Kajiado South the majority have between 5-10 acres, 32.7%. This County has the potential for agricultural production that can be exploited (see 5.1).

Table 5.1: Agricultural Production per Sub-County

	Acreage under crops						Total
	<1 acre	1-2 acres	3-5 acres	5-10 acres	>10 acres	No answer	
Kajiado County overall	21.6%	19.8%	8.3%	4.2%	.8%	45.4%	100.0%
Sub-County Analysis							
Kajiado Central	27.2%	12.5%	2.9%	1.1%		56.3%	100.0%
Kajiado North	9.6%	2.4%	1.2%			86.8%	100.0%
Kajiado South	1.8%		23.6%	32.7%	1.8%	40.0%	100.0%
Kajiado West	33.7%	39.7%	8.2%	1.6%	2.2%	14.7%	100.0%
Kajiado East	25.0%	37.5%	18.8%	12.5%		6.3%	100.0%

Source: Kajiado County Spatial Planning - Household Survey Data 2018

The main food crops produced in the County are maize, beans, potatoes and vegetables. Commercial farming of onions and tomatoes is done though some are grown in small quantities. Horticulture is also gaining popularity through irrigation schemes mainly in Kajiado East, Kajiado South and Kajiado North Sub-Counties. The area which have been used for irrigation is approximately 6000 Ha where furrow irrigation is dominant at 70 percent and 20 percent drip irrigation system. There are 80 small scale irrigation schemes and 2 large scale irrigation schemes. The two (2) large scale irrigation schemes are, Namelok in Kajiado South and Ngurumani in Kajiado West. See Map 5.2 on Irrigation Schemes.



Map 5.2: Irrigation Schemes in the County

Source: Geomaps, 2017 & KCG

Rain-fed agriculture is not sustainable due to erratic rains. In a majority of the Sub-County's subsistence agriculture is the mainstay. The majority of subsistence farmers are from Kajiado East at 58.7%. Table 5.2 shows the respondents per sub-county.

Table 5.2: Type of agriculture in the sub-counties.

	Type of agriculture practiced				Total
	Subsistence	Commercial	Both	No answer	
Kajiado County	33.1%	7.6%	12.2%	47.1%	100.0%
Sub-County analysis					
Kajiado Central	26.2%	12.1%	7.3%	54.4%	100.0%
Kajiado East	50.0%	14.3%	14.3%	21.4%	100.0%
Kajiado North	9.0%	3.0%	1.8%	86.2%	100.0%
Kajiado South	7.1%	-	51.8%	41.1%	100.0%
Kajiado West	58.9%	8.2%	9.2%	23.7%	100.0%

Source: Kajiado County Spatial Planning - Household Survey Data 2018

5.2.2 Main Crops Produced

The major crops produced for commercial or subsistence purposes are flowers, tomatoes, melons, onions, and other vegetables; Most of the crops are produced for consumption at the household level (see table 5.3). There is a need to develop a cash crop for the County so as to harness the agriculture potential for the County.

Table 5.3: A profile of agriculture practices and types of crops grown

Table 5.3: A profile of agriculture practices and types of crops grown	Crops planted					Total
	Cash Crops	Food Crops	Both	No Answer	Do Not Know	
Kajiado County (overall)	3.2%	39.3%	10.9%	46.5%	0.1%	100.0%
Sub-County analysis						
Kajiado Central	1.5%	35.3%	5.9%	57.4%	-	100.0%
Kajiado North	4.8%	7.8%	.6%	86.2%	0.6%	100.0%
Kajiado South	5.5%	1.8%	52.7%	40.0%	-	100.0%
Kajiado West	2.1%	68.6%	9.8%	19.6%	-	100.0%
Kajiado East	3.1%	75.0%	15.6%	6.3%	-	100.0%

Source: Kajiado County Spatial Planning - Household Survey Data 2018

Food Crops

The food crops are; Maize, Beans, Potatoes, sorghum, finger millet, cowpeas, green grams and Vegetables (Valued at Ksh; 632,367,000),2017. Kajiado South Sub County is the main producer of maize for subsistence and commercial purposes. Approximately 14,200 Ha and 14,010 Ha of land are cultivated commercial and subsistence maize production. The sub-County also leads in beans farming (18220 Ha) for subsistence and (5360 Ha) for commercial purposes.

Tomato farming is also common in Kajiado with approximately 1787 Ha under tomatoes and Kajiado South sub-County leading with approximately 850 Ha of land under tomatoes. The County has constructed a tomato processing factory in Loitokitok for value addition.

Industrial Crops

In terms of income generation from crops, the County received about KES 3.8 billion from the major crops (Economic Review of Agriculture, 2012).

Horticulture

Horticulture is also gaining prominence, esp. Tomatoes, bulb onions, and kales (Valued at Ksh; 1,230,670,000). This is mainly happening under irrigation in greenhouses and can be expanded to improve agricultural productivity and incomes for the farmers. The annual production for Namelok and Nguruman irrigation schemes is estimated at Ksh.742 million and 512 million respectively.

5.2.3 Practice of Unconventional Agriculture

The type of unconventional agriculture that is practiced in Kajiado is hydroponics and greenhouse agriculture, the production is uncoordinated, (see table 5.4).

Table 5.4: Unconventional agricultural practices in Kajiado County

County / Sub-County analysis	No. of Respondent	Whether the respondent practices unconventional farming in their land				If YES, types of unconventional farming						
		Yes	No	N/A	Total	Organic	Conservation	Green house	Hydroponics	Others	N/A	Total
Kajiado County (overall)	779	3.2%	83.1%	13.7%	100.0%	8.4%	5.0%	2.5%	0.5%	2.0%	81.7%	100.0%
Sub-County Analysis												
Kajiado Central	276	2.2%	97.8%		100.0%	30.0%	40.0%	20.0%	-		10.0%	100.0%

County / Sub-County analysis	No. of Respondent	Whether the respondent practices unconventional farming in their land				If YES, types of unconventional farming						
		Yes	No	N/A	Total	Organic	Conservation	Green house	Hydroponics	Others	N/A	Total
Kajiado East	93	2.2%	97.8 %		100.0 %		-	-	-	100 .0%		10 0.0 %
Kajiado North	166	4.8%	33.1 %	62.4 %	100.0 %	6.3 %	1.9%	-	0.6%	1.9 %	89.2 %	10 0.0 %
Kajiado South	55	-	92.7 %	7.3 %	100.0 %	-	4.2%	-	-		95.8 %	10 0.0 %
Kajiado West	189	4.8%	95.2 %	-	100.0 %	44. 4%	22.2 %	33.3%	-			10 0.0 %

Source: Kajiado County Spatial Planning - Household Survey Data 2018.

5.2.4 Primary Sources of Seeds

The primary sources of seeds include purchasing from seed companies (28%), previous harvests (21%) and from agricultural societies (9%) (See figure 10.1). This is suggestive that farmers seek for seeds from uncertified providers, this leads to low productivity See fig 5.1.

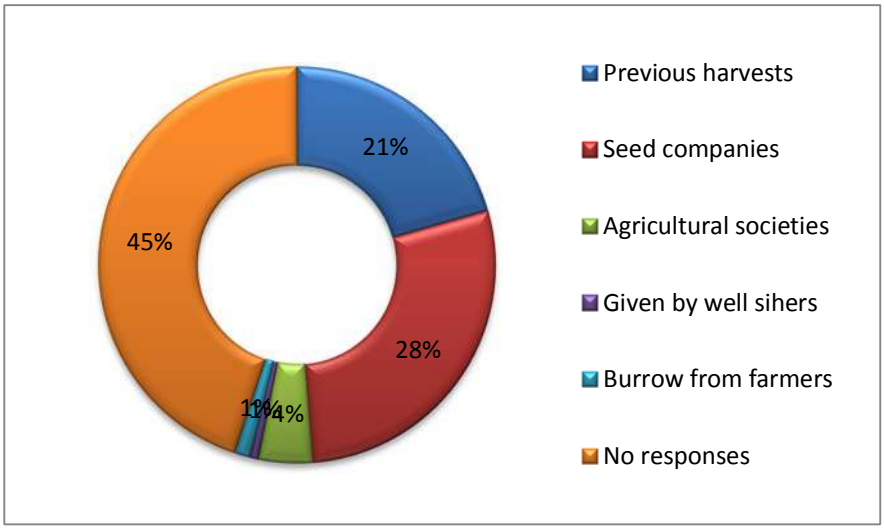


Figure 5.1: Sources of Seeds

Source: Kajiado County Spatial Planning - Household Survey Data 2018

5.2.5 Agricultural Produce Storage Facilities

The produce harvested require storage. However, in the County storage facilities were only known to 4% of the respondents (see fig 5.2)

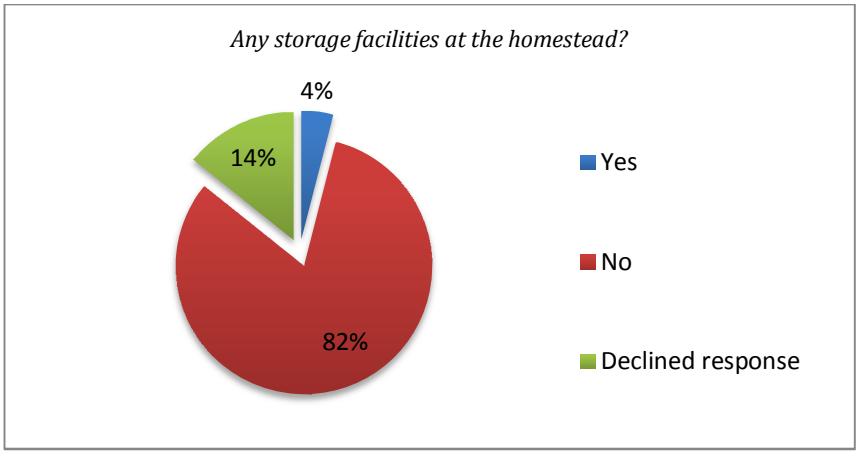


Figure 5.2: Availability of storage facilities by Sub-County

Source: Kajiado County Spatial Planning - Household Survey Data 2018.

The main food storage facilities in the County are found in Kajiado, Loitokitok and Ngong towns which have National Cereals and Produce Board (NCPB) stores with a capacity of 116,000 metric tonnes. Most of the small-scale farmers have storage facilities in their farms which are however not in good condition leading to huge post-harvest losses.

5.3 Livestock Production

5.3.1 Main Livestock Bred

The livestock kept in Kajiado County is mainly cattle (52.4 %) sheep (9.5%) and goats (8.6%) of the respondents (see fig. 5 3). Cattle, sheep, and goats are the mainstays for many households. The value chain for livestock is not fully developed yet it has very high potential.

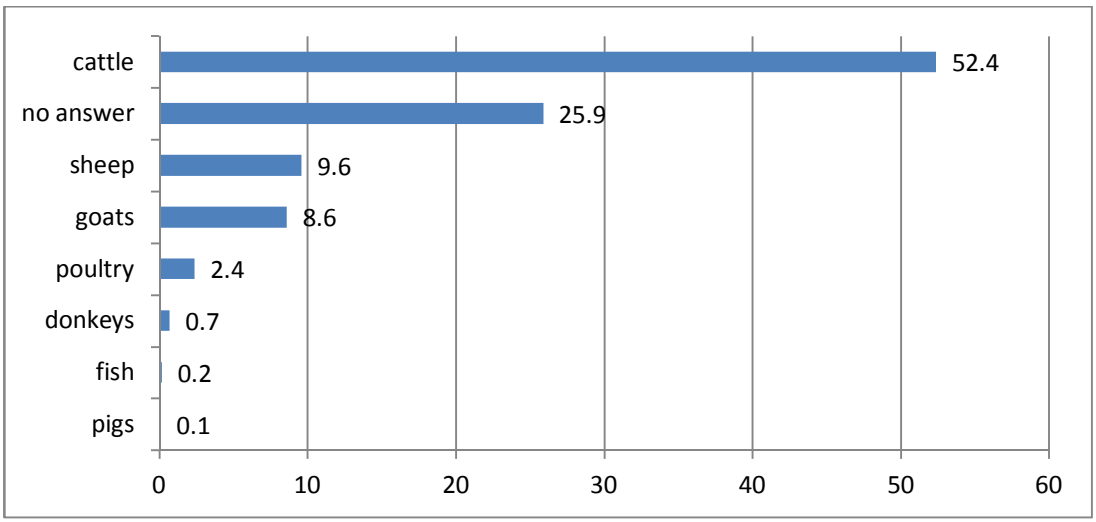


Figure 5.3: Types of livestock kept by respondents by Sub-County profile;
Source: Source: Kajiado County Spatial Planning - Household Survey Data 2018

5.3.2 Livestock Production

Livestock keeping is the main source of livelihoods and a major economic activity for Kajiado County. Livestock Farming; mainly beef/dairy cattle, Sheep and Goats under Pastoralism. Pastoralism is a way of life Pastoralists depend primarily on livestock or livestock products for income and food - typically they graze their animals on communally-managed or open-access pastures and move with them seasonally.

Pastoralism is the main source of livelihood for the majority of rural households in the County. The main livestock breeds are sheep (718,950), goat (699,658), beef and dairy cattle (411,840), commercial chicken (276,291), indigenous chicken (267,913), donkeys (63,980), pigs (6,127) and camel (1,597)-*Source: Kenya population and housing census 2009*. Livestock products in the County include beef, milk, skins, and hides. The average annual milk production per year is 912,721 liters, beef production is 6639 tonnes, mutton production is 642, 750 kgs, chevon production is 536,505, poultry production is 345,600 and egg production is 1,440,000 trays. There are however very few value additions ventures in the County.

Amongst pastoral communities, livestock is a form of savings, source of food, financial capital and the basis of wealth description Opportunities for pastoral farmers immensely depend on the livestock assets that they own. However, pastoralists do also face social, economic and environmental challenges that hinder their capacity to harness these opportunities

In the 1960s, the government introduced the group ranch concept with the intention of commercializing pastoralism to increase income and provide essential services. A group ranch is a livestock production system or enterprise where a group of people jointly own freehold title to land, maintain agreed stocking levels and herd their livestock collectively which they own individually (Ministry of Agriculture, 1968).

The objectives of the group ranches were;

1. to increase the productivity of pastoral lands through increased off-take
2. to improve the earning capacity of pastoralists
3. to avoid possible landlessness among pastoralists in case large tracts of land were allocated to individual ranchers
4. to avoid environmental degradation due to overstocking on communal lands
5. to establish a livestock production system that would allow modernisation or modification of livestock husbandry and still preserve many of the traditional ways of life without causing social frictions or an abrupt break with traditional ways of life.

However, the above objectives have not been achieved to a large extent due to various reasons. Among them, traditional cultural mindsets which view livestock as wealth to be accumulated thus negating the intended commercial aspect of off-takes. Increased livestock numbers degrade the fragile rangeland

ecosystem. Increasing human population and subdivision of the ranches has increased pressure on the semi-arid rangelands. The effects of climate change especially the prolonged droughts have complicated the situation further.

There were 56 group ranches in Kajiado County in the 1990s. However, the number of ranches has greatly reduced following major sub-divisions and the sale of land for human settlement. Currently, there are 10 communal grazing ranches mostly in Kajiado South and West for beef production. The land tenure system in the County has greatly changed, from 56 group ranches across the County to only 10. As of 2018, there were only 10 group ranches left unsubdivided, 5 in Kajiado West and another 5 in Kajiado South. These were;

- Oldonyonyokie
- Olkiramatian
- Shompole
- Olkeri and
- Torosei;

all in Kajiado West and for Kajiado South, they are;

- Rombo
- Ongulului
- Imbirikani
- Kuku and
- Esilenkei

Transforming and reorienting pastoralism development under these new realities including climate change is not an option but an imperative. Climate-Smart Agriculture and particularly pastoralism resilience is a must for Kajiado. This is the suitability to adapt to the arid and semi-arid environment characterized by low and variable rainfall patterns; droughts; high temperatures; shrinking grazing land and reducing water points.

5.3.3 Beef Cattle

Kajiado County is largely a livestock-based pastoral economy. The major cattle breeds are sahiwal, zebu, borans and exotic. Kajiado demonstration farm provides sahiwal breeding bulls to the pastoralists. The population of beef cattle is estimated at 581,020. The approximate Slaughter value in 2016 was Ksh 2,048,765,278.00 Hides and Skins valued at Ksh. 204,367,422. However, during the recent 2017/2018 prolonged drought, Kajiado County recorded 232,400 livestock deaths, most of them while searching for pasture. With a healthy cow costing about KES 60,000, this was about Sh13.94 billion lost. (Kajiado Governor Speech during the pastoral week, 2018).

Effects of Drought

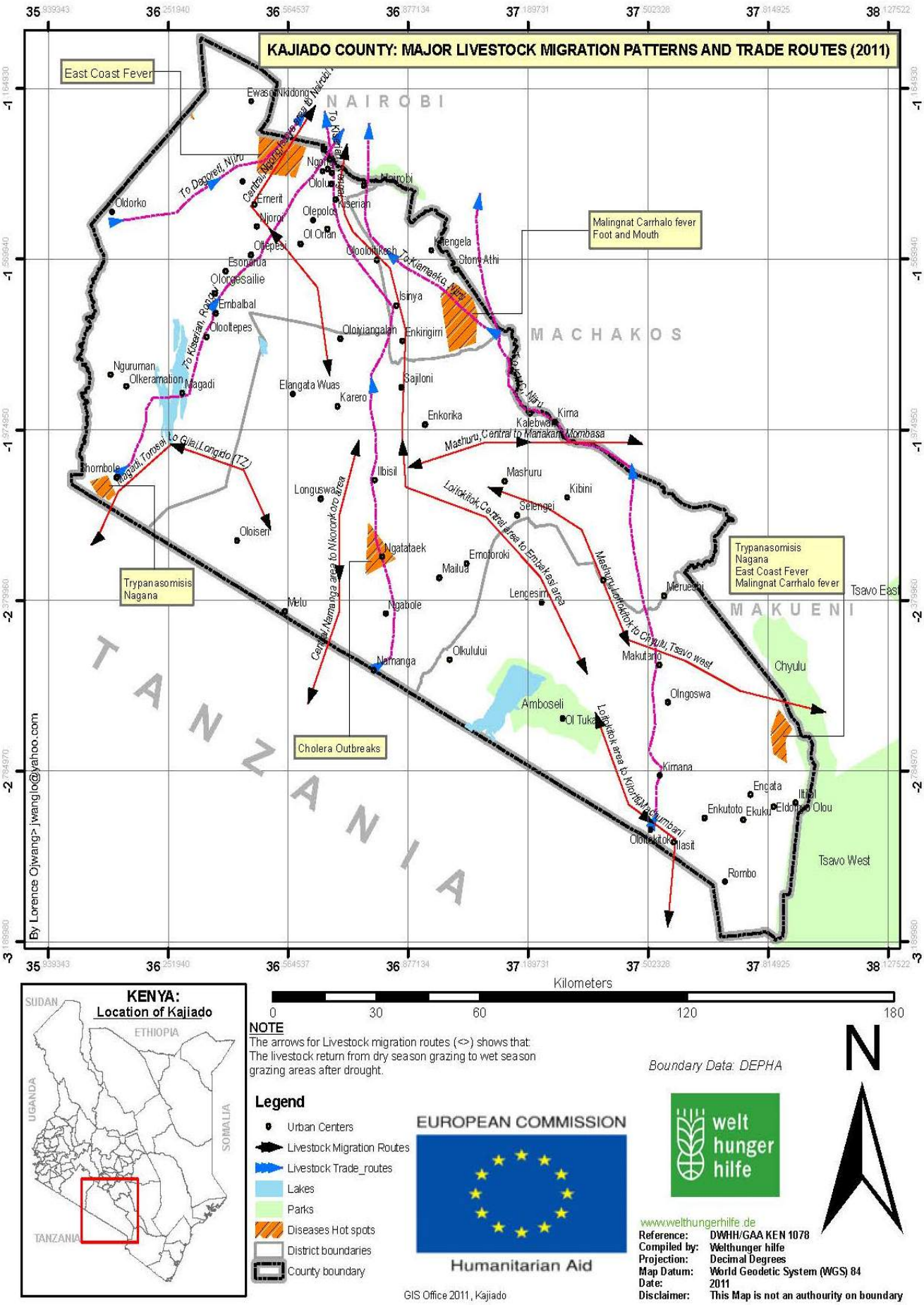
Drought has a devastating effect on the social economy. The impact is more devastating in vulnerable rural communities who do not have social safety nets such as insurance for livestock or crops. All the respondents mentioned

that the primary effect of drought is lack of water (100%) due to insufficient rainfall. Map 5.3 shows major animal migration routes and corridors used mostly during the drought season. The secondary effect of drought includes lack of food; livestock deaths among other catastrophic effects as shown below;

Effects of drought on households

- Water sources dry
- Livestock diminish and also migrate
- Crops yields reduce
- Businesses perform badly
- Families migrate

Source: Kajiado County Spatial Planning - Household Survey Data



Map 5.3: Major Livestock Migration Routes

Source: Welt Hunger Hilfe, 2011.

Drought Mitigation Measures

A number of drought mitigation measures were mentioned by respondents which suggest that there is local knowledge on coping with the effects of drought. The key coping mechanism includes planting drought resistance crops, developing community early warning systems and planting trees (afforestation).

The various stakeholders who are deemed responsible for implementing drought mitigation measures implementation are the National government, the County government, National Drought Management Authority (NDMA), Non-state actors, Kenya Red Cross (KRC), churches, and communities. Though responsibility for drought mitigation is shared, the community structures are very important in the implementation of all the designed measures, and this calls for full inclusion of the people in all interventions.

Livestock has the highest potential for reducing poverty, creating employment and contributing to economic growth. To improve the economic base and increase incomes of the pastoral community in Kajiado, the County Government has launched programs based on the Kenya Vision 2030 three pillars: the economic, the social and the political.

Eleven key flagship projects have been identified in the following areas;

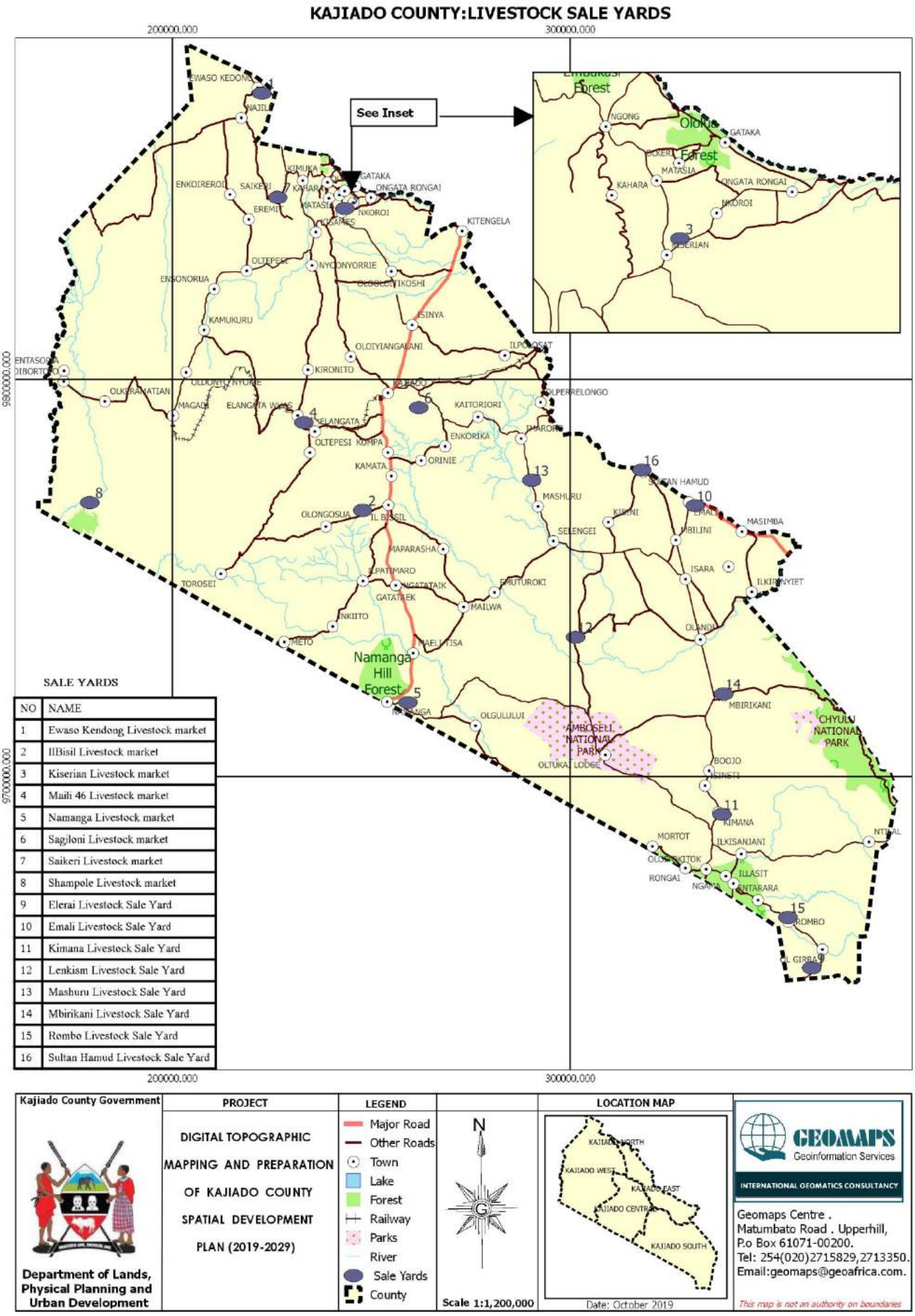
- Hay Production, Conservation, and Utilization by setting aside 10,000 acres for hay production and conservation
- Development and strengthening of Livestock value chains
- Support for Community-Based Organizations (CBOs)
- Linkage of the livestock subsector to the water subsector by collaborating with the National Irrigation Board (NIB) to construct 400 small dams for irrigation across the County.
- Revamping of livestock markets by introducing weighing machines and other services.

Several legislations will be needed to implement these projects, among them, the Kajiado County Adaptation Fund Bill (2018). The bill proposes to have Ward Adaptation and Planning Committees across the County, thus placing the community members at the center of adaptation planning and decision making

Kenya is a meat deficit country to the tune of 4.5m tons per annum. To bridge this gap presents an opportunity for Kajiado and other beef-producing counties. This calls for improving market access and productivity for the livestock value chain players and strengthening husbandry and animal management. This can be achieved through co-management of livestock markets; enhanced capacity building and promotion of innovative fodder management; strengthening the traditional pastoralist institutions and

mobilizing pastoralists and value chain actors into unified units such as cooperatives and community groups.

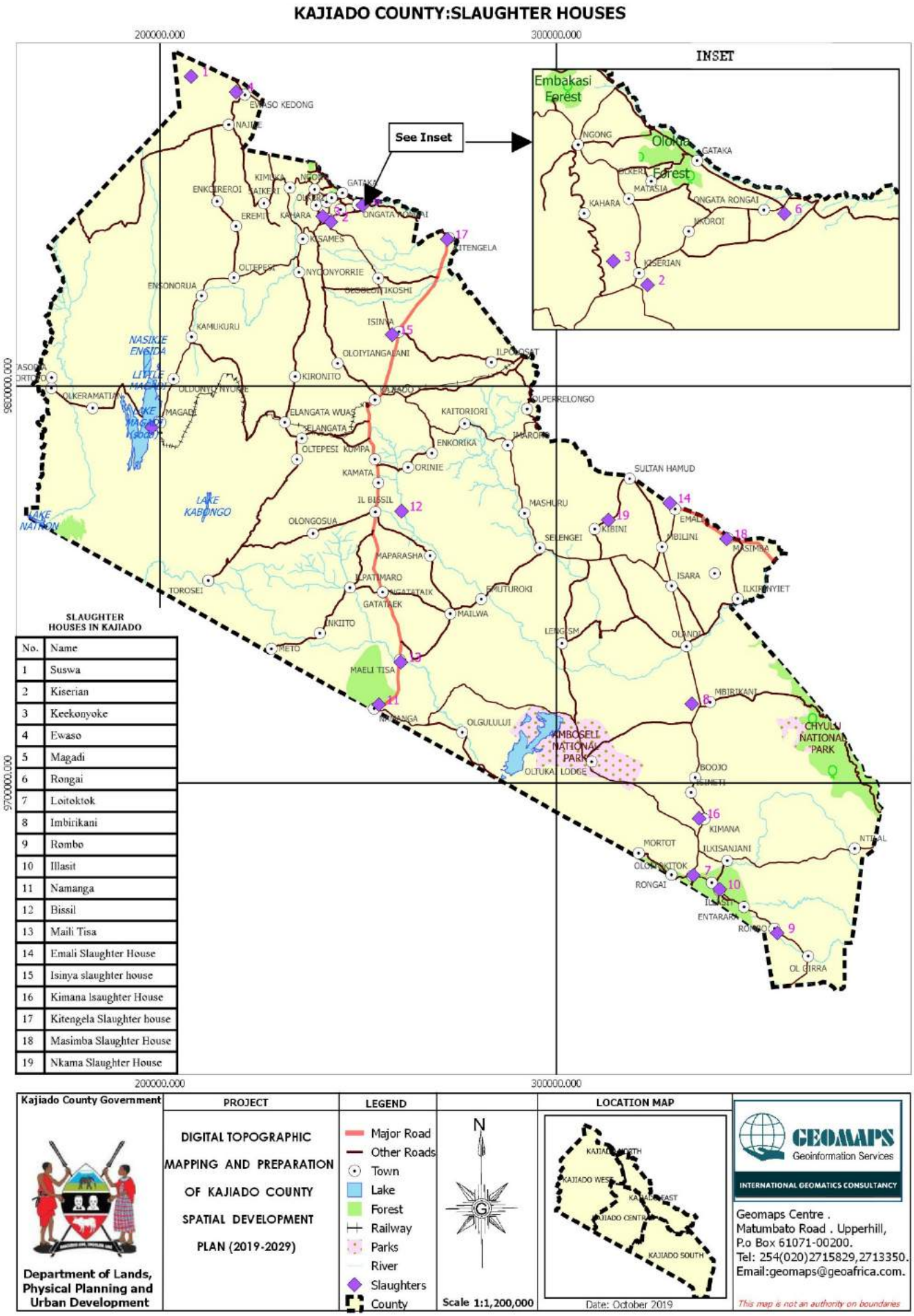
To achieve these objectives, animal sale yards and slaughter houses should be upgraded and co-managed to improve the beef, mutton and chevon value chains. The sale yards and slaughter houses should be linked as much as possible and modernize their infrastructure for value addition and marketing of the livestock products. Well planned market centres in the neighborhoods of sale yards should be developed with all weather roads, slaughter facilities with cold storage, hides and skins storage/tanneries plus all other amenities such as water, schools and dispensaries. This will link the livestock production and sales to niche markets. See the map of animal sale yards and slaughter houses below.



NO	NAME
1	Ewaso Kendong Livestock market
2	IlBisil Livestock market
3	Kiserian Livestock market
4	Maili 46 Livestock market
5	Namanga Livestock market
6	Sagiloni Livestock market
7	Saikeri Livestock market
8	Shampole Livestock market
9	Elerai Livestock Sale Yard
10	Emali Livestock Sale Yard
11	Kimana Livestock Sale Yard
12	Lenkism Livestock Sale Yard
13	Mashuru Livestock Sale Yard
14	Mbirikani Livestock Sale Yard
15	Rombo Livestock Sale Yard
16	Sultan Hamud Livestock Sale Yard

Map 5.4: Animal Sale yards in the County

Source: Geomaps, 2017 & KCG



Map 5.5: Slaughterhouses in the County

Source: Geomaps, 2017 & KCG

5.3.4 Dairy Cattle

The dairy industry is improving in the County as more farmers are investing in dairy cattle under zero-grazing and semi-zero grazing systems. The dairy cattle population is estimated at 149,000 and approximately 87,000 Zebu cattle making a dairy herd of 235,522 Milk production is approximated at 912,720 liters per annum valued at Ksh. 54,763,236. Kajiado North and Kajiado South Sub-Counties are leading in dairy cattle keeping and milk production. Some milk is collected by processors from dairy cooperatives in Kajiado Central, North, East and South. Some cooperatives in Kajiado Central and North have advanced to milk processing. Other milk marketing channels are through milk bars

Table 5.5: Dairy Industry Constraints and suggested solutions

Constraints	**Suggested solutions**
Frequent droughts that reduce forage base	Increased support to pasture conservation.
Inadequate funding for extension services	Dairy farming is young and upcoming in the County and a lot of farmer training in nutrition, breeding, fodder production and conservation and formation of milk marketing groups (co-ops) is required.
Lack of machinery and equipment for forage production & conservation	The County has the capacity for large scale dairy ranching; This can only be supported by mechanized forage conservation considering the people's pastoral background.
Presence of endemic tick-borne diseases.	The community should be encouraged to revive the collapsed plunge dips.
Poorly organized milk marketing system.	Encourage and support the formation of farmer marketing cooperatives. Encourage commercial dairy production.
Very low supply of quality breeding stock in the County	Encourage private farmer-based AI services.
High cost of farm inputs	Reduce taxation on Farm inputs.
Inadequate water especially during dry seasons	Support farmers to develop on-farm water sources.

Goats are mainly found across the County with the majority of them in the sub-counties with an adequate amount of browse. The major breeds kept include the indigenous small East African goat, Galla, German Alpine dairy

goats, and their corresponding crosses. There is a concerted effort by the livestock keepers to upgrade their goats using the Galla breed The Goats population is estimated to be 1,093,308. -

Sheep is a popular livestock species especially in the areas that lack adequate browse for use by other livestock species. The animal, just like the goat, is kept to meet the normal daily needs of the family. The most common breeds kept include the Red Maasai, Dorper, and their crosses. Sheep rearing is on the increase with some farmers investing in Dorper sheep breeding and this will increase the population of sheep in the district. The Sheep population (1,116,083).

5.3.5 Poultry

The farmers keep both indigenous and exotic breeds. These include chicken, ducks, and turkeys. The estimated population of poultry is 728,318,

5.3.6 Donkeys

The donkey's population is estimated at 103,178. Donkeys are used as the beast of burden, to transport items especially water and household items during movements. Recently, donkey meat has found its way into the markets with the opening of donkey slaughterhouses for export in Naivasha.

5.3.7 Pigs

The industry is doing well with many new farmers joining the enterprise. The farmers have a marketing outlet for Farmers Choice. The total number of pigs in the County is approximately 23,913.

5.3.8 Rabbits

There are many farmers getting interested in rabbit rearing. The farmers have been equipped with knowhow on rabbit keeping by the livestock officers but Currently, the market is a major challenge. There are approximately 23,880 rabbits.

5.3.9 Bee Keeping

There are 737 log hives, 5,090 Kenya Top Bar hives (KTBH) and 1,990 Langstroths making a total of 6,817 beehives. Honey production was 4119 Kg from log hives, 4994 Kg from KTBH and 5218 Kg from Langstroths making a total of 14,331 Kg. The County mainly relies on the national beekeeping station at Lenana for its supplies of beekeeping equipment. There are no honey processing centers in the County. Beekeeping in Kajiado has a high potential due to the availability of natural flora that provides bee forage. However, the low adoption rate may be attributed to the unavailability of apiculture training. According to the County Statistical Abstract 2015, there are 14,096 assorted beehives across the County producing about 31,543Kg of honey annually.

5.3.10 Fisheries

Fish farming is also being promoted in various parts of the County. There are 3500 fish ponds in the County some of which were constructed during the Economic Stimulus Program. The main fish species are tilapia, catfish, common carp (*cyprinus corpio*) and mosquitofish (*gandusia affinis*-which is reared to control mosquitoes). This, however, has been limited by lack of fingerlings, inadequate freshwater, low local demand and lack of cooling facilities. It has been observed that the locals are changing their attitude towards the consumption of fish, and this is likely to increase demand in the future.

Promotion of aquaculture is ongoing, through; Construction and equipping of fish ponds, Provision of fingerlings, Provision of fish feeds, Provision of sein nets, predator nets and scoop nets to farmers. Training of fish farmers and technical staff on fish quality control and safety assurance and Inspection of fisheries resources.

5.3.11 Unconventional Livestock Kept

A total of 451 respondents reported they keep unconventional livestock / new animals in their farms. These include bees (17.1%), ornamental animals (5.9%), guinea pigs (72.8%), chameleon (2.5%) and others (1.8%).

5.4 Agriculture Development Institutions

5.4.1 Extension Services and Marketing

The state of agriculture extension services in Kajiado is poor with only 31.2% get extension services, 55.6 % never access the extension services (see table 5.6). Extension services are better in Kajiado South 53.4% and Kajiado West 46%. Farmers usually learn from media and other farmers.

Table 5.6: Availability of extension workers and agricultural information

	Do extension workers reach your area				Sources of agriculture related information					Total
	Yes	No	Blank	No response	other farmers	media	Stake-holders	others	no response	
Kajiado Central (Overall)	31.2%	55.6%	0.1%	13.1%	14.9%	14.7%	33.4%	2.8%	34.3%	100.0%
Sub-County Analysis										
Kajiado Central	23.1%	76.9%	-	-	7.8%	20.1%	70.1%	1.9%	-	100.0%
Kajiado North	6.0%	28.9%	0.6%	64.5%	1.9%	2.5%	8.1%	-	87.6%	100.0%
Kajiado South	53.4%	44.8%	-	1.7%	3.6%	14.3%	10.7%	-	71.4%	100.0%
Kajiado West	46.0%	54.0%	-	-	27.3%	31.2%	33.8%	7.8%	-	100.0%
Kajiado East	42.9%	57.1%	-	-	47.1%	11.8%	23.5%	17.6%		100.0%

Source: Kajiado County Spatial Planning - Household Survey Data 2018

5.4.2 Existence of Farmers Training Centres

Agriculture Training Centres

Conducts Non-Residential farmers training, school visits and outreach programs including the establishment of crop demo plots for farmers training. These activities generate some revenue. The County has few farmer training centers (FTCs) as rated by only 7.4% overall in the County. The farmers visit the FTCs on a quarterly or annual basis. In Kajiado East the majority visit FTCs on a quarterly basis, this is a good practice (see 5.7). The farmers training centers where they exist can be developed to centers of excellence through engagement with the farmers in a region or area.

Table 5.7: Availability of extension workers and alternative sources of agricultural related information

	Whether there are any farmers training centres?			**How often do they visit farmers?**						**Total**
	Yes	No	No Response	Quart-erly	Semi Annually	Annually	Never	No Answer	Do Not Know	
Kajiado County	7.4%	79.4%	13.2%	33.3%	36.1%	5.7%	1.4%	23.4%	0.2%	100.0%
Sub-County Analysis										
Kajiado Central	5.1%	94.9%	-	35.8%	60.6%	3.6%	-	-	-	100.0%
Kajiado North	6.6%	28.1%	65.3%	4.4%	6.3%	4.4%	1.9%	82.5%	0.6%	100.0%
Kajiado South		96.5%	3.5%	37.5%	3.6%	23.2%	1.8%	33.9%	-	100.0%
Kajiado West	13.0%	87.0%	-	39.0%	55.2%	4.7%	1.2%	-	-	100.0%
Kajiado East	8.8%	91.2%	-	82.6%	13.0%	4.3%	-	-	-	100.0%

Source: Kajiado County Spatial Planning - Household Survey Data 2018

5.4.3 Markets for Produce

The produce from farmers is marketed in neighborhoods according to 74.9 % of the respondents. This was the case in all sub-counties. In Kajiado County, cooperatives and brokers undertake minimum marketing of produce which is a weakness as structures cannot be durable. Farmers organizations need to products in the County (see table 5.8).

Table 5.8: Places where most farm produce are sold by Sub-County

	Market Venue Where Farm Produce Are Sold					**Total**
	Market Centers	Neighborhood	Cooperatives	Companies	Brokers	
Kajiado County (overall)	10.6%	74.9%	.4%	14.0%	0.1%	100.0%
Kajiado Central	14.4%	85.6%	-	-	-	100.0%
Kajiado North	7.3%	21.8%	1.8%	68.5%	0.6%	100.0%
Kajiado South	3.6%	94.6%	-	1.8%	-	100.0%
Kajiado West	11.9%	88.1%	-	-	-	100.0%
Kajiado East	5.3%	94.7%	-	-	-	100.0%

Source: Kajiado County Spatial Planning - Household Survey Data 2018

5.4.4 Cooperatives

Currently, there are 643 registered cooperative societies in Kajiado County, out of which 402 are active. The number of cooperatives has grown at a rate of 7.9% p.a. One of the major cooperatives which is agriculturally-based is Tredairy Cooperative Society formed in 2018. It constitutes 11 individual cooperative societies.

5.4.5 County Agriculture Development Policies

For promotion of agriculture, the County Government should embark on facilitating the enactment of appropriate bills in support of the sector. It has been noted that many bills such as the Agricultural Training Centre services Bill, 2016 and the Kajiado County Animal Welfare Bill are still in the draft stage.

5.5 Challenges Facing Agricultural Production

Table 5.9: Challenge and Proposed Solution

Challenge	**Proposed solution**
Low uptake of Agricultural and animal breeding technologies	Enhanced field extension services
Inadequate technical staffing levels and inadequate Succession plan	Recruitment of technical staff as per the establishment and proper succession management
Diminishing Agricultural land	Proper land-use planning
Frequent droughts and as a result of climate change	Increase crop output and productivity through increasing acreage under irrigation and water harvesting infrastructure
High cost of farm inputs	Provision of subsidized agro-inputs
Lack of organised farmers marketing groups	Empowerment of the cooperative movement through the provision of equipment and capacity building
Presence of trans boundary and vector-borne animal diseases	Reduce the occurrence of major trans-boundary diseases and pests through surveillance and control measures
Inadequate and delayed funding (less than 4% of total budget)	Increase the level of funding to at least 10% as envisaged in Malabo declaration
Difficulty in accessing credit facilities from financial institutions	Networking and linkages with financial institutions
Aged transport fleet	Disposal of the aged fleet and commensurate replacement
Inadequate office accommodation	Provision of additional office space Inadequate
Inadequate ICT infrastructure	Provision of ICT facilities
Inadequate policy and legal frameworks	Customization of the relevant policies
Poor infrastructure (Access Roads, water supply, network coverage)	Work with the relevant players to improve infrastructure

Source: *Stakeholders consultation workshops, 2018.*

5.6 SWOT Analysis

Table 5.10: SWOT analysis

Strengths	Weaknesses	Opportunities	Threats
High population especially the youths; Labour	Preference for white-collar jobs	-Community interest in new farming ideas/technologies -Holistic resource management	-HIV/AIDS and other chronic diseases. -Drug and substance abuse
Local community's passion for crop & livestock production;	Not undertaking crop rotation leading to declining soil fertility.	Community sensitization programs with agriculture/ Livestock experts.	Increase in pests and diseases.
Agriculture institutions	Low uptake of agricultural courses.	-Agribusiness Expos to reach average farmers -Value addition	Preference for business courses
Availability of agricultural land including rangelands	Low adoption of modern farming technology; inadequate farming skills	Establishing irrigation schemes to boost yields and provide employment for residents	Climate change impacting heavily on weather patterns.
A ready market for farm outputs	Poor road networks that delay the transport of produce to the market.	Devolved transport function to the County governments.	Misuse of funds meant for the road sector.

Source: *Stakeholders consultation workshops, 2018*

CHAPTER 6: TRANSPORT AND INFRASTRUCTURE

6.1 Overview

Transport is the movement of people and goods from one point to another. The efficiency of a transport system has an impact on the economy of the County and the social welfare of its people. It allows for goods produced in the County to be taken to market in time and at reduced cost with labor being moved to their areas of maximum productivity in time. It also enables the community to enjoy access to social services such as schools and health facilities.

An efficient transport system requires proper physical infrastructure. These are the physical facilities that facilitate the movement of goods and people. They include road networks, pipelines, railway lines airports, etc. The major mode of transport in Kajiado County is road transport. Kajiado County is blessed with many water bodies including Lake Magadi and Lake Amboseli. However, water transport is not a common occurrence in the County because the water bodies are largely unnavigable.

6.2 Road Transportation

Road transport is an integral part of any transport system. Road networks in Kenya can be classified as either paved or unpaved depending on the road surface condition. The development, management, rehabilitation and maintenance of Kenyan roads is done through four (4) statutory organizations depending on the road classification. KeNHA (Kenya National Highways Authorities) established by the Kenya Roads Act 2007 is in charge of international trunk roads linking centers of international importance and crossing or terminating at international boundaries. These generally include roads in classes A, B and C. KeRRA (Kenya Rural Roads Authority) established by the Kenya Roads Act 2007 is in charge of the country's rural roads. These include roads in categories D, E, F, G, K, L, P, R, S, T, U, and W. KURA (Kenya Urban Roads Authority) established by the Kenya Roads Act 2007 under the Ministry of Transport and Infrastructure is in charge of National urban trunk roads.

County governments are in charge of County roads. In Kajiado County, 907.98 Km of roads are under KeNHA. Of these, 416.76 Km are paved while 491.22 Km is unpaved. Similarly, KeRRA is in charge of 388.2 Km of roads in Kajiado County out of which 4.54 Km are paved while 383.68 Km are unpaved. KURA is in charge of 4.75 Km of paved roads and 267.76 Km of unpaved roads and the Kajiado County government manages 33.21 Km of

paved roads and 4240.45 Km of unpaved roads. In total, Kajiado County has a road network of approximately 5842.36 Km. Charts 6.1 and 6.2 show the distribution of road networks among statutory bodies and the road surface conditions respectively.

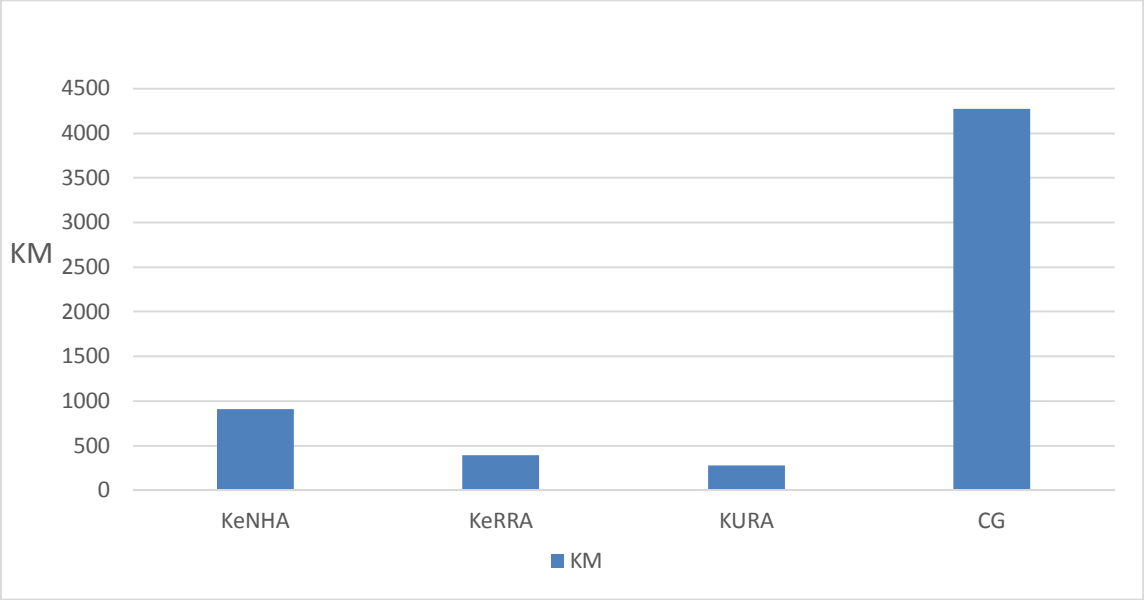


Figure 6.1: Distribution of Roads to the road authorities

Source: Kenya Roads Board

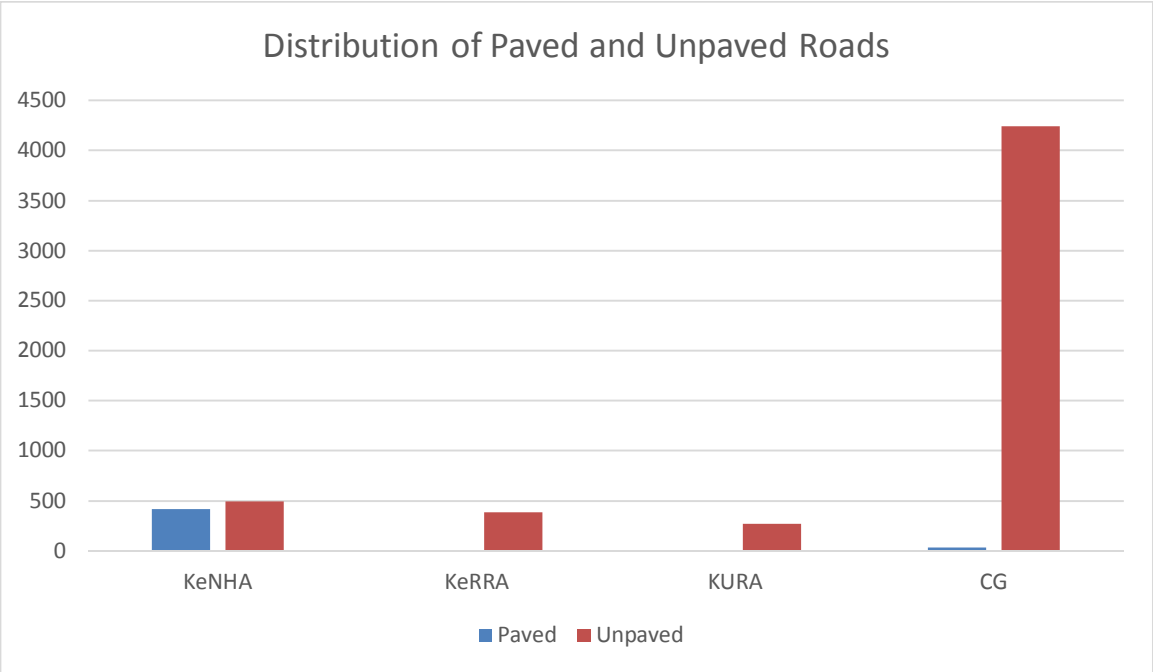


Figure 6.2: Distribution of paved and unpaved roads

Source: Kenya Roads Board

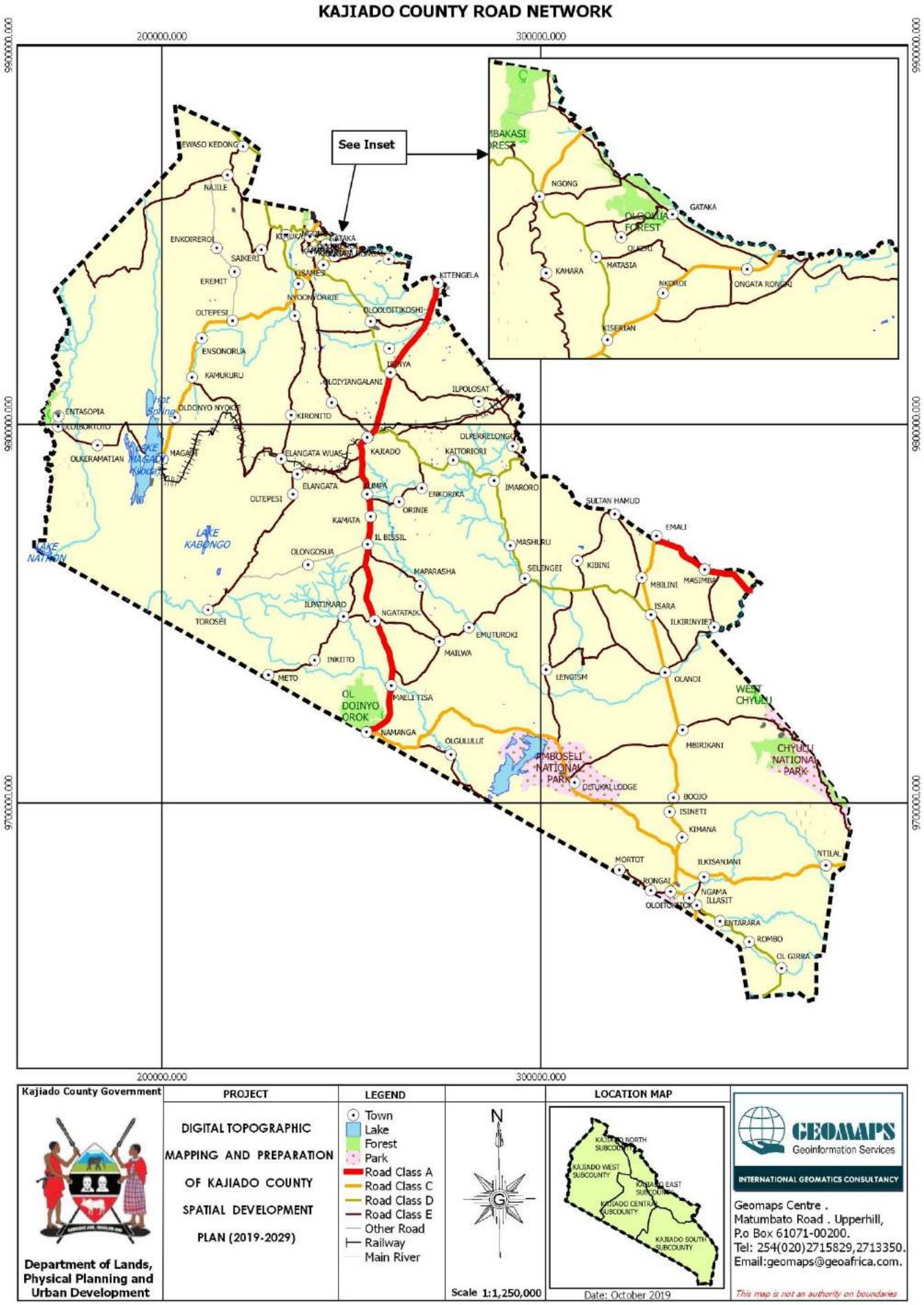
There is 1416.8 Km of rural roads classified as classes A, B and C and 3902.73 Km of rural unclassified roads. Some of the major roads and their classifications are listed in the table below.

Table 6-1: Classification of various roads in Kajiado County

CLASS	RID	Road Name	Paved	Unpaved	Total
A	A2	IBD Namanga-Athi River (part of the Great North Road)	132.4	0	132.4
	A5	A8 Emali-IBD Loitokitok	111.2	0	111.2
	A8	Emali-Kiboko (part of Mombasa Highway)	28.4	0	28.4
A	H2_Nairobi	Ngong Rd	4.8	0	4.8
Total			276.9	0	276.9
B	B19	B7 Magadi Road	94.7	38.6	133.3
	B50	B7 Suswa-Ngong-Kiserian-Isinya-A8 Konza	50.0	68.2	118.2
	B51	B19 Kamukuru-Elangata Wuas-A2 Olkilorit	0	77.3	77.3
	B52	A2 Kajiado-Imaroro-Mashuru-Selengei-A5 Isara	0	109.0	109.0
	B54	A2 Namanga-Amboseli-Kimana-Kilanguni-A8 Lugards Fall-A7 Malindi	0	159.3	159.3
	B55	A5 Illasit-Rombo-Njukini-A6 Taveta	0	38.9	38.9
Total			**144.7**	**491.2**	**635.9**
C	C271	Mbirikani-Tsavo N. Park- Ntilal	0	67.2	67.2
	C435	Ng'atataek-Emutoroki-Selengei- Sultan Hamud	0	81.4	81.4
	C436	Kimuka-Kisamis-Esilanke- Kajiado-Konza	0	103.5	103.5
	C444	Nkoroi-Nazarene-Kitengela	4.5	22.5	27.0
	C464	Olandi - Makindu	0	28.5	28.5
	C465	Thithi – Nzueni Imaroro-Salama	0	0.5	0.5
	C466	Imaroro-Salama	0	11.3	11.3

CLASS	RID	Road Name	Paved	Unpaved	Total
	C726	Ntulele-Mosiro-Najile-Ewaso Kedong	0	68.8	68.8
C Total			4.5	383.7	388.2
D	D1706	Torosei-Elangata	0	51.4	51.4
	D1707	Emuturoki-Amboseli	0	49.1	49.1
	D1708	Mbirikani-Ngama	0	47.8	47.8
	D1709	Meto-Lenkishon Primary School	0	47.4	47.4
	D1710	Elang'ata Wuas-Kisamis	0	44.9	44.9
	D1711	Embubu/Umoja-Ong'ata Rongai	0	12.8	12.8
	D1712	Oloiyangalani- Kajiado	0	8.5	8.5
	D1713	Kisamis-Esilanke-Kajiado- Konza	0	6.0	6.0
D	D1714	Administration Centre-Kajiado	0	2.6	2.6
	D1715	Administration Centre-Kajiado	2.4	0	2.4
	D1716	Kajiado-Kajiado	0	1.9	1.9
	D1717	Kajiado-Kajiado	0	0.9	0.9
	D1718	Administration Centre-Kajiado	0	0.8	0.8
	D1719	Administration Centre-Kajiado	0.8	0	0.8
	D1720	Kajiado-Kajiado	0	0.7	0.7
	D1721	Kajiado-Kajiado	0	0.4	0.4
Total D			3.2	275.2	278.4

Source: Kenya Roads Board



Map 6.1: Road network and classifications in Kajiado County
Source: Aerial Survey (2012)

6.2.1 Road Safety

In terms of road safety, Kajiado County is one of the leading counties in road fatalities per 100,000 population behind Nairobi, Taita Taveta, Baringo and Kirinyaga counties respectively recording more than 10 fatalities per 100,000 population in 2015. The chart below demonstrates the place of Kajiado County compared to other Kenyan counties in road fatalities ratings.

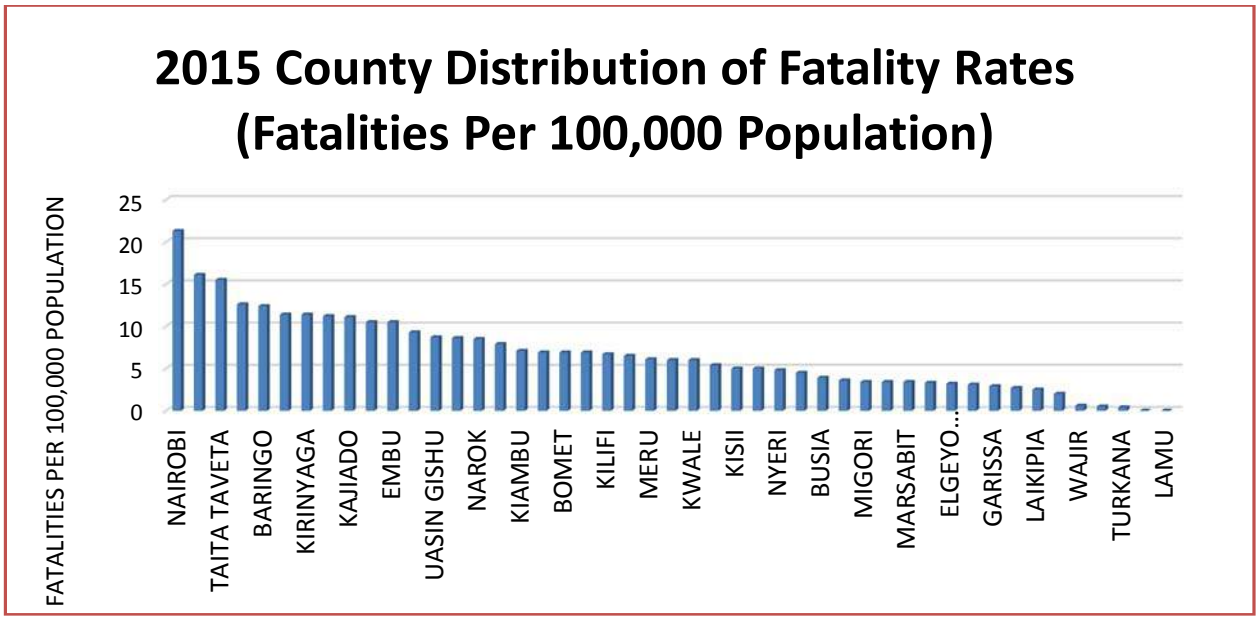


Figure 6.3: 2015 County Distribution of Fatality Rates

Source: NTSA Road Fatality Statistics Report (2015)

Among some of the most fatal roads in Kenya are Isinya- Kitengela and Loitoktok- Emali roads. According to NTSA (National Transport and Safety Authority), the statutory body charged with ensuring road safety in Kenya, road fatalities and serious injuries were on the rise between 2017 and 2018 (See the chart below)

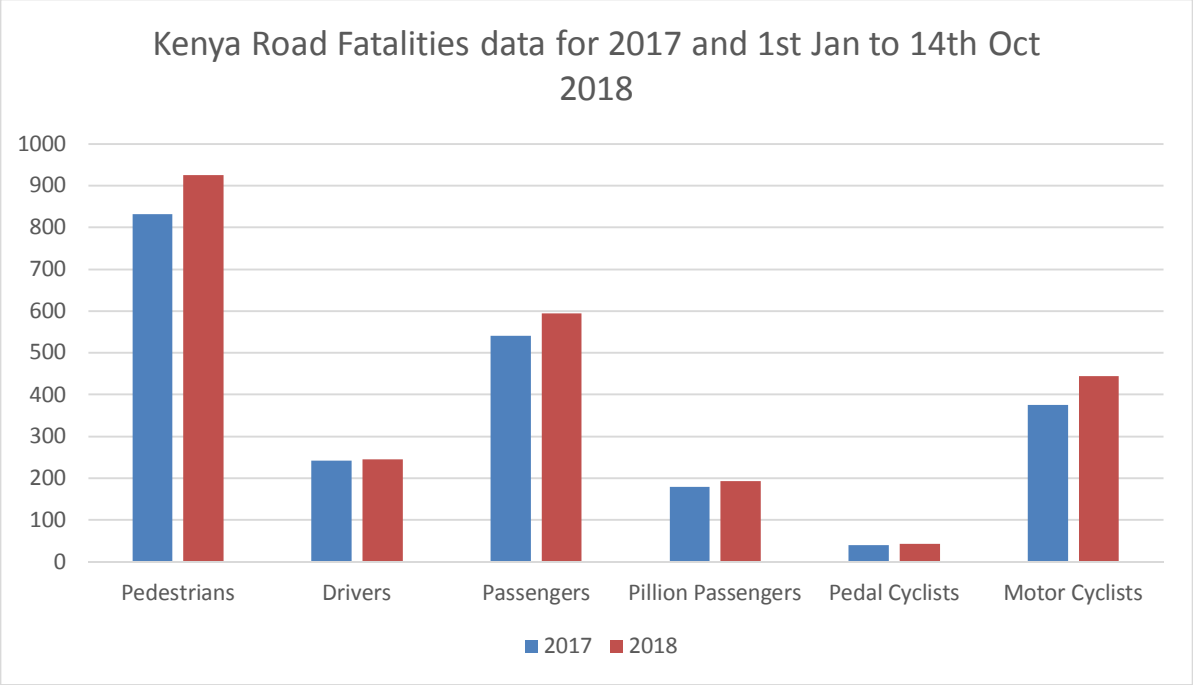


Figure 6.4: NTSA road fatalities

Source: *NTSA Road Fatality Statistics Report (2015)*

Pedestrians are the largest category of road users in Kajiado County and according to data collected by NTSA they are also the most affected group in road fatalities at 37.9% and 37.7% of all fatalities in 2018 (1st Jan to 14th October 2018) and 2017 respectively countrywide. Lack of pedestrian footbridges or other forms of road furniture to enable pedestrians to cross roads safely have been cited for these grim statistics. Lack of public awareness on road safety could also be a contributing factor to unsafe roads in the County.

6.2.2 Motor Vehicle Growth

With the rapid growth of the middle-class population and improved physical infrastructure in Kenya, motor vehicle ownership has been on a steady rise. Motor vehicle data is updated annually and is recorded by the Kenya National Bureau of Statistics (KNBS). The chart below demonstrates the motor vehicle growth treads in Kenya in recent times.

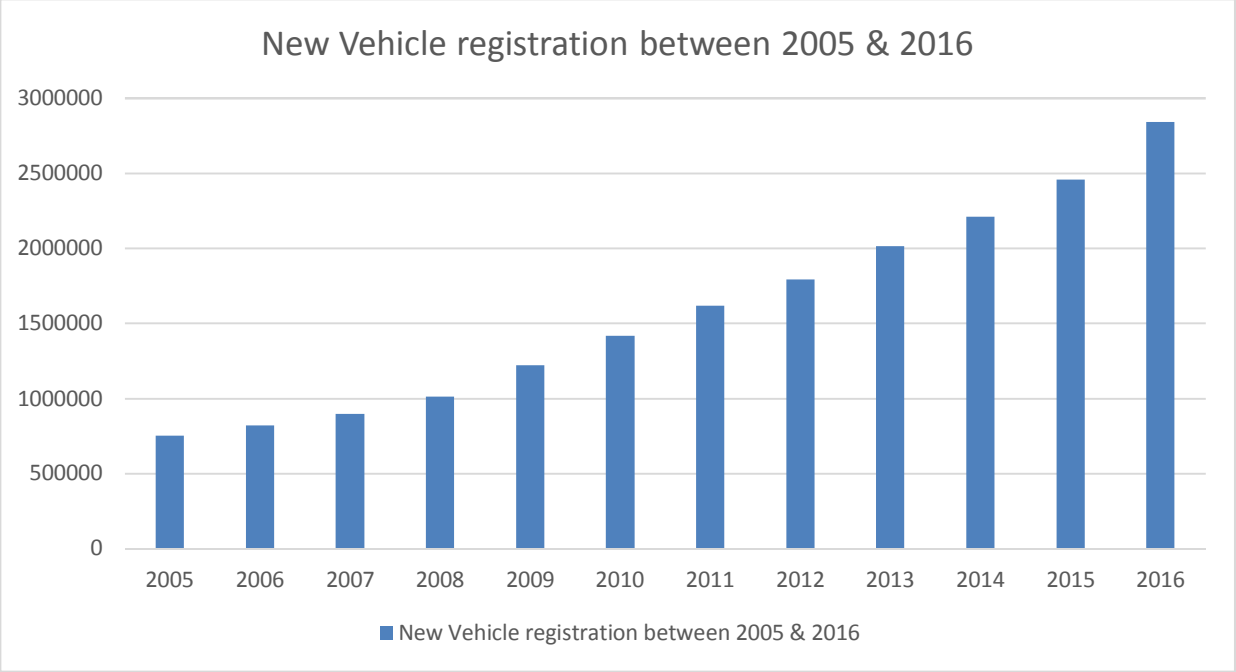


Figure 6.5: New motor vehicle registration trend

Source: Data from the Kenya Bureau of Statistics

Roads development in Kenya has lagged behind the corresponding increase in vehicle population on Kenyan roads. This has contributed to increasing road accident statistics and traffic congestion. These have been further aggravated by lack of planning of towns such as Ong'ata Rongai and Kitengela that have led to the sprawling of towns on either side of trunk roads and clustered settlements along major roads. Encroachment of roads by traders has served to reduce the width of the road reserve while lack of pedestrian footbridges causes interference of traffic flow by pedestrians crossing the roads thus contributing to traffic congestion.

6.2.3 Public Transport

Walking is predominantly the major mode of transport for residents in Kajiado County. Other common modes of transport include motorbikes (bodaboda) and public service vehicles (PSVs).

Table 6-2: Means of public transport and their usage

County & Sub-County analysis	Types of Transport***									Total
	Walk	Boda	Motorcycle (rider)	Motorcycle (Passenger)	Private car (self-drive)	Private car (Passenger)	Matatu	Bus	Others	
Kajiado County (overall)	58.8%	28.7%	6.4%	14.4%	9.2%	4.5%	14.9%	2.8%	0.5%	1143
Sub-County analysis										
Kajiado Central	60.2%	31.2%	6.1%	13.6%	3.1%	4.5%	9.2%	0.8%	-	359
Kajiado East	48.4%	44.2%	11.1%	12.0%	13.8%	-	7.4%	-	1.4%	217
Kajiado North	50.9%	17.0%	1.8%	8.5%	11.5%	3.0%	32.7%	8.5%	1.8%	165
Kajiado South	98.3%	34.5%	5.2%	50.0%	5.2%	10.3%	3.4%	1.7%	-	58
Kajiado West	61.0%	20.9%	6.1%	13.7%	12.2%	7.3%	18.9%	4.1%	-	344

Source: *Stakeholders consultation workshops, 2018*

The public service vehicle industry in Kajiado County is characterized by matatus, Tuk-Tuks, and bodabodas.

Image 6.2 : Typical 33 sitter Matatu

Image 6.1: Typical 14 sitter Matatu

Image 6.4 : Typical ride on a bodaboda

Source: Project team

Image 6.3: Typical Tuk Tuks in operation

Source: Project team

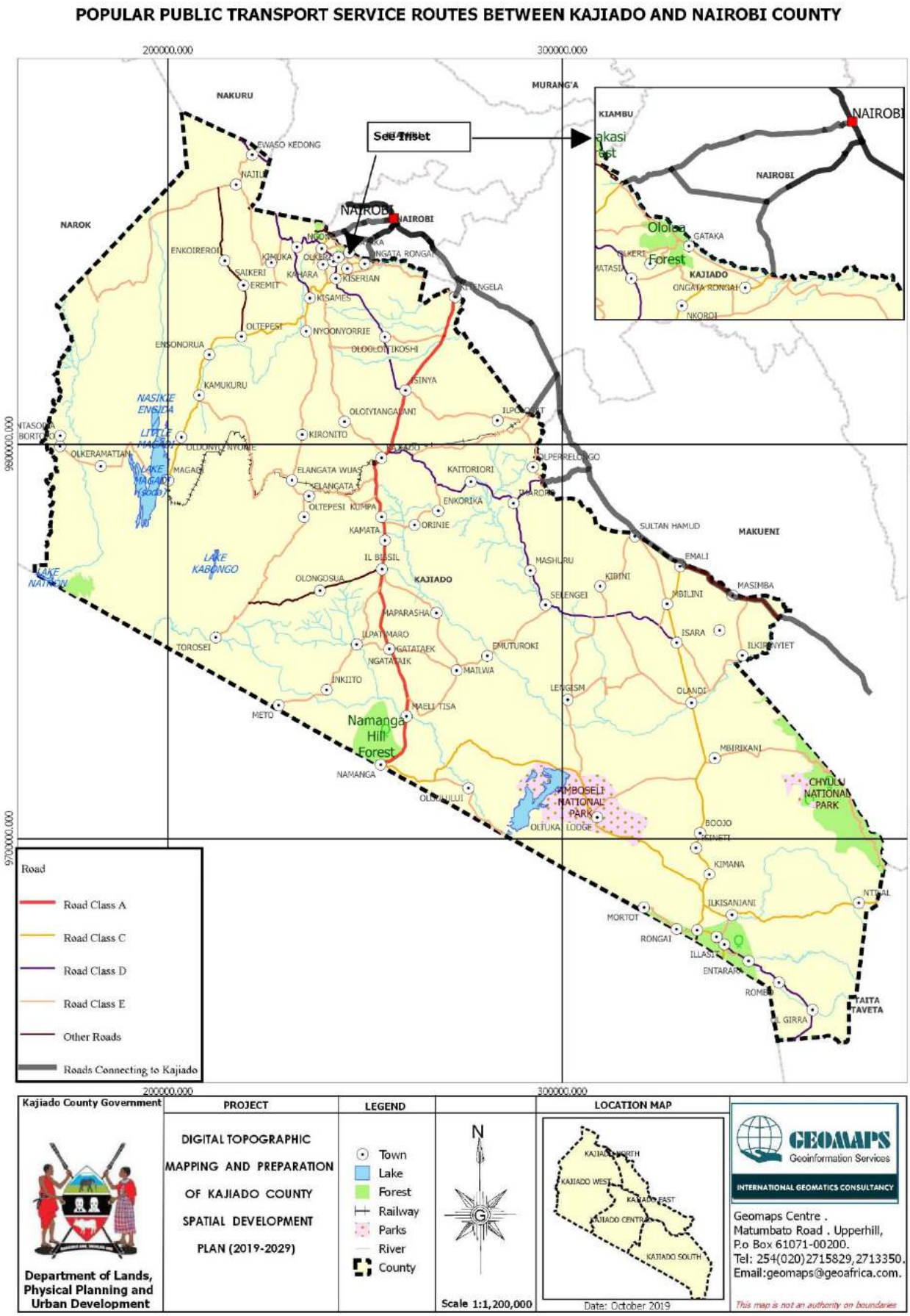
These paratransit means of transport are privately owned but licensed, registered and regulated by NTSA (National Transport and Safety Authority). Matatus operate over short distances within the County as well as long distances to connect Kajiado County to other counties. They are organized under various Saccos for ease of regulation by NTSA as well as for self-regulation.

Table 6-3: Some of the PSV Sacco's in operation in Kajiado County and registered by NTSA

Sacco	Route
Supercoach Safari Sacco Society Limited	
Seven City Shuttle Limited	Nairobi city centre- Kitengela / Athi river
Serian Savings and Credit cooperative society LTD	Kiserian -Ong'ata Rongai-Nairobi
Rongai Saving And Credit Cooperative Society Limited	Nairobi city Centre-Kiserian-Rongai
Ong'ata Line Transporters	Nairobi city centre-Ong'ata Rongai
Ong'ata Rongai Bus Services Orokise Sacco Ltd	Nairobi city centre-Ong'ata Rongai
Oromats Sacco Society Ltd	Nairobi city centre-Ong'ata Rongai
Kimma Savings and Credit Co-Operative Society Limited	Nairobi city - Kitengela
Nmoa Sacco Society Limited	Nairobi city centre- Ngong
Msafara Sacco Society Ltd	Nairobi to Ngong, Kiserian, Isinya, Kajiado, Namanga, Rongai- and Magadi
Nkikan Sacco Society Limited	
Naekana Route 134 Co-Operative Savings $ Credit Society Ltd	Nairobi city centre-Embisil-Kajiado-Namanga
Ngokana Savings and Credit Cooperative Society	Nairobi city centre- Ngong
Ngong Travellers Sacco	Nairobi city centre- Ngong

Source: NTSA website

Public transport vehicles predominantly operate on routes between Nairobi and various major towns in Kajiado County confirming Kajiado County as part of the larger Nairobi Metropolitan area. Below is a map of popular Public Service routes between Nairobi and Kajiado County



Map 6.2: Popular Public Service routes between Nairobi and Kajiado County
Source: Geomaps, 2017

Ticket prices vary from one matatu to another and largely depend on demand and supply. Peak hours attract high prices while off-peak hours attract lower prices. Weather is known to affect the fares as well. Tuk-tuks and boda-boda are predominantly operated over short distances within the County and their prices are negotiated between the operator and the customer. Bodabodas are more versatile than the matatus and tuk-tuk especially on rough terrain and their use has rapidly increased over the years. They also have the advantage of creating a huge number of employment opportunities for the youth in Kajiado County and improving last-mile connectivity for the population and goods. On the downside, they are responsible for a high number of road accidents/incidences due to poor regulation and untrained riders. The County government of Kajiado has provided space to act as a terminus for Matatus and tuk-tuk in all major towns and market places. Shades have also been provided for bodaboda operators at strategic points within the County.

Non-Motorised Transport (NMT)

Non-motorised transport is the predominant means of transport in Kajiado County. It is considered affordable and environmentally friendly and as such should be encouraged. NMT can take the form of walking, cycling or animal transport. It could be the ultimate solution to perennial traffic congestion problems in major towns and cities and must be promoted.

To be successful, non-motorised transport must be seen as a safe and efficient means of transport. Governments must deliberately invest in supporting infrastructure such as footbridges, cycling lanes, walkways street lights e.t.c. For Kajiado County, towns such as Ngong, Kitengela, Ong'ata Rongai, Kiserian and Oloitokitok are densely populated. Provision as been made for motorized transport while non-motorised transport has been neglected compromising road safety and promoting road congestion.

Ngong Township

To promote the use of non-motorized transport in Ngong township, pedestrian pathways and cycling lanes should be introduced on Ngong road (being the major road connecting the town to Nairobi city) from Embulbul into Ngong township to the junction with Kahara and Forest line road to serve the settlements clustered along the route. Kahara road, Forest line road and Ololua road within the Ngong township boundary should have cycling lanes and walkways as well. These routes should also be furnished with well-maintained streetlights for safety.

Ong'ata Rongai township

Ong'ata Rongai township in Kajiado North Sub-county has experienced rapid population growth in recent times. Ong'ata Rongai is a dormitory town to the city of Nairobi. Its economy largely depends on the residents who reside in the town but work in Nairobi and its environs. It is also a transit town to the population of Kiserian township and working in Nairobi. Traffic congestion is

a common occurrence at peak hours in the mornings and evenings along Magadi road as people commute to work and other businesses. A working bus terminus has not been established in Ong'ata Rongai and public service vehicles pick and drop passengers in undesignated bus stops causing confusion and congestion in the town and especially Magadi road. Therefore, a functioning bus terminus should be established along Magadi road C58 in the area at the junction with the Maasai lodge Road to cater for trips into and out of Ong'ata Rongai from Nairobi. Another functioning bus terminal should be designed and constructed along Magadi road C58 near the Kandisi River to cater for trips in and out of Ong'ata Rongai from Kiserian. Non-motorized transport, pedestrian walkways, and street lighting should be designed and constructed along Magadi road to connect the two-bus terminus.

Kitengela Township

Kitengela Township is a vibrant center near the border of Kajiado and Machakos County. It is located near the Export Processing zone and East Africa Portland Cement and Savannah cement factory. Settlement in Kitengela town is clustered along Namanga Road A104. Traffic congestion is common along the route. There is a bus terminus along Namanga road and this has helped the traffic congestion situation in the town. Besides Namanga road A104, there are service lanes serving the town. Cycling and pedestrian walkways should be constructed from the bus terminus to the Chuna estate along Namanga road A104. Well maintained and functioning street lights should be provided.

Kiserian Township

Kiserian is an important market center in Kajiado North sub-county. Kiserian market is an economic hub where trading of goods and services happens. Like in Ong'ata Rongai, settlements in Kiserian Township are linear along Magadi road C58. There are no functioning bus terminus in the township nor are there non-motorized transport such and pedestrian walkways nor cycling lanes. To encourage non-motorized transport, pedestrian walkway and cycling lanes should be established along Magadi road C58 from the junction of Magadi road with Rimpa roads to the junction of Magadi road with the Kiserian-Isinya road. The lanes should be equipped with working street lights. Market produce finds its way into the market. As such, rural roads beyond the borders of the township should continuously be graded and maintained in good condition.

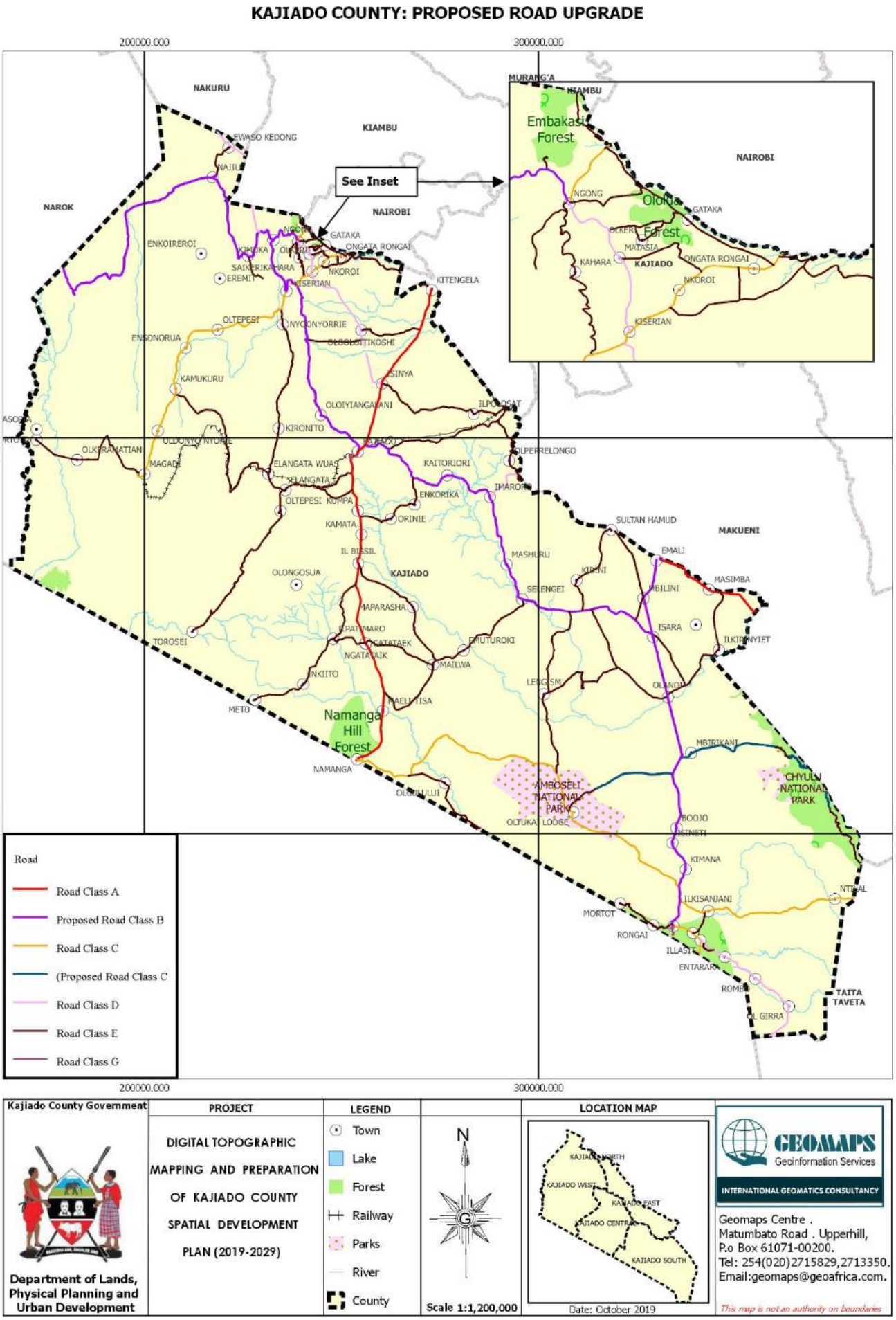
6.2.4 Emerging issues

The County of Kajiado organized forums for public participation in line with the Kenyan constitution. These forums were organized in each of the sub-counties making up Kajiado County and present in the forum were County officials as well as other stakeholders. The aim of these forums was to facilitate stakeholders to highlight various challenges and opportunities facing the

County. In the area of transport and infrastructure, the following dominant issues were highlighted.

It emerged that Kajiado County is poorly connected, for example to move from Oloitokitok in Kajiado South Sub County to the County headquarters in Kajiado town, Kajiado central subcounty through A109 and C102 roads, one needs to connect to Emali in Makueni County and Athi river in Machakos County. From the County headquarters in Kajiado, one has to travel to Kiserian in Kajiado North to get to Lake Magadi in Kajiado East sub County via A104 and C58 roads. In terms of inter-County connectivity, one has to go through parts of Machakos, Nairobi, Kiambu and Nakuru counties to get to the neighboring Narok County through A104. This hinders trade between the two counties whose dominant population share the same culture. It further emerged that the road network is characterized by poor road surface conditions.

The road network lacks adequate road infrastructure such as bridges at river crossings and inadequate street lighting in highly populated urban areas. Drainage channels in areas prone to flash floods are either lacking or are inadequate leaving the County vulnerable to loss of lives and property during heavy rainfall season. Whereas the County provided spaces to act as bus terminuses, the operational infrastructure to optimize efficiency in public transport is missing. The bus terminuses are largely unregulated and are located far in between. Feeder roads serving major roads are few therefore hindering the efficient movement of people and goods. To remedy the situation, some of the major roads in Kajiado County have been proposed for upgrading. Map 6.3 shows the proposed route for upgrade to class B and C roads. Existing routes have should be given priority for proposed upgrading rather than new routes to minimize cost in new land acquisition, minimize negative interference with existing land use and minimize interference with wildlife migration routes.



Map 6.3: Map of proposed new road
Source: Geomaps, 2017

To improve on connectivity between Kajiado South and Kajiado central, the Oloitokitok, Kimana, Isara, Emali road C102 should be upgraded from class C to class B status. To connect Isara to Kajiado town, the Isara, Mashuru, Imaroro, Kaitoriori, Kajiado road should be upgraded from class D to class B status. This would enable easy access to government services by Kajiado south residents. It would also promote trade between the predominantly cultivating areas of Kajiado South and the tourism and livestock keeping residents of Kajiado Central.

To promote tourism activities, the class E road connecting Amboseli National park with Chyulu hills should the upgraded to class C status. The route would also promote trade between the livestock keeping Kuku ward and crop growing Kimana ward. It would also facilitate the movement of livestock and livestock products from Kuku ward through the upgraded C102 road through Emali to neighbouring counties of Machakos and Nairobi.

To improve connectivity between Kajiado central, Kajiado North and Kajiado West, the road from Kajiado town through Oloiyiangani, Kisames, Kimuka to Ngong township road should be upgraded to class B status. Kajiado North is a populous area and upgrading road connection to the county headquarters will serve to bring government services closer to the residents.

6.3 Railway Transport

Kajiado County has only one line of rail from Konza to Magadi run by Tata Chemicals Magadi Limited (TCML). The line is 146km long. It branches off the Mombasa-Nairobi mainline (Under Kenya Railways) at Konza station and extends up to Lake Magadi.

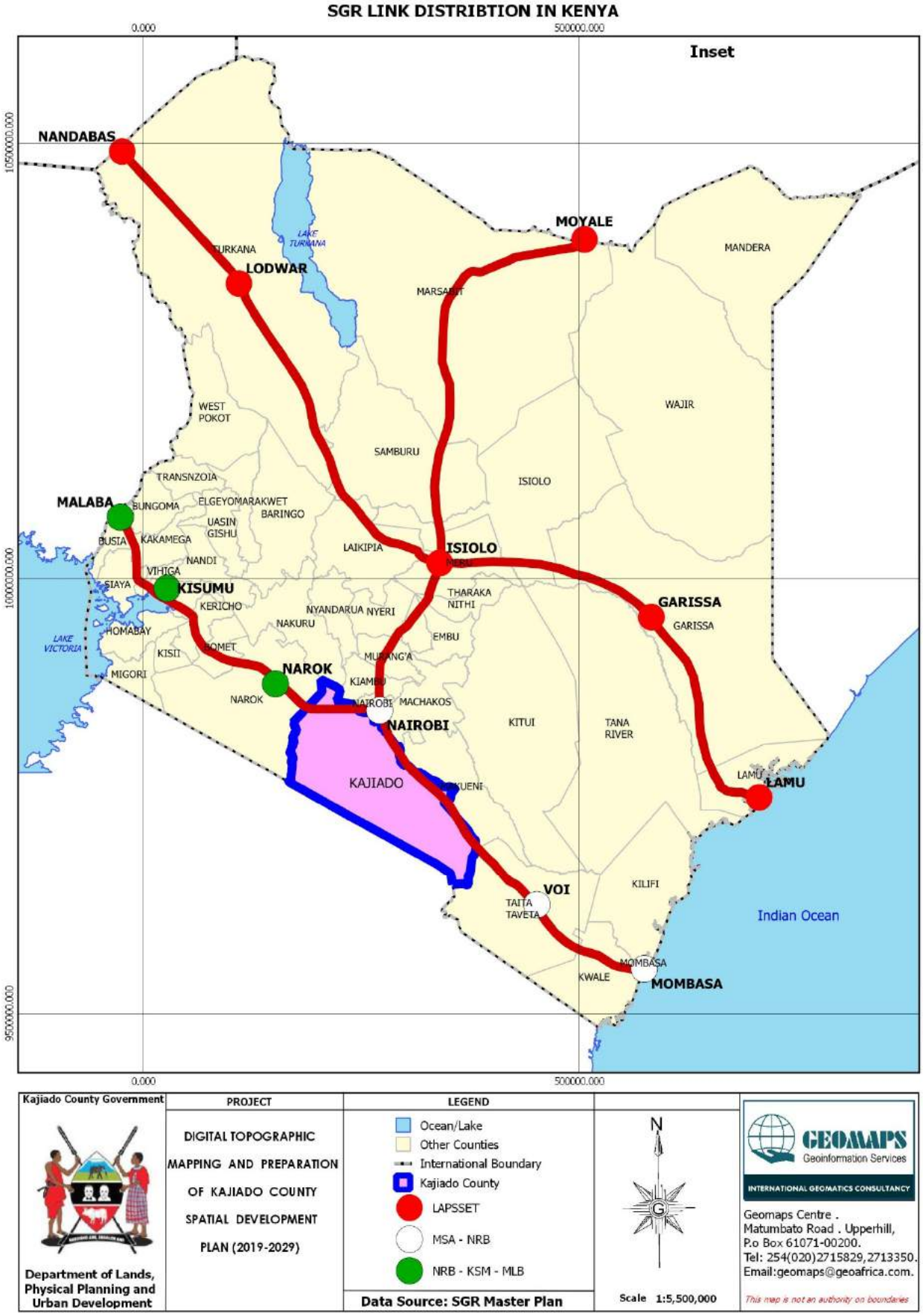
The purpose of the line is to transport Tata chemical products and raw materials. The company operates eight (8) mainline locomotives serialized from 9901-9908. They also have four (4) shunting locomotives used in the yards for marshaling wagons during train formation. There are three (3) types of wagons used on the line. The main type of wagon is the hopper type used to carry soda ash in bulk. These are serialized as 36xxx which are under lease from KR and 37xxx which are owed by TCML. The number of hopper wagons is approximately 250 in number. The second type of wagons is the tank type which is used to ferry petroleum products (HFO and diesel) for use in the plant and some dedicated to carrying water. The tank wagons are serialized 62xxx and are 22 in number. The third type of wagon is the covered wagon. This is used to carry bagged products that are later transshipped into lorries for distribution around the County. The covered wagons are approximately 20 in number.

Although the line is exclusively meant to transport Tata Chemical Magadi Limited products and raw materials, it also offers limited commuter transport services on two routes. The first is between Konza and Kajiado which has two

return trips weekly with a capacity of 162 passengers. The ticket for a one-way trip goes for Ksh 50. The other route is between Kajiado and Magadi. There are three return trips weekly on this route and a ticket goes for 70Ksh. The line has four (4) terminuses i.e Kajiado station, Tsingiraini, and Magadi which are in good condition and Konza station which is in a run-down condition.

The standard gauge railway (SGR) project presents new opportunities for rail transport in Kajiado County. The second phase of the project currently ongoing from Nairobi to Malaba passes through Kajiado North Sub County with a captivating tunnel, the second-longest in Africa between Em-Bulbul and Ngong. Part of the scope of the second phase of the project build intermediate freight exchange and passenger stations at Ong'ata Rongai, Ngong towns in Kajiado North Sub County. Coming in on phase three of the SGR project is to have commuter services extended to Kiserian. The railway line passes near Kajiado County's border with Makueni and Machakos counties.

Currently, the County government of Kajiado does not accrue any revenues from the railway line directly.



Map 6.4: SGR Master Plan
Source: Geomaps, 2017 & Kenya Railways Mapping Database

6.3.1 Emerging issues

Kajiado County being part of the larger Nairobi metropolitan area has witnessed the development of major towns acting as dormitory towns to the city. Nairobi city is said to have a population of about five (5) million people during the day and one (1) million at night with the other four (4) million people residing in satellite towns such as Ong'ata Rongai, Kiserian, Kitengela, and Ngong. Currently, Kajiado residents rely on road transport between these towns and the city of Nairobi and other surrounding counties. Kajiado County is increasingly becoming an industrialized County with many manufacturers taking advantage of its natural resources and its proximity to the city. As the population continues to grow and industries continue to sprout, there is an increasing need to create alternative means to efficiently move goods and people while relieving the County's road network from carrying heavy loads. Whereas the SGR commuter rail project is a welcomed development, an enabling environment needs to be created within the County to enable the County to reap maximum benefits from the project. The SGR project has the capacity to serve a limited population of the County with major attractions such as Lake Magadi, Lake Natron, and Amboseli National Park not accessible from the railway corridor. Apart from tourism and mining, the main economic activity for the County is ranching and animal husbandry. Currently, no railway line serves this economic activity.

6.3.2 Proposed Strategy

- To have an impact in Kajiado, it is proposed that the Magadi rail be upgraded to SGR standards.
- In addition to the proposed Kiserian SGR commuter rail, an SGR commuter link should be considered between Kajiado town and Nairobi

6.4 Pipeline Transport

Pipeline transport in Kenya only applies to the transportation of import oil and oil products from the port city of Mombasa inland to other cities in the country and for export to landlocked countries such as Uganda, Burundi, and Rwanda. The Pipeline runs from Mombasa to the border town of Malaba through Nairobi, Nakuru, and Eldoret. Pipeline development and management are done by the Kenya Pipeline Company (KPC), a state corporation. The pipeline delivers the product to depots situated strategically for storage with the last mile delivery done by road. Whereas pipeline transport is considered a relatively safe means for transporting oil products, its distribution in Kenya is poor with only one major artery existing from Mombasa to Nakuru where it splits into two (2) branches toward Eldoret and Kisumu.

6.4.1 Emerging issues

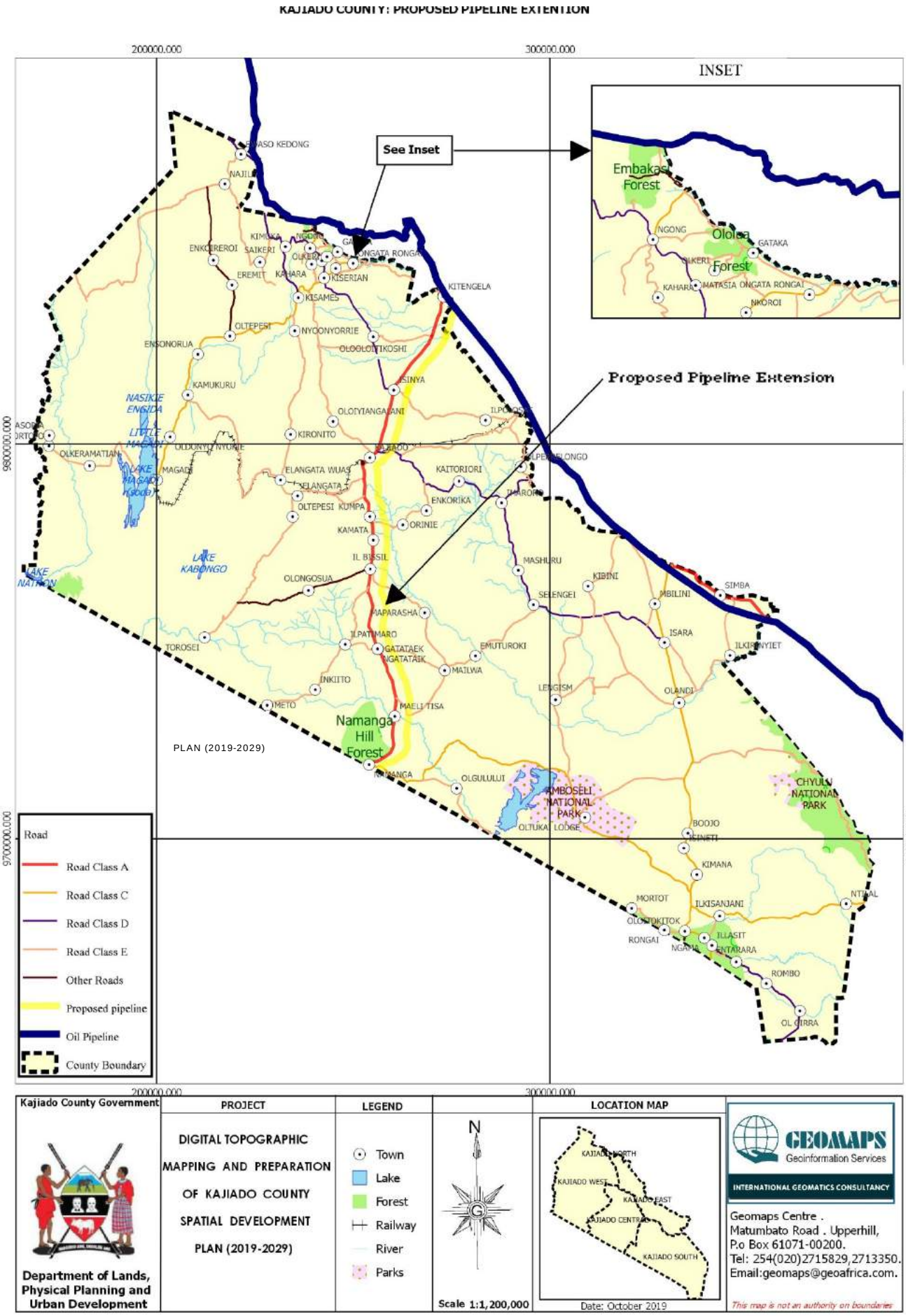
Pipeline transport barely has any significate social-economic impact once operational except at the location of loading and storage terminus. Kajiado County does not host any pipeline termini. The County gets its supply of oil

products by road from the Nairobi depot. Recently there was the discovery of what was thought to be natural gas 200m deep by a farmer in Kajiado County. However, further studies showed that the gas was biogenic and not petroleum. Despite this setback, Kajiado County still remains an oil potential County with hopes of finding oil in Kajiado oil block under the state-owned national oil still high.

6.4.2 Proposed Strategy

- To extend a pipeline from Athi river south through Kajiado town to Namanga along the A104 road and construction of a depot terminus at Kajiado town. This would reduce the cost of transport to various destinations within the County.

Map 6.5 shows the existing pipeline and the proposed extension into Kajiado County.



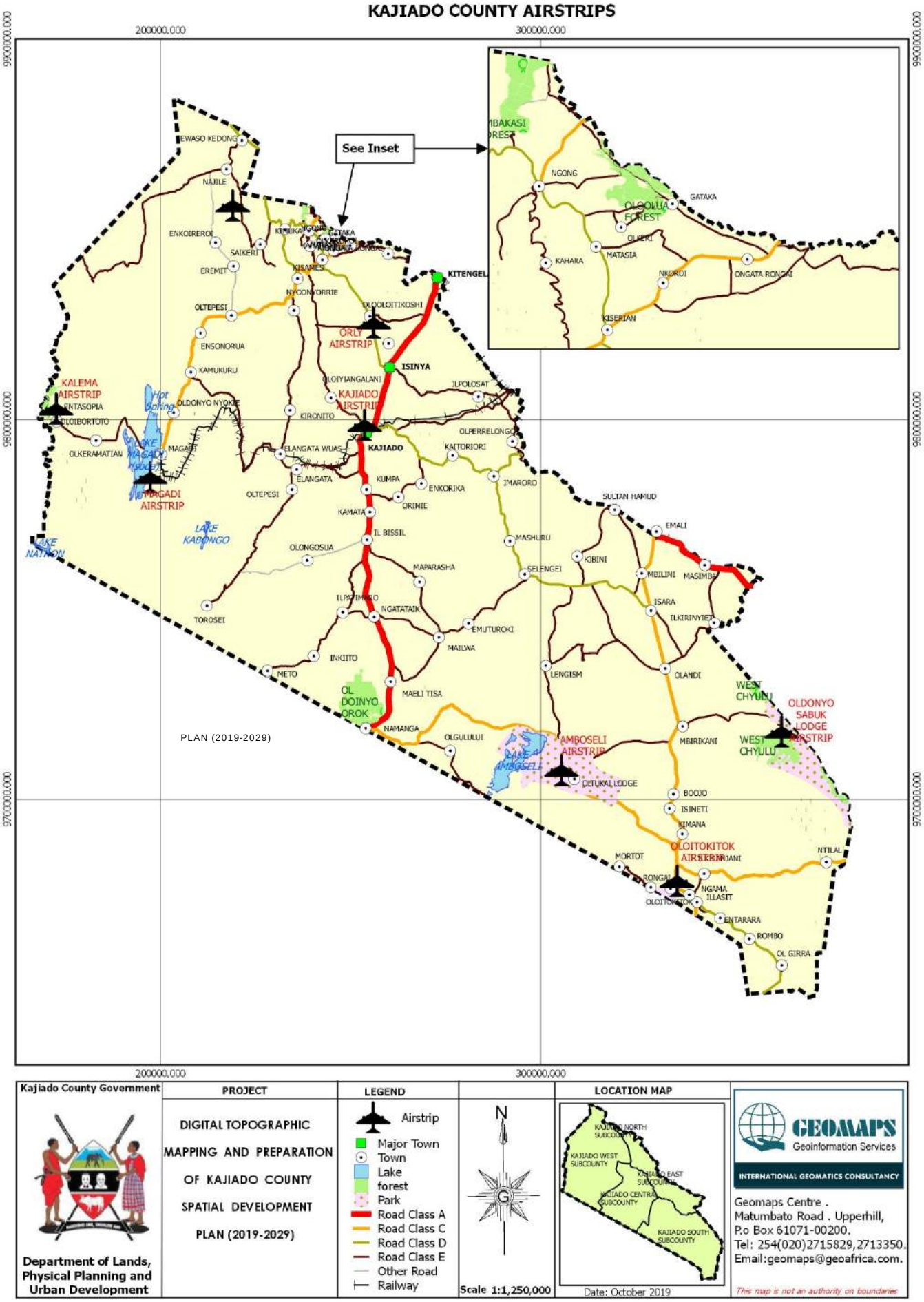
Map 6.5: Proposed pipeline extension
Source: Aerial Survey (2012)

6.5 Air Transport

There are eight (8) airstrips in Kajiado County. Each sub-county has at least one airstrip. These are Kajiado, Ngong, Oloitokitok, Orly, Magadi, Kalema and Amboseli airstrips.

Amboseli strip is located inside Amboseli national park in Kajiado County close to Kenya's border with Tanzania. It serves the Amboseli National park. It is approximately 156Km from Jomo Kenyatta International Airport. The geographic coordinates of Amboseli Airport are 2° 38' 42.00"S, 37° 15' 0.00"E (Latitude: -2.64500; Longitude: 37.25000). It's located at 1,145 meters (3,757 ft) above sea level. It has a single asphalt runway of 1001m in length that serves regularly scheduled service from Air Kenya and unscheduled service from air charter service providers.

Magadi Airstrip is located in Kajiado County, in southern Kenya, near the town of Magadi on the eastern shores of Lake Magadi. Its location is approximately 97 kilometers southwest of Nairobi International Airport. The geographic coordinates of this airport are: 1° 57' 0.00"S, 36° 16' 45.00"E (Latitude: 1.950000; Longitude: 36.279166). Below is a map of the location of all airstrips in Kajiado County.



Map 6.6: Airstrip distribution in Kajiado Count
Source: Aerial Survey (2012)

6.5.1 Emerging Issues

It emerged that Kajiado County is fairly well connected by air with its proximity to Nairobi's Jomo Kenyatta International Airport and numerous airstrips within the County. The airstrips only have the capacity to handle small chartered aircraft. Only a very small population of Kajiado County travel by air with most flights targeted at tourists visiting numerous tourist attraction sites. Air transport is considered an expensive way of travel and carrying freight and is only justifiable when transporting highly perishable products such as flowers or vegetables. With the growing population and reducing space for ranching, residents of Kajiado County are turning to crop farming. Whereas Kajiado County is considered a dry County, Kajiado south produces a wide variety of horticultural crops such as onions and tomatoes thus have the potential for commercial air transport facilities.

6.5.2 Proposed Strategy

- It is proposed that the airstrip at Oloitokitok and Kajiado be upgraded to carry heavier traffic
- To upgrade all airstrip runways into bitumen standards

6.6 Water

Kajiado County enjoys an average of 500mm of rainfall yearly. The wettest month records an average of 113mm with the driest month getting 2mm of rainfall. As such Kajiado is classified as a water-scarce County. Apart from direct precipitation, other sources of freshwater in Kajiado County include rivers, shallow wells, protected springs, dams, water pans, boreholes, and unprotected springs. Springs from Nkuruman escarpment provide water for irrigation in the area. The Tsavo River with its main tributaries Nolturesh, Mokoine, and Rombo, which flows from the eastern slopes of Mt. Kilimanjaro, provides water to Kajiado South Sub-County. This river is perennial in the upper parts. Ngong hills springs also provide water in some parts of Ngong and Kiserian towns.

About 70% of freshwater in Kajiado County is drilled from boreholes. There are about three hundred (300) private and four hundred (400) community boreholes in the County. Dams such as Kiserian and Oloishobor also provides freshwater. In addition, there are about three hundred (300) community pans.

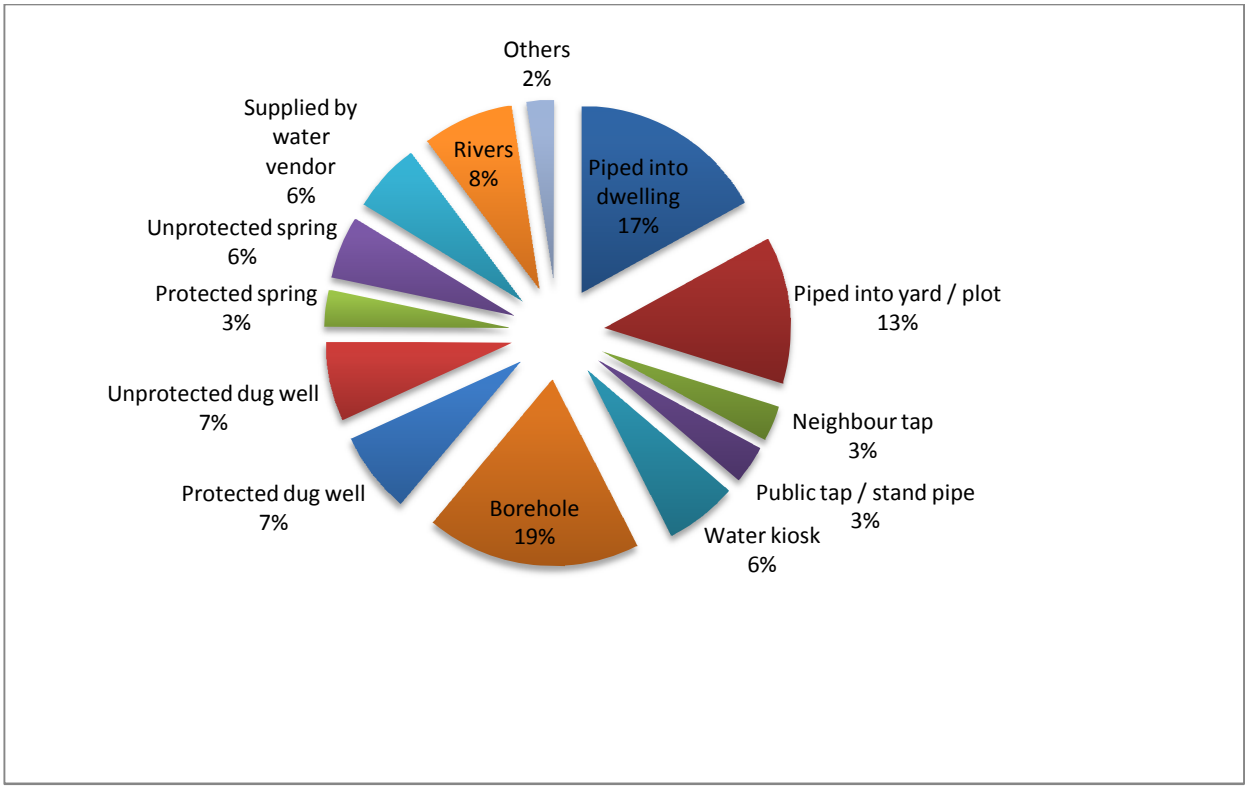


Figure 6.6: Primary sources of water for household use
Source: Kajiado County Spatial Planning - Household Survey Data 2018

The survey established that various sources of water for domestic use were accessed by households. These were boreholes at 19%, piped dwellings at 17% and rivers at 8%.
Table 6.3 shows some of the existing water sources for Ngong town in Kajiado North, their yields and operational status

Table 6.3: Details of existing water sources in Ngong

Source	Year Drilled/ Constructed	Present Yield (m3/hour)	Daily Pumping Hours	Borehole Depth (m)	Comments
Ngong Main Water Supply Borehole	1956	20	24 (gravity flow	252	Operational
Embulbul Main Water Supply Borehole	1955	4	9	142	Operational
Embulbul Primary School Borehole	2006	14	12	220	Operational
Embulbul Roadside	2006	15	12	200	Operational

Source	Year Drilled/ Constructed	Present Yield (m3/hour)	Daily Pumping Hours	Borehole Depth (m)	Comments
Borehole Water Supply					
Ngong Scheme 305 Water Supply Borehole	1973	10	18	260	Operational
Olkeri Borehole Station	1981	20	19	240	Operational
Ngong Booster Station Borehole					Not in use
Oloolua Borehole 1					Currently under rehabilitation
Oloolua Borehole 2	2006	17	16	174	Operational

Source: integrated sanitation management plan for Nairobi and selected satellite towns, Kenya 2018

Table 6.4 shows some of the existing water sources for Ong'ata-Rongai town in Kajiado North, their yields and operational status

Table 6-4: Details of existing water sources in Ong'ata Rongai

Source	Year Drilled/ Constructed	Present Yield (m3/hour)	Daily Pumping Hours	Borehole Depth (m)	Comments
Health Centre Borehole	2007	Not known	12	272	Operational
Nkaimurunya Borehole		6	Varies (about 9 hours)	260	Operational
Upper Gataka Borehole		3	12		Operational
Ong'ata Rongai Open Air Market Borehole		0			Not in use
Olekasasi Borehole 1	2007	25	12	250	Operational
Olekasasi Borehole 2	2010	8	12	250	Operational

Source: integrated sanitation management plan for Nairobi and selected satellite towns, Kenya 2018

The total length of the existing distribution system is approximately 9km and comprises mainly of PVC pipes (DN50 to DN100). There are a total of 2934 registered connections.

Ngong water Services Company has the following rising mains installed.

- DN100 PVC 2,000m line from the scheme 305 boreholes to Ngong main town boreholes storage tanks
- DN75 GI 1,400m line from town borehole to the main storage tank
- DN 110 PVC 4,500m line from Olkeri urban borehole to main storage tanks

Table 6-5: Storage tanks for OWSC-Ngong

Source	**Year of Installation**	**Storage capacity**	**Remarks**
Masonry tank at the ground	1962	40	
Elevated steel tank 5.5m from the ground level	1995	90	
Elevated steel tank 18m from the ground level	2007	48	
Masonry storage tank	1997	0	90m³ tank is abandoned due to excessive leaking beyond repair
Masonry tanks at the ground level with a capacity of 100m³ each	1968	300	
Masonry ground tank at the ground level	1995	150	
Masonry ground tank at the ground level	1995	30	
Masonry tank located at the ground level	1997	120	
Masonry storage tank at the ground level	1968	0	100m³ currently not in use, until later
Total Utilized Capacity		**778**	

Source: integrated sanitation management plan for Nairobi and selected satellite towns, Kenya 2018

In Ong'ata Rongai piped water is supplied by a private operator (WSP). The operator is regulated by WRMA and the water is tested annually by the Ministry of Water. The distribution line consists of 30Km of mainly PVC pipes. Through the scheme, 36 households are serviced by metered connections. The rising main is 600m long, and consists of DN250 steel pipes, running from the water treatment works to the main water storage tanks (twin 1,200 m^3 storage tanks).

The *Ong'ata Rongai* Water Supply has the following three pumping stations:

- Raw water pumping station from the intake to the treatment works;
- Clearwater pumping station from the treatment works to the two-main ground level water storage tanks;
- *Gataka* booster pumping station from the ground level storage tanks to the elevated water storage tanks

The table below provides a summary of the storage reservoirs serving the *Ong'ata Rongai* area.

Table 6-6: Storage reservoirs serving the Ong'ata Rongai area.

Source	**Year of Installation**	**Storage Capacity (m^3)**	**Remarks**
Elevated steel storage tanks 18m high from the ground level	1994	250	
Elevated steel storage tanks 18m high from the ground level	1994	120	Requires rehabilitation
Reinforced concrete tanks at the ground level	1994	1,200	
Reinforced concrete tanks at the ground level	1994	1,200	
Elevated plastic tank at 2m high from the ground level	2006	5	

Source	Year of Installation	Storage Capacity (m^3)	Remarks
Elevated Plastic storage tank 7m High on steel stand	1994	10	
Reinforced Concrete storage tank at the ground level	1994	45	
Reinforced Concrete storage tank at the ground level	1994	75	
Elevated plastic tanks, (4 No.) elevated 15m from the ground level	Unknown	30	It was initially a 100m^3 Steel tank
Elevated plastic tank elevated 5m from the ground level.	2006	10	
Elevated plastic tank elevated 13m from the ground level	2006	16	
Total capacity		**2,961**	

Source: Integrated Sanitation Management Plan for Nairobi And Selected Satellite Towns, Kenya 2018.

According to the Integrated Sanitation Management Plan for Nairobi and Selected Satellite Towns, Kenya 2018, the water demand for Ngong is 5.9 MLD. Domestic water demand is 3.2 MLD while commercial and industrial water demand was 393 m^3/day. The non-revenue and unaccounted for water is at 40%. The system average demand for Ngong is 4.2MLD.

The table below shows the major towns in Kajiado County and their current and projected water demands.

Table 6-7: Water demand for various towns in Kajiado County

Area	Water Demand in m^3/d		
	Yr 2018	**Yr 2022**	**Yr 2032**
Kitengela township area	9,364	12,630	21,984
Kajiado township	2,021	3,638	18,427
Isinya urba area	1,359	1,765	3,308
Kisaju urban area	975	1,265	2,370
Olooloitikosh urban area	365	473	883
Bisil Urban Area	845	1,096	2,053
Rural areas	339	440	884

Source: Consultancy Services for Feasibility Study, Preliminary Design and Detailed Design for the Proposed Oloolotikosh-Kitengela-Kajiado Water and Sewerage Project in Kajiado County

For Ong'ata Rongai, the water demand is 10.7 MLD. Demand for domestic water supply is 10.7 MLD and demand for commercial and industrial water is 534m^3/day.Non-revenue and unaccounted for water is at 40%. The system average demand for Ong'ata Rongai was 7.6 MLD.

Proposed Oloolotikosh-Kitengela-Kajiado Water and Sewerage Project in Kajiado County (Ongoing)

The Proposed Oloolotikosh-Kitengela-Kajiado Water and Sewerage Project in Kajiado County is an ongoing water project set to serve the population of Kitengela Township Area, Kajiado Township Area, Isinya shopping center area, Kisaju Area, Olooloitikosh shopping center area and Bisil area. The project will comprise a dam (Kitengela dam), water treatment facilities and flow stations and water tanks in Kitengela and Kajiado. The project is designed to harvest rainwater runoff. The map below shows the general design layout of the project.

The proposed dam has the capacity to hold $34x10^6$ m^3. The ultimate capacity of the dam is expected to be 36,908,000m^3/y. The table below shows the demand for water in various areas expected to benefit from the project.

Map 6.7: Design layout for the proposed Oloolotikosh-Kitengela-Kajiado Water and Sewerage Project in Kajiado County
Source: Tana-Athi Water Services Board & KCG, 2019

Table 6-8: Water Demand Estimates for the project sub-area (m^3/d)

	Demand in m^3/d		
Project Sub-Areas	**Year (2018)**	**Year (2022)**	**Year (2032)**
Kitengela Township	9,364	12,630	25,984
Kajiado Township	2,521	3,638	8,844
Isinya Area	1,359	1,765	3,308
Kisaju Area	975	1,265	2,370
Olooloitikosh Area	365	473	883
Bisil Area	845	1,096	2,053
Rural Areas	339	440	884
Livestock Water Demand	691	934	2,073
Crop Irrigation (Raw)	5,951	7,234	11,783
Other Water Demand	823	1,112	2,320
	23,234	**30,588**	**60,504**

Source: Tana-Athi Water Services Board, Consultancy Services for Feasibility Study, Preliminary Design and Detailed Design for the Proposed Oloolotikosh-Kitengela-Kajiado Water and Sewerage Project in Kajiado County

Rehabilitation and Augmentation of Oloitokitok water supply and sanitation project (Ongoing)

The Oloitokitok water supply and sanitation project provides Water and Sewerage services to the residents of Oloitokitok and its environs. Athi water and Services Board and Tanathi Water and Services Board with funding from the Government of Kenya and the Arab Bank for Economic Development in Africa (BADEA) are some of the bodies responsible for the rehabilitation of the project with a view to providing Oloitokitok town and its environs with adequate water supply until the year 2030.

The project entails pumping water from Nol Turesh Springs to the Intermediate Pumping Station. From the Intermediate Pumping Station, the water will be pumped to water tanks located at the Lolopon. From the water tanks, water will flow by gravity to serve Oloitokitok town and its environs. Currently, water vendors are the main water source for both domestic and business use. Other alternative sources are boreholes and water piped from Tanzania. From February 2015, the Nol-Turesh water supply system has not been operating. The Nol-Turesh Pipeline serves Kimana, Mashuuru, Nzaui, Mukaa, Athi River and the lower Kajiado County.Oloitokitok town water supply comprises of two pumping stations; at the source works and at the intermediate pumping station. Water is stored in a main storage tank at Oloitokitok town for distribution by gravity to Oloitokitok and Ilassit towns and the KRA customs border post. Other areas served by the project include Engama and Kikelelua. Whereas the design capacity was meant to supply 2000m^3/day to Oloitokitok township, only 1000m^3 is achieved daily against a demand of 5000m^3/day.

The scope of the project include;

- Rehabilitation of the Nol Turesh Springs Source works and associated works comprising of the chemical house, valve chambers, the storehouse, water sump, the pump house, the staff houses, supply and installation of 2no. pumping units and related control panels and general civil works within the source works;
- Rehabilitation of the Intermediate Pumping Station and associated works comprising of the pump house, fencing of the site, the 200m^3 water tank, valve chambers, the staff houses, supply and installation of 2no. pumping units and related control panels and general civil works;
- Rehabilitation of the Lolopon Water Tanks and associated works comprising of the 500m^3 NOLWASCO water tank, fencing of the tanks site, supply and installation of 2no. DN 100mm bulk water meters, the entrance gate, and valve chambers;
- Supply, construction, and Installation of Photovoltaic Solar Power system consisting of 250W monocrystalline photovoltaic modules,

15,000W-3phase solar inverter, DC control unit and distribution boards at Nol Turesh Springs

- Construction of 5no. Water Kiosks in Oloitokitok Town;
- Construction of Oloitokitok Town Water Supply Distribution System approximately 10,820m.
- Construction of Trunk Sewers of dia. 375mm, in precast concrete socket/spigot pipes (approximately 5,463.4m) and manholes (136No.);
- Construction of Sewer laterals of dia. 225mm, (approximately 8,798m) and manholes (182No.)
- Construction of Sewage Treatment Works comprising the Waste Stabilisation Ponds (Anaerobic – 1, Facultative -1, Maturation -3), sludge drying bed and associated works Construction of outfall sewer and associated works
- Construction of 3no. Ablution blocks

6.6.1 Emerging issues

From the Kajiado County Spatial Planning - Household Survey Data 2018**,** challenges in freshwater supply include inadequate/untimely disbursement of funds and destruction of water catchment areas. Water companies suffered from massive inefficiencies. Kajiado County does not earn revenue from water treatment and supply. Policies on water recycling and rainwater harvesting are only at draft stages. Only about 17% of Kajiado residents enjoy piped water. Currently, demand for piped water is much higher than supply leading to frequent water rationing. Water reticulation infrastructure is inadequate for the rapidly rising population.

6.6.2 Proposed Strategy

- To service the existing water services company and equip them to maximise output
- To service the current water reticulation system to reduce water losses.
- To ensure water services companies are adequately staffed
- To ensure water tariffs are affordable by offering incentives to water companies in the County.
- Expand the capacity of existing water companies by exploring alternative sources of water and increasing their water storage capacity.

6.7 Sanitation and Drainage

Kajiado County is strategically placed bordering the city of Nairobi. As the city population swells and the demand for settlement areas increases, major urban areas have grown in Kajiado County as dormitory towns to the city. These include Kajiado town, Kitengela, Ong'ata Rongai, Isinya, Oloitikitok, Sultan Hamud and Namanga among others. Whereas the demand for proper sanitation facilities such as sewerage systems is on the rise, access to

sewerage connections is limited. Ngong town has a small and non-functional old sewerage system. The original pond treatment system has been filled with solid rubbish. According to the 1992 Ngong town Physical Development Plan, four (4) hectares of land had been reserved for a sewage treatment works. The reserved site has however been encroached by a private and informal housing development. The 2002 Ong'ata Rongai town Physical Development did not allocate land for sewage treatment works. Similarly, the 1991 Kitengela town Physical Development plan did not reserve land for municipal sewage treatment works in Kitengela. Greywater is disposed through septic tank systems or discharged into open channels in its raw form. Major health challenges arise from poor sanitation in Kajiado County. The major methods of solid waste disposal are pit latrine in the rural areas and septic tanks and cesspools in the urban areas. Kajiado South Sub County leads in lack of sanitation facilities with 16.4% having to do with open defecation.
The Oloitokitok town topography slopes towards either Narumoru or Kikelelua Rivers that traverse the outer present boundary of the town. As such, a sewerage outfall from the town with trunk sewers along Narumoru River has been proposed.

The option for the sewerage collection and disposal system considered are: -

- Sewerage System with the two trunk sewers one trunk passing near Narumoru River to join another trunk leading to a separate/ decentralized treatment works near River Narumoru.
- A separate/ decentralized treatment works consisting of Waste Stabilisation ponds (one anaerobic pond, one facultative pond, and three maturation ponds and one sludge drying bed) to be located near the banks of Narumoru River.

Table 6-9 shows the current and projected demand for water disposal in Kitengela and Kajiado Township.

Table 6-9: Wastewater disposal demand in Kitengela and Kajiado

Area	Demand m³/d		
	Yr 2018	Yr 2022	Yr 2032
Kitengela township	7,491	10,104	20,787
Kajiado Township	2,016	2,910	7,075

Source: Consultancy Services for Feasibility Study, Preliminary Design and Detailed Design for the Proposed Oloolotikosh-Kitengela-Kajiado Water and Sewerage Project in Kajiado County

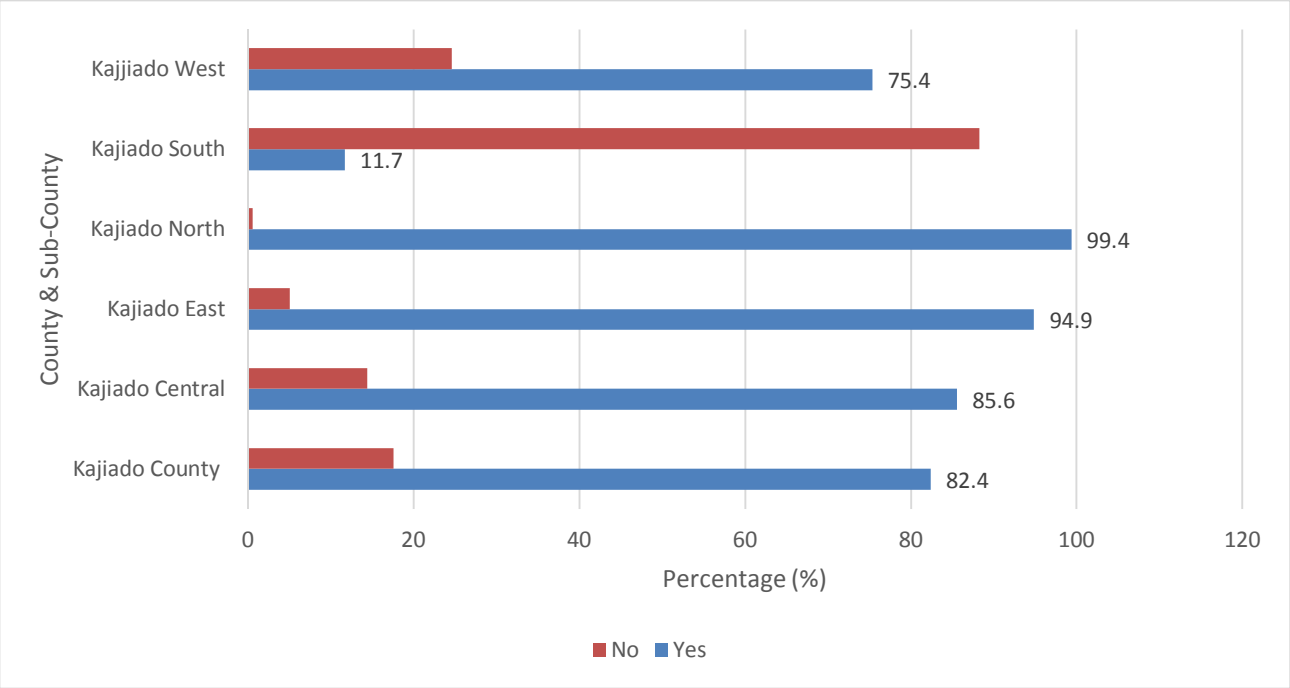


Figure 6.7: Accessibility of toilet facility by Sub County

Source: Kajiado Household Survey Data 2018

Table 6-10: Types of toilets analysis by Sub-County

Region	No. of respondents	Types of Toilet							Total
		Pit Latrine	Flush Toilet /WC	VIP Latrine	Public Latrine	No facility/flying toilets	Bush	Other	
Kajiado County (overall)	1,287	67.6 %	13.1%	1.1%	1.3%	0.3%	16.4 %	0.3%	100.0 %

Source: Kajiado Household Survey Data 2018

Studies are ongoing with County and National Government being major stakeholders with a view to remedy the wastewater disposal system. The

County Government provides public toilets mostly at market places. There is a total of eight (8) public toilets in the County of Kajiado. Isinya-1, Kajiado-1, Ngong-0, Kiserian-1, Ong'ata Rongai-1, Kitengela-2, Kimana-1, and Oloitoktok-1.

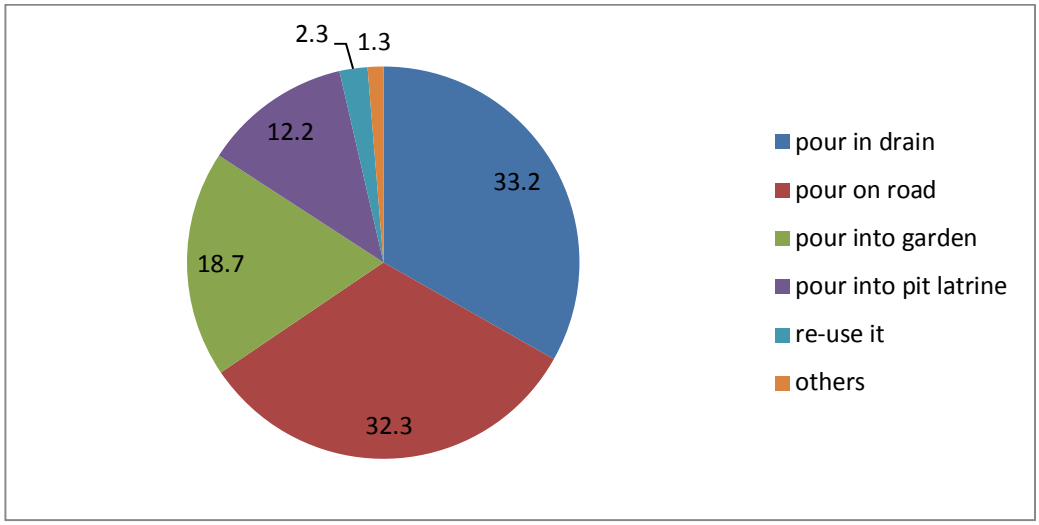


Figure 6.8: Channels of disposing of wastewater

Source: Kajiado County Household Survey Data 20

The Proposed Sewerage System

A wastewater treatment plant has been proposed at Iltareto Area. This site is 4.5km South-east of the Athi River-Kajiado-Namanga Road along the Olkejuado River. The site is located on coordinates 1_0 54' 17" S, 36_0 47' 46" E.

With this site, the following trunk sewers are proposed.

- 11,900m long Olkejuado River Trunk Sewer
- 3,900m long Kajiado Town Northern Sub-Trunk Sewer
- 2,900m long Kajiado Town Southern Sub-Trunk Sewer
- 3,000m long Administration zone Sub-Trunk Sewer
- 4,400m long Maasai Technical College Sub-Trunk Sewer
- 7,350m long Mabatini Sub-Trunk Sewer

A total of 15km of secondary and tertiary sewers have been proposed to be implemented in the currently settled areas with the major concentration being in the Main Township area, Majengo, the Kajiado Hospital area, Governor's office area and Law Courts.

On-site sanitation facilities have been proposed in the peri-urban and rural areas within the project. These facilities include;

- Pit Latrines in Rural Areas
- Ventilated Pit Latrine in Rural Areas with higher Population
- Pour Flush Latrines in Institutions in Rural Areas

- Septic Tanks and Package Waste Water Treatment Plants in Peri-Urban Areas

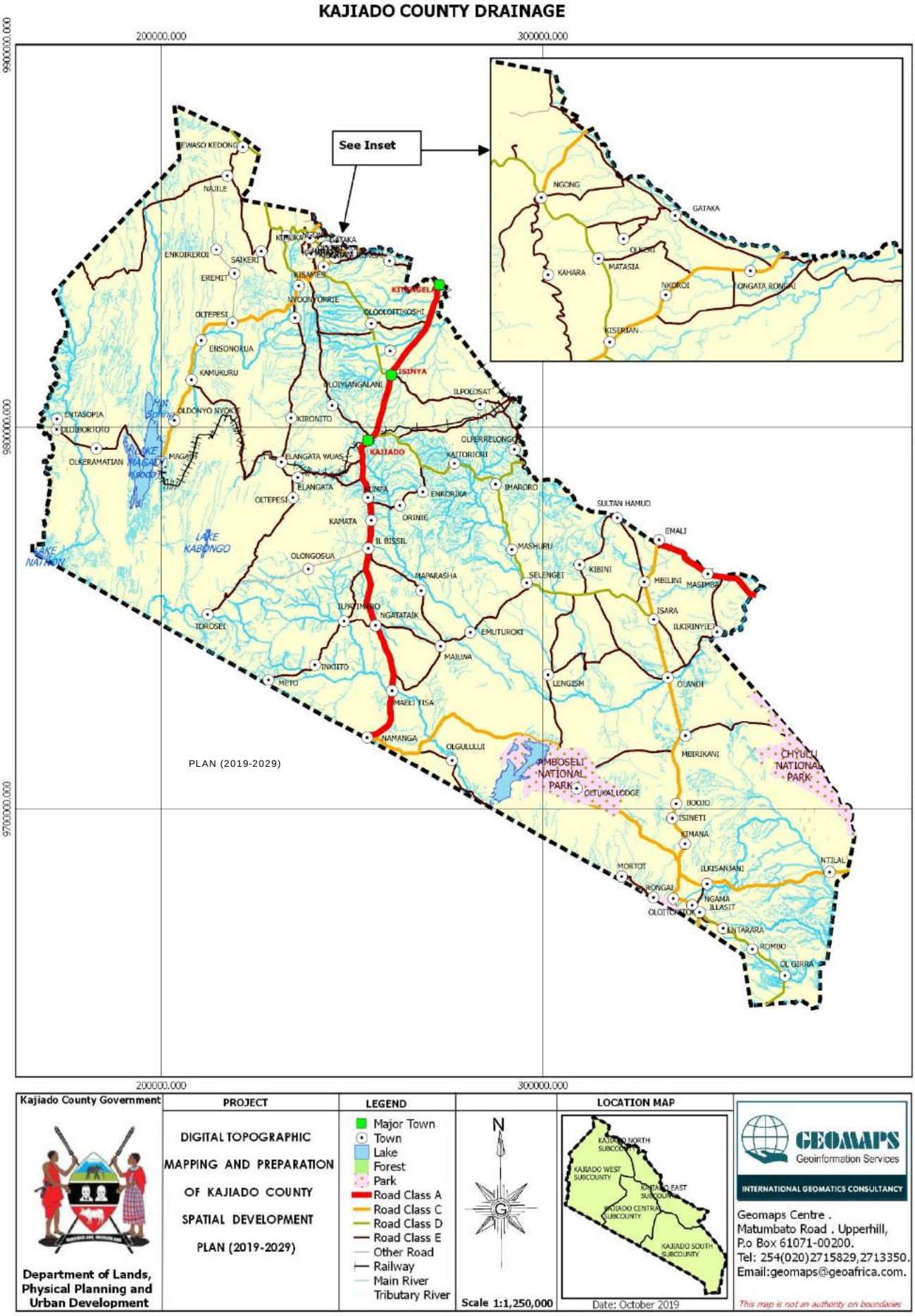
6.7.1 Emerging issues

The biggest challenge cited for the poor sanitation facilities is the lack of adequate funding. Pollution has however been recorded at Kiserian dam from a nearby Kiserian slaughterhouse and town greywater discharged into open channels and finding its way to the dam. Neither urban nor rural populations in Kajiado County are adequately served with the sewerage system. Kajiado South Sub County access to proper sanitation facilities was especially found to be poor with only 11.7% of the population with access to sanitation facilities. Kajiado North Sub County has the highest population with access to proper sanitation facilities at 94%. It is however clear from the field surveys conducted within the County that sewerage facilities are either lacking or are not serviceable

Kajiado County is generally well-drained. However, recent years have witnessed flooding and destruction of transport infrastructure in areas such as Maparasha in Kajiado Central Sub-County, along the Kitengela-Isinya-Namanga highway and Ong'ata Rongai in Kajiado North Sub-County. Cases of flooding in urban areas are caused by uncontrolled development, lack of storm drain facilities and blockage of storm drains while in rural areas flooding is caused by deforestation, and poor sand harvesting practices. Flooding could also be attributed to factors that go beyond the county such as climate change. Unsustainable sand harvesting practices have also affected river regimes in the County causing flooding. The urban population has also increased with new buildings reducing percolation of surface runoff. Roads with poor storm drain design have also contributed to flooding.

6.7.2 Proposed Interventions

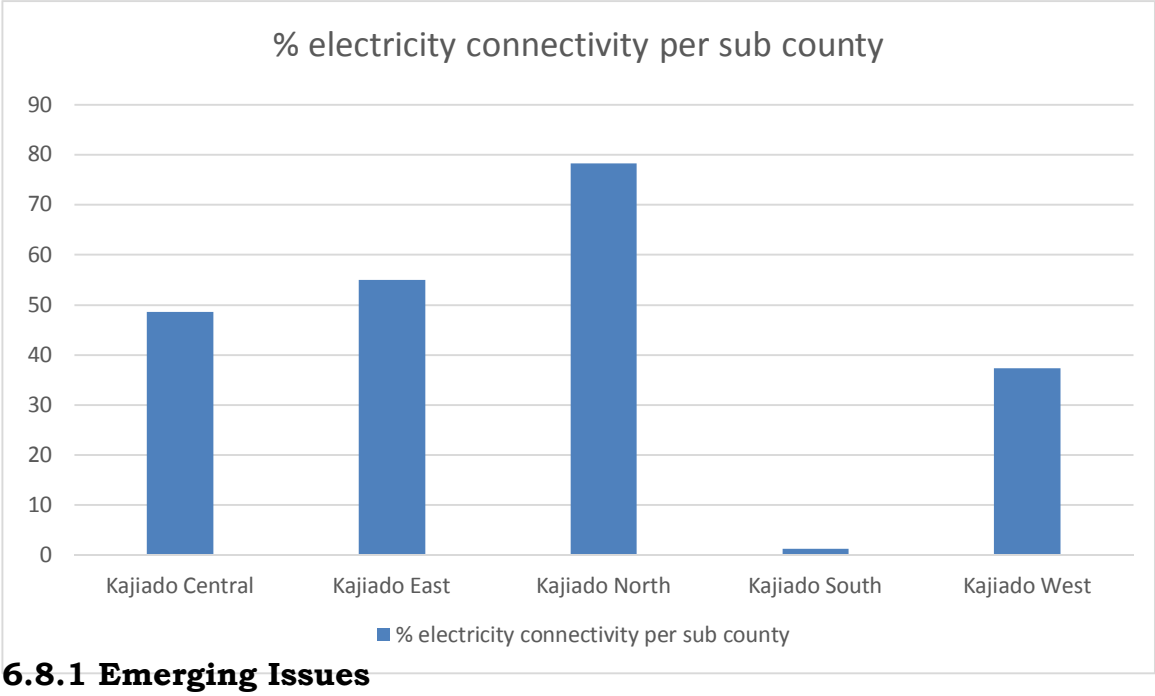
- To provide sewerage systems to all fast-growing towns in the County.
- To equip Oldonyo Orok, Oloolaiser, Olkejuado and Nol-Turesh water companies with modern efficient sewerage treatment facilities.
- To ensure all roads especially in towns such as Ong'ata Rongai, Kitengela, Ngong, Kajiado town and Kiserian have storm drain.
- To have regular maintenance of roads to ensure drainage facilities are not blocked by solid waste or other foreign material.
- Control development to ensure laws regarding riparian land are enforced.
- Control development to allow green areas and avoid excessive surface runoff during storms.
- Encourage rainwater harvesting by building dams upstream of rivers.
- Control sand water harvesting in rivers across the County.
- Encourage reforestation and afforestation whereas controlling charcoal burning.



Map 6.86.9 : Drainage map for Kajiado County
Source: Aerial Survey (2012)

6.8 Energy/ Power

Power and energy are some of the main drivers of any economy. Their availability, distribution, and cost have bearing on the County's capacity to grow industries and create employment. Proper lighting enhances security and enables communities to enjoy social facilities such as health and schools thus improving their living standards and eradicating poverty through improved literacy levels. In Kajiado County, about 85% of schools and 75% of health facilities are connected to the national grid through the government's last-mile connectivity program. Only those on far flange areas of the County are yet to be connected under the program. About 50% of all boreholes in the County are connected to power. Connectivity to the rural household is however low at only about 20%. Access to electricity by Sub County is lowest in Kajiado South at 1.2% and the highest access was in Kajiado North at 78.2%. Power in Kajiado County is generated from wind energy at the Ngong Hills wind farm. Another wind farm, a proposed Kipeto power energy, is also in the pipeline. Power generation is majorly done by the National government through KENGEN (Kenya Electricity Generation Company) and connected to the national grid for distribution throughout the country by Kenya Power. Kenya Power has established Namanga, Kajiado, Isinya, Kitengela, Oloitoktok, and Ngong substations to enhance its power distribution in Kajiado County. Other small-scale sources of energy include biogas for domestic use and solar energy by Non-Governmental Organizations (NGOs) such as World Vision and Amref mostly for private boreholes.



6.8.1 Emerging Issues

Figure 6.9: Electricity connection per Sub County

Source: Kajiado County Household Survey Data 2018

From the Kajiado County Household Survey data 2018, three (3) out of five (5) sub-counties have less than 50% connectivity to power. There is great untapped potential for solar energy in the County. Electricity tariffs are too high for residents. Also, a hindrance to domestic power connection is the nomadic lifestyle of Kajiado County residents which means they may not have permanent residence.

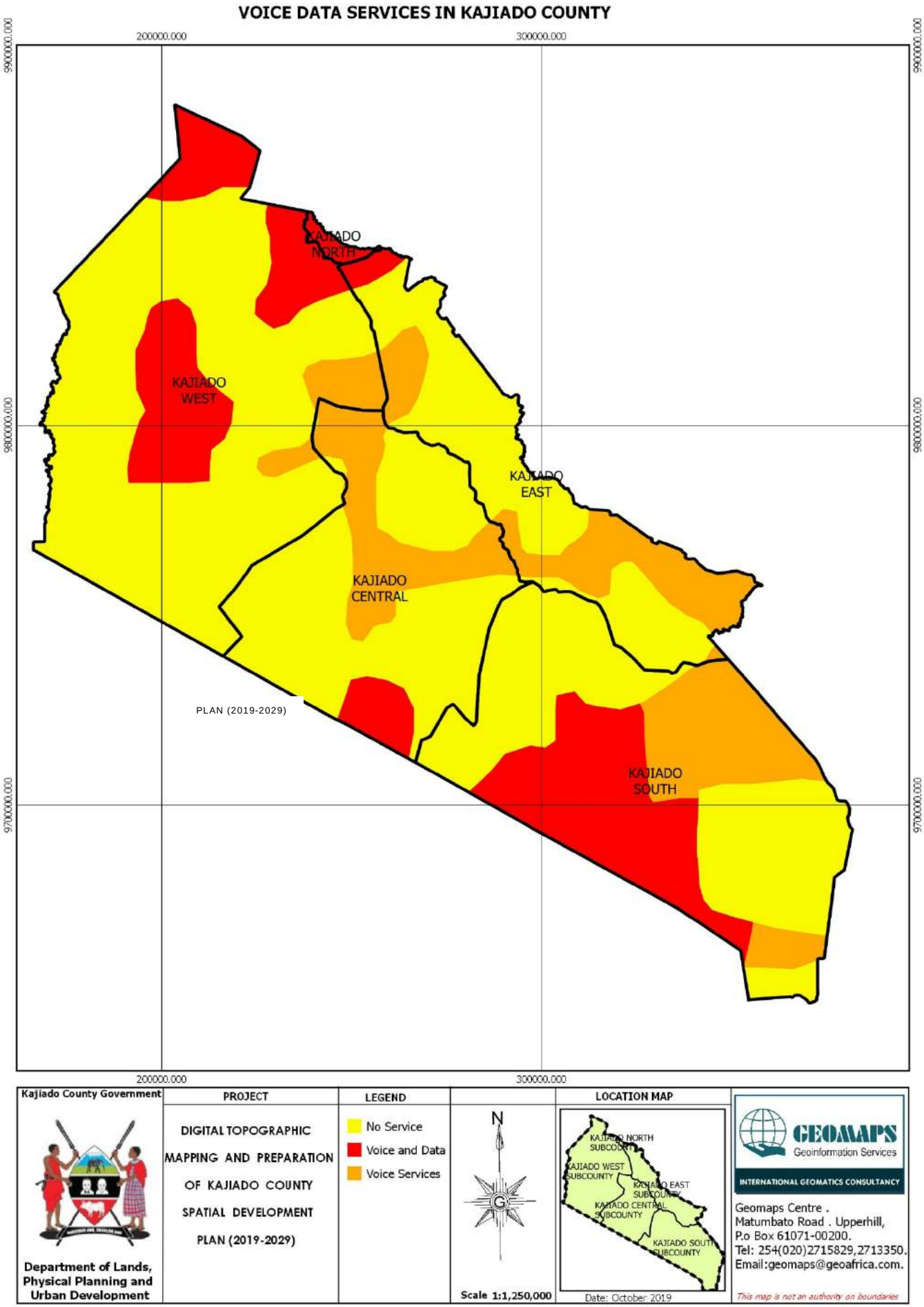
6.8.2 Proposed Interventions

- To offer incentives to residents to reduce energy costs.
- Do public awareness workshops on alternative sources of energy such as mobile solar lighting devices.

6.9 ICT and Mobile Connectivity

Advancing information and communication technology is making the world a global village. Information that would take months to go round the world now can go round almost instantly. This development in communication technology has brought about numerous advantages all over the world. It enhances social and cultural interactions, through tools such as Facebook, Twitter, and Skype etc. It has broken the language barrier so people from all over the world can interact and conduct business. Data can now be sent much faster and stored much safer. It has created a pool of knowledge easy to access from any corner of the world with proper infrastructure. Painstaking work can now be done more efficiently and cheaply through ICT devices.

Online jobs have created platforms where countries can export skills thus creating much-needed employment opportunities. In Kenya, mobile phones have completely revolutionized the money transaction system through M-Pesa, Airtel Money, T-kash and other similar services. Mobile phone users in Kenya can access their bank accounts for any money transaction with ease increasing efficiency in business and boosting security. It is in this light that the government of Kenya has put in tremendous efforts towards increasing awareness and access to ICT through its free laptop project. The aim is to equip children at a tender age with skills necessary to prosper in the current world of technology. In Kenya, ICT services are regulated by the Communication Commission of Kenya. Voice and data services are provided by private limited companies including Safaricom, Airtel and Telkom among other players. They provide wireless data and voice services. Below is a map showing access distribution to voice and data services in Kenya.



Map 6.10: Distribution of Voice and Data services in Kenya
Source: CCK, 2019

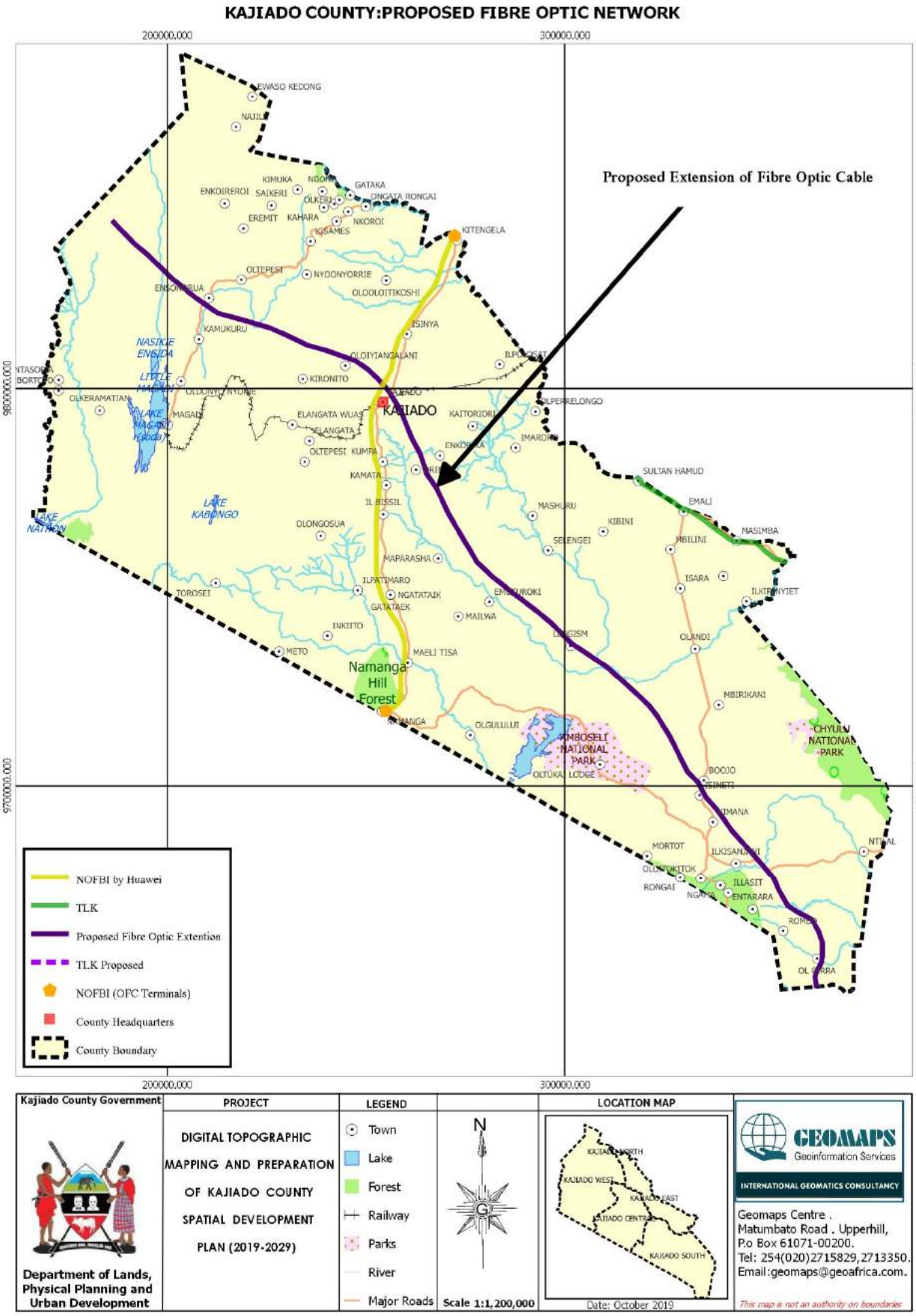
An alternative method of distributing ICT services is by the Local Access Network connectivity through physical infrastructure such as fiber optic cables. These are much faster and more efficient than wireless connections. The ministry if ICT has collaborated with private companies to conclude the National Optic Fiber Backbone Infrastructure.

6.9.1 Emerging issues

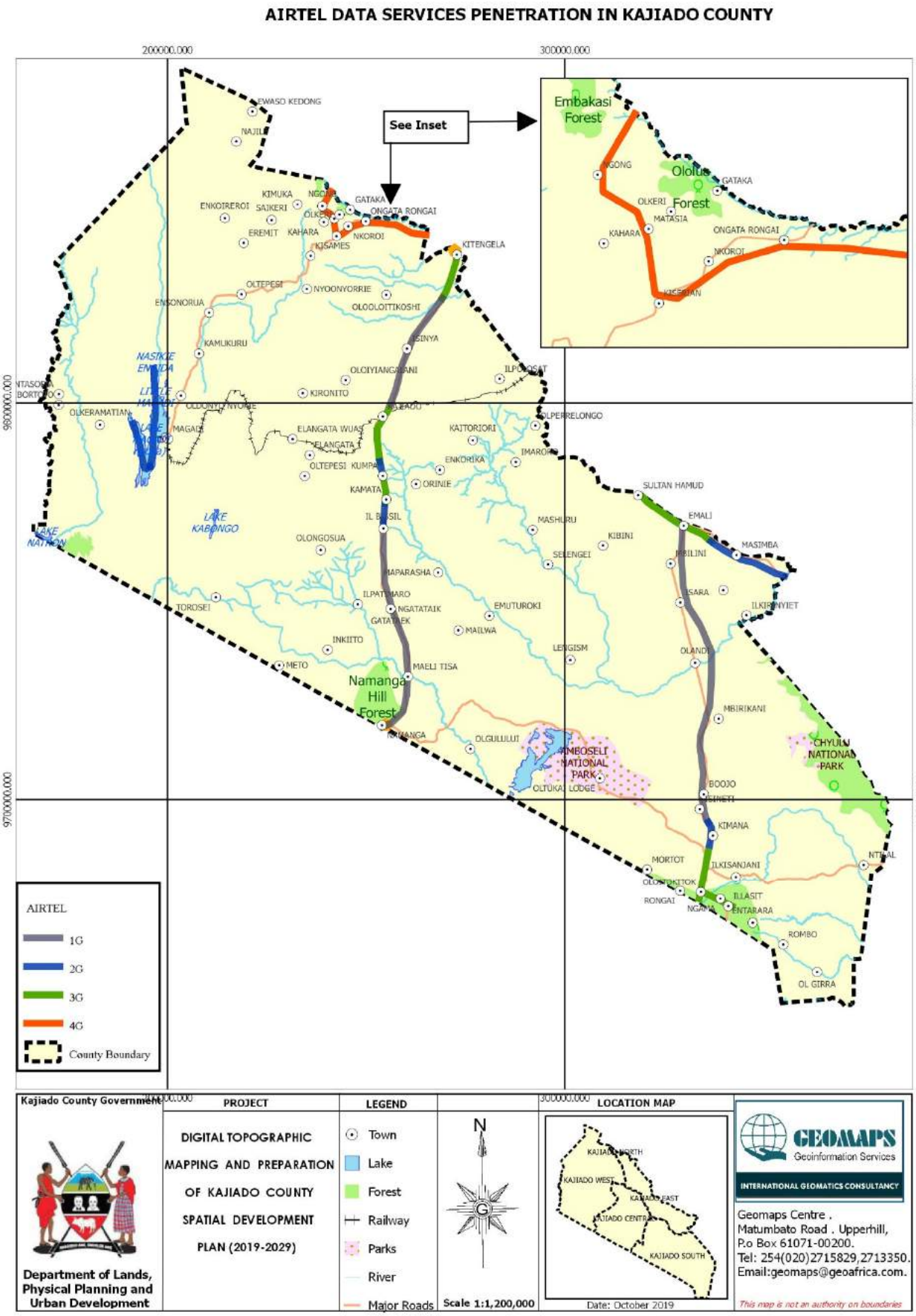
Although fiber optic cables connections are more accessible in urban centers, the infrastructure is still limited to mainly major urban areas. The spread of ICT services is limited by poor access to power connections in Kajiado County. Narrow roads and encroachment of road reserves hinders the laying of fiber optic cables. Scattered and dispersed settlements in Kajiado West and Kajiado South sub-counties increases the connection cost. More than 50% of Kajiado County has no Voice and data services. Map 6.12 shows Kajiado link to the fiber optic services with a proposed extension

6.9.2 Proposed Interventions

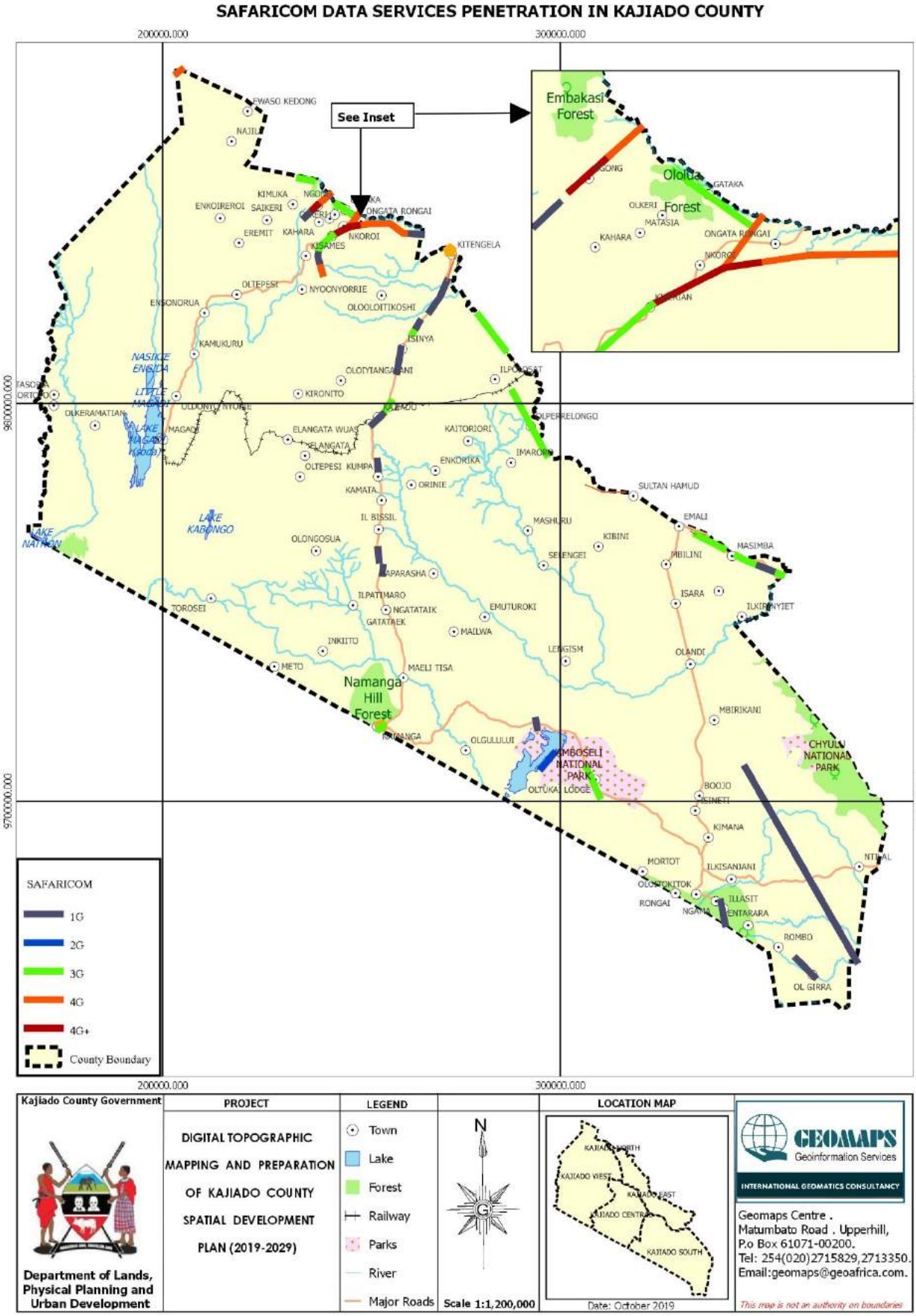
- To control encroachment into the road reserves so as to facilitate laying fiber optic cables.
- Widening of road reserves.
- Enforcement and development control.
- To increase power connectivity through alternative sources of energy such as solar and wind energy.
- To collaborate with private companies providing voice and data services to invest more in ICT infrastructure increase signal strength and coverage.



Map 6.11: Proposed Fiber Optic network in Kajiado County
Source: Geomaps, 2019 & https://www.nperf.com/en/map/KE

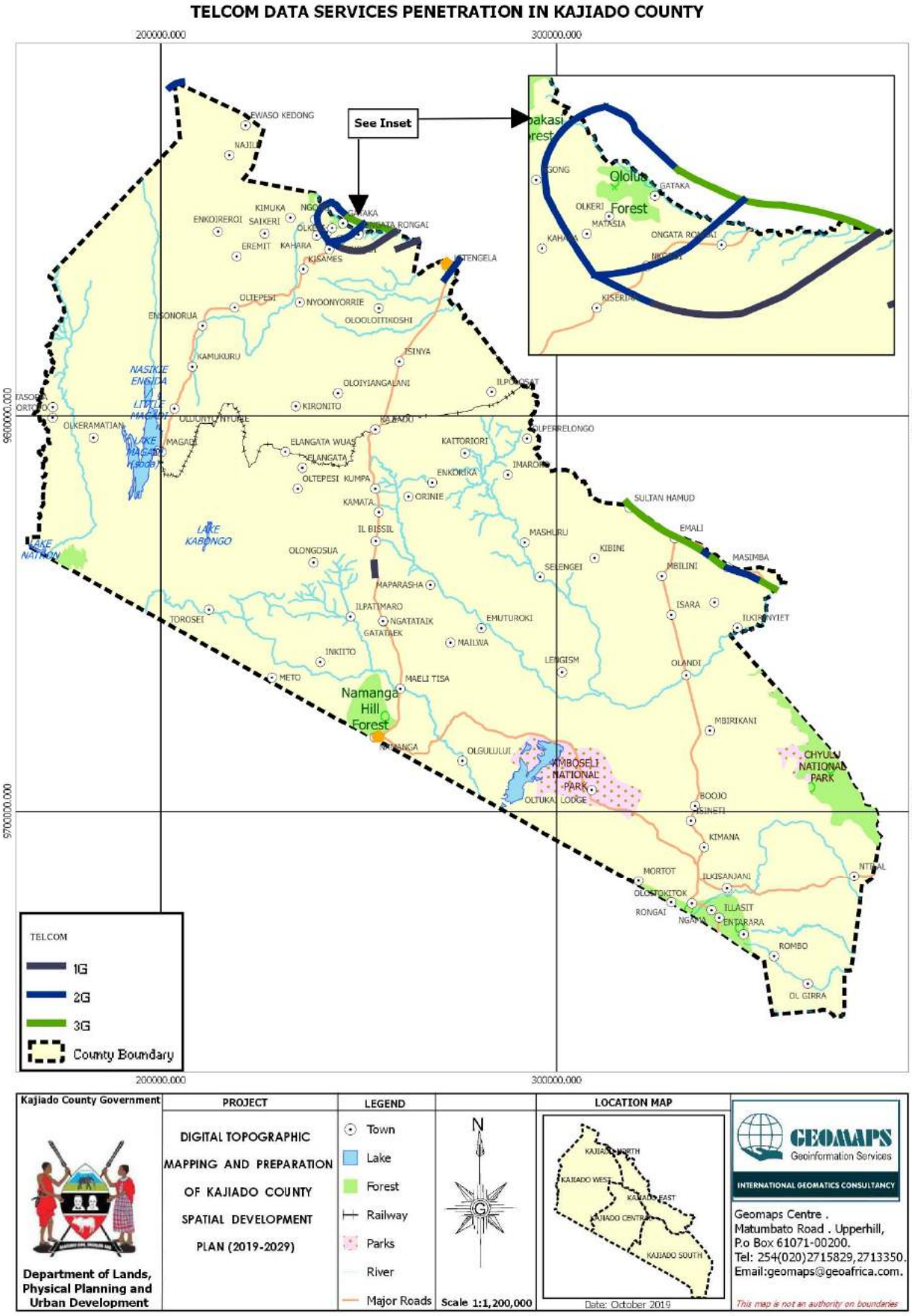


Map 6.12: Airtel Data penetration in Kajiado County
Source: Geomaps, 2017 & https://www.nperf.com/en/map/KE



Map 6.13: Safaricom Data penetration in Kajiado

Source: Geomaps, 2017 & https://www.nperf.com/en/map/KE



Map 6.14: Telkom Data penetration in Kajiado County

Source: https://www.nperf.com/en/map/KE

CHAPTER 7: SOCIAL INFRASTRUCTURE

7.1 Introduction

The social infrastructure supports the economic and social growth of a region. They consist of recreational facilities, education facilities, health facilities, religious facilities, and security facilities. Social infrastructure improves the standards of living of people, alleviates poverty and improves environmental conditions within human settlements.

7.2 Education

7.2.1 Overview

Education remains the most critical component for economic development and social progression in any society and is typically seen as a means of improving people's welfare. The Kenya Vision 2030 underscores the importance of education in ensuring relevant human and social capital for sustainable development in the country. Kajiado County government recognizes that education and training is one of the levers that will make the County a vibrant region with high standards of living for its residents. The development concern is for the County to provide adequate school infrastructures such as desks, chairs, classrooms, laboratories, and staffing. The County has several learning institutions according to data from the Kenya National Bureau of Statistics (KNBS).

7.2.2 Literacy Levels

The literacy level in Kajiado County is lower at 65.2% compared to the national literacy level of 71.4% according to the Ministry of Education reports. This can be attributed to a combination of factors that include high drop outs rate, low transition rate and socio-cultural practices among others. Cultural practices such as early marriages and Female Genital Mutilation (-GM) are a major impediment to girl-child education and empowerment while young boys take part in herding at the expense of education.

7.2.3 Early Childhood Education (ECDE)

ECDE is education provided to the children aged between 3-6 years old. There are both private and public ECDE centres within Kajiado County. There are about 811 ECDE centres in the County. The population stands at 54,604 for both boys and girls. There is, therefore, a need for more sensitization to achieve a hundred percent enrolment rate at this stage. Currently, there are 811 ECD centres with 2594 teachers in Kajiado County.

7.2.4 Enrolment in Pre-Primary School

The Kenya national gross enrolment rate in pre-primary school was 49.9 % in 2005, while at the global scale the percentage was 60.85 in 2009. According

to the 2009 population census, Kajiado County had 127,570 children aged between 0-9 years.

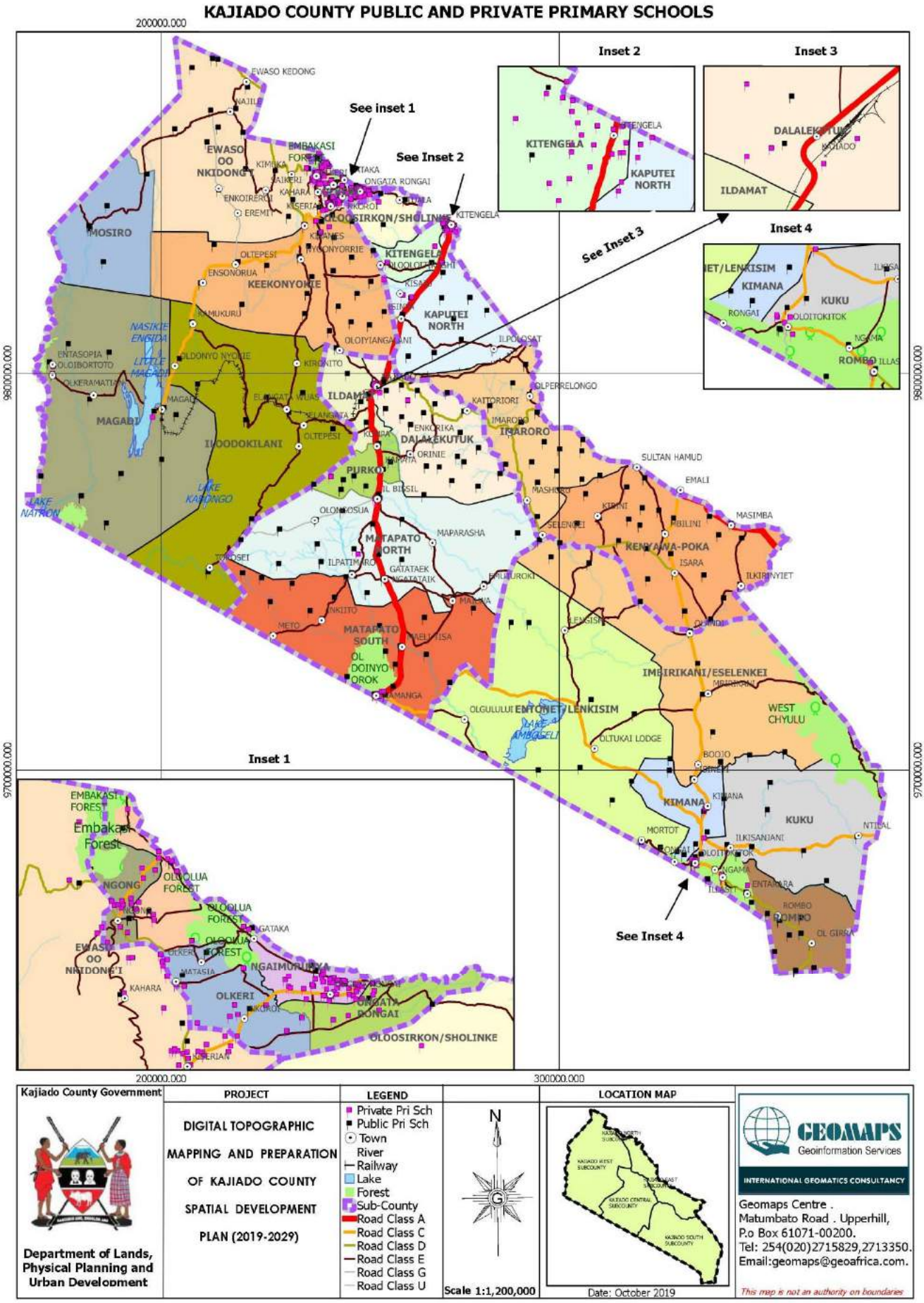
The survey in Kajiado found that the Pre-primary population stands at 52,091 for both boys and girls while the total enrolment stands at 42,565 which implies that only 76.7 percent of the ECDE population has been enrolled in schools. There is, therefore, a need for more sensitization to achieve a hundred percent enrolment rate at this stage. Currently, there are 925 ECD centres with 2211 teachers. The teacher to pupil ratio stands at 1:19.

7.2.5 Primary Education

There are 514 primary schools both public and private as of 2013, with an enrolment of 155,955 pupils, where 48% of the enrolled are girls and 52% are boys. The net enrolment rate is 86.19% while the teacher/pupil ratio is currently at 1:60. The transition rate from primary to secondary schools stood at 54% as of 2013 with the majority of the beneficiaries being boys.

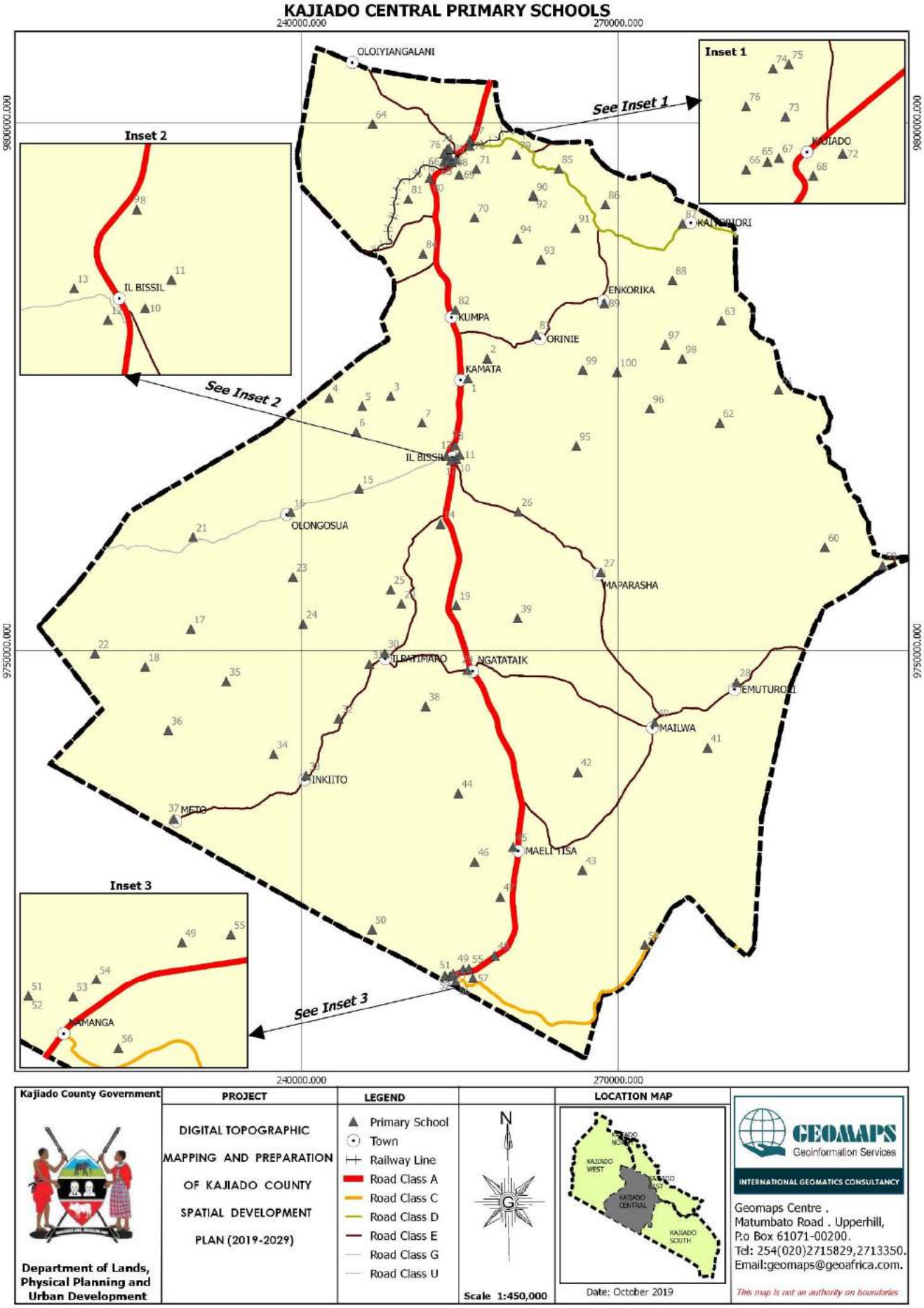
The distribution of education facilities is skewed with the urban areas having more facilities. However, the household survey found that distances to primary school remains a challenge with 63.8 percent of children walking for over 5Km and only 8.5 percent walking for 0-1Km away from school.

Kajiado North has the highest concentration of education facilities both public and private. Kajiado West and South have the least number of facilities (See Map 7.1 and refer to Socioeconomic Household Survey Report).



Kajiado County Government	PROJECT	LEGEND		LOCATION MAP	
Department of Lands, Physical Planning and Urban Development	DIGITAL TOPOGRAPHIC MAPPING AND PREPARATION OF KAJIADO COUNTY SPATIAL DEVELOPMENT PLAN (2019-2029)	Private Pri Sch Public Pri Sch Town River Railway Lake Forest Sub-County Road Class A Road Class C Road Class D Road Class E Road Class G Road Class U	N Scale 1:1,200,000	Date: October 2019	GEOMAPS Geoinformation Services INTERNATIONAL GEOMATICS CONSULTANCY Geomaps Centre . Matumbato Road . Upperhill, P.o Box 61071-00200. Tel: 254(020)2715829,2713350. Email:geomaps@geoafrica.com. This map is not an authority on boundaries

Map 7.1: Distribution of private and public primary schools
Source: Geomaps, 2019

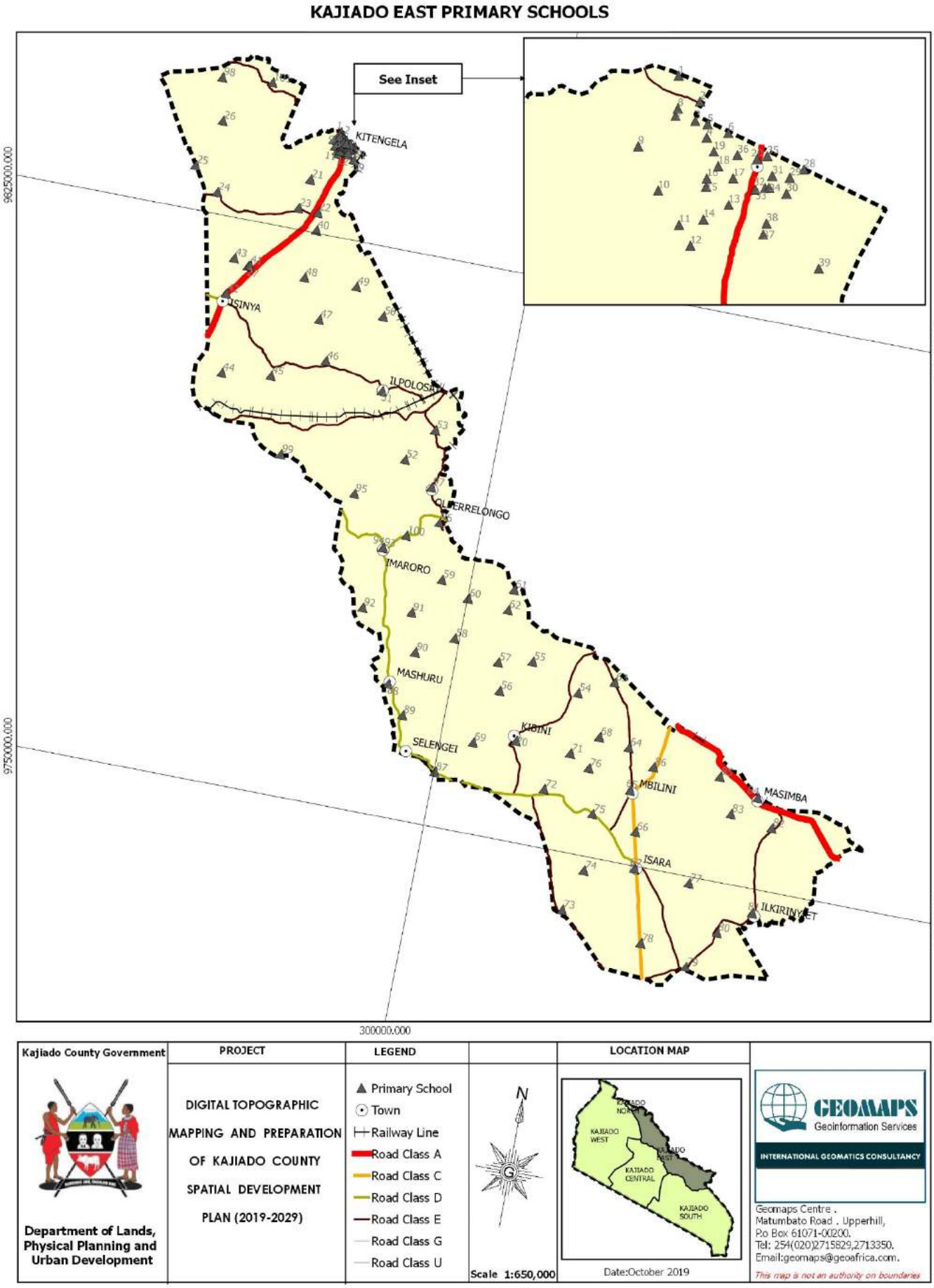


Map 7.2: Distribution of primary schools in Kajiado Central
Source: Geomaps, 2019

KAJIADO CENTRAL LIST OF PRIMARY SCHOOLS NAMES

NO.	NAME	STATUS
1	NKOILE PRI SCH	PUBLIC
2	ILMOLELIAN PRI SCH	PUBLIC
3	ENKARONI PRI SCH	PUBLIC
4	ENDOINYIO ENKAMPI PRI	PRIVATE
5	OLOOSIYAMALIL PRI SCH	PUBLIC
6	ISIAIT PRI SCH	PUBLIC
7	ILPARRUA PRI SCH	PUBLIC
8	ILBISSIL BOARDING PRI SCH	PUBLIC
9	ILBISSIL PRI SPECIAL UNIT	PUBLIC
10	ST NORAH ACADEMY	PRIVATE
11	ILBISSIL TOWNSHIP PRI SCH	PUBLIC
12	CROWN OF HOPE COMPLEX PRI SCH	PRIVATE
13	ILBISSIL ACADEMY PRI SCH	PRIVATE
14	LENKISHON PRI SCH	PUBLIC
15	OITII PRI SCH	PUBLIC
16	LOROGOSWA PRI	PUBLIC
17	KIPAKOT PRI SCH	PUBLIC
18	MAISIKIRIA PRI SCH	PUBLIC
19	MEIDANYI PRI SCH	PUBLIC
20	NGATATAEK PRI SCH	PUBLIC
21	ESOIT PRI	PUBLIC
22	ENKERESUNA PRI	PUBLIC
23	OLOIKA PRI	PUBLIC
24	ILMARBA PRI	PUBLIC
25	ESEKI PRI	PUBLIC
26	LELE CHRISTIAN PRI	PUBLIC
27	MAPARASHA PRI	PUBLIC
28	EMOTOROKI PRI	PUBLIC
29	EMURUADIKIRR BLESSED ACADEMY PRI	PRIVATE
30	ILPATIMARU PRI	PUBLIC
31	IMPOORRI PRI	PUBLIC
32	LEBOO PRI	PUBLIC
33	KISAPUK PRI	PUBLIC
34	LINTI PRI	PUBLIC
35	NAIRRABARA PRI	PUBLIC
36	OLOIRIMIRIMI PRI	PUBLIC
37	METO PRI	PUBLIC
38	OLOMAYIANA PRI	PUBLIC
39	MOPIA PRI	PUBLIC
40	MAILWA PRI	PUBLIC
41	SERE PRI SCH	PUBLIC
42	LUMBWA PRI SCH	PUBLIC
43	ELUANATA PRI	PUBLIC
44	ENOOSAMPURRUMPURR PRI	PUBLIC
45	ENGABOLI PRI	PUBLIC
46	NOONTOTO PRI	PUBLIC
47	INKATI PRI	PUBLIC
48	INAARO LUKUNY PRI	PUBLIC
49	ROCKYN HILLS ACAD PRI SCH	PRIVATE
50	OLMANIE PRI SCH	PUBLIC

NAME	NO.	STATUS
NAMANGA TOWNSHIP PRI SCH	51	PUBLIC
NAMANGA SPECIAL UNIT SCH PRI	52	PUBLIC
NAMANGA ISLAMIC CENTRE PRI SCH	53	PRIVATE
NAMANGA MOUNTAINVIEW PRI SCH	54	PRIVATE
ST JUDE THADDEUS PRI SCH	55	PRIVATE
OSOTUA ACADEMY PRI SCH	56	PRIVATE
AIC NAMANGA PRI SCH	57	PUBLIC
AIC SAMARIAN MISSION ACADEMY	58	PUBLIC
EMASHINI PRI SCH	59	PUBLIC
MEGUMI PRI SCH	60	PUBLIC
OLOONTULUGUM PRI SCH	61	PUBLIC
NAILUMPE PRI SCH	62	PUBLIC
ILKIREMISHO PRI SCH	63	PUBLIC
OLOOSUYIAN PRI SCH	64	PUBLIC
ST JOHN PRI SCH	65	PRIVATE
ACK EMMANUEL ACADEMY PRI SCH	66	PRIVATE
KAJIADO TOWNSHIP PRI SCH	67	PUBLIC
KAJIADO ADVENTIST EDUCATIONA & REHAB CENTER PRI	68	PRIVATE
SAMBELL JUNIOR ACAEMY PRI SCH	69	PRIVATE
ILTARETO PRI SCH	70	PUBLIC
ISEURI PRI SCH	71	PUBLIC
KAJIADO HILL ACADEMY PRI SCH	72	PRIVATE
ALHUDA MUSLIM PRI SCH	73	PUBLIC
GRANDA PRI SCH	74	PRIVATE
SAINA PRI SCH	75	PUBLIC
HIGHGATE CHILDRENS PREP SCH	76	PRIVATE
AIC GIRLS PRI BOARDING SCH	77	PUBLIC
PRIMARY BOYS BOARDING SCH	78	PUBLIC
EITI PRI SCH	79	PUBLIC
MOIPEI PRI SCH	80	PUBLIC
ESOKOTA PRI SCH	81	PUBLIC
KUMPA HOLY MOTHERS PRI SCH	82	PUBLIC
ORONIE PRI SCH	83	PUBLIC
PARANAE PRI SCH	84	PUBLIC
INKINYIE PRI SCH	85	PUBLIC
IMPIRO PRI SCH	86	PUBLIC
OLENARAU PRI SCH	87	PUBLIC
OLGOS PRI SCH	88	PUBLIC
ENKORIKA PRI SCH	89	PUBLIC
SAJILONI PRI SCH	90	PUBLIC
INKUSERON PRI SCH	91	PUBLIC
LITTLE ANGELS PRI SCH	92	PRIVATE
ISILALE PRI SCH	93	PUBLIC
NALEPO PRI SCH	94	PUBLIC
OLOOMUNYI PRI SCH	95	PUBLIC
PILIWA PRI SCH	96	PUBLIC
ENKASURAI PRI SCH	97	PUBLIC
MALILIMA PRI SCH	98	PUBLIC
OLOBELIBELI PRI SCH	99	PUBLIC
SINGOI PRI SCH	100	PUBLIC



Map 7.3 : Distribution of primary schools in Kajiado East
Source: Geomaps, 2019

KAJIADO EAST LIST OF PRIMARY SCHOOLS

NO.	NAME	STATUS
1	NAISULA SPRINGS SCH PRI	PRIVATE
2	ST LOUIS ACADEMY	PRIVATE
3	CHRISTIANE PREPARATORY SCH	PRIVATE
4	MERRY EDGE SPRINGS ACADEMY PRI	PRIVATE
5	JOYLAND PREP SCH	PRIVATE
6	ST PHILLIP JUNIOR ACADEMY PRI SCH	PRIVATE
7	ST JAMES ACADEMY-PRI	PRIVATE
8	NOONKOPIR TOWNSHIP PRI SCH	PUBLIC
9	NEEMA EDUCATION CENTER PRY	PRIVATE
10	ATHI RIVER GK PRISON PRI SCH	PUBLIC
11	KAUTI ACADEMY-PRI	PRIVATE
12	MILIMANI KITENGELA JUNIOR ACADEMY PRI	PRIVATE
13	ST LINAS ACADEMY- PRI	PRIVATE
14	WAMUKOY AACADEMY- PRI	PRIVATE
15	SUCCESS ACADEMY-PRI	PRIVATE
16	SPRINGFIELD PREP SCH PRI	PRIVATE
17	SAROPA BELLS ACADEMY-PRI	PRIVATE
18	WEMA JUNIOR ACADEMY-PRI	PRIVATE
19	PE-ELIS EDUCATION CENTER PRI	PRIVATE
20	MUTHENYA JUNIOR ACADEMY-PRI	PRIVATE
21	ACACIA CREST ACADEMY-PRI SCH	PRIVATE
22	MOCEDET SCH	PRIVATE
23	ENKASITI PRI SCH	PUBLIC
24	ST BENARD PRI SCH	PRIVATE
25	ERETETI PRI SCH	PUBLIC
26	SHOLINKE PRI SCH	PUBLIC
27	KEPIRO PRI SCH	PUBLIC
28	SUNNYSIDE ACADEMY	PRIVATE
29	KITENGELA ACADEMY PRI	PRIVATE
30	OUR LADY QUEEN OF MERCY	PRIVATE
31	ST. LILYANNA PREPARATORY	PRIVATE
32	LYNKERS ACADEMY	PRIVATE
33	ST MONICA ACADEMY	PRIVATE
34	EFA ACADEMY PRI	PRIVATE
35	KITENGELA SHALOM ACADEMY	PRIVATE
36	IDA STAR ACADEMY PRI	PRIVATE
37	SHINING STARS ACADEMY PRI	PRIVATE
38	SARGULL EDUCATIONAL CENTRE PRI	PRIVATE
39	KITENGELA EBENEZER ACADEMY PRI	PRIVATE
40	KORROMPOI PRI	PUBLIC
41	ST ANNES KISAJU	PRIVATE
42	ISINYA MIXED BOARDING PRI	PUBLIC
43	TOP RIDE ACADEMY	PRIVATE
44	KIKAYAYA PRI SCH	PUBLIC
45	ENKIRGIRRI PRIMARY SCH	PUBLIC
46	EMAMPARISWAI PRI SCH	PUBLIC
47	LENCHANI PRIMARY SCHOOL	PUBLIC
48	OLTUROTO PRIMARY SCH	PUBLIC
49	OLE NKOTILA PRI SCH	PUBLIC
50	NASERIAN PRI SCH	PUBLIC

NO.	NAME	STATUS
51	ILPOLOSAT PRI	PUBLIC
52	OSARAI PRI	PUBLIC
53	ILMAMEN PRI	PUBLIC
54	ILKISHUMU PRI SCH	PUBLIC
55	ARROI PRI SCH	PUBLIC
56	EWANGAN PRI SCH	PUBLIC
57	SANARE PRI SCH	PUBLIC
58	OLOMAIYANA PRI SCH	PUBLIC
59	KILOH PRI SCH	PUBLIC
60	LESOIT PRI SCH	PUBLIC
61	LESONKOYO PRI SCH	PUBLIC
62	ILMAO PRI SCH	PUBLIC
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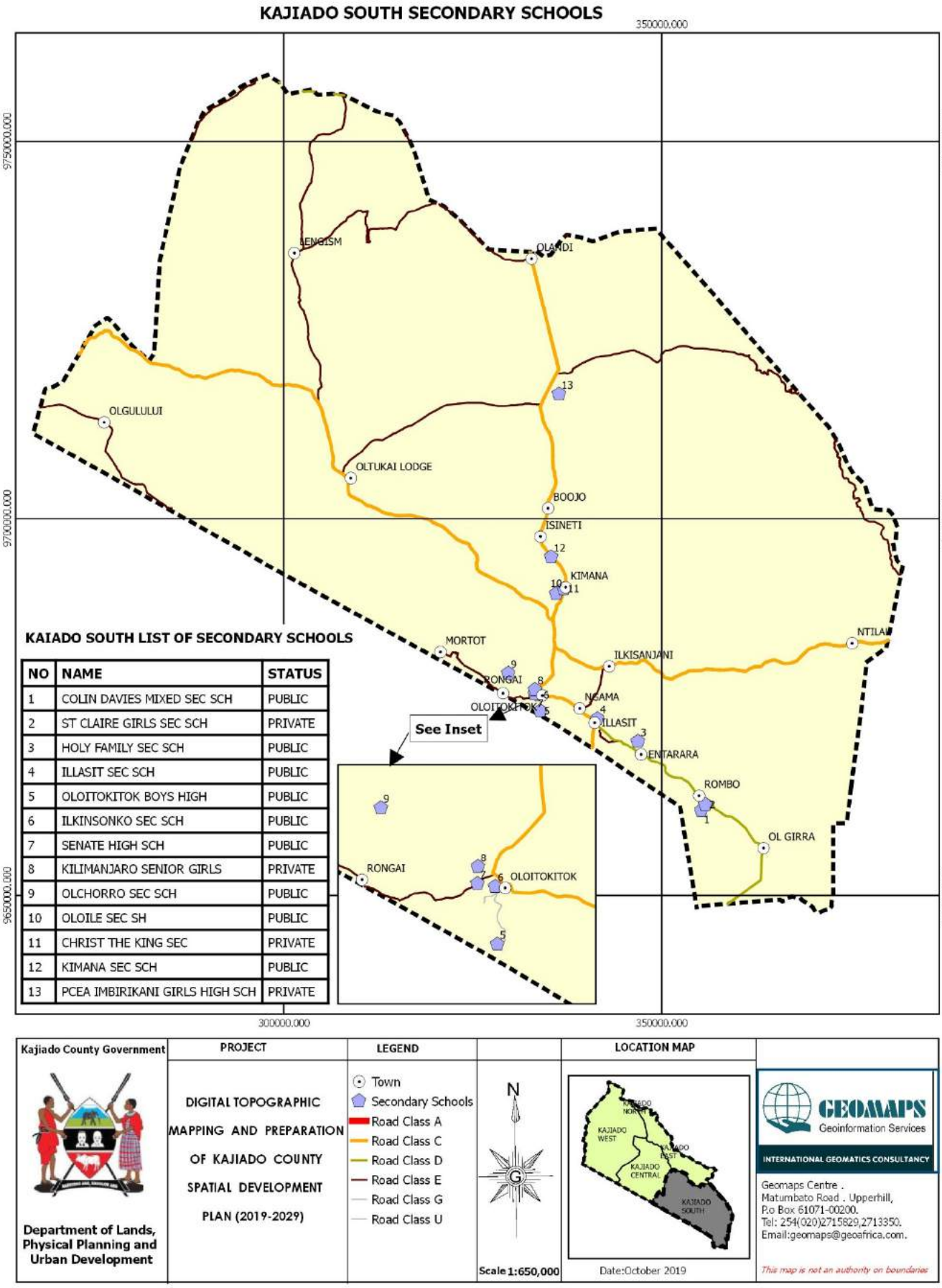
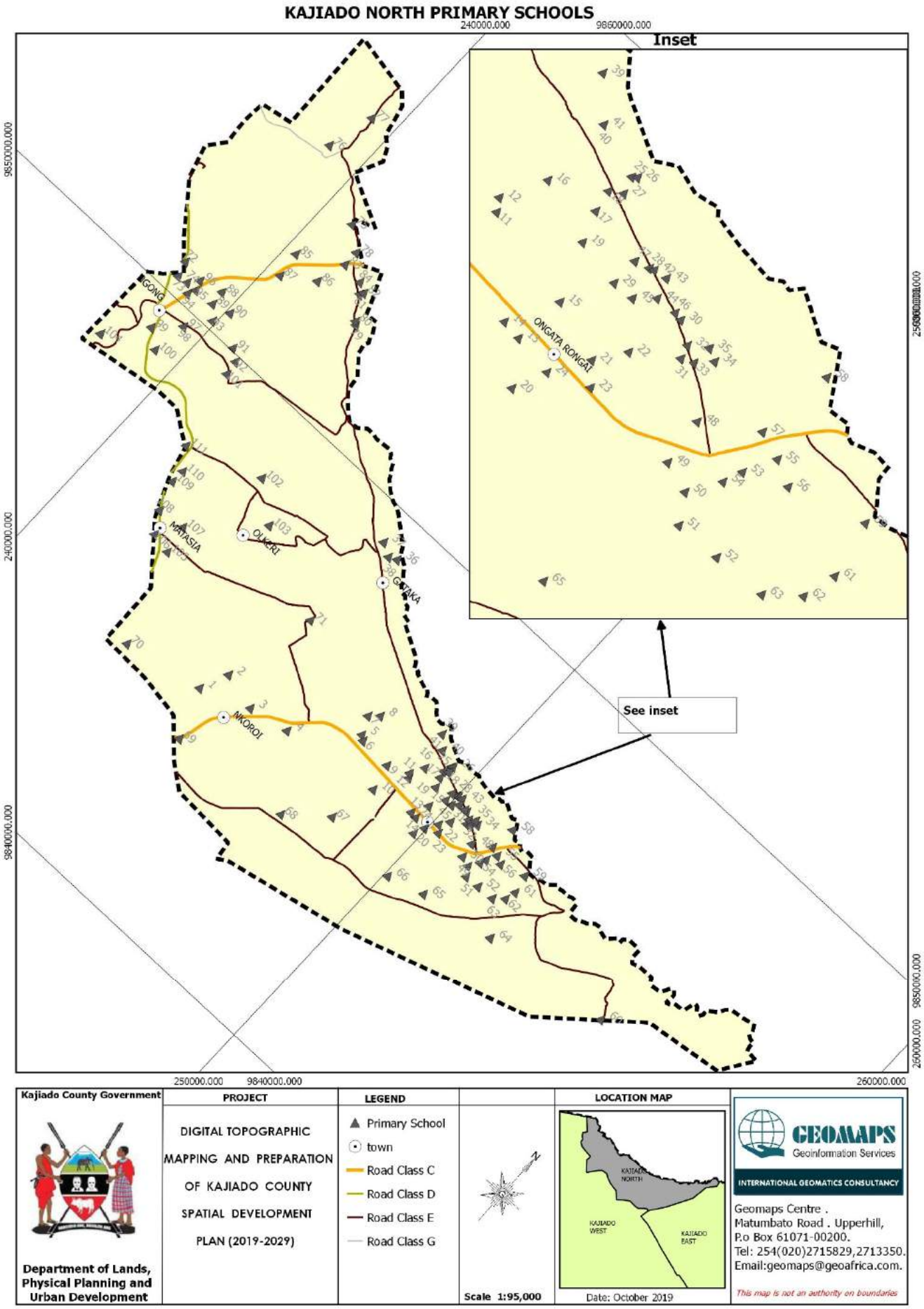
64	SAMULI PRI SCH	PUBLIC
65	ENTARETOI PRI SCH	PUBLIC
66	NEMBUYA PRI SCH	PUBLIC
67	ISARA PRI SCH	PUBLIC
68	NOONG'ABOLO PRI SCH	PUBLIC
69	ENDOINYIO ENKER PRI SCH	PUBLIC
70	KIBINI PRI SCH	PUBLIC
71	ESOIT SAMPU PRI SCH	PUBLIC
72	ILMUKUTANI PRI SCH	PUBLIC
73	KUNCHU PRI SCH	PUBLIC
74	ESARUNOTO PRI SCH	PUBLIC
75	ILAIMIRROR PRI SCH	PUBLIC
76	NOOMPALA PRI SCH	PUBLIC
77	NOOSIDAN PRI SCH	PUBLIC
78	IMBUKO PRI SCH	PUBLIC
79	MERRUESHI PRI SCH	PUBLIC
80	OLKATETEMAI PRI SCH	PUBLIC
81	ILKELUNYETI PRI SCH	PUBLIC
82	MCK KIBOKO PRI SCH	PUBLIC
83	OLDOINYIO LENKAI PRI SCH	PUBLIC
84	SIMBA PRIMARY SCH	PUBLIC
85	NKUSSO PRI SCH	PUBLIC
86	OLTINKA PRI SCH	PUBLIC
87	ESELENKEI PRI SCH	PUBLIC
88	MASHUURU PRI SCH	PUBLIC
89	OLTEPESI PRI SCH	PUBLIC
90	ILKIDEMI PRI SCH	PUBLIC
91	ENDIKIR PRI SCH	PUBLIC
92	NGATU PRI SCH	PUBLIC
93	EMARORO PRI SCH	PUBLIC
94	IMARORO PRI SCH	PUBLIC
95	OLOIBOR AJIJIK PRI SCH	PUBLIC
96	ILMEJOOLE PRI SCH	PUBLIC
97	OLPERRELONGO PRI SCH	PUBLIC
98	MELANIE JUNIOR ACADEMY-PRI	PRIVATE
99	EMARTI PRI SCH	PUBLIC
100	PARSINTI PRI SCH	PUBLIC
101	TIPATET EMAKOKO PRI SCH	PUBLIC



NO	NAME	STATUS
1	COLIN DAVIES MIXED SEC SCH	PUBLIC
2	ST CLAIRE GIRLS SEC SCH	PRIVATE
3	HOLY FAMILY SEC SCH	PUBLIC
4	ILLASIT SEC SCH	PUBLIC
5	OLOITOKITOK BOYS HIGH	PUBLIC
6	ILKINSONKO SEC SCH	PUBLIC
7	SENATE HIGH SCH	PUBLIC
8	KILIMANJARO SENIOR GIRLS	PRIVATE
9	OLCHORRO SEC SCH	PUBLIC
10	OLOILE SEC SH	PUBLIC
11	CHRIST THE KING SEC	PRIVATE
12	KIMANA SEC SCH	PUBLIC
13	PCEA IMBIRIKANI GIRLS HIGH SCH	PRIVATE

Map 7.4 : Distribution of schools in Kajiado South
Source: Geomaps, 2019

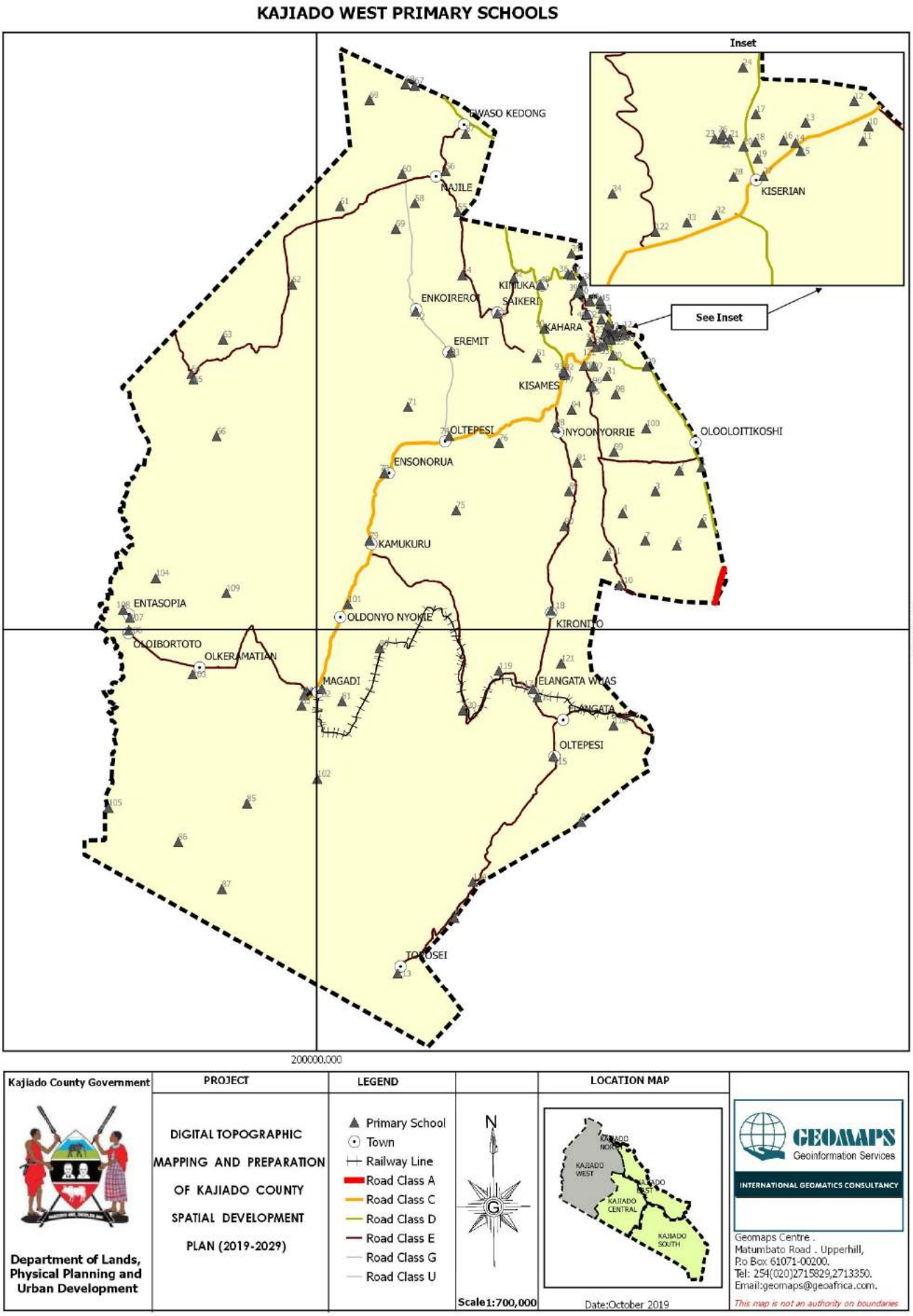


Map 7.5 : Distribution of primary schools in Kajiado North
Source: Geomaps, 2019

KAJIADO NORTH LIST OF PRIMARY SCHOOLS

NO	NAME	STATUS
1	MAGADI ROAD SCH-PRI	PRIVATE
2	KATSO SCHS-PRI	PRIVATE
3	ARAP MOI PRI SCH	PUBLIC
4	MAXWELL ADVENTIST ACADEMY-PRI	PRIVATE
5	LAISER HILL ACADEMY-PRI	PRIVATE
6	FAITH CHRISTIAN ACADEMY-PRI	PRIVATE
7	ONGATA ACADEMY-PRI	PRIVATE
8	THORN TREE ACADEMY	PRIVATE
9	ST AGNES RONGAI ACADEMY	PRIVATE
10	OLERAI PRIMARY SCH	PRIVATE
11	SCHOLARS JUNIOR PRI	PRIVATE
12	WOODGREEN PRI SCH	PRIVATE
13	THE PINNACLE SCH-PRI	PRIVATE
14	THE ONGATA SPRINGS ACADEMY-PRI	PRIVATE
15	NCOORO ACADEMY-PRI	PRIVATE
16	KANDISI COMMUNITY PROJECT CENTER-PRI	PRIVATE
17	UFANISI EDUCATION CENTER-PRI	PRIVATE
18	MOUNT HOREB EDUCATION CENTER-PRI	PRIVATE
19	ST PETERS STARLIGHT ACADEMY-PRI	PRIVATE
20	KEFJOY ACADEMY-PRI	PRIVATE
21	GREENLIGHT ACADEMY-PRI	PRIVATE
22	PCEA ONGATA RONGAI EDUCATION CENTER-PRI	PRIVATE
23	PRIME JUNIOR ACADEMY-PRI	PRIVATE
24	BETHANY JUNIOR ACADEMY-PRI	PRIVATE
25	SHALOM PRI SCH	PRIVATE
26	ST CLINTON JUNIOR SCH-PRI	PRIVATE
27	RAINBOW PRI SCH	PRIVATE
28	ONGATA PINEBREEZE ACADEMY-PRI	PRIVATE
29	KAG ACADEMY-PRI	PRIVATE
30	ONGATA RONGAI ADVENTIST ACADEMY-PRI	PRIVATE
31	EXCELLENT ACHIEVERS ACADEMY-PRI	PRIVATE
32	ST MARYS PRI SCH	PRIVATE
33	JOYHOME SCH-PRI	PRIVATE
34	JANSIL JUNIOR SCH-PRI	PRIVATE
35	ONGATA BROOOKVIEW ACADEMY-PRI	PRIVATE
36	NKAIMURUNYA PRI SCH-	PUBLIC
37	WISDOMLINK ACADEMY-PRI	PRIVATE
38	SILVERSPRINGS ACADEMY PRI	PRIVATE
39	ONGATA RONKAI PRI SCH	PUBLIC
40	NAKEEL PRI SCH	PUBLIC
41	NAKEEL PRI SCH -SPECIAL UNIT	PUBLIC
42	CARLYNE JUNIOR SCH-PRI	PRIVATE
43	MAXON ACADEMY-PRI	PRIVATE
44	THE PROMISE JUNIOR ACADEMY-PRI	PRIVATE
45	ST BRIAN JUNIOR SCH-PRI	PRIVATE
46	BOONHOUSE SCH-PRI	PRIVATE
47	FIG JUNIOR ACADEMY-PRI	PRIVATE
48	ALPHA SCH-PRI	PRIVATE
49	ST MARKS ACADEMY-PRI	PRIVATE
50	RUNNERS JUNIOR ACADEMY-PRI	PRIVATE
51	RIDGE ACADEMY-PRI	PRIVATE
52	RIVERVIEW JUNIOR ACADEMY-PRI	PRIVATE
53	SANJOSE ACADEMY-PRI	PRIVATE
54	STAR OF EXCELLENCE PRI SCH	PRIVATE
55	SUCCESS PAGA PRI SCH	PRIVATE
56	EBENEZER ACADEMY-PRI	PRIVATE
57	THE AMINI SCH-PRI	PRIVATE
58	RONGAI COMMUNITY CHILDREN CENTER-PRI	PRIVATE
59	MAMATA JUNIOR ACADEMY-PRI	PRIVATE
60	OLOOSIRKON PRI SCH	PUBLIC
61	JENNIX SCH COMPLEX-PRI	PRIVATE
62	FAITHLAND MUTA PRI SCH	PRIVATE
63	OLEKASASI PRI SCH	PUBLIC
64	ACACIA PARK SCH-PRI	PRIVATE

NO	NAME	STATUS
67	ST PETERS ACADEMY-PRI	PRIVATE
68	VALLEYVIEW PRI SCH	PRIVATE
69	RIMPA ROAD ACADEMY-PRI	PRIVATE
70	NJUGI ACADEMY PRI	PRIVATE
71	KAREN VIEW ACADEMY-PRI	PRIVATE
72	NEEMA ACADEMY PRI SCH	PRIVATE
73	MAINFLOW PREP SCH-PRI	PRIVATE
74	GREENYARD JUNIOR SCH-PRI	PRIVATE
75	SERARE SCH-PRI	PRIVATE
76	KERARAPON PRI SCH	PUBLIC
77	EWANGAN ACADEMY-PRI	PRIVATE
78	BRO. BEAUSANG EDUCATION CENTER-PRI	PRIVATE
79	EVERTONE SCH -PRI	PRIVATE
80	SHALOM ACADEMY-PRI	PRIVATE
81	EMBUL-BUL PRI SCH	PUBLIC
82	BARAKA JOY EDUCATIONN CENTER PRI	PRIVATE
83	EVERTONE SCH-HAJJI RAMATHAN-PRI	PRIVATE
84	PCEA AMANI SCH-PRI	PRIVATE
85	TENDERCARE JUNIOR SCH	PRIVATE
86	MIDHILL PREP SCH-PRI	PRIVATE
87	KENVIC SCH-PRI	PRIVATE
88	CALVARY BAPTIST ACADEMY-PRI SCH	PRIVATE
89	ST JOSEPH NGONG CATHOLIC ACADEMY-PRI	PRIVATE
90	GREENWOOD EXCEL SCH PRI	PRIVATE
91	OLOOLUA PRI SCH	PUBLIC
92	OLOOLUA ACADEMY-PRI	PRIVATE
93	UKOMBOZI ACADEMY-PRI	PRIVATE
94	KING SOLOMONS ACADEMY-PRI	PRIVATE
95	ALPHA ACADEMY-PRI SCH	PRIVATE
96	PCEA ENCHORO EMUNY PRI SCH	PRIVATE
97	NGONG TOWNSHIP PRI SCH	PUBLIC
98	NGONG TOWNSHIP PRI SCH-SPECIAL UNIT	PUBLIC
99	PURKEI PREP SCH-PRI	PRIVATE
100	ACK EMMANUEL EDUCATION CENTER-PRI	PRIVATE
101	BENEZER JUNIOR ACADEMY-PRI	PRIVATE
102	NGONG HURUMA SCH-PRI	PRIVATE
103	OLKERI PRI SCH	PUBLIC
104	HILLSTAR ACADEMY-PRI	PRIVATE
105	NARAMAT ACADEMY-PRI	PRIVATE
106	JORAM G.M ACADEMY-PRI	PRIVATE
107	ENOOMATASIANI PRI SCH	PUBLIC
108	VINEYARD ACADEMY-PRI	PRIVATE
109	UPPER MATASIA ACADEMY-PRI	PRIVATE
110	MEMUSI ACADEMY-PRI	PRIVATE
111	FAITH GREENVALLEY PRO SCH	PRIVATE



Map 7.6 Distribution of primary schools in Kajiado West
Source: Geomaps, 2019

KAJIADO WEST LIST OF PRIMARY SCHOOLS

NO.	NAME	STATUS
1	SAITHYA SAI SCHOOL PRI	PRIVATE
2	INKOKIRDINGA PRI	PUBLIC
3	KISAJU PRI SCH	PUBLIC
4	INCHORRO PRI	PUBLIC
5	NADOENTERIT PRI SCH	PUBLIC
6	INKIITO PRI	PUBLIC
7	KIRKURIA PRI	PUBLIC
8	OLTEPESI PRI SCH	PUBLIC
9	ILMOTIO PRI	PUBLIC
10	REDSOIL SCH-PRI	PRIVATE
11	MAGADI ROAD PRI	PRIVATE
12	ELITE ACADEMY-PRI	PRIVATE
13	ACK GOODSHEPHERD ACADEMY-PRI	PRIVATE
14	MUGIMA TRAINING & OUTREACH CENTER-PRI	PRIVATE
15	OLONANA MEMORIAL ACADEMY-PRI	PRIVATE
16	THE PRINCESCH PRI	PRIVATE
17	KISERIAN PRI SCH	PUBLIC
18	DISCIPLES JUNIOR SCH	PRIVATE
19	INDIGENOUS CHILDREN CENTER PRI	PRIVATE
20	SAJOS ACADEMY PRI	PRIVATE
21	TOWNSHIP SCH PRI	PRIVATE
22	KISERIAN ADVENTIST PRI SCH	PRIVATE
23	FAITH PREP SCH-PRI	PRIVATE
24	OLOOSURUTIA PRI SCH	PUBLIC
25	BROOKHILLS JUNIOR SCH PRI	PRIVATE
26	MILIMANI STAR JUNIOR SCH-PRI	PRIVATE
27	ST JAMES DAM SCH-PRI	PRIVATE
28	ST ANNE CATHOLIC ACDEMY-PRI	PRIVATE
29	OLOOLTEPES PRI SCH	PUBLIC
30	NAROMORU PRI SCH	PUBLIC
31	SAFENEST JUNIOR SCH PRI	PRIVATE
32	THE LITTLE SCHOLARS PRI SCH	PRIVATE
33	IMANI JUNIOR SCH-PRI	PRIVATE
34	OLTEYANI PRI SCH	PUBLIC
35	SIMBA ACADEMY AND PREP SCH	PRIVATE
36	MUINJAFAM ACADEMY-PRI	PRIVATE
37	KIBIKO PRI SCH	PUBLIC
38	NEEMA ACADEMY PRI SCH	PRIVATE
39	PCEA EMANYATTA SCH	PRIVATE
40	AIC NGONG HILLS SCH-PRI	PRIVATE
41	UPPER MATASIA PRI SCH	PUBLIC
42	APEX PREP SCH-PRI	PRIVATE
43	VINEYARD ACADEMY-PRI	PRIVATE
44	UPPER MATASIA ACADEMY-PRI	PRIVATE
45	ST JOAN PRI SCH	PRIVATE
46	FAITH GREENVALLEY PRO SCH	PRIVATE
47	JOEMA SCH-PRI	PRIVATE
48	TESTIMONY HIL SCH-PRI	PRIVATE
49	KIMUKA PRI SCH	PUBLIC
50	OLOSHO OIBOR PRI SCH	PUBLIC

NO.	NAME	STATUS
51	ILNGAROOJ PRI SCH	PUBLIC
52	OLMAROROI PRI SCH	PUBLIC
53	SAIKERI PRI SCH	PUBLIC
54	ILKILORIT PRI SCH	PUBLIC
55	OLNG'ARUA PRI SCH	PUBLIC
56	NAJILE PRI SCH	PUBLIC
57	EWUASO PRI SCH	PUBLIC
58	OLENTOKO PRI SCH	PUBLIC
59	KIMELOK PRI SCH	PUBLIC
60	OLODUNG'ORO PRI SCH	PUBLIC
61	SAIRASHIE PRI SCH	PUBLIC
62	OLDEPE PRI SCH	PUBLIC
63	OLOKERI PRI SCH	PUBLIC
64	OLDORKO PRI SCH	PUBLIC
65	NANING'OI PRI SCH	PUBLIC
66	EMBARBAL PRI SCH	PUBLIC
67	OLGUMI ADVENTIST PRI SCH	PUBLIC
68	OLGUMI PRI SCH	PUBLIC
69	KISHARU PRI SCH	PUBLIC
70	ESONORUA PRI SCH	PUBLIC
71	OLEKIMUNKE PRI SCH	PUBLIC
72	ENKOIREROI PRI SCH	PUBLIC
73	EREMIT PRI SCH	PUBLIC
74	OLTEPESI PRI SCH	PUBLIC
75	EMBOLIEI PRI SCH	PUBLIC
76	ENKEREYIAN PRI SCH	PUBLIC
77	OLEPOLOS PRI SCH	PUBLIC
78	TANIA INTEGRATED SCH	PRIVATE
79	ERORET PRI SCH	PUBLIC
80	KOORA PRI SCH	PUBLIC
81	KOMIYA PRI SCH	PUBLIC
82	ILPARAKUO PRI SCH	PUBLIC
83	MAGADI JUNIOR PRI SCH	PRIVATE
84	MAGADI PRI SCH	PUBLIC
85	OLOIKA PRI SCH	PUBLIC
86	SHOMPOLE PRI SCH	PUBLIC
87	ENDOINYO OLASHO PRI SCH	PUBLIC
88	INYONYORI PRI SCH	PUBLIC
89	LOODARIAK PRI SCH	PUBLIC
90	OLOONKURMAN PRI SCH	PUBLIC
91	SINTATO PRI SCH	PUBLIC
92	MASAI PLAINSVIEW ACADEMY PRI SCH	PRIVATE
93	OLOSERIAN ACADEMY PRI SCH	PRIVATE
94	LESHUTA PRI SCH	PUBLIC
95	ILMASIN PRI SCH	PUBLIC
96	OSILIGI ACADEMY PRI SCH	PRIVATE
97	OLOOSEOS PRI SCH	PUBLIC
98	OLCHORONYORI PRI SCH	PUBLIC
99	KIPETO PRI SCH	PUBLIC
100	OLOIRIEN PRI SCH	PUBLIC

KAJIADO WEST LIST OF PRIMARY SCHOOLS

NO.	NAME	STATUS
101	OLDONYO NYOKIE PRI SCH	PUBLIC
102	MURANTAWUA PRI SCH	PUBLIC
103	OLKIRAMATIAN ARID ZONE PRI SCH	PUBLIC
104	MUSENKE PRI SCH	PUBLIC
105	PAKASE PRI SCH	PUBLIC
106	OLOIBORTOTO PRI SCH	PUBLIC
107	OUR LADYOF MOUNT CARMEL PRI SCH	PRIVATE
108	ENTASOPIA PRI SCH	PUBLIC
109	OLDORKO PRI SCH	PUBLIC
110	OLOYIANKALANI PRI SCH	PUBLIC
111	ESILANKE PRI SCH	PUBLIC
112	KENYA MARBLE QUARRY PRI SCH	PUBLIC
113	TOROSEI PRI SCH	PUBLIC
114	EMURKEYA PRI SCH	PUBLIC
115	ENCHORRO-ESENTEU PRI SCH	PUBLIC
116	ELANGATA WUAS PRI SCH	PUBLIC
117	OLCHEKUT SUPAT ACADEMY	PRIVATE
118	KILONITO PRI SCH	PUBLIC
119	INAUDOT PRI SCH	PUBLIC
120	SINGIRAINE PRI SCH	PUBLIC
121	INDUPA PRI SCH	PUBLIC
122	ST. PATRICKS PRI SCH	PRIVATE

The current disposition of primary schools in the various sub-counties is as follows;

Kajiado North- 147, Kajiado East- 108, Kajiado West- 82, Kajiado Central- 99, Kajiado South- 70. Kajiado West and Kajiado South sub-counties have the least number of primary schools.

Table 7.1: Projections for primary schools per sub County

Sub County	2009	2010	2015	2018	2020	2025	2028	2030
Kajiado North	58	61	80	94	104	137	161	178
Kajiado Central	29	31	40	47	53	69	82	91
Kajiado East	39	41	54	63	71	92	109	121
Kajiado West	30	32	42	49	55	72	85	94
Kajiado South	39	41	54	64	71	93	109	121

The major urban areas in Kajiado County, namely Ngong, Ong'ata Rongai, Kitengela have skewed distribution of educational facilities. Most of these primary schools in these urban areas are private primary schools. This translates to shorter walking distances to the nearest schools. However, in rural areas, students walk as far as 5km or more to the nearest primary school due to the sparse distribution of the primary schools.

Table 7.2: **Guidelines for distribution of primary schools**

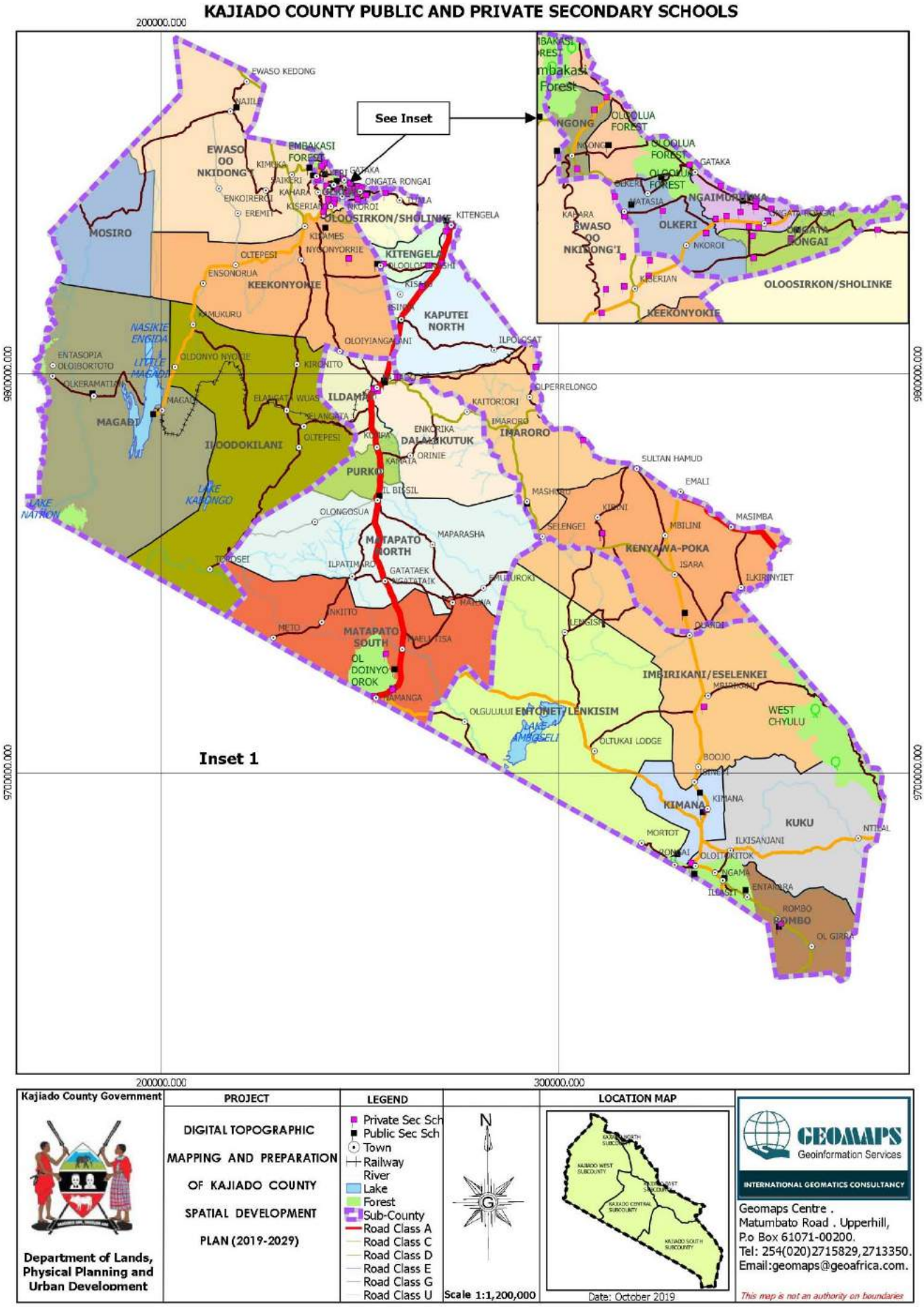
Catchment population	**No.**	**Area in ha**	**Walking distance**
4000	1	3.9	500m-2km

For ECDS/preparatory schools, it is desirable for them to be attached to primary schools and recommended distance is 300-500m and the land size requirement is 0.15-0.25ha

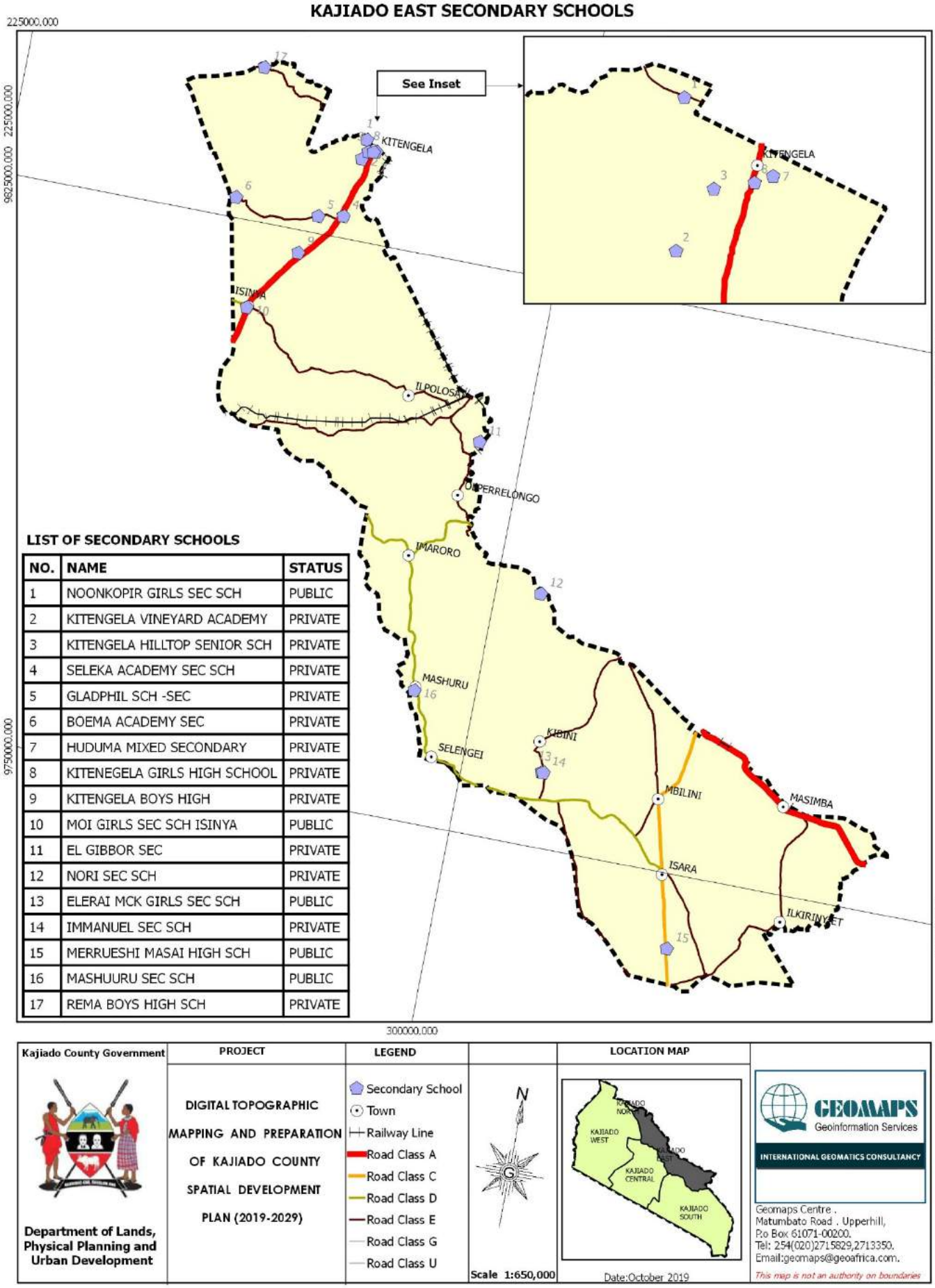
7.2.6 Secondary Education

There were 90 secondary schools (both public and private) as of 2013; with an enrolment of 20,122 students and 2,614 teachers hence the teacher/student ratio was 1:21. Enrolment in secondary schools was at 32%. Currently, it is approximated that 68.1 percent of the students walk for more than 5Km to the nearest school compared to those living within one kilometer to the nearest school is 5.7 percent.

From the below maps, Kajiado North sub-County has the highest number of secondary schools. This can be attributed to high population density. There is a deficiency of Secondary schools with Kajiado West and South having the least facilities (see Map 7.2 - spatial distribution of secondary schools).



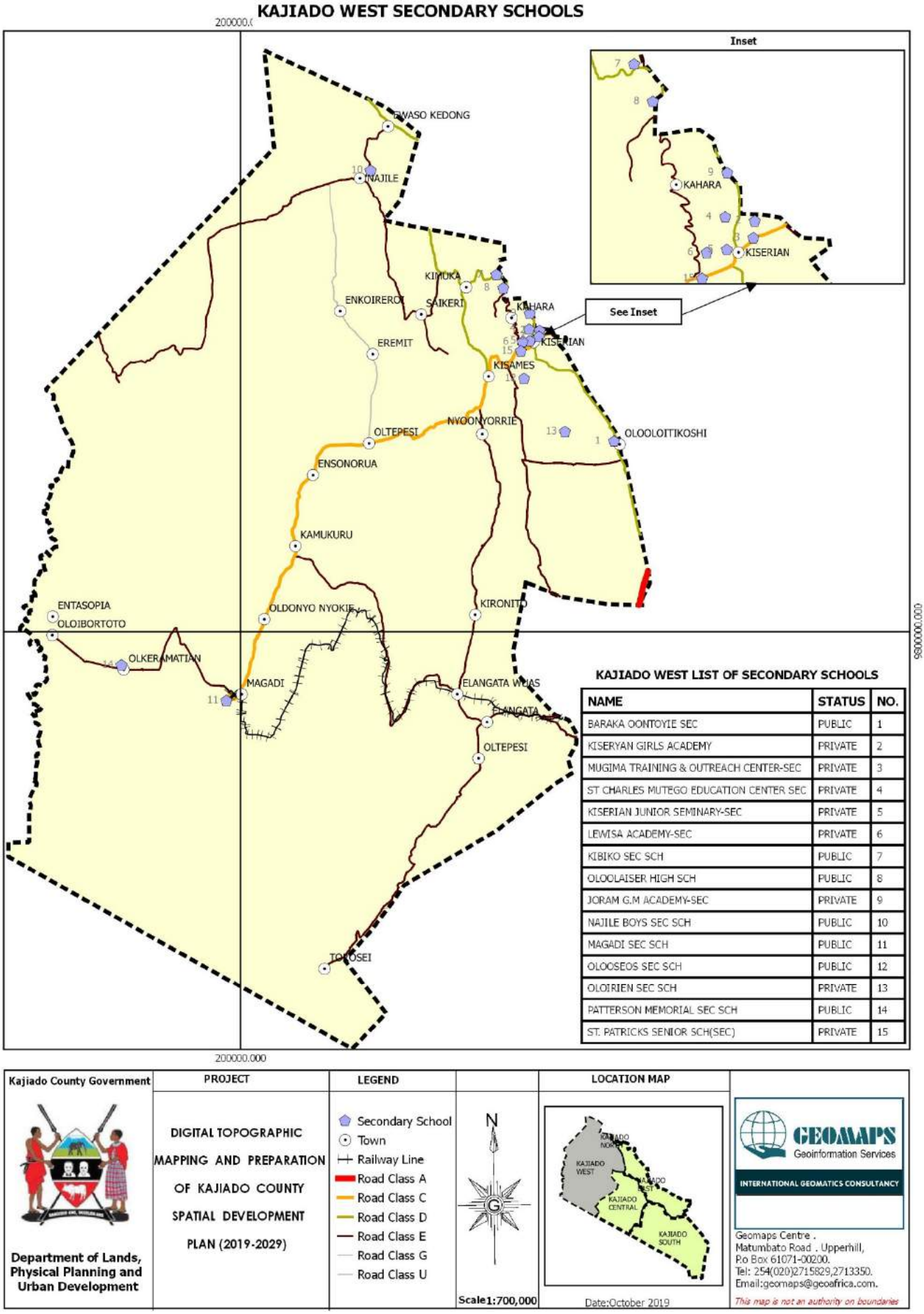
Map 7.7 Distribution of secondary schools in Kajiado County
Source: Geomaps, 2019



LIST OF SECONDARY SCHOOLS

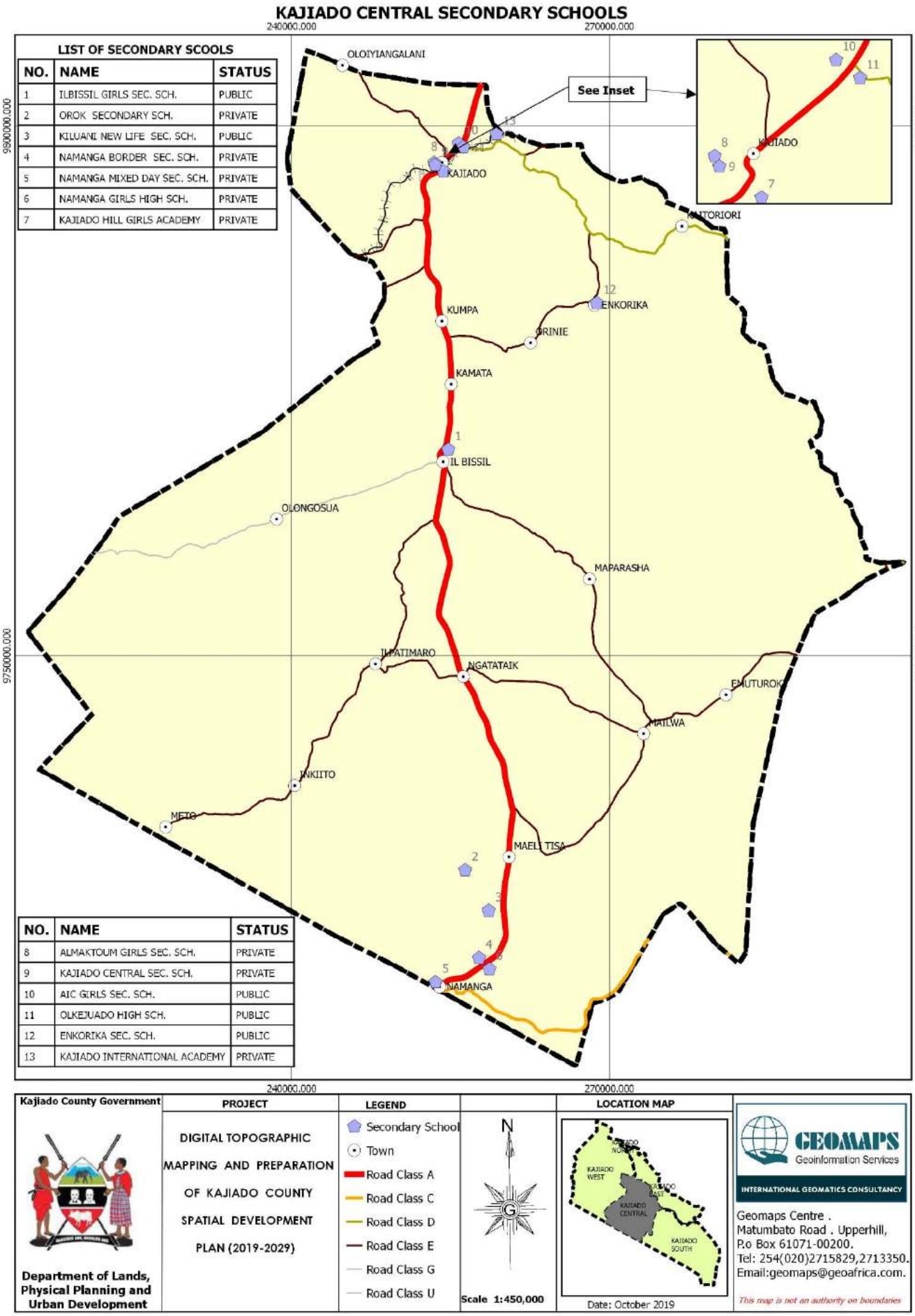
NO.	NAME	STATUS
1	NOONKOPIR GIRLS SEC SCH	PUBLIC
2	KITENGELA VINEYARD ACADEMY	PRIVATE
3	KITENGELA HILLTOP SENIOR SCH	PRIVATE
4	SELEKA ACADEMY SEC SCH	PRIVATE
5	GLADPHIL SCH -SEC	PRIVATE
6	BOEMA ACADEMY SEC	PRIVATE
7	HUDUMA MIXED SECONDARY	PRIVATE
8	KITENEGELA GIRLS HIGH SCHOOL	PRIVATE
9	KITENGELA BOYS HIGH	PRIVATE
10	MOI GIRLS SEC SCH ISINYA	PUBLIC
11	EL GIBBOR SEC	PRIVATE
12	NORI SEC SCH	PRIVATE
13	ELERAI MCK GIRLS SEC SCH	PUBLIC
14	IMMANUEL SEC SCH	PRIVATE
15	MERRUESHI MASAI HIGH SCH	PUBLIC
16	MASHUURU SEC SCH	PUBLIC
17	REMA BOYS HIGH SCH	PRIVATE

Map 7.8: Distribution of secondary schools in Kajiado East
Source: Geomaps, 2019

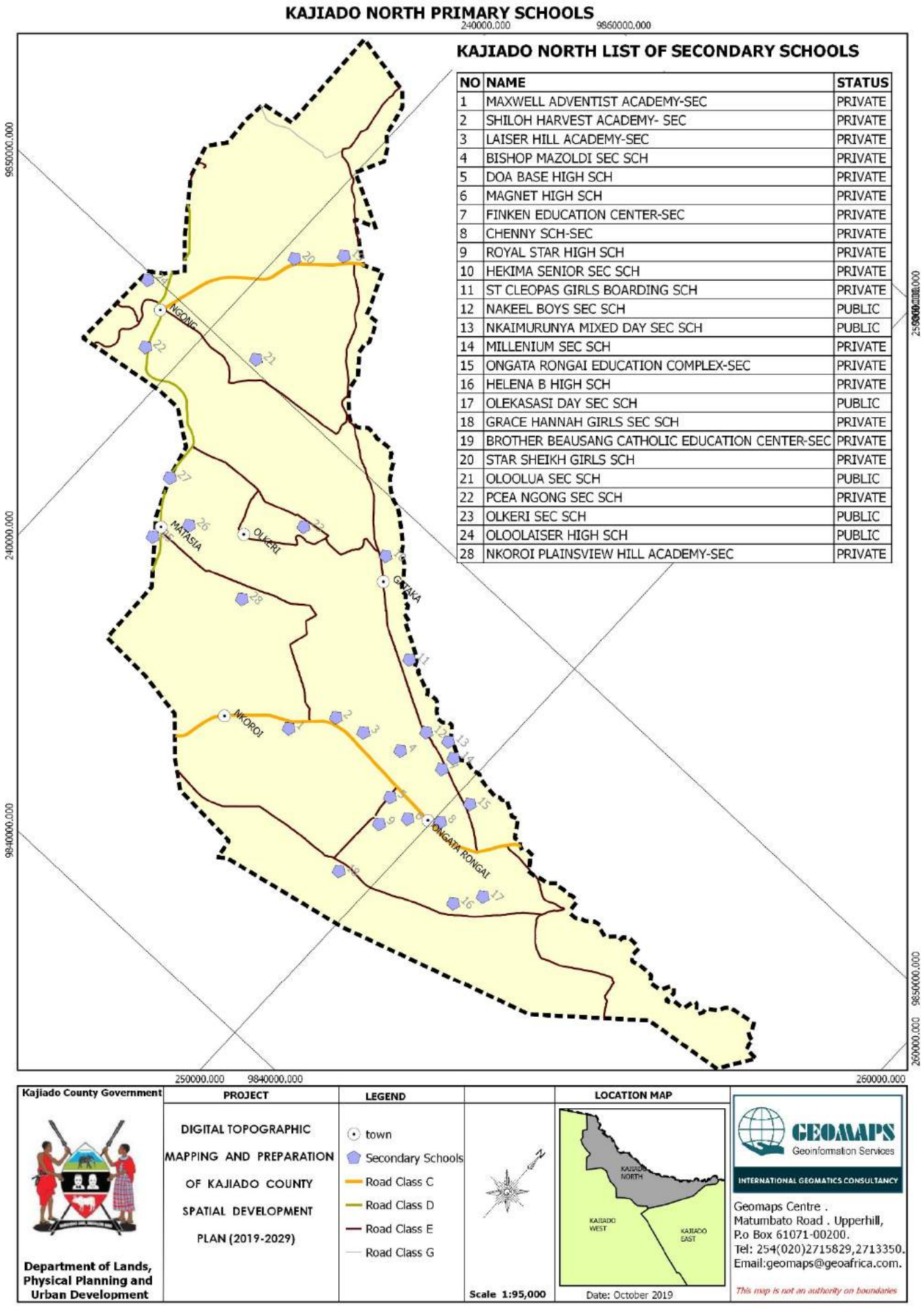


NAME	STATUS	NO.
BARAKA OONTOYIE SEC	PUBLIC	1
KISERYAN GIRLS ACADEMY	PRIVATE	2
MUGIMA TRAINING & OUTREACH CENTER-SEC	PRIVATE	3
ST CHARLES MUTEGO EDUCATION CENTER SEC	PRIVATE	4
KISERIAN JUNIOR SEMINARY-SEC	PRIVATE	5
LEWISA ACADEMY-SEC	PRIVATE	6
KIBIKO SEC SCH	PUBLIC	7
OLOOLAISER HIGH SCH	PUBLIC	8
JORAM G.M ACADEMY-SEC	PRIVATE	9
NAJILE BOYS SEC SCH	PUBLIC	10
MAGADI SEC SCH	PUBLIC	11
OLOOSEOS SEC SCH	PUBLIC	12
OLOIRIEN SEC SCH	PRIVATE	13
PATTERSON MEMORIAL SEC SCH	PUBLIC	14
ST. PATRICKS SENIOR SCH(SEC)	PRIVATE	15

Map 7.9: Distribution of secondary schools in Kajiado West
Source: Geomaps, 2019



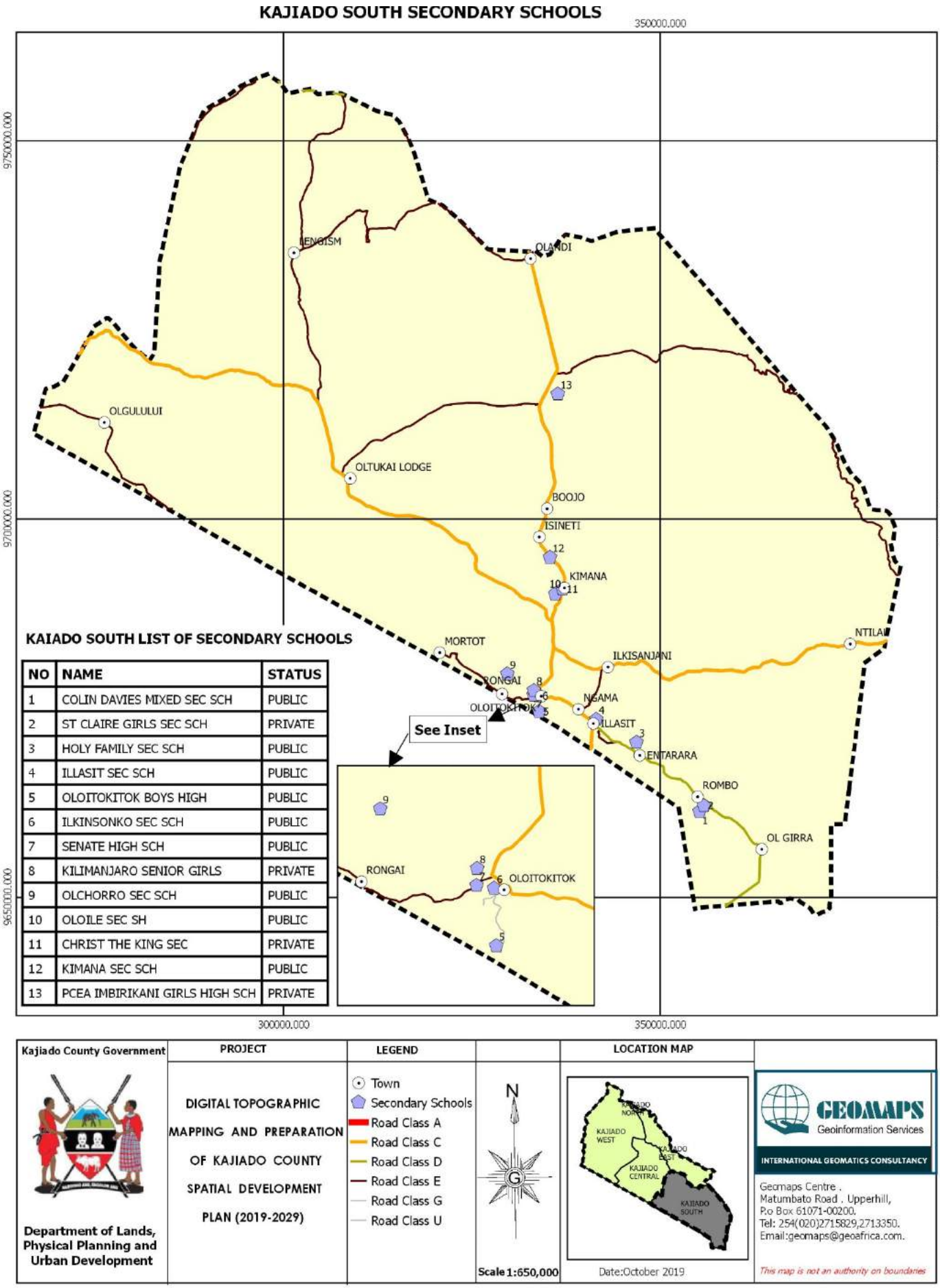
Map 7.10: Distribution of secondary schools in Kajiado Central
Source: Geomaps, 2019



KAJIADO NORTH LIST OF SECONDARY SCHOOLS

NO	NAME	STATUS
1	MAXWELL ADVENTIST ACADEMY-SEC	PRIVATE
2	SHILOH HARVEST ACADEMY- SEC	PRIVATE
3	LAISER HILL ACADEMY-SEC	PRIVATE
4	BISHOP MAZOLDI SEC SCH	PRIVATE
5	DOA BASE HIGH SCH	PRIVATE
6	MAGNET HIGH SCH	PRIVATE
7	FINKEN EDUCATION CENTER-SEC	PRIVATE
8	CHENNY SCH-SEC	PRIVATE
9	ROYAL STAR HIGH SCH	PRIVATE
10	HEKIMA SENIOR SEC SCH	PRIVATE
11	ST CLEOPAS GIRLS BOARDING SCH	PRIVATE
12	NAKEEL BOYS SEC SCH	PUBLIC
13	NKAIMURUNYA MIXED DAY SEC SCH	PUBLIC
14	MILLENIUM SEC SCH	PRIVATE
15	ONGATA RONGAI EDUCATION COMPLEX-SEC	PRIVATE
16	HELENA B HIGH SCH	PRIVATE
17	OLEKASASI DAY SEC SCH	PUBLIC
18	GRACE HANNAH GIRLS SEC SCH	PRIVATE
19	BROTHER BEAUSANG CATHOLIC EDUCATION CENTER-SEC	PRIVATE
20	STAR SHEIKH GIRLS SCH	PRIVATE
21	OLOOLUA SEC SCH	PUBLIC
22	PCEA NGONG SEC SCH	PRIVATE
23	OLKERI SEC SCH	PUBLIC
24	OLOOLAISER HIGH SCH	PUBLIC
28	NKOROI PLAINSVIEW HILL ACADEMY-SEC	PRIVATE

Map 7.11: Distribution of secondary schools in Kajiado North
Source: Geomaps, 2019



NO	NAME	STATUS
1	COLIN DAVIES MIXED SEC SCH	PUBLIC
2	ST CLAIRE GIRLS SEC SCH	PRIVATE
3	HOLY FAMILY SEC SCH	PUBLIC
4	ILLASIT SEC SCH	PUBLIC
5	OLOITOKITOK BOYS HIGH	PUBLIC
6	ILKINSONKO SEC SCH	PUBLIC
7	SENATE HIGH SCH	PUBLIC
8	KILIMANJARO SENIOR GIRLS	PRIVATE
9	OLCHORRO SEC SCH	PUBLIC
10	OLOILE SEC SH	PUBLIC
11	CHRIST THE KING SEC	PRIVATE
12	KIMANA SEC SCH	PUBLIC
13	PCEA IMBIRIKANI GIRLS HIGH SCH	PRIVATE

Map 7.12: Distribution of secondary schools in Kajiado South
Source: Geomaps, 2019

Secondary schools in the 5 sub-counties are provided as follows;

Kajiado North- 35, Kajiado East- 18, Kajiado West- 6, Kajiado Central- 13, Kajiado South- 13.

Kajiado North sub-county has the highest number of secondary schools of which close to 80% are privately owned.

The transition from primary schools to secondary schools is low in rural areas hence few secondary schools are recorded in the rural centers with low enrollment.

Table 7.3: **Projections for secondary schools per sub County**

Sub County	**2009**	**2010**	**2015**	**2018**	**2020**	**2025**	**2028**	**2030**
Kajiado North	29	30	40	47	52	68	80	89
Kajiado Central	14	15	20	24	27	35	41	46
Kajiado East	19	21	27	32	35	46	54	61
Kajiado West	15	16	21	25	28	36	42	47
Kajiado South	20	21	27	32	36	47	54	61

Table 7.4: **Guidelines for provision and distribution of secondary schools**

Catchment population	**No.**	**No. of streams**	**Area in ha**	**Walking distance**
4000	1	1 2 3	3.4 3.5 4.5	500m-3km

7.2.7 Tertiary Education

The County has several universities including Maasai Mara University, Nazarene University, Adventist University, UMMA University, Kenya Assemblies of God, East Africa University. There are also numerous middle-level colleges including Maasai technical college.

Table 7.5: **Projections for education facilities**

Education category	**2009**	**2015**	**2018**	**2020**	**2025**	**2030**
Nursery	275	355	402	436	534	654

Primary	196	244	287	311	381	467
Secondary	86	111	125	136	167	204

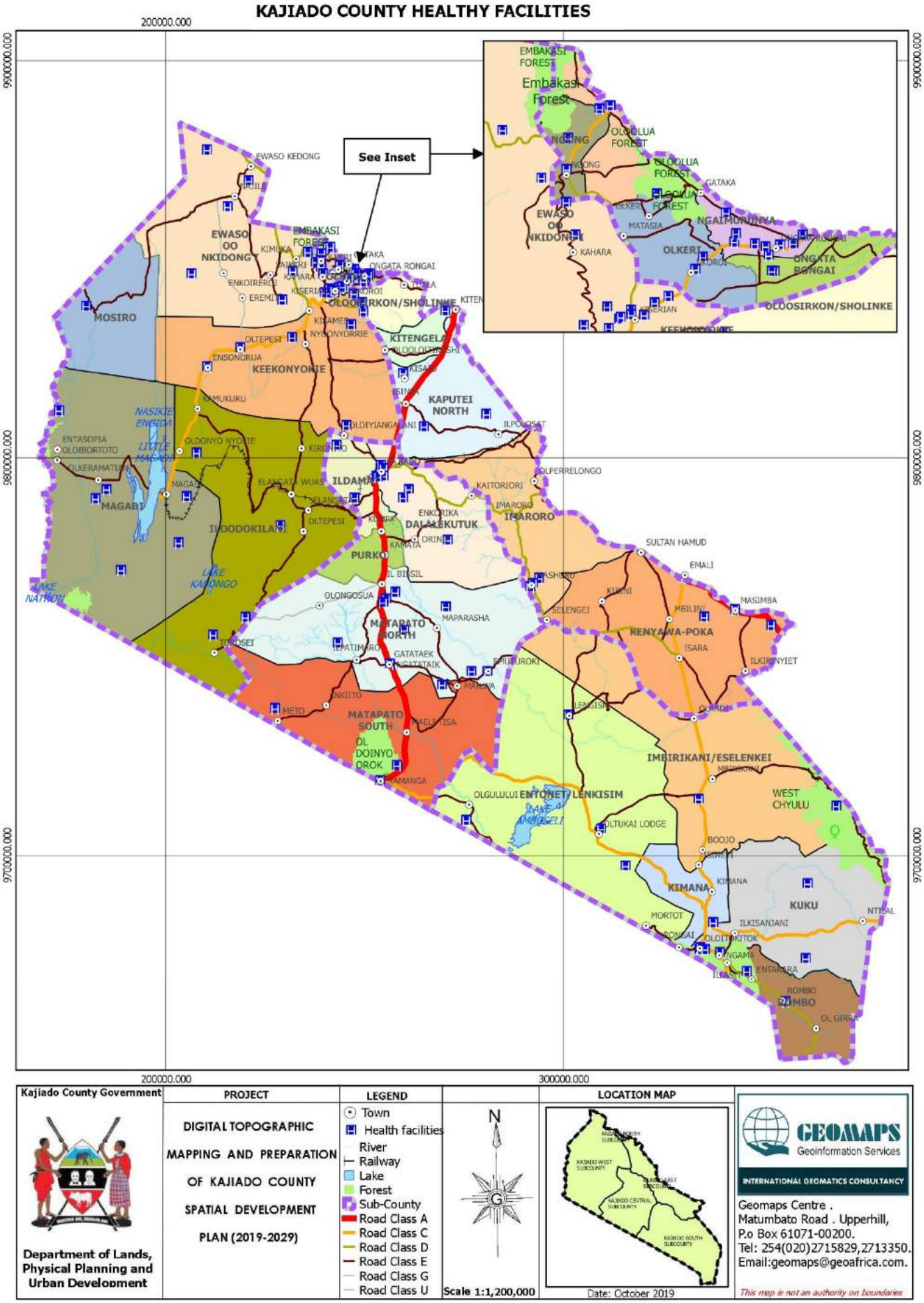
Source: *Consultant's Projections*

7.3 Health

7.3.1 Health Access

There is one referral hospital (Kajiado Referral Hospital) and three (3) sub-county hospitals (Ngong, Kitengela and Loitokitok Sub-County Hospitals), sixteen (16) health centres and sixty (60) dispensaries run by the County government. There are also six (6) hospitals, thirteen (13) nursing homes, seven (7) health centres, twenty-seven (27) dispensaries and one hundred and one (101) clinics that are either run by private, faith-based, community-based and other non-governmental organizations.

Together with these, the County has sixty-two (62) community health units initiated out of which only 37 are active. The doctor population ratio is 1:26,094 and the nurse population ratio is 1:1,068. The average distance to a health facility is 14.3 km, with only 9.9% of the population within a distance of less than a Kilometre to a health facility.



Map 7.13 Distribution of health facilities in Kajiado County
Source: Geomaps, 2019

7.3.2 Morbidity

Non-communicable diseases such as malaria (55.8%), typhoid (36.6%) and respiratory tract infections (13.8%) constituted the largest percentage of ill-health in Kajiado County.

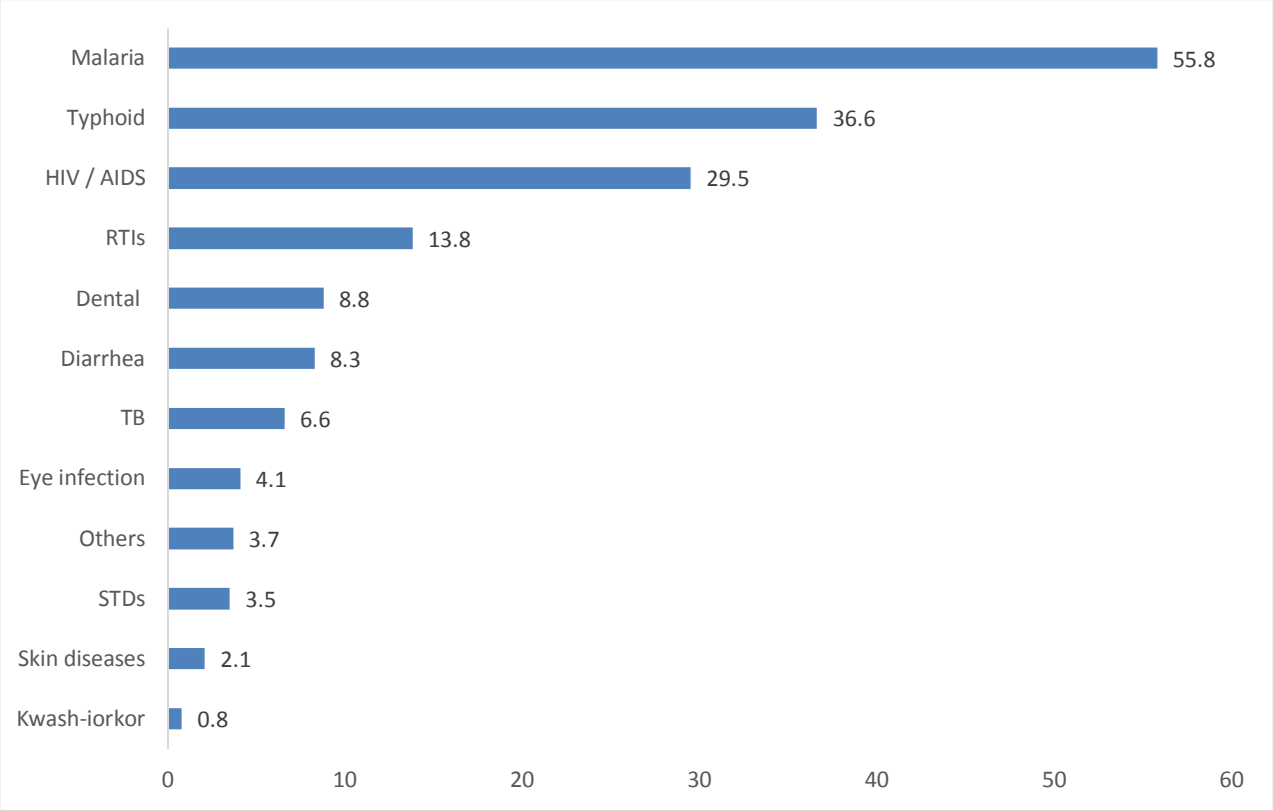


Figure 7.1: Levels of disease-causing morbidity in %

Source: Kajiado Household Survey Data 2018

7.3.3 Nutritional Status

Delivery in health facilities has gained popularity and this has assisted much in reducing child mortality and malnutrition cases in children. The malnourished are offered relief foods and supplements to improve their health. Interventions to reduce dependence on relief foods have lead to community training on how to diversify their produce instead of over-relying on meat and milk for food. Underweight (weight for age) is reported at 22.7% while stunted (height for age) is estimated to be 29.5%.

7.3.4 HIV and AIDS

Kajiado County has a HIV prevalence of 4.4 % (women at 6.3% and men at 3.8%) and the County is rated 22nd out of the 47 counties in Kenya (KASF, 2014). At the County level, the Kajiado Health Sector Strategic and Investment Plan (KHSSIP) 2014 - 2018 singles out HIV/AIDS-related infections as the leading cause of mortality and morbidity.

The proximity of Kajiado County to Nairobi County, which has a HIV prevalence of 6.8% (ranked 8th nationally) and falls in the high incidence

counties, has spill-over effects on Kajiado County because Kajiado offers access to affordable housing.

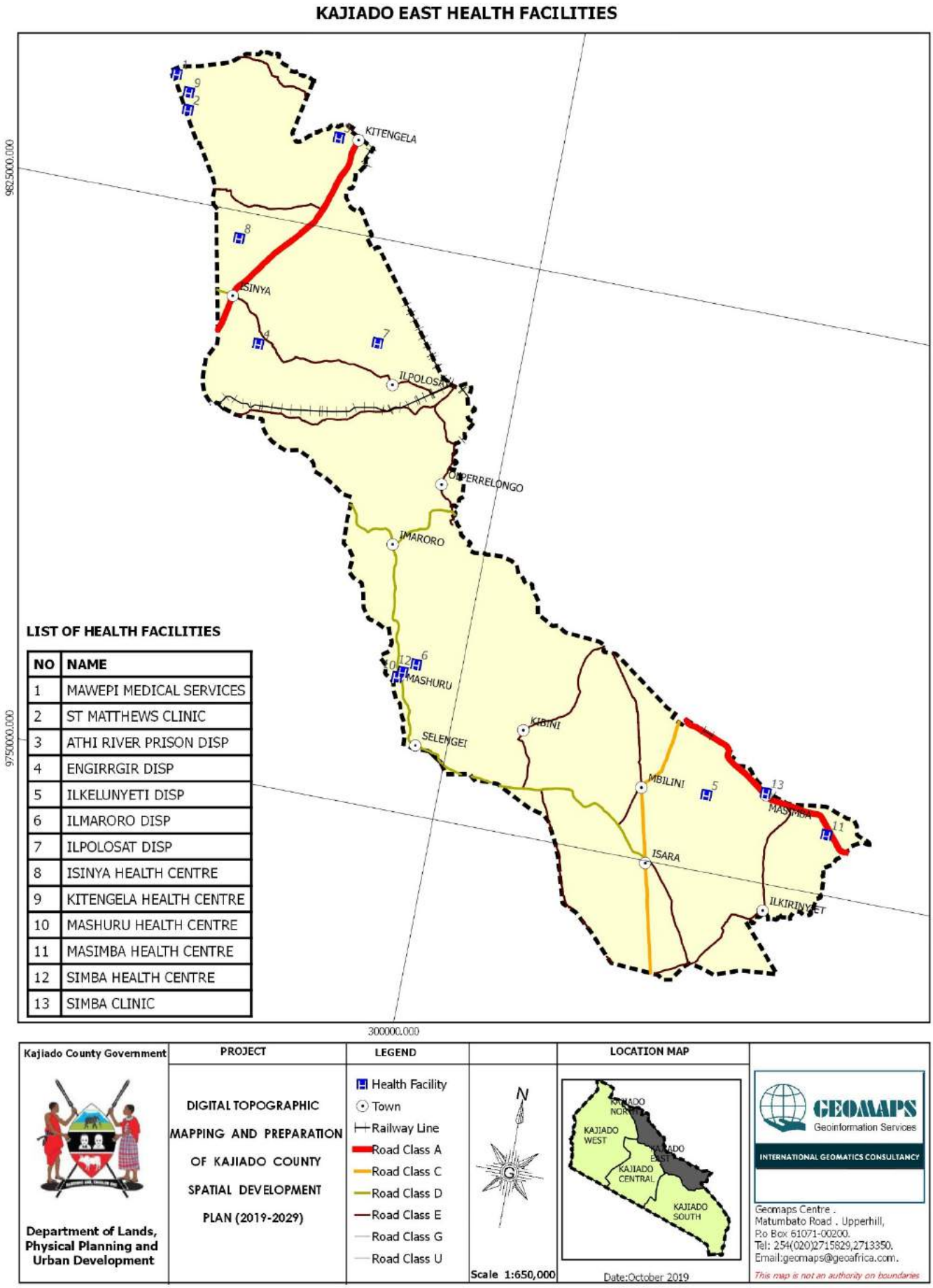
Strategies to be adopted by KCHSP

Strategic directions to be adopted by the Kajiado County HIV Strategic Plan (KCHSP)
• Reducing new HIV infections • Improving health outcomes and wellbeing of all people living with HIV • Using a human rights-based approach to facilitate services for people living with HIV, key populations and other priority groups in all sectors • Strengthening the integration of health services and community systems • Strengthening research, innovation and information management to inform the Kajiado County HIV Strategic Plan • Promoting the utilization of strategic information for research and monitoring and evaluation to enhance programming • Increasing domestic financing for a sustainable HIV response • Promoting accountable leadership for the delivery of the MCASP results by all sectors and actors. • Promoting accountable leadership for the delivery of the Kajiado County HIV Strategic Plan

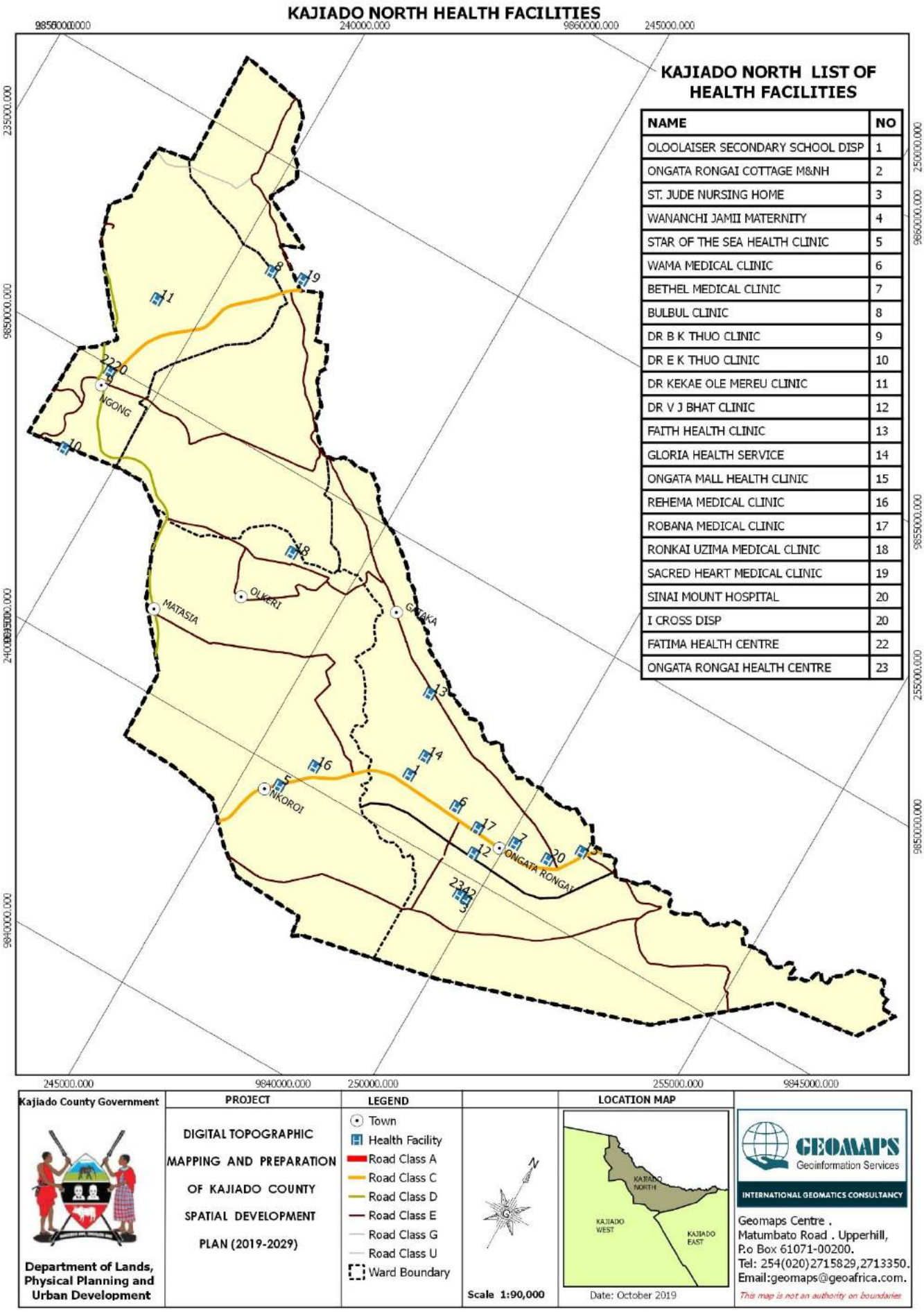
Source: KCHSP, 2016

7.4 Recreational Facilities

Kajiado County has very few recreational facilities. There is an urgent need in developing recreational facilities and parks for all the urban areas. The facilities will not only act to nurture talent but also bring sports tourism to the County.

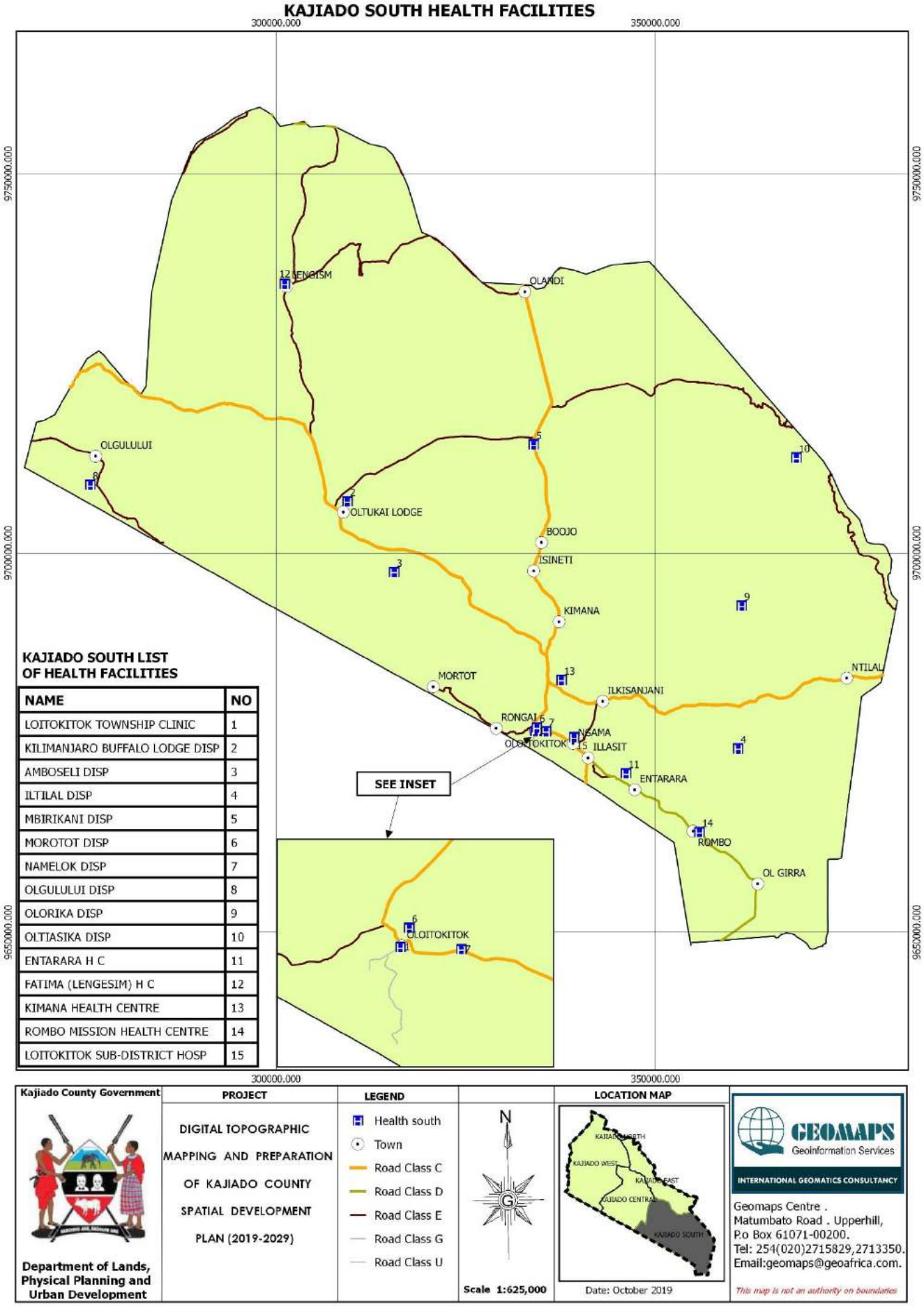


Map 7.14: Distribution of health facilities in Kajiado East
Source: Geomaps, 2019

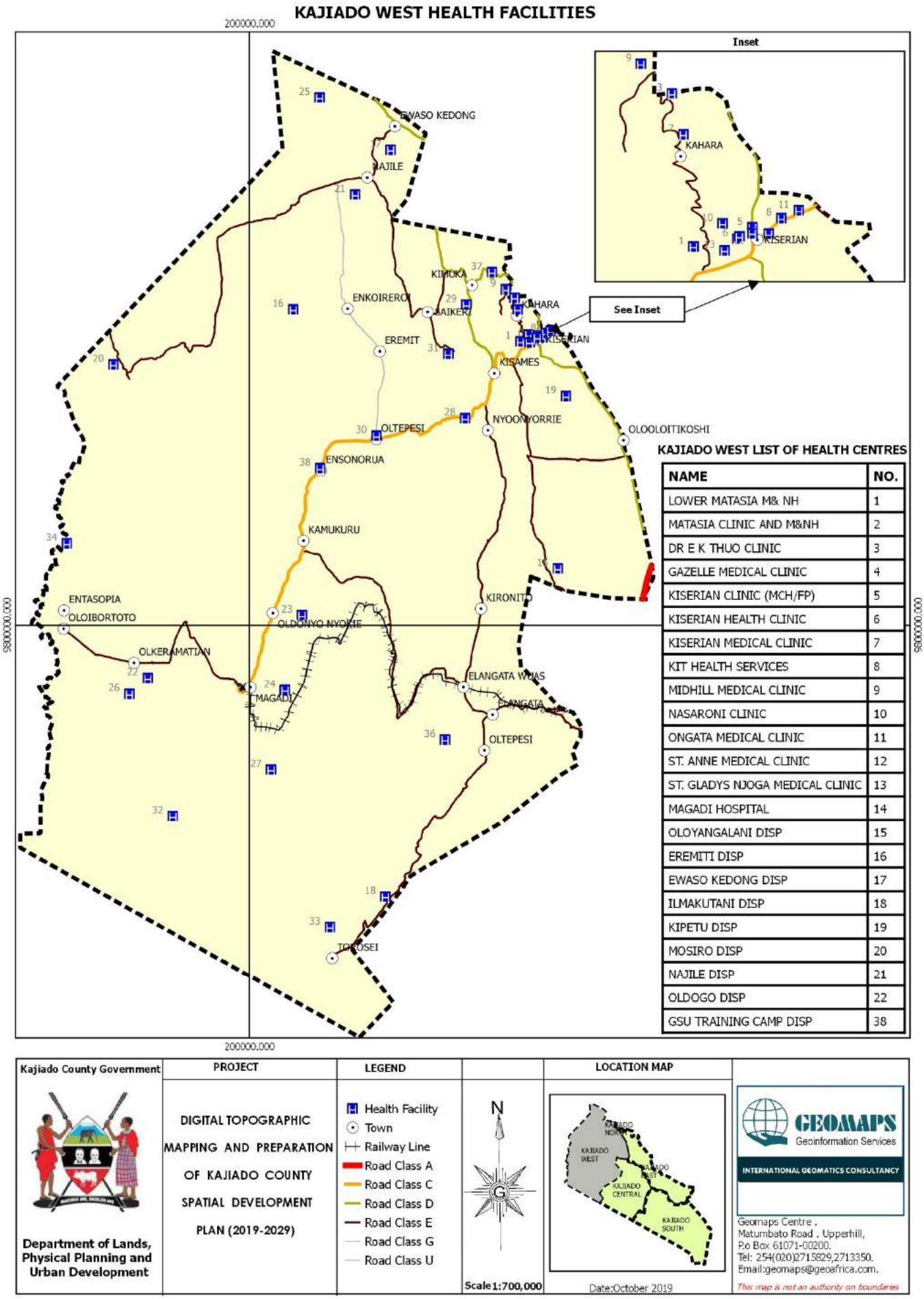


NAME	NO
OLOOLAISER SECONDARY SCHOOL DISP	1
ONGATA RONGAI COTTAGE M&NH	2
ST. JUDE NURSING HOME	3
WANANCHI JAMII MATERNITY	4
STAR OF THE SEA HEALTH CLINIC	5
WAMA MEDICAL CLINIC	6
BETHEL MEDICAL CLINIC	7
BULBUL CLINIC	8
DR B K THUO CLINIC	9
DR E K THUO CLINIC	10
DR KEKAE OLE MEREU CLINIC	11
DR V J BHAT CLINIC	12
FAITH HEALTH CLINIC	13
GLORIA HEALTH SERVICE	14
ONGATA MALL HEALTH CLINIC	15
REHEMA MEDICAL CLINIC	16
ROBANA MEDICAL CLINIC	17
RONKAI UZIMA MEDICAL CLINIC	18
SACRED HEART MEDICAL CLINIC	19
SINAI MOUNT HOSPITAL	20
I CROSS DISP	20
FATIMA HEALTH CENTRE	22
ONGATA RONGAI HEALTH CENTRE	23

Map 7.15: Distribution of health facilities in Kajiado North
Source: Geomaps, 2019

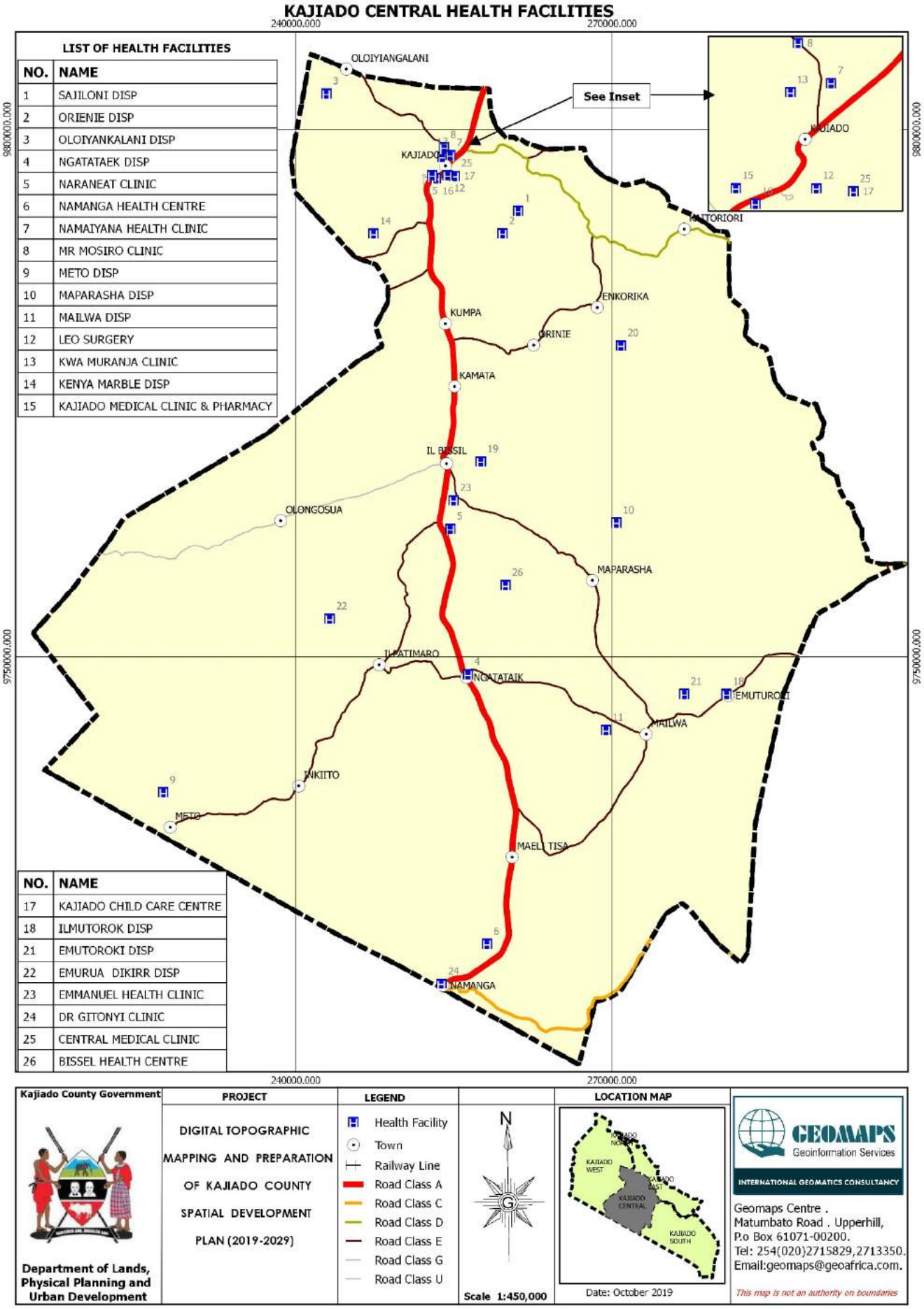


Map 7.16: Distribution of health facilities in Kajiado South
Source: Geomaps, 2019



NAME	NO.
LOWER MATASIA M& NH	1
MATASIA CLINIC AND M&NH	2
DR E K THUO CLINIC	3
GAZELLE MEDICAL CLINIC	4
KISERIAN CLINIC (MCH/FP)	5
KISERIAN HEALTH CLINIC	6
KISERIAN MEDICAL CLINIC	7
KIT HEALTH SERVICES	8
MIDHILL MEDICAL CLINIC	9
NASARONI CLINIC	10
ONGATA MEDICAL CLINIC	11
ST. ANNE MEDICAL CLINIC	12
ST. GLADYS NJOGA MEDICAL CLINIC	13
MAGADI HOSPITAL	14
OLOYANGALANI DISP	15
EREMITI DISP	16
EWASO KEDONG DISP	17
ILMAKUTANI DISP	18
KIPETU DISP	19
MOSIRO DISP	20
NAJILE DISP	21
OLDOGO DISP	22
GSU TRAINING CAMP DISP	38

Map 7.17 : Distribution of health facilities in Kajiado West
Source: Geomaps, 2019



Map 7.18: Distribution of health facilities in Kajiado Central
Source: Geomaps, 2019

7.6 Emerging Issues per Sub-County

The stakeholder consultation workshops, residents of different sub-counties gave pressing issues related to social infrastructure. The data was collected on a per-ward basis and then collated per Sub-County. The emerging issues were then identified as follows:

Table 7.6: Emerging Issues

Sub-County	Sector	Challenges
Kajiado Central	Health	• Uneven distribution of health facilities • Inadequate personnel • Not well equipped • Shortage of drugs
	Education Facilities	• Uneven distribution of educational facilities especially secondary schools and tertiary colleges • Inadequate staffing • High dropout rates • Draught challenges
	Community facilities	• No social hall • No recreational centres • Inadequate cemeteries
	Education Facilities	• Uneven distribution of educational facilities especially secondary schools and tertiary colleges • Inadequate staffing
Kajiado West	Health Facilities	• Inadequate facilities • Understaffing • High child mortality rate • Insufficient medicine
	Education facilities	• ECDE not well equipped • Lack of feeding programme • Understaffing of primary and secondary schools • Lack of technical institutions
Kajiado South	Education	• Inadequate land for schools • Fewer ECDE classes • Inadequate teachers
	Health	• Few doctors and nurses • Insufficient health equipment • Few community health workers • Lack of ambulance in the ward
Kajiado East	Education	• Few learning facilities • Distance • Under staff

Sub-County	Sector	Challenges
		• Feeding programs
	Recreational	• No recreational facilities
	Health	• Insufficient facilities • Insufficient drugs • Inadequate personnel
Kajiado North	Education	• Few public schools • Few Tertiary institutions • Few ECD classes
	Recreational facilities	• Lack of public recreational facilities • Lack of social hall
	Health	• Non-functional health facilities • Lack of toilets
	Recreational facilities	• No facilities in the social hall • Lack of power, water, and seats

Source: Kajiado Household Survey Data 2018

7.7 Cross-cutting Issues

Table 7.7: Cross-cutting Issues

Sector	Challenges
Education Facilities	• Uneven distribution of educational facilities especially secondary schools and tertiary colleges • Inadequate staffing • High illiteracy • Insufficient land for schools • Lack of equipment in schools • High dropout rates • Drought challenges
Health Facilities	• Uneven distribution of health facilities • Inadequate personnel • Not well equipped • Insufficient medicine • Poor accessibility to health facilities • Long distances to health facilities • Communicable diseases • Inadequate ambulances • Incomplete health facilities
Sport & Recreational Facilities	• Inadequate sports facility • Inadequate recreational facilities • Inadequate social hall • Inadequate talent development
Cemeteries	• Insufficient land allocation for cemeteries • Poor maintenance of cemeteries

Source: Kajiado Household Survey Data 2018

CHAPTER 8: HUMAN SETTLEMENT

8.0 Introduction

The section looks at the human settlements in Kajiado County. A situational analysis was done where opportunities and challenges in human settlements were identified. Strategies towards sustainable human settlements have been formulated with project budgets and implementers.

8.1 Human Settlements

Human settlements are the totality of the human community - whether city, town or village - with all the social, material, organizational, spiritual and cultural elements that sustain it. The fabric of human settlements consists of physical elements and services to which these elements provide the material support. The physical components comprise:

- Shelter, i.e. the superstructures of different shapes, size, type and materials erected by mankind for security, privacy and protection from the elements and for his singularity within a community
- Infrastructure, i.e. the complex networks designed to deliver to or remove from the shelter people, goods, energy or information
- Services cover those required by a community for the fulfilment of its functions as a social body, such as education, health, culture, welfare, recreation and nutrition.

It is now contended that human settlements are the spatial dimension as well as the physical expression of economic and social activity. No creative act takes place without being influenced by settlement conditions. In turn, the creation of workable human settlements inevitably becomes an objective of, an indicator of and a prerequisite for social and economic development.

Settlements are an objective of development in that places where people can live learn and work in conditions of safety; comfort and efficiency are a fundamental and elementary need. Settlements are also an indicator, in that they are the most visible expression of a society's ability to satisfy some of the fundamental needs of its members: they can mark accomplishments as well as expose destitution, neglect and inequality. Finally, settlements are a prerequisite for social and economic development, in that no social progress for sustainable economic growth can occur without efficient settlements systems and settlement networks.

Although, as described above, 'human settlements' is a broad concept, and includes e.g. sustainable development, the key concerns in the domain of human settlements are:

- Housing
- Infrastructure and urban services, including waste disposal, sanitation, drinking water, and energy supply etc.
- Urbanization

8.2 Role of Human Settlements

Human settlements perform the following more specific functions including:

8.2.1 Service Function.

Human settlements facilitate provision of schools, health services, public utilities, banking services, Cooperatives, administration, judicial, recreational and other social services.

8.2.2 Economic Function

Human settlements provide employment in agricultural, industrial, commercial and in the service sectors. They provide markets for both subsistence and cash produce, and allow material advancement out of manufactured goods for persons resident in them.

8.2.3 Residential Function

Human settlements always have a residential function for people working in agricultural or non-agricultural employment. As development progresses, the demand for these activities increases and, in turn, the development has a beneficial effect on the entire region through interdependence between urban and rural settlements.

8.3 Human Settlement Objective

The overall human settlement objective is to improve the social, economic and environmental quality of human settlements and the living and working environments of all people, in particular the urban and rural poor. Such improvement should be based on technical cooperation activities, partnerships among the public, private and community sectors and participation in the decision-making process from community groups and special interest groups such as women, indigenous people, the elderly and the disabled. These approaches should form the core principles of national settlement strategies.

8.4 Types of Human Settlements in Kajiado County

Settlement patterns in Kajiado County can be classified into rural, peri-urban and urban;

(i) Rural settlement (Scattered)

These are rural settlements where livestock and agriculture activities are primarily undertaken. The settlement patterns are scattered in the farms. The

percentage rural population in 2009 was 76.53% with a County population density of 31 persons per kilometers squared, Map 8.1.

Figure 8.1: Aerial image of dispersed rural settlement in Kajiado
Source: Geomaps 2018

The hinterlands are poorly endowed with quality infrastructure (such as good quality roads, water, electricity, and sewer) and social services (education, health, recreation security among others) image 8.1 & 8.2.

Image 8.1: Rural roads in poor condition, in Matasia
Source: Field Survey 2018

Image 8.2: Rural houses
Source: Field Survey 2018

(ii) Peri-urban settlements

Peri urban settlements are transition spaces with some degree of intermingling of urban and rural uses. They have enormous potential to play a positive role in enhancing urban sustainability. This is because some major towns in Kajiado County have faced the challenges posed by urban sprawl. According to 2009 Kenya population and housing census, the table below shows peri-urban settlements were identified.

Peri-urban Area	2009 (Census)	2018 (Projections)	2030 (Projections)
	Total	Total	Total
Kajiado	229	370	704
Ngong	3,115	5,043	9,588
Kiserian	3,853	6,238	11,860
Sultan Hamud	2,781	4,502	8,560
Total	**9,978**	**16,153**	**30,712**

Source: Kenya National Bureau of Statistics and consultant's projection

(iii) Urban Settlements

Urban settlements in Kajiado County are either clustered or Linear.

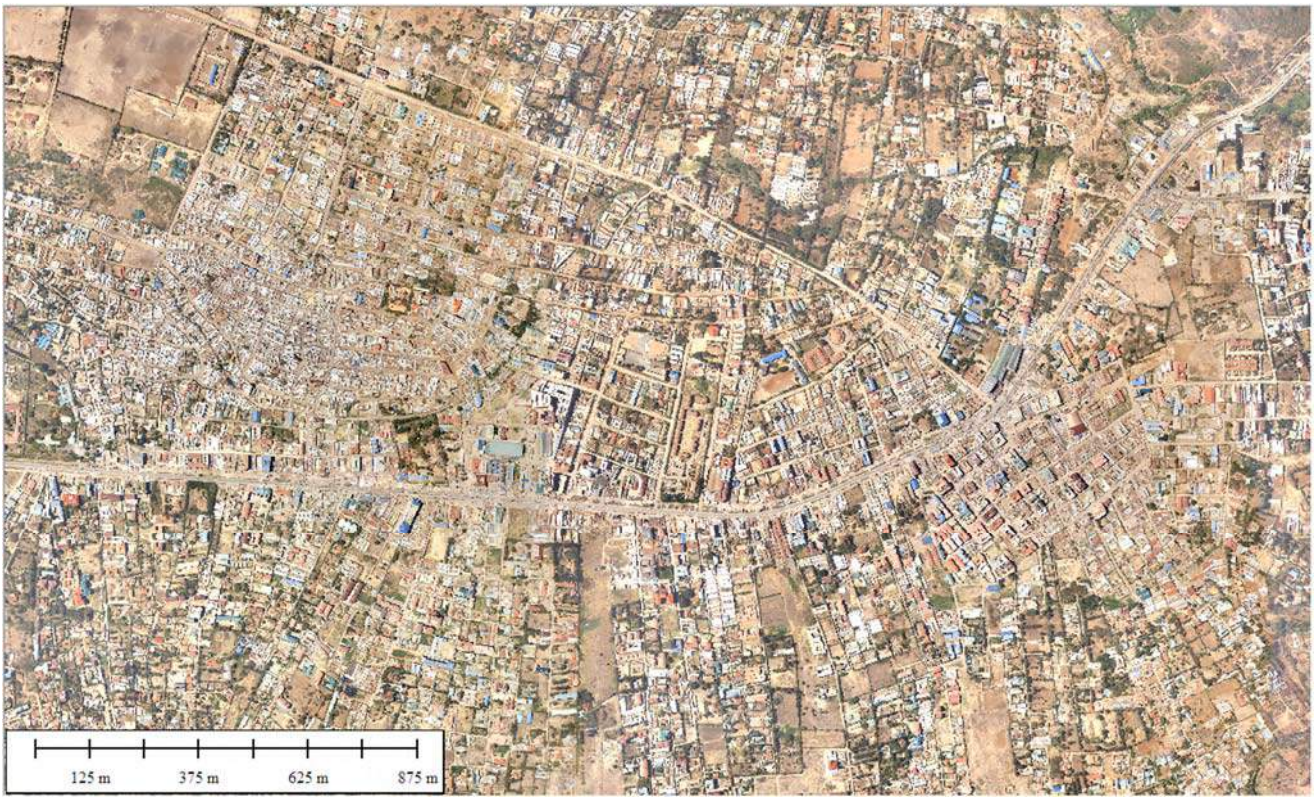
a) Nucleated

Urban centers are clustered or nucleated settlements with predominantly non -primary activities, map 8.2.

Map 8.1 : Nucleated urban settlement in Ngong Town
Source: Geomaps 2018

b) Linear Settlements

Another form of urban form that is predominant in Kajiado is linear settlement which is urban growth along the major roads, map 8.3



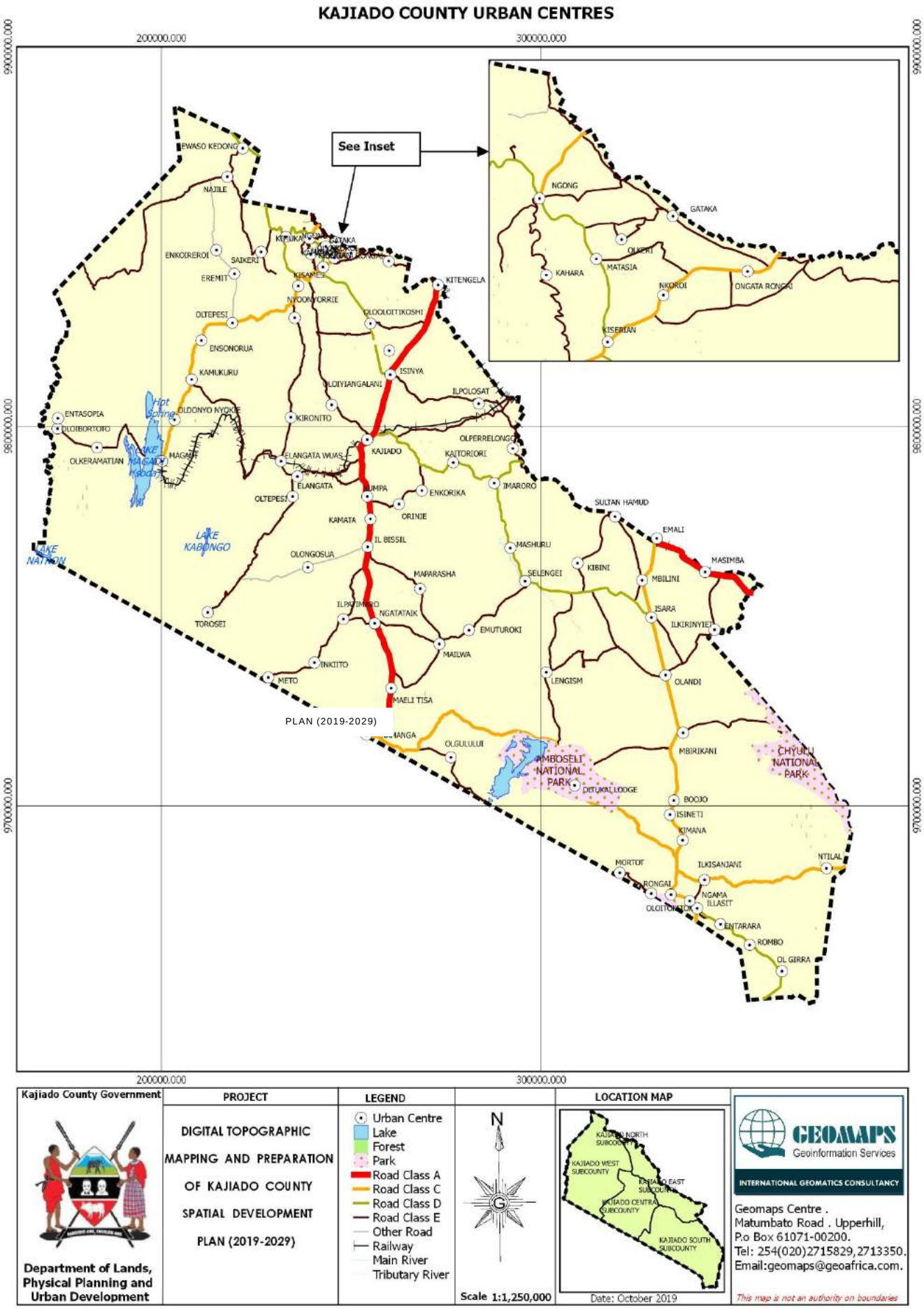
Map 8.2: Linear settlement in Ong'ata Rongai town
Source: Geomaps 2018

c) Classification of urban centres

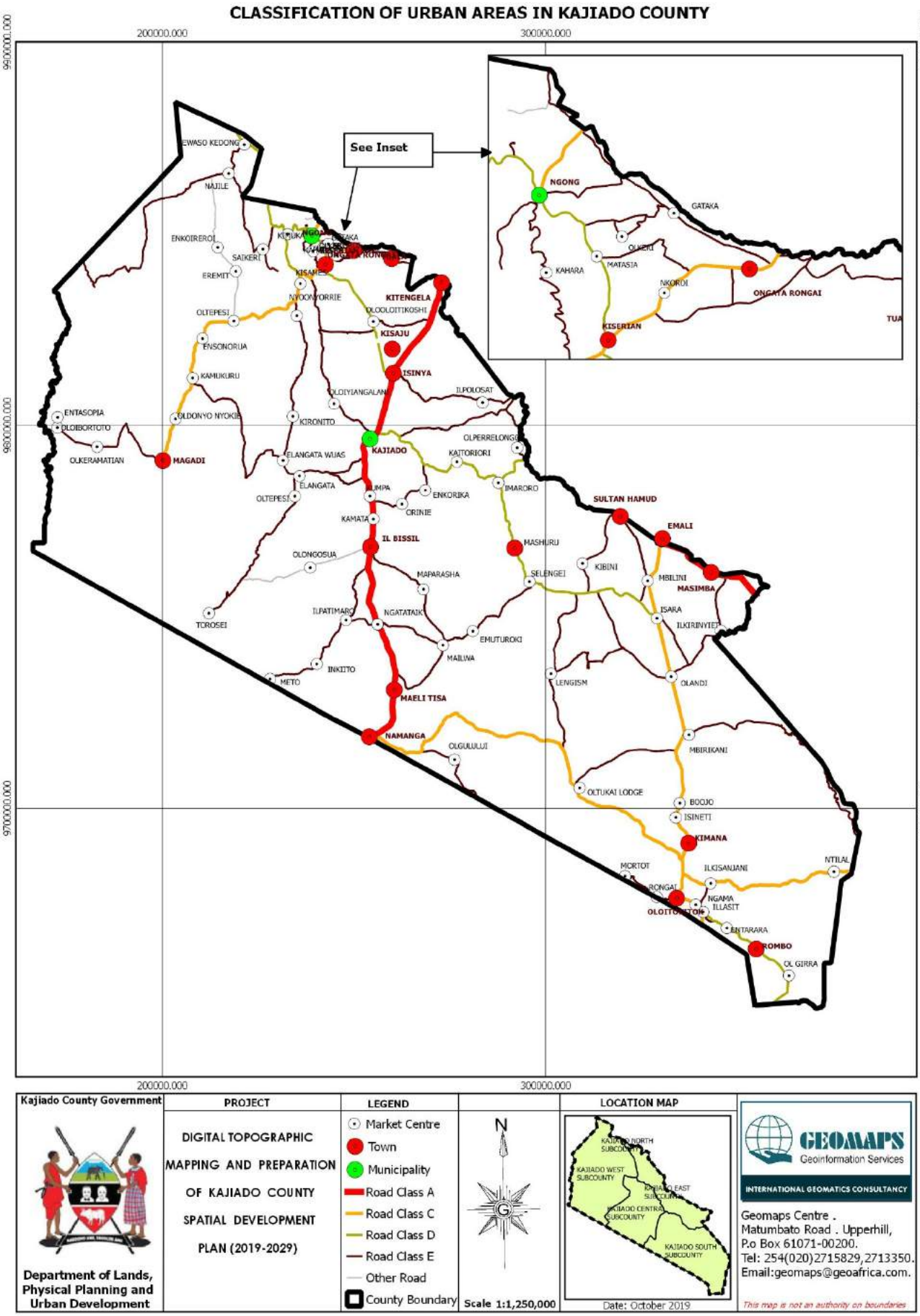
The Urban Areas and Cities Act 2011(revised 2015) requires a city to have a population of over 250,000 residents according to the last population census, have an Integrated Sustainable Urban Development Plan and demonstrate economic viability among other requirements. Accordingly, no town in Kajiado qualifies for city status on the stated criteria. Again, the proximity to Nairobi does not favour establishing another city. The same Act defines a municipality as an urban center with a population of 70,000- 249,000 residents as at the time of the last population and housing census and has an integrated development plan among other requirements. Going by these key requirements, only Ngong town qualifies for municipal status based on 2009 population. Kajiado town being the County headquarters automatically qualifies for special municipal status. The County Government has already initiated the process of conferring the two stated urban centres as municipal status. The Act further requires a town to have a population of at least 2,000 residents at the time of the last census. Table 8.1 and map 8.4 shows the major towns with a population of between 2,000 and 69,999 in 2009 census in Kajiado County.

Accordingly, 17 towns qualify for town status table 8.2 and map 8.5

Urban Population projections describe a significant growth in towns, for instance Kitengela and Ong'ata Rongai will have 179038 and 123667 in 2030 representing a 307.80% growth respectively. This growth can be attributed to growing social economic activities in the towns, rural-urban migration. The County should provide more social amenities as well as enhance urban management capacity for the fast-growing town.



Map 8.3: Major urban centers in Kajiado County
Source: Geomaps 2019



Map 8.4: Classification of towns in Kajiado County
Source: Geomaps 2019

Table 8.1: Towns with municipality status.

Urban Area	2009 (Census)	2018 (Projections)	2030 (Projections)
	Total	**Total**	**Total**
Ngong	104,073	168,505	320,337
Kajiado Town	14,631	23,689	45,034
Total	**118,704**	**192,194**	**365,371**

Source: Kenya National Bureau of Statistics and consultant's projection

Table 8.2: Towns qualifying for town status.

Urban Area	2009 (Census)	2018 (Projections)	2030 (Projections)
	Total	Total	Total
Kitengela	58,167	94,178	179,038
Mashuuru	50,254	81,365	154,693
Ong'ata Rongai	40,178	65,052	123,668
Rombo	37,604	60,884	115,753
Kiserian	26,761	43,329	82,370
Magadi	25,451	41,207	78,344
Kimana	20,349	32,946	62,638
Oloitokitok	9,201	14,911	28,350
Namanga	9,066	14,679	27,905
Mbirikani	8,702	14,089	26,786
Isinya	8,670	14,038	26,686
Olkramatian	7,947	12,866	24,462
Kisaju	6,208	10,051	19,109
Emali	5,567	9,013	17,136
Ilbissil	5,376	8,704	16,547
Sultan Hamud	3,855	6,242	11,866
Ilpatimaro	3,623	5,865	11,152
Masimba	1,327	2,148	4,084
Total	**328,306**	**531,567**	**1,010,587**

Source: Kenya National Bureau of Statistics and consultant's projection

8.5 The Role and functions of urban centers

Urban centers in the County play administrative, service economic, social and innovative roles in development in the County. Very important, they provide market for rural agricultural produce and supply inputs to the rural agricultural sector. The roles of the various towns are given in table 8.3.

Table 8.3: Role of key urban centres

	Town	Role
1	Kajiado town	County headquarters, administration, transport linkage, economic, residential, education services, medical services and farm equipment
2	Ngong	Sub County headquarters, administration, transport linkage, economic, residential, education services, medical services and farm equipment
3	Kitengela	Commercial hub, industrial, transport coordination
4	Ong'ata Rongai	Residential and transport coordination
5	Kiserian	Food supply (meat supply)
6	Loitokitok	Administration (Sub County headquarters), commercial, transport linkage, food supply
7	Namanga	Administration, international gateway (border town)
8	Isinya	Administration (headquarters for Kajiado East), transport linkage
9	Ilbissil	Market function (yard for cows, slaughter houses), education
10	Sultan Hamud	Education, collection point for food products

Source: Kajiado County Government

8.6 Infrastructure and social services

The County lack adequate infrastructures and services requisite for their development. The situation is worse in the rural areas and in the unplanned towns especially in the low-income settlements.

The dilapidated physical infrastructure in the County is one of the major impediments to trade and investment. The County's poor and inadequate infrastructure (road, water supply, and electricity telecommunications/ICT among others) has led to high cost of doing business and hindered harnessing of local potential and access to markets.

The County with a road network of 2,344.2Km has only 300Km of tarmaced road. The entire road network in this vast County is only 2,344.2 Km out of which 300Km is bitumen, 932.3Km gravel, and 1111.9Km earth road.

During rainy season most of the earth roads are rendered impassable, which hampers movement of persons and goods. Poor roads also hinder access to farms and markets.

The County is water deficient as most rivers are seasonal. The major sources of underground water are boreholes and springs but in some areas borehole water is saline. The County does not have adequate water harvesting structures. There has been low community involvement in construction and rehabilitation of water supply facilities. The County lacks solid waste management, sewerage system and public toilets in major towns. The County has low electricity connectivity especially in rural areas. High electricity connection tariffs hinder households, institutions and businesses from accessing electricity. This impairs their operations and growth.

There are seven airstrips in the County, with at least one in each Sub-County. The airstrips are in Kajiado Town, Loitokitok, Olooloitikosh, Ngong, Magadi, Daraja and Amboseli National Park.

The County also experiences low connectivity to ICT due to high cost of ICT infrastructure. Urban centres in the County lack adequate infrastructure and social amenities such as quality roads, water supply, sewer, electricity, health and education facilities, recreation areas, police stations, public cemeteries

The CSP identifies the available amenities and proposes the necessary additions to serve the population.

8.7 Planning status of the major urban centres

Physical development plans guide urban development and are one of the key instruments of urban management. Where there are no physical development plans, towns grow, haphazardly without control and finally become economically, socially and environmentally unproductive. According to Kajiado 2013-2017 CIDP, 20 towns are planned while 45 towns are unplanned. Table 8.4 gives the planning status of the major towns. Efforts should be made to get all towns in the County planned.

Table 8.4: Planning status of the major urban centres.

Town	Plan Status
Kajiado	Not approved
Ngong	Approved
Kitengela	Approved
Ong'ata Rongai	Not approved
Kiserian	Not approved
Loitokitok	Not approved
Namanga	Not planned
Isinya	Not Approved
Ilbissil	Not approved
Sultan Hamud	Not approved

Source: Field Survey, 2018

8.8. Towns with informal/low-income settlements

Due to rapid urbanization and lack of formal sector to supply adequate houses especially for the low-income segment of the society, there has been proliferation of informal settlements to meet the housing gap, table 8.5. This is manifested in the slums and squatter settlements and other form of shanty developments. There is need to embrace the national housing policy, Jubilee government pillar on provision of adequate affordable housing and planning regulations to enhance housing delivery in the affected towns. The complimentary role of the public and private sector in housing delivery should be tapped into.

Table 8.5: Major towns with informal settlements

	Towns	**Informal/low-income settlements**
1	Ngong	Gichagi, Mathare
2	Kajiado Town	Majengo
3	Kitengela	No informal settlement
4	Ong'ata Rongai	Kware, Gataka

Source: Kajiado County Government

8.9 Factors Influencing Human Settlements

Settlement patterns in Kajiado County are influenced by availability of natural resources, soil fertility and rainfall, pasture, infrastructure (especially road network), economic opportunities, urbanisation and proximity to Nairobi. Although a large population is in the rural areas, the urban centers have the highest population density due to rural-urban migration, as a result of a comparatively well-developed infrastructure, social amenities, employment opportunities and security. The factors affecting human settlements are summarized in table 8.6 its distribution is spatially represented in map 8.6

a. Soil fertility and rainfall

Soils feed the plants which in turn feed the animals that feed us. Some areas in Kajiado County have a good soil fertility and rainfall such as Ngong, Oloitokitok and Sultan Hamud. These areas can be used for livestock and agriculture development.

b. Pasture

Kiserian and Oloitokitok are some of the grazing areas in the county. Grazing is allowing livestock to directly consume the growing forage; grasses, legumes,

and forbs, in a pasture or rangeland. Grazing provides good nutrition and other benefits to the animal and can lead to more productive forage growth.

c. Economic opportunities

Economic activity involves production, distribution, consumption and exchange. It satisfies human wants, needs and utilise the resources optimally. Ngong, Kajiado town, Kitengela, Ong'ata Rongai, Kiserian, Oloitokitok, Namanga, Isinya, Ilbissil and Sultan Hamud are major areas there are high economic opportunities.

d. Urbanisation

Urbanisation occurs mainly because people move from rural areas to urban areas and it results in growth in the size of the urban population and the extent of urban areas. These changes in population lead to other changes in land use, economic activity and culture. High rate of urbanization is experienced in towns such as Ngong, Kajiado town, Kitengela, Ong'ata Rongai, Kiserian, Oloitokitok, Namanga, Isinya, Ilbissil and Sultan Hamud

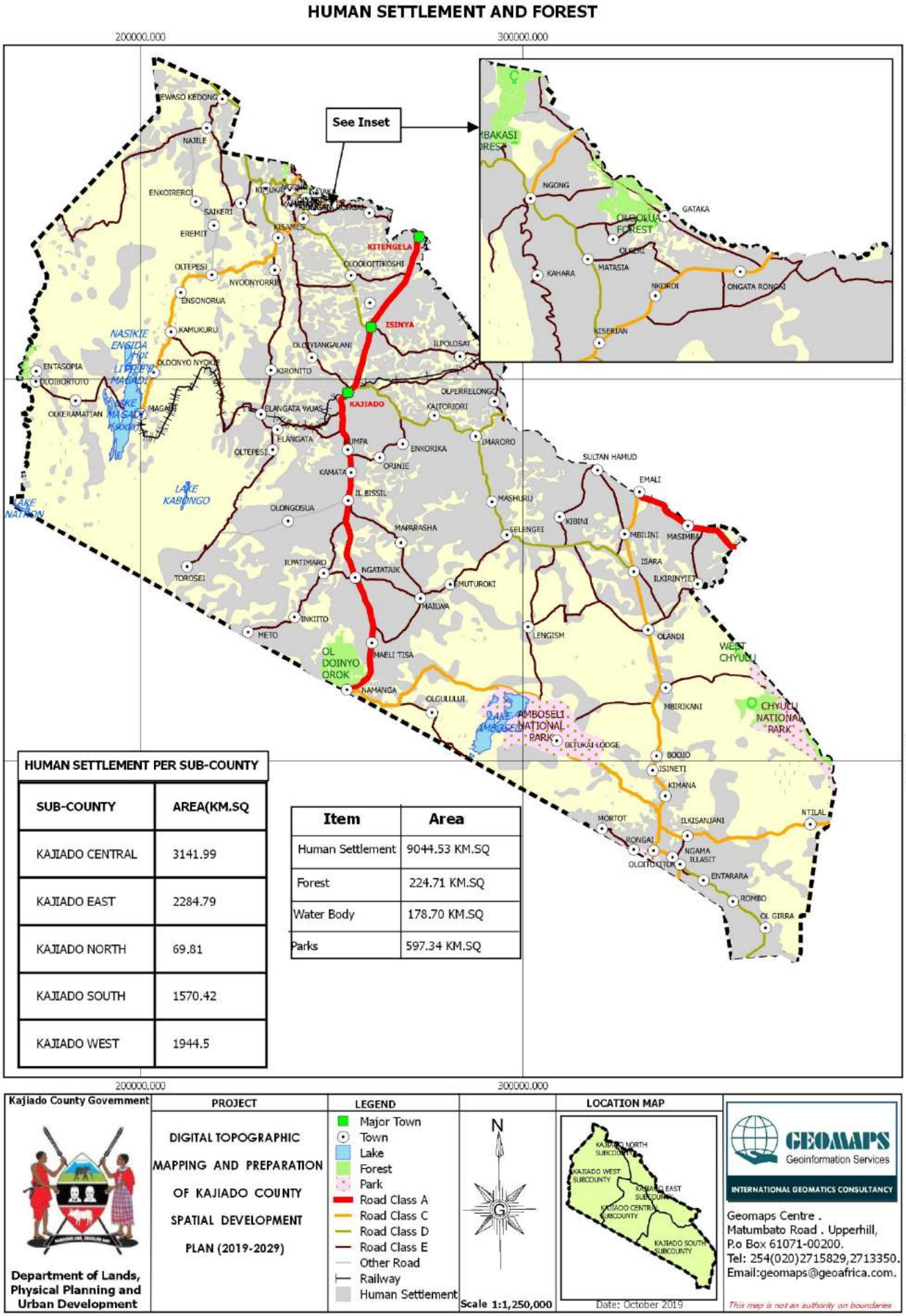
e. Proximity to Nairobi

Areas such as Ngong, Kajiado town, Kitengela, Ong'ata Rongai, Kiserian, and Isinya are relatively close to Nairobi city hence they provide a good residing place for many of Nairobi's workers.

Table 8.6: Factors influencing human settlements in the County

Town	Natural resources	soil fertility and rainfall	Pasture	Infrastructure (especially road network),	Economic opportunities	Urbanizations	Proximity to Nairobi	Other specify
Ngong	✓	✓		✓	✓	✓	✓	
Kajiado Town	✓			✓	✓	✓	✓	
Kitengela				✓	✓	✓	✓	
Ong'ata Rongai				✓	✓	✓	✓	
Kiserian			✓		✓	✓	✓	
Oloitokitok		✓	✓		✓	✓		Border advantage
Namanga				✓	✓	✓		Border advantage
Isinya				✓	✓	✓	✓	Rich inter-land livestock production
Bissil				✓	✓	✓		Border proximity, charcoal, livestock
Sultan Hamud		✓		✓	✓	✓		

Source: Field Survey 2018



Map 8.5: Human Settlement Map- 2017

Source: Geomaps 2019

8.10 Urban-Rural Linkages

Urban-Rural linkages can be defined as the structural, social, economic, cultural, and political relationships maintained between individuals and groups in the urban environment and those in rural areas (Lesetedi, 2003). They can also refer to spatial and sectoral flows that occur between rural and urban areas. Spatial flows include flows of people, goods, money, technology, knowledge, information, and waste. By contrast, sectoral flows include flows of agricultural products going to urban areas, and goods from urban manufacturing areas going to more rural areas (Tacoli, 1998 cited in von Braun, 2007).

Typically, Urban-Rural linkages are often articulated in the nature and forms of migration, production, consumption, financial and some investment linkages that occur within the Urban-Rural symbiosis. The exchange of money, goods, visits including social activities, and communication with relatives and friends can all be used as indicators of Urban-Rural linkages (Action Against Hunger, 2012)

Urban-Rural Linkages support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning. The Urban-Rural linkages in Kajiado County are not well developed as demonstrated by the poor infrastructure link (especially road networks) between the major, medium and small towns and the rural areas. The distribution of the medium and small towns is skewed in the County and needs strategies to bring balanced regional distribution.

8.11 Land Tenure

Land tenure is the relationship, whether legally or customarily defined, among people, as individuals or groups, with respect to land. Rules of tenure define how property rights to land are to be allocated within societies. They define how access is granted to rights to use, control, and transfer land, as well as associated responsibilities and restraints. In simple terms, land tenure systems determine who can use what land for how long, and under what conditions.

According to Kenya's constitution, 2010, there are three types of land tenure, viz: private land, public land, and community land. Private land is land owned by an individual under freehold or leasehold tenure. Public land is vested in the government for the benefit of the people in Kenya. It includes roads, all water bodies, forests, national parks, and land that have minerals, among others. Community land is held by and managed by communities. It includes land registered under group representatives, shrines, grazing areas and ancestral lands

Land tenure affects access, conservation and utilisation and provision of infrastructure and services. It also has a bearing on cost of projects. Table 8.9 gives a breakdown of the land tenure in the County.

Most of the trust and government land in Kajiado County has been adjudicated and government settlement schemes implemented. No consideration was made to set aside adequate public land for urban areas table 8.10. Thus, very few urban centers have adequate public land for expansion. Urban centers and small towns have developed on private land. This has led into land sub-divisions and some illegal settlements to accommodate the expanding demand for land. The end result of this has been uncontrolled development of slums in the areas.

8.12 Opportunities for Human Settlements in Kajiado County

- Land with high human carrying capacity potential that would mitigate accommodation of the high population growth.
- Ecological and topographical diversity that would accommodate various land uses including ecotourism.
- Locally available building materials that would make building construction relatively cheaper.
- Northern corridor as presented by the County bordering Mombasa Road would provide easier connectivity for goods and services to the rest of the country.
- Proximity to Nairobi allowing the County to enjoy triccle down economic activities through development of real estate and industries.
- Reasonably developed inter and Intra road network (Namanga- Athi River road, Magadi Road, Emali- Oloitoktok road) that provides connectivity.
- Many fast-growing urban centres such as Kitengela, Ng'ong, Namanga, Kiserian, Kajiado, Magadi etc that provide centres for socioeconomic development.
- Cross-border trade as provided through Kenya-Tanzania border at Namanga, Rombo and Oloitoktok.
- Very rich Maasai culture e.g. *Manyatta* settlements, artefacts, attire that form a strong basis for cultural tourism.

8.13 Emerging Planning Issues in Human Settlement

(a) Rapid population growth

The County population growth rate is 5.5 percent; much higher than the national average growth rate of 3.14 as per 2009 National Population and Housing Census. The high population growth rate has created a predominantly youthful population with about 51.29 percent of the population being less than 20 years of age and about 72.99 percent of the

population less than 30 years of age. The large youthful population exerts pressure on the existing natural resources, infrastructure and social services. It creates need for employment, housing, infrastructure and social amenities. According to the 2009 population census the average population density in the County was is 31 persons per kilometer squared and is projected to increase to 95.42 by 2030, table 8.7 and map 8.7

Table 8.7: County population and density projection

County	2009 Census		2018 Projection		2030 Projection	
	Population	Density (p/km^2)	Population	Density (p/km^2)	Population	Density (p/km^2)
Total	687,312	31	1,112,827	50.19	2,115,546	95.42

Source: Kenya National Bureau of Statistics

Strategy

Since the largest contribution to population growth is immigration the County should enhance investment in social facilities (schools, hospitals, housing, security, etc.) and employment opportunities to accommodate the growing population. Physical infrastructure and land use planning should be undertaken to support the burgeoning population.

(b) Large Youthful Population

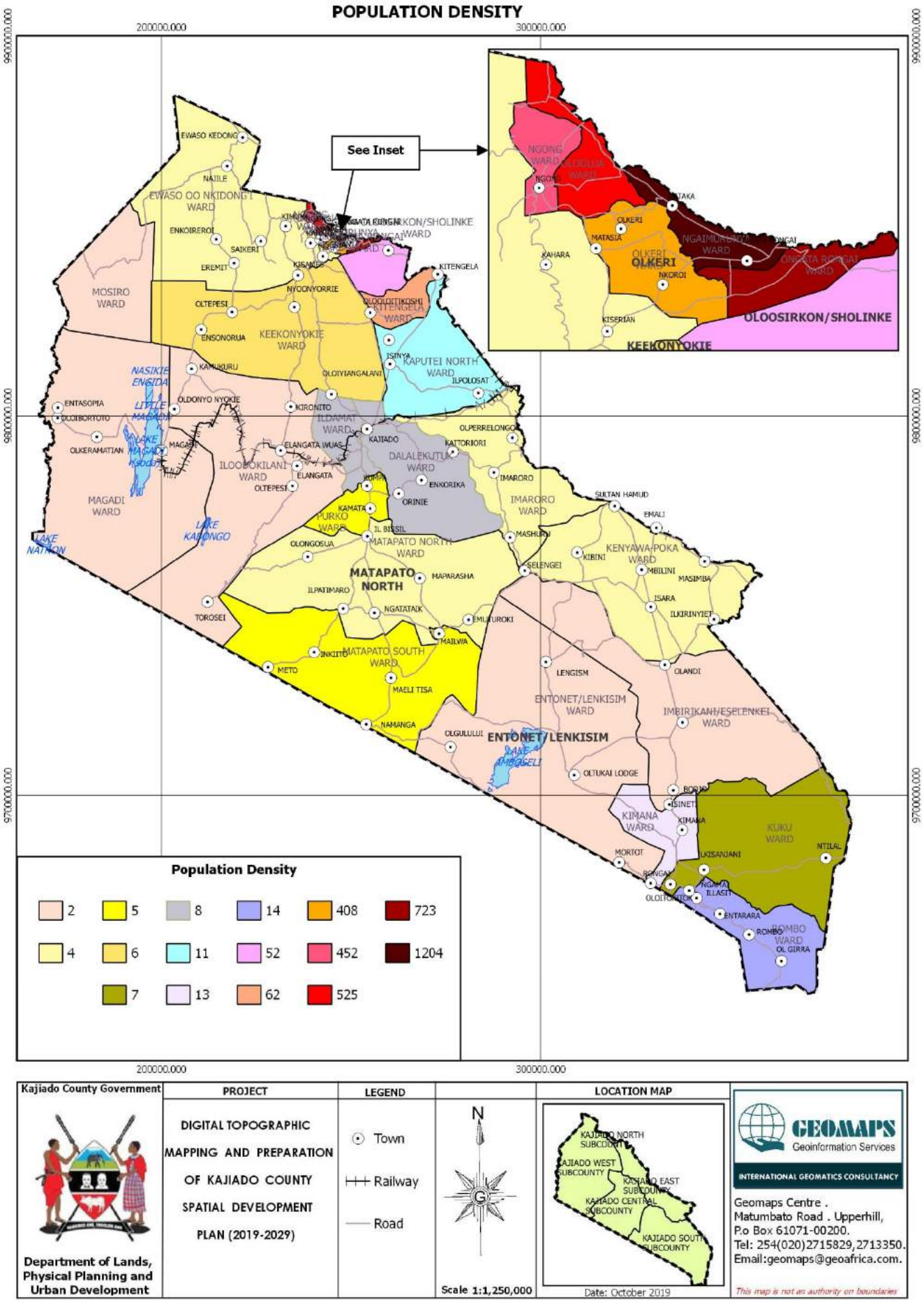
From the population pyramid figure 1, the dominant age cohort 0-4 is approximately 16.1 percent of the total population whilst the smallest age cohort 80+ is approximately 0.67 percent of the total population. The population reduces throughout the age cohorts apart from age cohort 20-24 and 25-29 which slightly increases.

Strategy

Investment in social facilities (schools, hospitals, housing, security, etc.) and employment opportunities to accommodate the large youth population

(c) Uneven Settlements and Population Distribution.

Settlement patterns in Kajiado County are influenced by availability of natural resources, soil fertility and rainfall, pasture, infrastructure, economic opportunities, urbanization and proximity to Nairobi. Although a large population is in the rural areas, the urban centers have the highest population densities mainly due to immigration as a result of well-developed infrastructures, employment opportunities, and proximity to Nairobi (Kajiado County Integrated Development Plan, 2013-2018) map 8.7 and 8.9. Towns are unevenly distributed developing mainly along the main transport corridors and in the high potential areas. The rural population is 76.5%, with the remaining 23.47% living in towns. Although the average County population density is 31 persons per Km^2 much higher than the national average of 67 persons per Km^2, there are regional disparities in population densities.



Map 8.6 : Population densities in Kajiado County

Source: Geomaps 2019

Map 8.7: Dense urban settlement in Oloitoktok town
Source Geomaps 2018

Map 8.8: Aerial images of sparse rural settlements in Kajiado rural
Source Geomaps 2018

Strategy

To reduce population disparities, efforts geared towards a more balanced population densities are required. These include more infrastructure, social amenities and government investment in areas with low population densities. Towns should encourage to grow in those areas by creating economic opportunities a so as to attract more population. The areas of focus should

include Kajiado Central, Kajiado West, Kajiado South and Kajiado East which have relatively low population densities.

(d) Subdivision of land into small parcels

The size of arable land in the County is 3468.4 Km^2 which represent 15.8% of the total land area (21,900.9 Km^2). The average land holding size is approximately 9 Ha on small scale and 70 Ha on large scale.

The bulk of the land holdings in the County are small-scale and are found mainly in the high potential agricultural areas, urban centres and their proximities. The medium and large-scale farms account for a small per cent of the holdings, but cover the largest area under livestock and wildlife sanctuaries, Image 8.3.

Image 8.3: Board selling Sub-divided land

Source: Field Survey 2018

Strategy

To forestall further land fragmentation, minimum land acreage should be established for both urban and rural areas. When subdividing rural agricultural land, the minimum size of land subdivisions should be based on the agro ecological zone as recommended by the physical planning handbook 2007 and the Kajiado County Land subdivision guidelines 2018, annex 1.

Consideration is given to how much land can support a family before the minimum acreage is determined. It is recommended that the following minimum land sizes be maintained according to the agro ecological zones. It should also be noted that during the process of land subdivision the land owner is required to surrender 4% of the land to be earmarked for public utility purposes exclusive of road reserve.

(g) High Levels of Poverty

The Human Poverty Index is a composite measure of poverty that combines several basic factors affecting the quality of life. The major component included in the HPI survey includes; longevity of life, knowledge acquisition, economic status and social inclusion. According to the 2009 Kenya Human Development report, Kajiado County's HPI is 27.0 percent compared to the national average of 29.1 per cent.

Unemployment, drought, low agriculture productivity, and an increasing dependency ratio are some of the major contributing factors to poverty in the County image 8.4. Other causes of poverty include poor marketing linkages for agricultural products, lack of affordable credit facilities for farmers and high costs of farm inputs.

Image 8.4: Poverty manifested in low quality housing

Source: Field survey 2018.

Strategy

There is need to initiate programmes that reverse these trends with the aim of improving the living standards of the County's residents. The programmes should work towards promoting investments, use of modern techniques and practices in livestock production, agriculture and acquisition of appropriate skills. More and diversified economic activities especially in the SMEs should be created together with other labour-intensive economic activities.

(h) Poor quality of housing

Decent housing is a national objective and one of the four pillars of the Jubilee government. The nature of dwelling units in terms of roofing, walling material,

as well as flooring material as per households in the County, demonstrates a significant disparity as one progress from rural to urban areas, table 8.9 and image 8.5 & 8.6

There is marked variation in housing in the urban, peri-urban and rural settlements. In urban centres there are both high-end settlements and sprawling slums. The peri urban areas have mainly permanent and semi-permanent houses. While in rural areas we have semi-permanent houses and *manyattas*.

Table 8.8: Households building materials, 2009

Material	Percentages (%)
HH distribution by main wall materials	
Stone	27.6
Brick/block	7.6
Mud or wood	22.7
Mud/cement	3.3
Wood only	8.3
Corrugated iron sheet	26.5
Grass / reeds	2.1
Tin	0.5
Other	1.4
HH distribution by main floor materials	
Cement	57.3
Tiles	4.0
Wood	0.3
Earth	38.7
Other	0.1
HH distribution by roofing materials	
Corrugated Iron sheet	67.1
Tiles	3.9
Concrete	3.4
Asbestos sheet	3.2
Grass	10.6
Makuti	0.4
Tin	0.4
Mud/dung	10.3
Other	0.7

Source: Kajiado County Integrated Development Plan 2013-2017

Image 8.5: Low quality houses in Kajiado rural
Source: Field survey 2018

Image 8.6: Low income houses in Kiserian town
Source: Field survey 2018

Strategy

This shortcoming needs to be addressed in order to ensure the provision of affordable modern housing that promote healthy living. Policies and strategies to ensure decent affordable houses should be embraced. These include, appropriate building technologies, use of locally available building materials,

slum upgrading and affordable credits. The County government should enhance serviced land for housing development in markets and urban centers

(j) Rapid Urbanization

The County continues to experience high rates of immigration. The effect of this has been a steady increase in population especially in the urban centres estimated at 4% per annum. Urban population account for 23.47% of the County population. The rapid urban growth has resulted to urban problems such as urban congestion, environmental degradation, regional imbalances and a burgeoning population of under and unemployed workers and sprawling slums and squatter settlements among others.

Strategy

The ever-rising population growth in urban areas calls for better housing, creation of more economic opportunities, enhanced security, improved urban planning, water and sanitation, social amenities like schools and effective health centers. This will prepare them to absorb more population sustainably

(k) Unplanned urban centers

Most urban and market centers in the County lack physical development plans to guide their growth map 8.14. Uncontrolled urban growth on the other hand may lead to higher incidences of crime and mushrooming of informal settlements. More important is the urgent need for the physical planners to take decisive actions to safeguard public utilities and other physical amenities in the County and avoid uncoordinated settlement patterns.

Figure 8.2: Unplanned town in Kajiado County (Namanga)
Source: Geomaps 2018

Strategy

Proper planning of all the towns and market centers and enhanced enforcement of the County by-laws is recommended. This should start with the big towns and cascade down to the smallest market centers.

(l) Urban sprawl

The urban centers in the County are expanding very fast into the rural lands. The expansion involves subdivision of the rural land adjacent to urban areas into small parcels and conversion into urban land uses map 8.15. The sprawl is low density urban development. The conversion of rural agricultural is compromising food security and increases cost of infrastructure and service provision (population, economic activities, services, etc.) as the urban area expands.

Map 8.9: Urban sprawl in Kitengela town

Source: Geomaps 2018

Strategy

Urban boundaries of all towns and markets should be demarcated and urban development contained within them. Densification of development can control the need for urban sprawl.

(m) Linear Urban development

Linear urban development occurs along the main road arteries. This phenomenon was observed along the major roads such as the Northern corridor, Kitengela-Namanga Road, Ong'ata Rongai-Magadi road, Bul Bul-Ngong- Kiserian-pipeline road, Emali- Oloitoktok road and other roads map

8.16. The resulting towns and market centres are often difficult to service efficiently. Often, the first problems noticed by residents is traffic congestion as people compete to move along the narrow urban corridor while ever more people join the ribbon further along the corridor.

Map 8.10: Linear urban development in Ong'ata Rongai town
Source: Geomaps 2018

Strategy
Urban consolidation is often a solution to encourage growth towards a more compact urban form. This can be attained through planning and strict development control.

(n) Growth of urban and market centers at the road junctions
Road junctions are very favorable nodes for urban development. This is because they are the interchange of travel routes. Many centers have grown at the road junctions and include Ngong Town, Kiserian town, Isinya town among other small market centres map 8.17 and 8.18.

Map 8.11: Aerial image of Isinya town
Source: Geomaps 2018

Map 8.12: Aerial image of Kiserian Source: Geomaps 2018

Strategy

Planning interventions are required at the junction points to guide and control spatial development.

(o) Development of settlements on road reserves.

Many businesses and residential premises are locating on road reserves image 8.8. This was observed along the major road arteries. This will result to

transport-settlements land use conflicts and will create squatting on the road reserves

Strategy

The agencies responsible for the roads together with the County Government should work collaboratively to discourage and remove settlements on the road's reserves.

(p) Traffic congestion in growing towns

Traffic jam is emerging as serious mobility challenges in the major urban centers image 8.7. In the towns along the Mombasa-Nairobi highway lorries and trailers are parked by the roadside in urban centers exacerbating traffic congestion and compromising road safety along the highway. All the key towns in the County are experiencing serious traffic jams, vehicle congestion and vehicle parking challenges.

Image 8.7: Traffic congestion in Ngong town

Source: Field survey 2018

Strategy

Town planning and traffic management sections should provide adequate parking lots in the towns. Every urban center should have designated parking for public transport vehicles and lorries. Adequate parking for private and business vehicles should be provided in the spatial planning of the affected towns. Strict traffic management strategies should be employed.

(q) Informal businesses on the road reserves and open areas

Many informal small-scale business activities are being carried out on the road reserves and undesignated open areas. This is a common feature of almost all urban and market centers in the County image 8.8 and 8.9.

Image 8.8: Small scale businesses by the road side in Ngong town

Source: Field survey 2018

Image 8.9: Road side market (Ngong open air market)

Source: Field survey 2018

Strategy
Interventions to create trading and production areas for this category of economic activities will be required in planning those urban centers.

(s) Scattered Rural Settlements
The settlement patterns are influenced by availability of natural resources, soil fertility and rainfall, pasture, infrastructure, economic opportunities, urbanization and proximity to Nairobi. Although a large population is in the rural areas, the urban centers have the highest population densities due to rural-urban migration as a result of well-developed infrastructures, employment opportunities and security. The rural population is estimated to be 76.53 per cent, with the remaining 23.47 per cent living in towns.

Scattered human settlements (Map 8.1 & 8.10) are very expensive to provide with infrastructure and social amenities compared to compact high density settlements such as urban centers

Strategy
Future County Spatial Planning should encourage settlements in compact well planned serviced towns and market centers (*Compact urban settlements promotes relatively high residential density with mixed land uses. It is based on an efficient public transport system and has an urban layout which encourages walking and cycling, low energy consumption and reduced pollution. A large resident population provides opportunities for social interaction as well as a feeling of safety in numbers and "eyes on the street". It is also a more sustainable urban settlement type than urban sprawl because it is less dependent on the car, requiring less (and cheaper per capita) infrastructure provision*). This will free rural land for agricultural purposes.

(t) Poor Urban-Rural Linkages
The condition of roads between urban centers and their surrounding rural areas is very bad in the region image 8.1. This has led to high transportation costs, affecting human settlements in the hinterland areas. Roads are in poor condition.

The demand by the population for non-food goods, input and services by the agricultural sector and demand for food and goods by the urban dwellers can only be met if there is a coordinated urban- rural linkage.

Strategy
It is critical to promote integrated urban and territorial planning, where urban centers of different sizes are integrated with their hinterlands. The back-and forth movement of people between urban and rural areas, and the social-cultural relations between the two should also be considered in planning and formulating County policy.

(u) Low Economic activities in some market/trading centers

Many urban centers have low economic activities, as manifested buy closure of many business premises. The centers also lack business diversification as they offer similar goods.

Strategy

To stimulate economic activities in the "dead market centers" public investment in infrastructure, social amenities and security should be prioritized, while economic diversification potentials should be explored. Improving inter- markets and urban road networks to the neighboring towns and hinterlands invigorates economic activities.

(v) Special planning areas

Area next to Nairobi and Amboseli National Park, wildlife and livestock corridors, international boundary frontiers, water catchment areas and wetlands

Strategy

This can be managed by spatial planning of the area around the lake with strong considerations to sustaining the lake. Zoning of the lake riparian for lake compatible activities such as tourism and conservation can enhance lake conservation.

Table 8.9: SWOT Analysis for human settlements

Strengths	Weaknesses	Opportunities	Threats
• Good inter towns' road connectivity. • Even distribution of urban areas • Strong economic diversification. • Favourable climate in some towns. • Cosmopolitan County • Fertile land in some areas • Large youthful population growth	• Growth of towns without planning such as Namanga Town • Growth of urban and market centres at the road junctions such as Isinya town. • Low economic activities in some market/trading centres such as Matasia. • Poor quality of housing. • Informal businesses on the road reserves and open areas. • Scattered Rural Settlements. • Poor Urban-Rural Linkages. • Inadequate infrastructure and Social amenities. • Uneven population distribution • Uneven distribution of human settlements	• Developed inter and intra road network • Many urban centres • High tourism potential • Locally available building materials • Ecological and topographical diversity • Good climate for human settlements • Availability of social amenities such as education facilities, health facilities among others • Reasonable literate manpower	• Traffic congestion in growing towns. • Environmental degradation (forest encroachment) • Increasing human settlements around ecological fragile areas. • Fast population growth. • High population densities in urban areas • Subdivision of land into small parcels. • High Levels of Poverty. • Rapid Urbanization.

Source: *Stakeholders consultation workshops, 2018*

CHAPTER 9: ECONOMICS

9.1. Overview

The successful implementation of the CSP necessitates effective financial planning to determine the current sources of revenues, current expenditures, and potential sources of funds to finance the proposed projects. This is consistent with ensuring that the strategies proposed can be effectively implemented. This section seeks to assess the current state of the economy to propose areas of future development for continuous growth. As such, it seeks to assess the current state of the local economy in Kajiado County to determine the main economic drivers. This section will primarily dwell on how County's collection of revenues and its expenditure capacity with the aim of outlining how different economic sectors can be improved to enhance their economic outlook.

The constraint encountered in this sector will also be assessed before the opportunities and potentials for economic growth can be proposed. The proposals offered are consistent with the development of other sectors as proposed in this CSP.

9.2 Local Economy

Kajiado County is one of the counties in Kenya with the most diversified economy. The County falls under the arid and semi-arid land (ASAL) regions of the country. Although livestock keeping under the pastoralism model remains the mainstay of the Kajiado economy, the County also hosts tourism activities, crop cultivation, mining and business development among other multiple activities.

Livestock keeping is practiced in all sub-counties of Kajiado County. The Masaai people occupy the largest part of the county although it is increasingly becoming a metropolitan county as people from other communities immigrate to the county. The Maasai are a nomadic community and practice the pastoralist model of livestock keeping. Cattle, sheep, and goats are the main livestock reared in the county. Livestock keeping is done on group ranches, free-range land, or individually-owned piece of land. Although Kajiado is an arid and semi-arid area, crop cultivation the residents also practice crop farming. Crop farming is mostly practiced in Kajiado South and Kajiado East using rainwater and irrigation. In Kajiado West, crop cultivation is mainly done under irrigation. Crop farming is also practiced in Kajiado North and Kajiado Central, although to a small extent.

Commerce and trade are also major economic activities in Kajiado County. Commercial activities are spread out across the whole county, with high concentrations within and around urban centres. Sub-counties in proximity to the Nairobi – Kajiado North and parts of Kajiado East – have large urban

areas, which makes commercial activities a major source of livelihood for the locals. In other sub-counties, commercial activities are concentrated in towns and local centres. The county also benefits from trading activities, especially the sale of agricultural produce, livestock and minerals.

Tourism is also a major source of income in Kajiado County. The county is home to a number of conservancies and tourist attraction sites. They conservancies include Amboseli Conservancy, Shompole Conservancy, Mount Suswa Conservancy, Rimpa Estates Wildlife Conservancy, Ngong Hills, and Chyulu Hills National Park, among many others. The presence of wildlife, including lions, elephants, buffaloes, and leopard and rhino make Kajiado one of the most attractive tourist destinations in the country. Ecotourism is also a major attraction in the county.

9.3 Major Economic Activities in the County

The economy of Kajiado County is diverse given a large number of economic activities evident here. Livestock rearing is the main economic activity in Kajiado County, providing a source of livelihood for many residents. The farm animals are used in producing milk and beef for the local market in the County and to the neighbouring Nairobi County. The proximity of the County to Nairobi presents a strategic market to supply the surplus produce from the livestock farmers.

Agriculture is the second-largest economic activity in the County. Even then, Kajiado is classified as part of the Arid and Semi-Arid (ASAL) areas of Kenya, which means that the climate is not very conducive for agriculture. Despite this, there is a growing number of residents who practice irrigation farming in areas such as Kimana and Rombo.

Another common economic activity in Kajiado is tourism. In particular, the Amboseli National Park is a major income earner for both the County government and the residents. The extraction of natural resources is also a common economic activity. Soda ash is mined in Lake Magadi, providing the County with an important revenue stream. Quarrying is also a common activity in the County. The last major economic activity is trading in commodities. The economy of most urban centres in the County is largely dependent on the trade-in wares, which is common in both shops and open-air markets. Sub-counties near Nairobi, especially Kajiado North Sub-County are also urbanizing at a fast rate, thus supporting the growth of commercial enterprises as the demand for commodities grows.

Employment is also a major revenue source for most residents in the County, especially those residing near Nairobi and industries. Apart from self-employment, a considerable number of residents are employed in companies located within the County and in adjacent counties. However, the lack of skills and low educational attainment are major challenges affecting the residents in the County.

9.3.1 Trade and Industrialization

Kajiado County is strategically placed for trade given its proximity to Nairobi, bordering Tanzania, and neighboring multiple counties. Kajiado North is highly commercialized and business and trade are the primary source of revenue for both residents and the County government. In rural Kajiado, the major trade activities involve livestock and agricultural produce. In the 2017/18 financial years, trade and industrialization surpassed land, physical planning, and natural resource to become the leading source of revenue for the County.

Despite the high potential for trade and industrialization in the County, the value creation in the sector is inhibited by poor infrastructural development to support commercial activities, low-value addition to farm and livestock production, poor inter-linkage with neighbouring counties, and poor transportation network to link the sub-counties in the County. Rural connectivity is also poor, especially in Kajiado West Sub-County.

Revenue generation from trade and industrialization by the County fluctuates significantly, which may inhibit budget forecasting and economic planning. An analysis of the revenue collection from the sector from the 2014/15 financial year shows poor records in revenue generation from major sectors. Table 9.1 shows the revenue collection breakdown from trade and industrialization activities.

Table 9.1: Revenue Generation from Trade and Industrialization

Revenue Type	Actual Performance 2014/15	Actual Performance 2015/16	Actual Performance 2016/17	Actual Performance 2017/18
Single business permit (SBP)	133,625,978	123,219,886	137,212,557	189,064,755
SBP Application fee	1,201,300	-	933,943	-
Penalties/ surrender	2,679,097	-	251,845	-
Barter Market	17,580,989	15,085,706	14,967,460	22,203,270
Occupancy Fee	1,472,330	-	-	-
Weight and measures	1,169,670	1,956,310	1,346,661	542,000
Tourism			2,462,280	
Market Stall	1,768,009	1,112,423	1,229,750	599,599
Co-operative& marketing	195,080	-	-	3,039,625
Liquor License	31,332,675	15,964,500	-	-
Miscellaneous	-	4,541,330	406,800	-
TOTAL	**191,025,128**	**161,880,155**	**158,811,296**	**215,449,249**

Source: Budget Control Office, Kajiado.

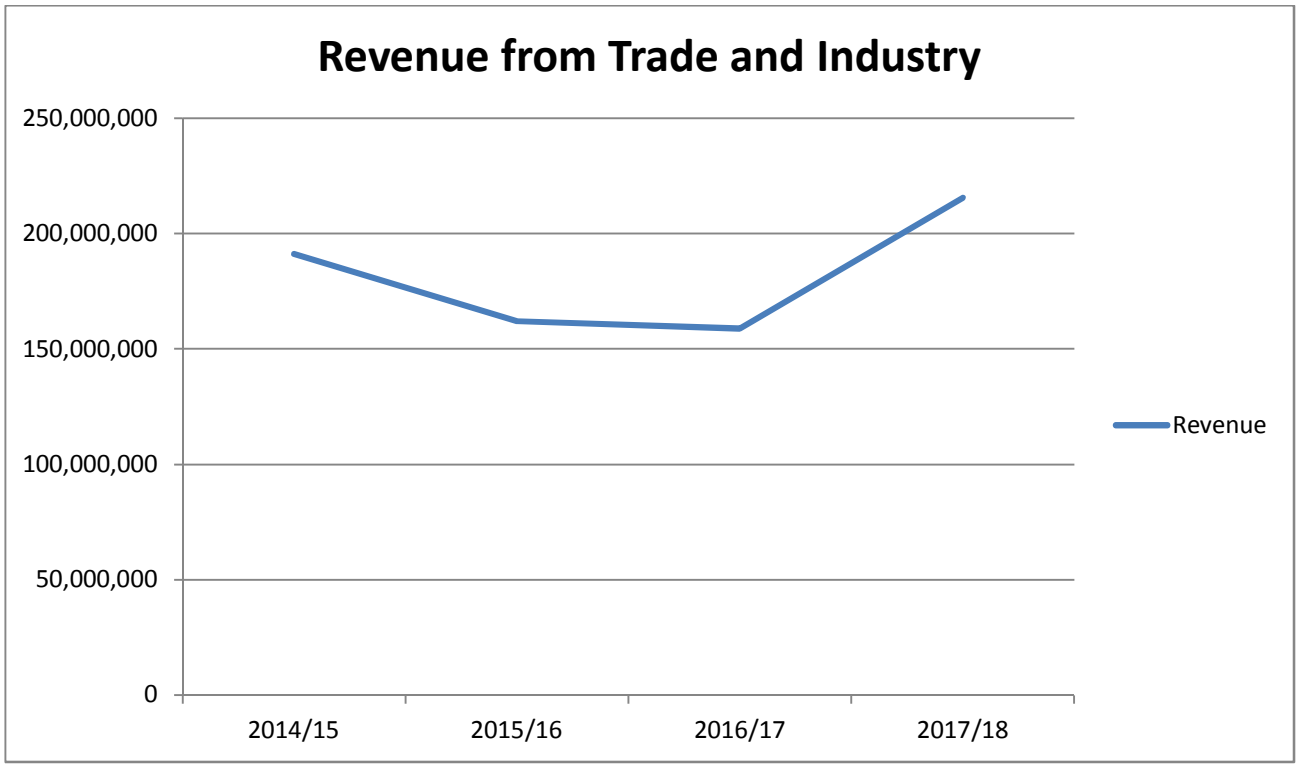


Figure 9.1: Fluctuations in revenue collection from trade and industry

The fluctuations in revenue collection from trade and industrialization are reflected in individual revenue sources. Single business permits remain the largest source of revenue in this area, although there are major fluctuations. Each source of revenue has gaps, representing years that revenues from the source could not be accounted for. This is an indicator of weak revenue collection approaches. More accountable revenue collection strategies should be implemented and all revenues accounted for effectively.

9.3.2 Economic Value of Agriculture, Livestock, Fisheries, and Cooperative Development

The majority of the area in Kajiado is used for crop farming and livestock keeping. Fishing is also taking shape in the County. Although livestock keeping is the major economic activity in the County, crop farming is highly prevalent, especially in Kajiado East, Kajiado West and Kajiado South sub-counties. Agriculture and livestock are the mainstays of the County. Fishing has also been growing in recent years.

These economic activities generate significant revenues to the County government, although more can still be done to improve them. In the 2016/17 financial year, the sector contributed Ksh. 50,105,007 of total revenues collected. Over three-quarters of this amount was gotten from livestock-related activities, while the rest was from agriculture, corporative development and allied activities. Table 9.2 represents revenue generation to the County from agriculture, livestock, fisheries, and corporative development.

Table 9.2: Revenue generation from agriculture, livestock, fisheries, and cooperative development

Revenue Stream	2014/15	2015/16	2016/17	2017/18
Agricultural Produce	18,328,404	11,457,546	12,496,518	5,773,403
Livestock Vaccination	3,315,552	-	102,560	
Livestock Cess/Sale Yards	9,625,312	15,306,673	7,405,460	11,135,970
Hides & Skin	445,040	-	320,980	-
ATC	572,090	-	500,491	-
poultry cess	116,256	-	353,540	-
manure cess	190,575	-	296,300	-
AMS	1,423,478	-	74,904	-
slaughter Fee	10,289,069	10,634,982	11,062,199	11,349,585
Tender document sale	627,615	-	-	-
Permit Fee	-	-	602,195	-
marketing/ cooperative	94,290	-	677,510	-
Miscellaneous	-	1,185,469	33,892,657	4,637,340
TOTAL	**45,027,681**	**38,584,670**	**67,785,314**	**32,896,298**

Source: Budget Control Office, Kajiado County.

Revenue generation from agriculture, livestock, fisheries, and cooperative development are considerably low considering that the majority of the residents in the County rely on them for income. Perhaps the major challenge facing this sector as a source of revenue is the fluctuations in the collection of funds. From table 9.2, it is noted that revenues from the sector declined from Ksh. 45,027,681 in 2014/15 to Ksh38,584,670 in 2015/16 before increasing to Ksh. 67,785,314 in 2016/17. In 2017/18, revenues from the sector declined by more than 50% to Ksh. 32,896,298. Such a trend makes the source of revenue unpredictable and hard to base economic planning on revenues collected.

While the decline in revenue generation from this sector is worrying, its relevance to the County is still high. Agriculture and livestock farming are a critical source of livelihood and food items for households in the County. Consequently, this sector should receive special attention when proposing strategies for its improvement.

Crop Farming

Crop farming is a major contributor of household and county revenues in Kajiado County. Farming is done for commercial and subsistence purposes.

While all sub-counties are involved in crop farming, most farmers are found in Kajiado South. Based on the data collected from the socio-economic survey, 52.9% of the residents engage in farming. The percentage of the population engaged in subsistence, commercial, and a combination of both is 33.1%, 7.6%, and 12.2%, respectively.

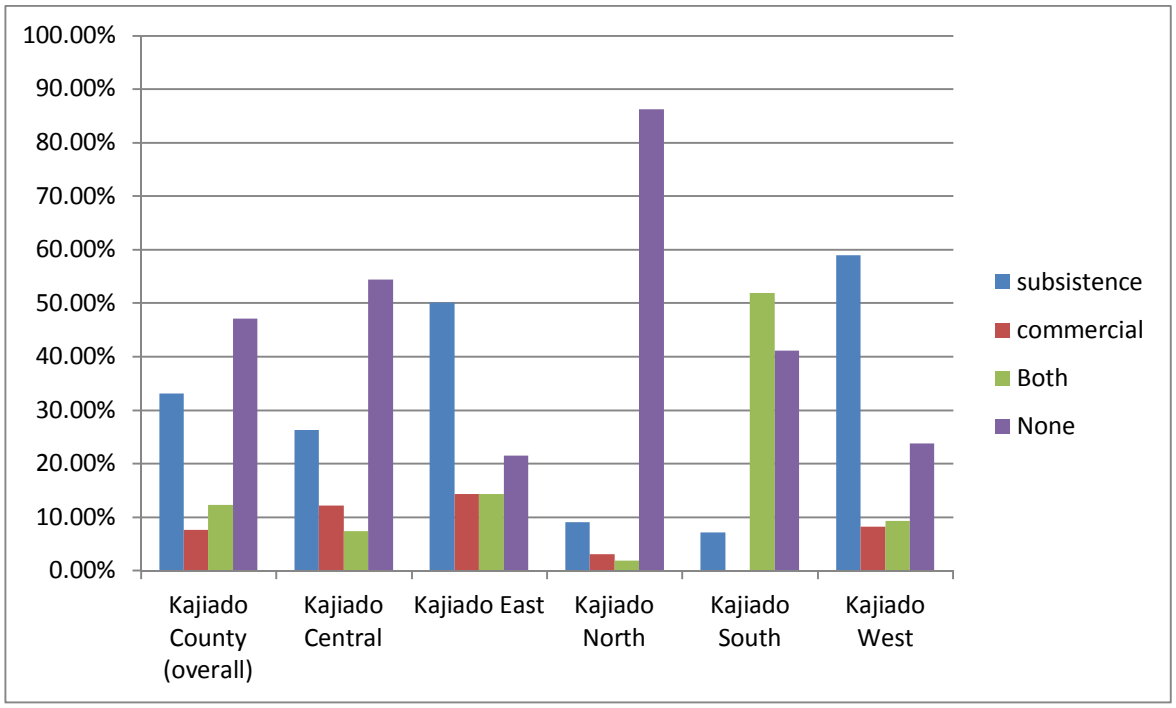


Figure 9.2: Percentage of people engaged in crop farming
Source: Socioeconomic survey (2018)

Although a large number of farmers are involved in crop cultivation, the type of farming and the size of land dedicated to farming differ across counties. Majority of farmers in Kajiado West and Kajiado East are involved in subsistence farming on small farms. On the contrary, farmers in Kajiado South cultivate crops on large tracks of land.

From the socio-economic household survey, it has been established that the majority of the residents in the County engage in one form of farming of another. Only, 45% of the residents do not engage in farming. Figure 9.3 gives sub-county analysis of the people involved in farming.

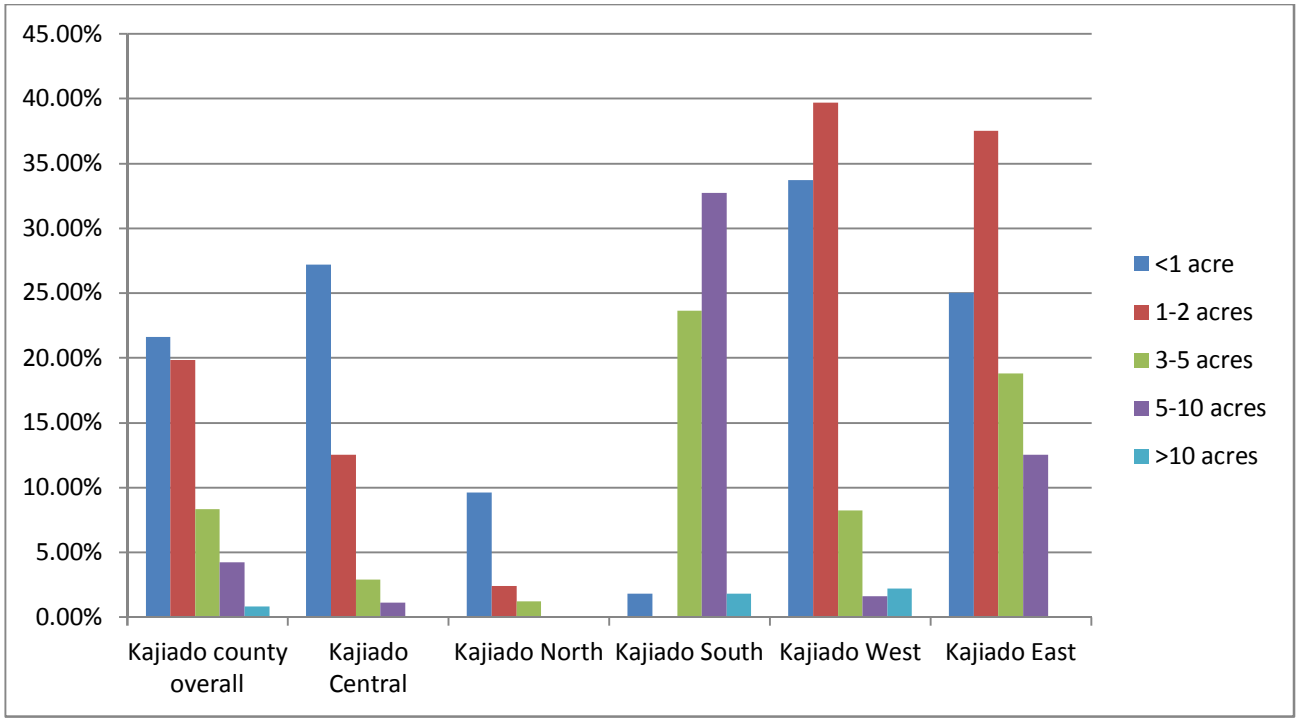


Figure 9.3: Size of the farm under crop cultivation.

Source: Socioeconomic survey (2018)

The high concentration in commercial farming and the large chunks of land dedicated to crop cultivation in Kajiado South make it the Sub-County the leading producer of agricultural produce in the County. The Sub-County produces maize on an estimated 28,210 Ha (14,010 Ha for subsistence and 14,200 Ha for commercial). Bean farming is done on 23,580 Ha (18,220 Ha for subsistence and 5,360 Ha for commercial). Of the 1,787 Ha of land for tomato farming in the County, 850 Ha is in Kajiado South (CIDP 2018-2022).

The distribution of farming activities in Kajiado County indicates that agriculture-related activities, such as crop husbandry, disease control, irrigation, and training should be decentralized in Kajiado South, East, and West sub-counties. The commercialization of agriculture in Kajiado South Sub-County should be used to guide the investments in mechanization, the establishment of government storage facilities, and investment in agriculture.

Value Chain in Agricultural Production

Value chain analysis is a strategic tool that helps in the analysis of activities to identify areas of weakness and opportunities for improvement. In Kajiado County, value chain analysis will be used in the assessment of the activities involved in the creation of value for agricultural products. This will be based on two of the major product categories identified: cereals and horticulture. Figure 9.4 represents a diagrammatic representation of the value chain of maize as one of the cereals produced in Kajiado.

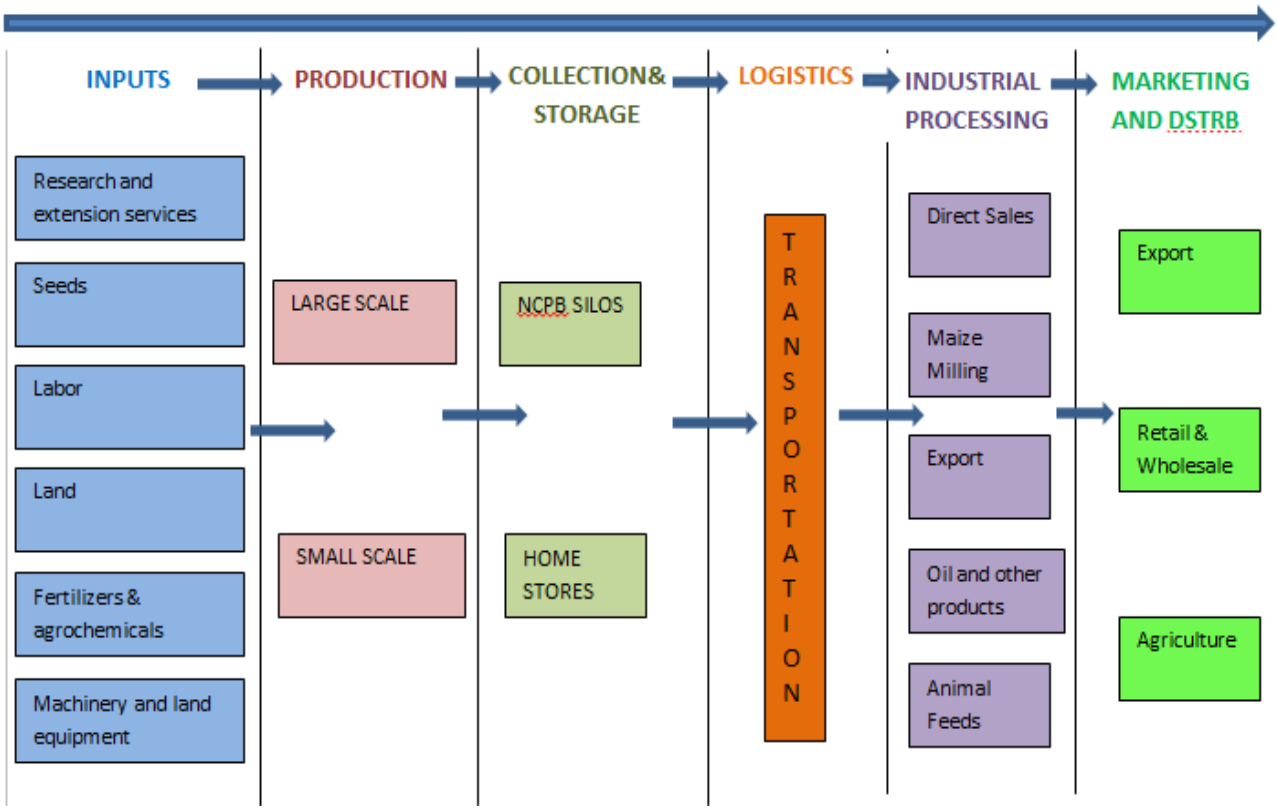


Figure 9.4: Value Chain of Maize.
Source: Geomaps Field work

Past government efforts and allocation of financial resources to support farming activities are consistent with the current situation on the ground. In the 2013/2017 Kajiado CIDP, the County government proposed 3 fresh produce markets in Isinet, Ong'ata Rongai, and Kajiado towns. The three markets can serve the three major crop-producing sub-counties. The market in Isinet should serve farmers in Kajiado South, the Ong'ata Rongai market can serve farmers in Kajiado West while the Kajiado market should serve farmers from some parts of Kajiado East such as Kiserian, which can also sell to the neighbouring Nairobi and Machakos counties.

Livestock Keeping

Pastoralism is the main source of livelihood to majority of rural households in the County. Based on data from the Kenyan Population Census in 2009, the main livestock breeds were sheep (718,950), goat (699,658), beef and dairy cattle (411,840), commercial chicken (276,291), indigenous chicken (267,913), donkeys (63,980), pigs (6,127) and camel (1,597). Livestock products in the County include beef, milk, skins, and hides. There are however very few value additions ventures in the County.

The promotion of this livestock keeping has been identified as a priority by the County Government as evident in the proposed funds to support related activities. Table 9.3 lists the proposed activities and the proposed budgets:

Table 9.3: Proposed Activities and Budges in the Livestock Sector

Program	**Approved budget estimates for 2017/18**	**Budget estimates for 2018/19**	**Projected Estimates for 2019/20**	**Projected Estimates for 2020/21**
Animal Husbandry	6,441,579	145,975,922	160,573,514	176,630,866
County Abattoirs Development	2,408,600	1,758,085	1,933,893	2,127,283
Animal Disease Control	34,280,761	56,579,412	62,237,353	68,461,089
Livestock Market Development	1,745,402	688,537	757,391	833,130
Veterinary Services	3,582,739	1,766,900	1,943,590	2,137,949
Demonstration Farm- Kajiado	1,670,841	1,198,200	1,318,020	1,449,822
Total	**52,779,922**	**211,967,056**	**233,163,761**	**256,480,139**

Source: Program Based Budget Estimates 2018/19

These programs are consistent with the challenges facing the livestock sector in Kajiado County. In particular, the losses by farmers from livestock diseases, low production, and poor markets have been considered in these strategies. Once implemented, these programs will enhance livestock development in the County. The projects should be well managed to ensure that they reach all people affected by the problems. The County should go a

step further and create industries that support livestock farmers in the County. Value addition to animal products should be prioritized as a way of enhancing income by both the County government and the residents.

Fish Production

Fish farming is being promoted in various parts of the County. In 2013, there were 3500 fish ponds in the County, some of which were constructed during the Economic Stimulus Program. The main fish species are tilapia, catfish, common cat and mosquito fish. This, however, has been limited by lack of fingerlings, inadequate freshwater, low local demand and lack of cooling facilities. It has been observed that the locals are changing their diet habits towards the consumption of fish, and this is likely to increase demand in the future.

The County Government mission in this sector is to "increase fish production and productivity through sustainable natural resource management and enhanced fisheries extension services for commercial and nutritional improvement as an alternative livelihood" (County Government of Kajiado, 2018). To achieve this mission, the government has projected the expenditure requirements as follows:

Table 9.4: Projected budget for fish farming

Program	Approved budget estimates for 2017/18	Budget estimates for 2018/19	Projected Estimates for 2019/20	Projected Estimates for 2020/21
Fisheries Development and Management	4,230,200	3,870,193	4,257,212	4,682,933

Source: Program Based Budget Estimates 2018/19

9.3.3 Revenue Generation from Lands, Physical Planning and Natural Resources

Kajiado County Government generates substantial revenue from activities related to lands, physical planning, and natural resources. The majority of these fees are generated from cess collection, development approval permits, rents and rates, and the provision of related services. The activities have been the main source of local revenue from 2014/15 until 2016/17 before they were surpassed by trade and industrialization. Given the large endowment of natural resources in Kajiado County, there is a large potential for improvement in the sector.

Lake Magadi is the main source of Soda-Ash. The Trona from the lake is the purest surface deposits in Africa. Tata Chemicals Limited which is the sole miner of soda ash has contributed to improving the standards of living of

people living around the lake by providing employment directly or indirectly and through corporate social responsibility initiatives. Approximately 576,000 tonnes of soda-ash are harvested per year in Magadi and this makes it the largest producer both in the country and in Africa (County Government of Kajiado, 2013).

Sand harvesting is active in Mashuuru, Isinya and Kajiado central sub-counties in all rivers which are seasonal. There is also small-scale mining of gypsum, limestone, and salt in the County. Other activities include quarrying in Sholinke, Ngurunga, and Noompopong, and ballast mining around Kitengela.

Despite the high economic potential of mining activities in the County has several mining sites are however not being done to full capacity. The mining potential is still high if all activities are well-coordinated and controlled. Among the mining activities that would benefit from improvements are quarrying in Kitengela, sand harvesting in Olkejuado River, limestone and marble mining in the Kajiado area. An environmental impact assessment should be carried out first to determine its feasibility.

Table 9.5: Revenue Generation from Lands, Physical Planning and Natural Resources

Revenue Stream	2014/15	2015/16	2016/17	2017/18
Quarry Chips	6,731,755	-	10,333,638	
Plot Rent	23,307,431	-	28,310,615	44,685,813
Search cert and consent	-	0	2,523,585	
Sewerage	611,560	1,282,550	-	20,000
Sand Fees	138,165,185	85,795,520	66,505,100	80,826,000
Burial Fees/Noise Pollution	27,900	-	-	
Land Penalty	173,594	-	411,811	157,000
Mortuary fee	10,000	-	9,000	
land rates	97,987,727	90,548,917	30,195,819	50,645,086
Survey Fees	1,093,810	-	2,135,367	
Ballast Cess	6,936,250	7,650,400	5,719,200	10,267,750
Pozzolana Cess	5,916,330	-	11,102,300	
Dumping fee	13,070	-	-	
Fire Inspection Fee	-	-	316,000	-
Limestone/royalties	27,988,434	34,618,766	8,517,491	9,579,061
Other property charges	8,746,463	-	757,900	-
Royalties soda ash	0	-	2,571,555	-
Miscellaneous	-	5,515,514	-	-
TOTAL	**317,709,509**	**225,411,667**	**169,409,381**	**196,180,710**

Source: Budget Control Office, Kajiado County.

Perhaps the major trend that can be observed from Table 9.4 is the fluctuations in the revenue collection from nearly all revenue sources. The reduction in the collection of certain revenues such as land rates is a reflection of the ineffectiveness in revenue collection in the County. Considering that the land from which rates are to be collected rarely changes, the large declines in revenues from this source show a worrying trend. Better measures should be taken to make revenues from this source more consistent. Additional natural resources in the County should be explored to determine their economic value and which will lead to increased revenue.

9.3.4 Employment

Employment remains a major source of livelihood for most residents in Kajiado County. According to a study conducted in 2012, 55.5% of the people in the County were employed. The implication is that 44.5% of the residents are dependent on the rest for upkeep. A high unemployment rate leads to poor capital accumulation, as most of the income is spent as opposed to being saved or invested. With poor capital accumulation, there is a low likelihood of economic advancement for the residents.

Wage Earners

Wage-earners form the majority of employed people in Kajiado County. The 2009 Census reported that Kajiado North has the highest employment rate (65.3%). Loitokitok (in Kajiado South) came close with an employment rate of 63.6%. The percentage of wage earners in Kajiado Central was modest at 52.9%.

Self-Employment

Self-employment is a critical source of income for residents in the County. It is estimated that 40% of residents in Kajiado County are self-employed, running small and medium enterprises (SMEs). Based on the 2018 socioeconomic survey, 46.4% of the respondents indicated that they had at least one person who was self-employed in their household. The average number of self-employed people in the County was two per household. Kajiado Central Sub-County had the highest percentage of self-employed people (67.5%). Kajiado North (54.1) came second while Kajiado South (24.4%) had the least percentage of households with self-employed persons. Table 9.6 indicates the self-employment data in the County based on the survey.

Table 9.6: Self-employment in Kajiado County.

County / Sub-County	Number of Respondents	Whether anyone in the household is self-employed			
		Yes	No	Declined to answer	Total
Kajiado County (Overall)	1248	46.4%	51.0%	2.6%	100.0%
Sub-County Analysis					
Kajiado Central	366	67.5%	32.5%	-	100.0%
Kajiado East	217	41.4%	58.6%	-	100.0%
Kajiado North	202	54.1%	37.8%	8.1%	100.0%
Kajiado South	150	24.4%	64.9%	10.7%	100.0%
Kajiado West	346	36.9%	63.1%	-	100.0%

Source: Socioeconomic survey (2018)

The high level of self-employment in Kajiado is an indicator of the potential for revenue collection from single business permit applications, licenses, and tax collection. However, the operating environment in the County is restrictive given the poor infrastructure serving most areas, especially in the rural setting. In particular, sub-counties with the least number of self-employed people (Kajiado West and Kajiado South) have poor rural connectivity, poor water connections, and lack of electricity in most areas. Government services in these areas are also limited.

Employment by Sector

The employment situation in Kajiado is reflective of the major economic activities in the County. The projected labour force in 2018 was 624,184. Agriculture, manufacturing, construction, and transport remains the major sectors that people are employed in the County. To increase the level of employment, these sectors should be developed further to support more workers. The business environment in the County should also be improved to attract more investors and make it easier to run businesses.

The capacity of SMEs to create employment remains low despite their high number in the County. According to the 2018 socioeconomic survey, only 1.9% of the SMEs were reported to employ more than 2 people. The rest employed either one or two people only. The poor generation of jobs through self-employment may be an indicator of their difficulty in transitioning from the inception stage to large businesses. Unfortunately, very small enterprises lack economies of scale in production. Their fixed costs constitute a large percentage of their total costs of operation and have a very high likelihood of failure. The ability of such businesses to acquire additional funding, such as loans is also very low.

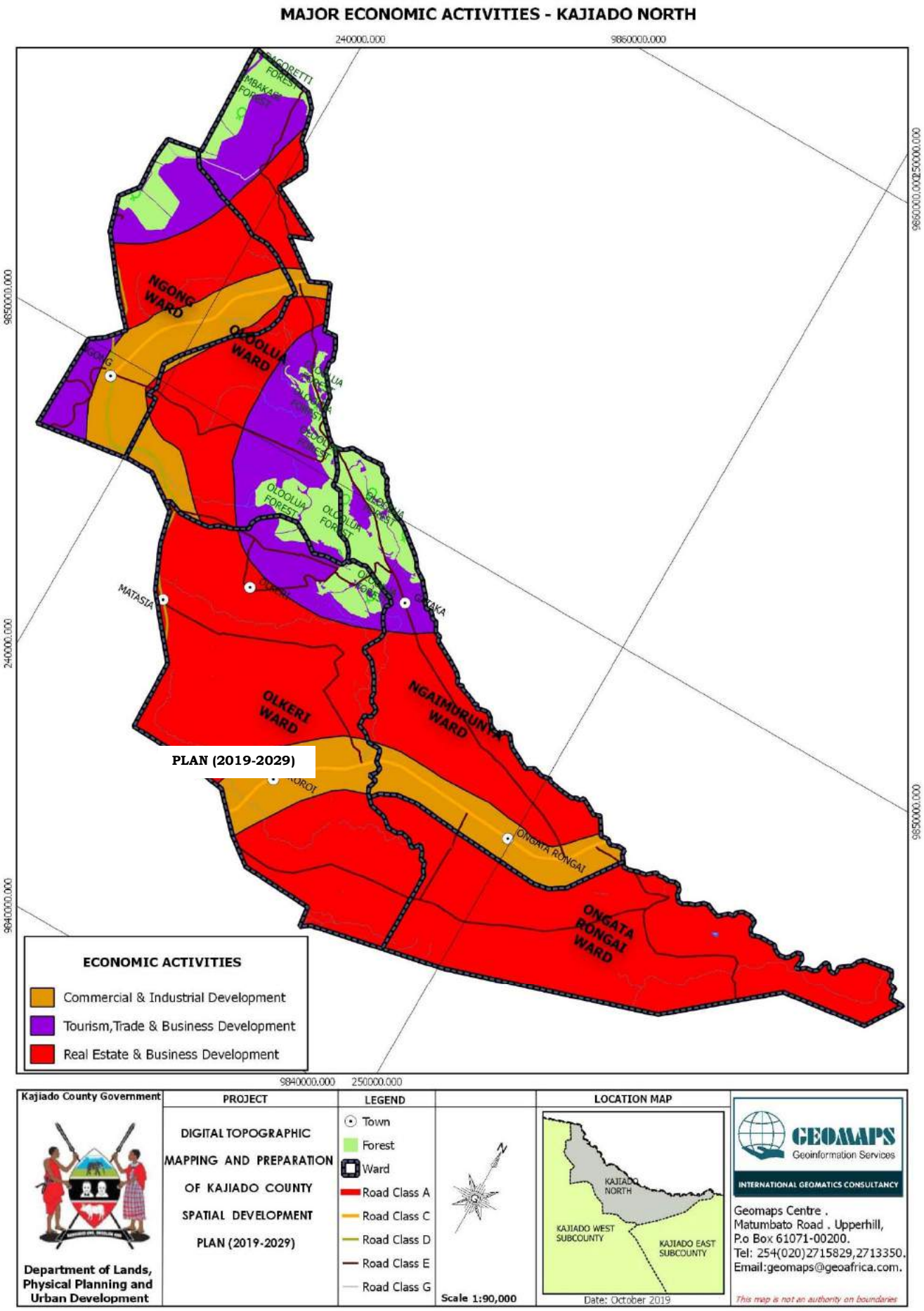
9.4 Analysis of Economic Activities at the Sub-County Level

9.4.1 Kajiado North

The economy of Kajiado North is largely influenced by its proximity to Nairobi County. This phenomenon has contributed to the growth of the majority of the area into urban centres. Urbanization has replaced activities such as crop farming and livestock keeping that were more prevalent in the past. The major towns in the Sub-County – Ngong and Ong'ata Rongai – and their neighbouring areas act as 'dormitories' to Nairobi County. The rapid urbanization in the Sub-County has led to business development and trade being the leading economic activity influencing growth. The growth in real estate development and commercial activities is influenced by the growing urban population in the Sub-County.

The major economic activities around the major towns and transportation corridors in the County is real estate and business development. In particular, areas around Ong'ata Rongai and Ngong towns are largely influenced by these economic activities. The situation is replicated along the Ong'ata Rongai-Nkoroi-Kiserian, Kiserian-Matasia-Ngong, and Ngong-Bulbul transport corridors. The rural and semi-rural areas in Kajiado North are driven by agribusiness and commercial development.

Apart from commercial, trade and real estate, development in Kajiado North is influenced by tourism. Areas around the Ngong Hills, Oloolua Forest, Dagoretti Forest, and Embakasi Forest have touristic features that if well-developed would become major spheres of economic influenced. Currently, only Ngong Hills is utilized as a tourist attraction site for nature walks and hiking. Although Oloolua Forest is also underuse, its entrance is on the Nairobi County side, thus denying Kajiado revenues. The County should open up an entrance to the forest near Gataka and charge entry fees. Tourist hotels and can be built in areas around the attraction sites for increased revenue generation and economic growth. The major economic activities influencing development in Kajiado North are represented in Map 9.1.



Map 9.1: Major Economic Activities - Kajiado North

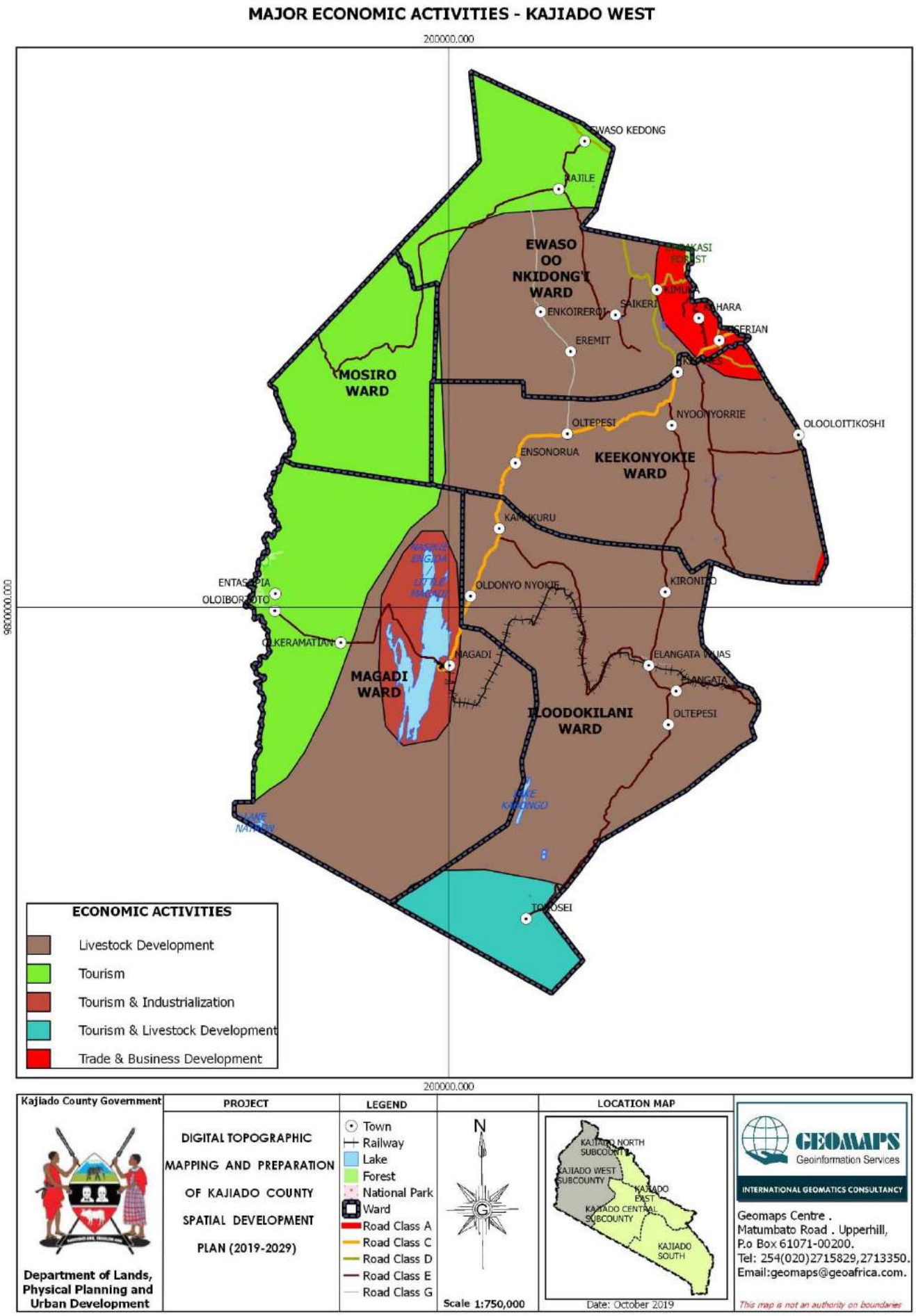
Source: Geomaps 2019

9.4.2 Kajiado West

Kajiado West is primarily rural, with Kiserian and Magadi being the major towns. There are five major economic activities influencing economic development: livestock development, tourism, business development, agriculture, and mining. Livestock development is the major economic activity influencing economic development in the sub-county. The sub-county receives very little rainfall, which makes livestock keeping more viable than crop farming. Commercial development is largely concentrated around Kiserian and Magadi towns. The construction of a dry port in Nakuru County near Suswa trading centre will have some multiplier effect on Kajiado West Sub-County if well tapped. Residents in the sub-county can benefit by using the dry port to receive and transport items of trade to and from other parts of Kenya and other countries.

To the west of the Sub-County is the Kajiado-Narok border. The strip running down the border is characterized by touristic features given its proximity to Maasai Mara. Shompole conservancy is located on the southern side of the sub-county in Magadi Ward. The conservancy is shared between Kajiado and Narok, with the larger part being in Kajiado West. The conservancies houses lakes Magadi and Natron. It is also home to diverse wildlife, including elephants, giraffe, buffalos, and oryx. Kajiado West is also home to Mount Suswa Conservancy, which is located on the northern side of the sub-county (Ewuaso Kedong Ward). Mount Suswa Conservancy is ideal for camping and hiking. It hosts wildlife such as baboons. Visitors can also explore the caves and admire the beautiful scenery. However, tourism in the region can be improved further to boost economic activities in the area.

Apart from the commercial activities and tourism, the economy around Lake Magadi is also driven by industrialisation. The mining of Soda Ash in the lake by Tata Chemicals Ltd has led to the industrialisation of the town. The activity drives business and employment trends in the area. Apart from the mining done in Lake Magadi, Kajiado West has stone and ballast harvesting activities in Ewuaso Kedong ward and Kipeto areas. Map 9.2 illustrates the major economic activities in Kajiado West and their sphere of influence.

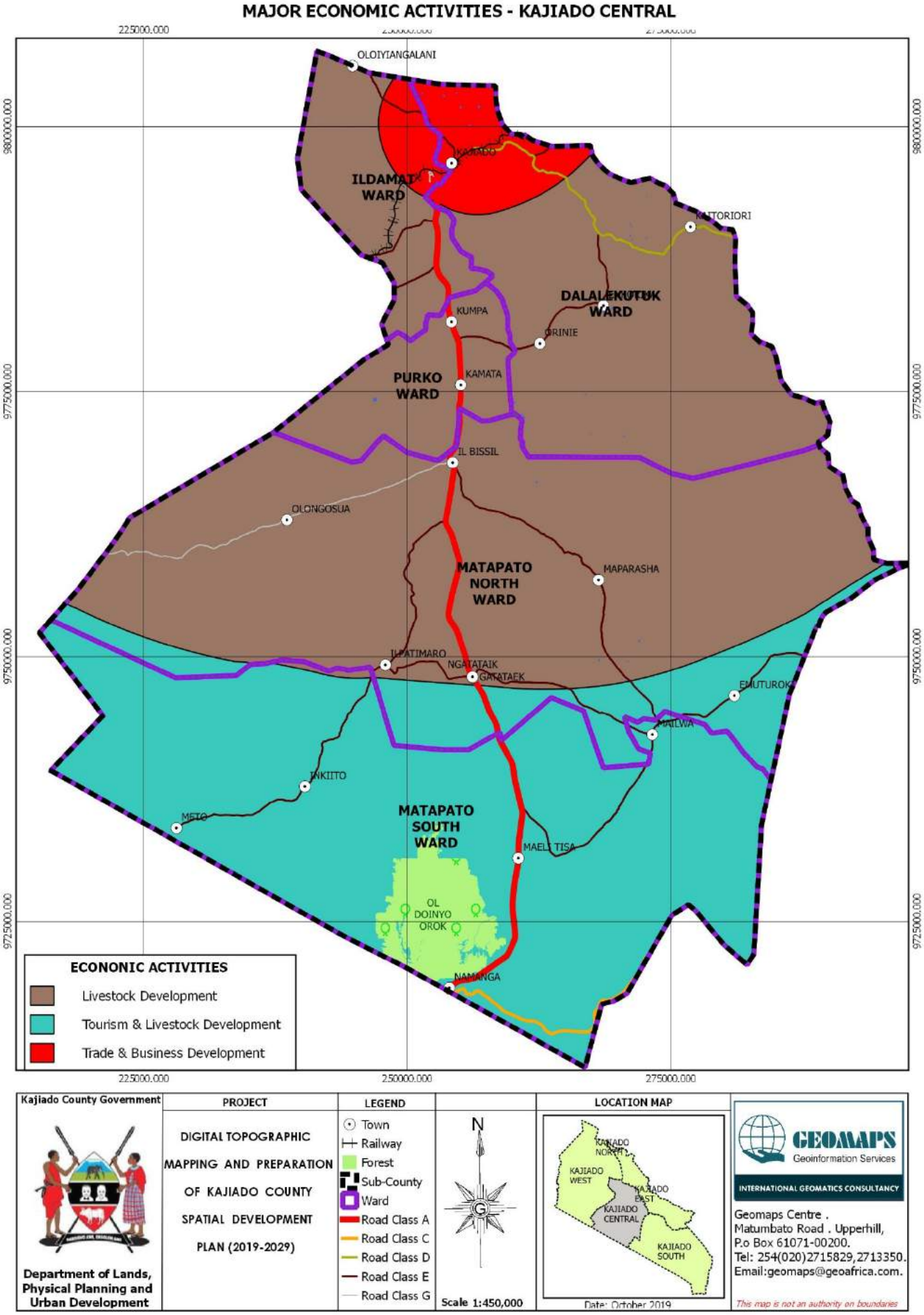


Map 9.2: Major Economic Activities - Kajiado West
Source: Geomaps 2019

9.4.3 Kajiado Central

Economic development in Kajiado Central is driven primarily by four economic activities: livestock development, tourism, commercial development, and trade. Livestock development is major economic activity and extents to majority of the areas in the County. The sphere of tourism is largely situated in the lower part of the County (primarily Matapato South Ward). The Amboseli Conservancy and Ol Doinyo Orok are contributing to the growth of tourism in the southern part. Livestock development is also a major economic activity in the area.

Commercial development and trade are situated around towns and along the major transport corridors. The area around Kajiado Town is largely commercial and the sphere of influence extends for a radius of several kilometers. The Kajiado-Isinya transportation corridor is also a prime area for commercial development. To the south, the development of Namanga Town and its surrounding environs is largely driven by commercial activities and trade. The location of the town at the Kenya-Tanzania border makes it an important trade hub connecting the two countries. Map 9.3 illustrates the major economic activities in Kajiado Central and their sphere of influence.



Map 9.3: Major Economic Activities - Kajiado Central

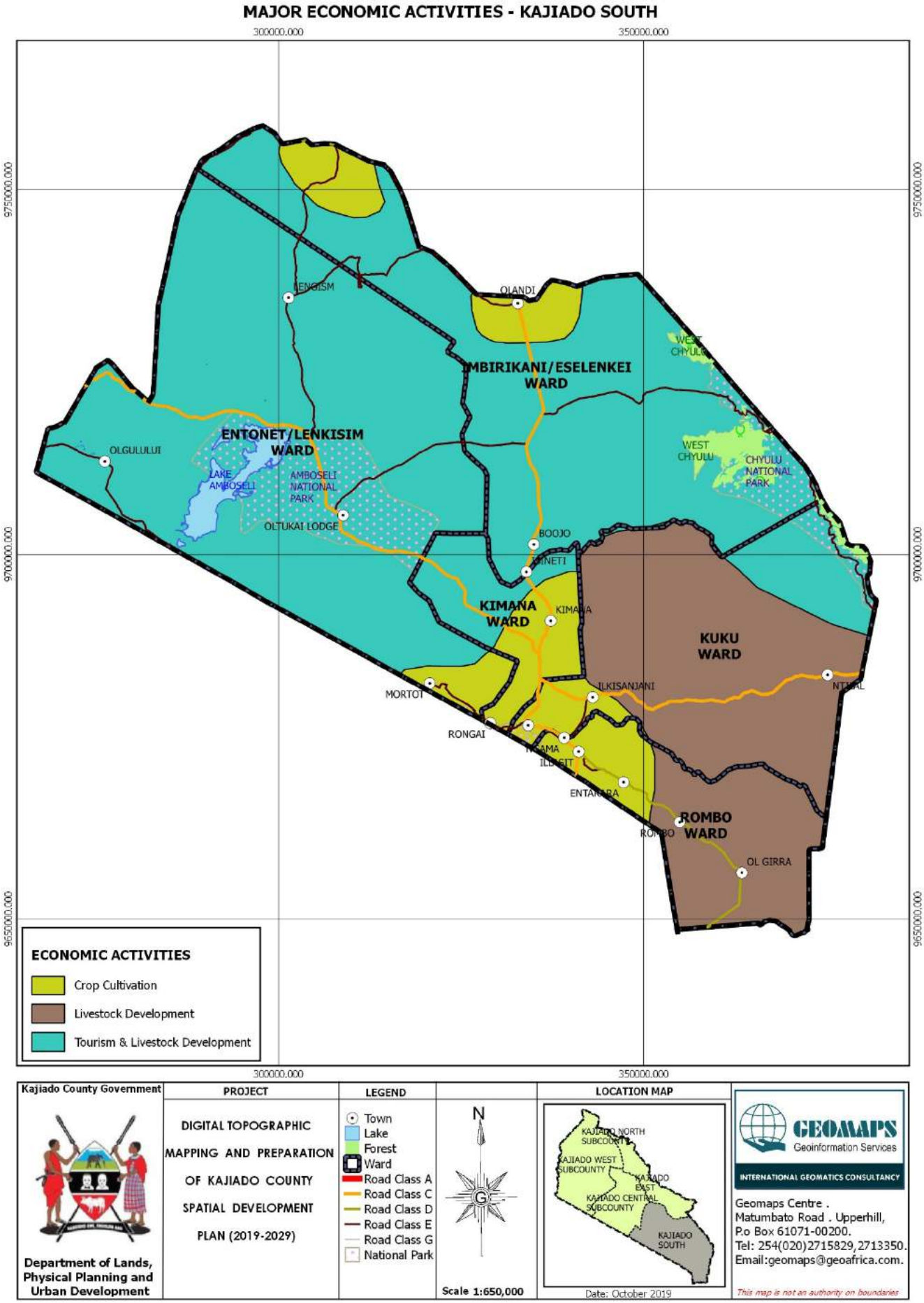
Source: Geomaps 2019

9.4.4 Kajiado South

The major economic activities in Kajiado South are livestock development, tourism, crop cultivation, and commercial development. In the south-east part (primarily Rombo and Kuku Wards), livestock development is the primary economic activity. The major land use in the area is group ranches where residents rear livestock. However, the area also hosts irrigated agriculture. The development of areas around the Amboseli National Park and Chyulu National Park, as well as the corridor connecting the two (largely Entonet/Lenkisim and Imbikani Wards), is largely influenced by a combination of livestock development and wildlife. The Amboseli and Chyulu forest ecosystems are significant tourist attraction sites, making tourism a major income-generating activity in the area. Wildlife exists alongside livestock rearing. Wildlife tourism supports the development of multiple hotels and lounges in the area, which also constitute a major economic activity.

Crop cultivation is also a major economic activity in Kajiado South, especially in the areas bordering Mount Kilimanjaro and the northern side bordering Kajiado East. These areas are characterized by heavy rainfall, thus the appropriateness of crop cultivation as a major economic activity. The majority of the crop production in Kajiado County comes from Kajiado South. Farmers engage in large- and small-scale farming for both commercial and subsistence farming. The last major economic activity is business development, which is largely concentrated in the major towns like Oloitokitok and Kimana and the major transport corridors.

Kajiado South is also developing as an industrial town, an economic activity that can be developed further to improve its viability. Notably, the area around Imbirikani hosts Simba Cement Company (a heavy industry). Land should be set aside in the area for further industrial development. The area is ideal for industrial development as it is served by the Emali-Oloitokitok Road that joins Mombasa Road. New industrial development in the area would also make it economical to supply support infrastructure such as water and electric as a result of the economies of scale. Map 9.4 illustrates the major economic activities in Kajiado South and their spheres of influence.



Map 9.4: Major Economic Activities - Kajiado South
Source: Geomaps 2019

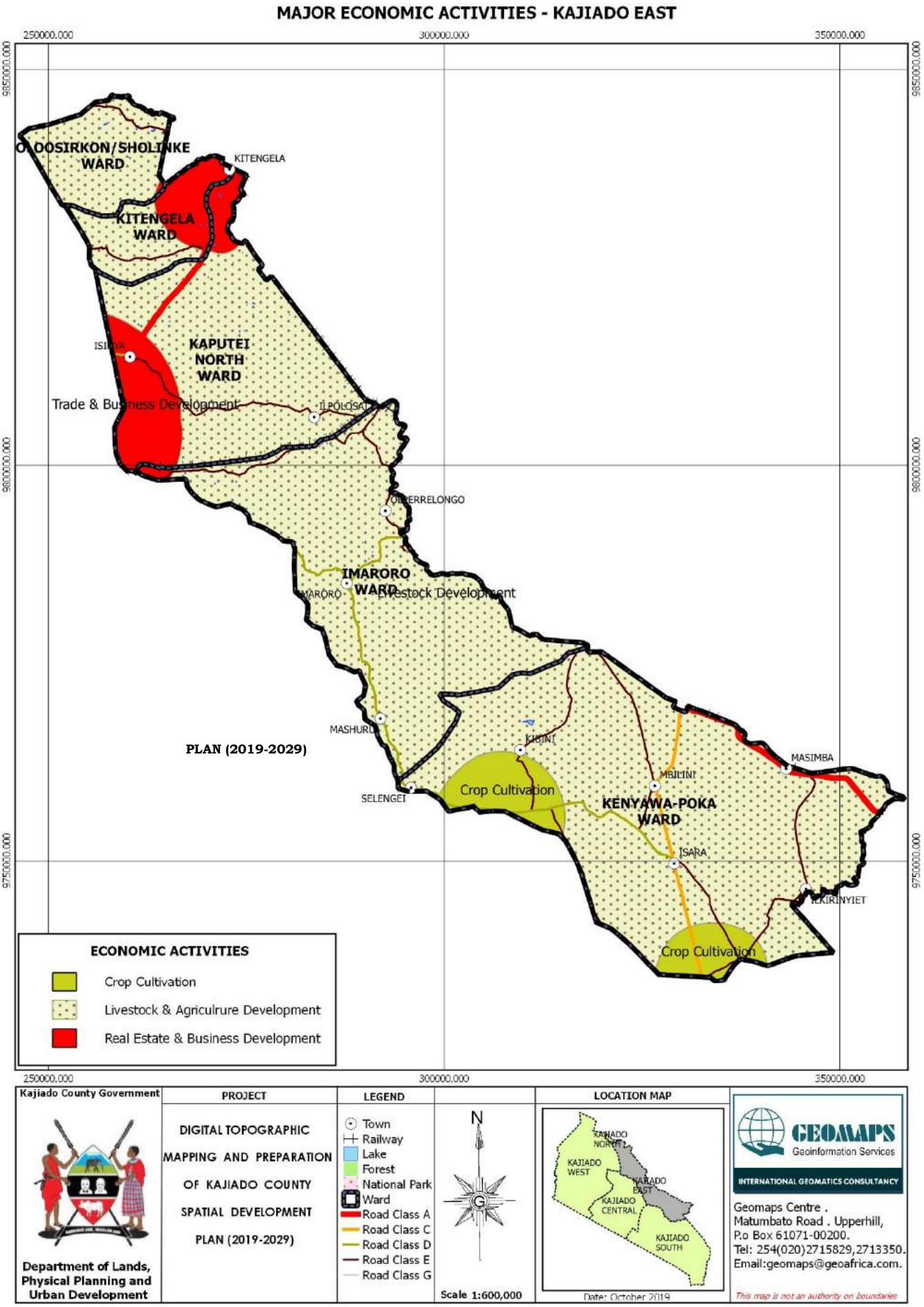
9.4.5 Kajiado East

Livestock development, crop cultivation, business development, and industrialization. Livestock farming and crop cultivation is done collectively in most parts of Sub-County. The economic development of all the five wards in the Sub-County is influenced by livestock development and crop farming. Intensive crop cultivation is also found in areas neighbouring Kajiado South.

Commercial and business development has its sphere primarily in areas around Kitengela, Isinya, and Kisaju, as well as major transportation tracks. Kitengela has developed as a dormitory town for Nairobi County. The town hosts a wide range of commercial activities and real estate development. The transportation corridor between Kitengela and Isinya along Namanga road is also dotted with economic activities. Isinya has been growing at a first-rate as an urban centre, with the sphere of influence of commercial activities spreading several kilometres. Pipeline road (Isinya to Kiserian) also presents a high potential for the development of commercial activities. The development of the north-eastern side at the point where Kajiado County touches Mombasa Road is also driven by commercial activities.

Apart from commercial activities, Kajiado East is a major industrial sub-county in Kajiado County. In particular, the area between Kisaju and Isinya has been developing as an industrial zone. The proximity of Kitengela to the Athi River industrial zone in Machakos has also made led to industrial developments in the town. For increased economic benefits, the area between Kitengela and Isinya should be developed as an industrial zone. Apart from the mining done by Simba Cement, sand harvesting is ongoing in the Mashuru area and acts as a major source of livelihood for the locals.

Map 9.5 shows the major economic activities in Kajiado South and their sphere of influence.



Map 9.5: Major Economic Activities - Kajiado East
Source: Geomaps 2019

9.5 Government Past Efforts in the Economic Sectors

In the 2013/17 County Integrated Development Plan, the Kajiado County Government crafted the economic vision of attaining "A globally competitive economy with sustainable and equitable socio-economic development, where citizens operate freely across borders". In line with the vision, the County set its main objective as that of promoting small scale enterprises (SMEs) and medium-size industries. It also sought to endeavour in facilitating the dissemination of vital information on trade matters. This included providing businesspeople with market information or data, assisting businessmen/cooperatives in establishing small enterprises, identifying opportunities for investment, retail and wholesale trade services, self-employment possibilities, and providing potential businessmen with information on business opportunities.

Table 9.7: The sub-sector priorities identified in the 2013-2017 CIDP

Sub-Sector	Priority
Tourism	Develop tourism facilities and diversify tourism products; Enhance domestic and international marketing and promotion; Review of tariffs; and mobilize resources to support conservation.
Trade and industry	To promote trade and industry
Cooperative development and marketing	Improve market for farm produce; enhance mobilization of funds, and Increase production and products.
Cooperative movement	Develop County Cooperative Policy: Mobilize resources to support the Coop movement.

Source: 2013-2017 CIDP

To support the set objectives and priority economic sub-sectors, the County sought to implement the flagship projects illustrated in Table 9.8.

Table 9.8: Flagship projects identified in the 2013-2017 CIDP

Project	Location	Objectives	Targets	Activities
Creation of a tourism circuit	Amboseli-Maasai Mara	To open up the County as a tourism destination	A complete circuit	Roads improvement, opening up of roads, extension of power lines and water services along the circuit
Construction of export	Namanga	To promote processing for goods for export	1 site development	Site identification

Project	Location	Objectives	Targets	Activities
processing zone				and development
Construction of modern markets	Ngong Kitengela Ong'ata Rongai Namanga Kimana	To provide a conducive environment for traders	At least 4 markets improved to modern standards	Construction, rehabilitation, and expansion of markets
Establish industrial park	Ngong Rongai Kitengela	To provide an opportunity for industrial development and create employment opportunities	Three industrial parks	-Identification of sites - Infrastructure development - Roads, electricity and water and publicity
Fresh produce markets	Isinet Rongai Kajiado town	To provide a conducive environment for fresh produce traders	3 complete markets and in use	Construction of market sheds and toilets

Source: 2013-2017 CIDP

Despite the high potential of these projects in improving the economic outlook of the County and improving revenue generation by the residents and the County government, most of them were never implemented. The poor rate of implementation indicates a failure on the part of the government. Part of the reason for non-implementation might be the high recurrent expenditures as a percentage of the total budget, which leaves little revenue for development projects.

9.6 County Financials

9.6.1 Budgeting

The Kajiado County relies on revenues from local sources, government transfers, and grants. Although the local revenue sources make a major contribution to the revenues collected, they make up a significantly smaller percentage of the budget when compared to the exchequer releases. In the 2018/2019 budget estimates of Kshs. 9.514 billion, government transfers accounted for 63% of the projected revenues while local revenue sources were estimated at 17%. Grants were estimated at 8% while the remainder of the budget was to be funded from the unutilized funds from the 2017/18 financial year.

Majority of this amount has been planned for financing recurrent expenditures (57%) while the remaining was planned for development. Under current remuneration, the remuneration of personnel accounted for 31% of the budget while the operational and maintenance expenses had been

estimated to use 26% of the budget. The 2018/19 budget estimates have been provided in Table 9.9.

Table 9.9: 2018/19 Budget Estimates

BUDGET SUMMARY 2018/19		
REVENUE	**Kshs.**	**PERCENTAGE**
Government Transfers	5,997,400,000	63%
Local Revenue	1,583,856,996	17%
Grants	732,783,466	8%
Balance B/f (2017/18)	1,200,000,000	13%
Total	**9,514,040,462.00**	**100%**
EXPENDITURE		
RECURRENT		
Personnel Emoluments	2,965,559,172	31%
Operation and Maintenance	2,478,830,555	26%
Total	**5,444,389,727**	**57%**
DEVELOPMENT	4,069,650,735	43%
TOTAL EXPENDITURE	**9,514,040,462**	**100%**

Source: Program Based Budget Estimates 2018/19

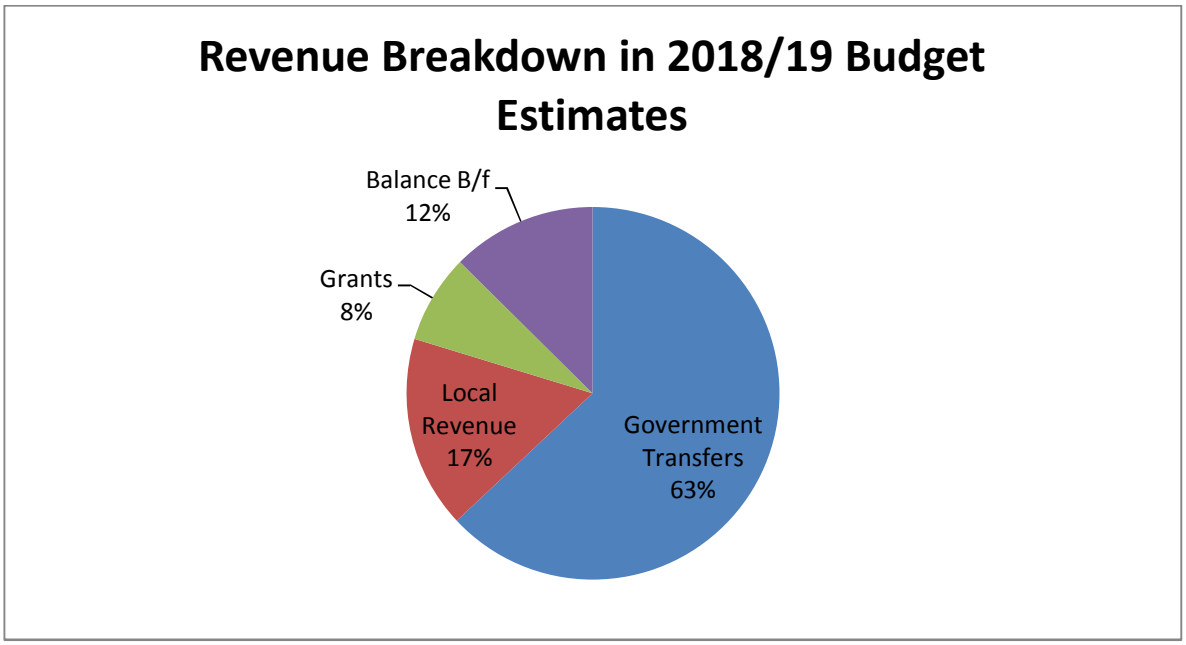


Figure 9.5: Revenue Breakdown in 2018/19 Budget Estimates

Although the share of the budget financed by the national government is still substantial, it has declined significantly from the 2017/18 budget estimates. In the 2017/18 budget estimates, a total of Kshs. 6.23 billion was estimated. Kshs. 5.01 billion (80.4%) was expected from the national government, Kshs. 231.92 million (3.7 percent) as total conditional grants and Kshs.990.79 million (15.9 percent) was to be generated from local revenue sources. Of this amount, Kshs. 4.36 billion (70%) was allocated to recurrent expenditures, with the rest set aside for development (Office of the Controller of Budget, 2017).

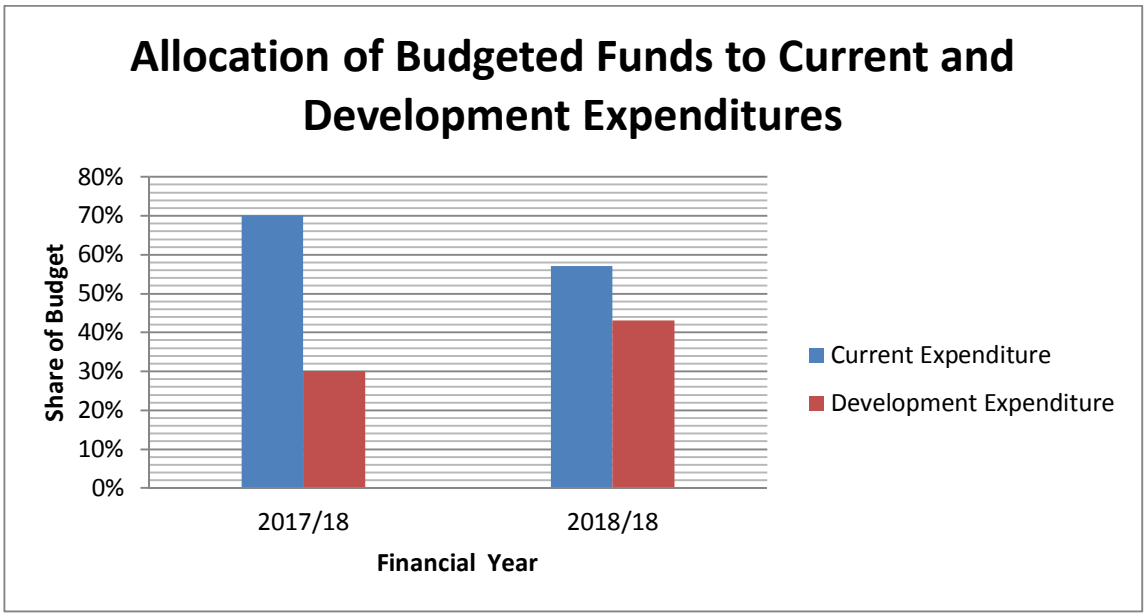


Figure 9.6: Allocation of Budgeted Funds to Expenditures

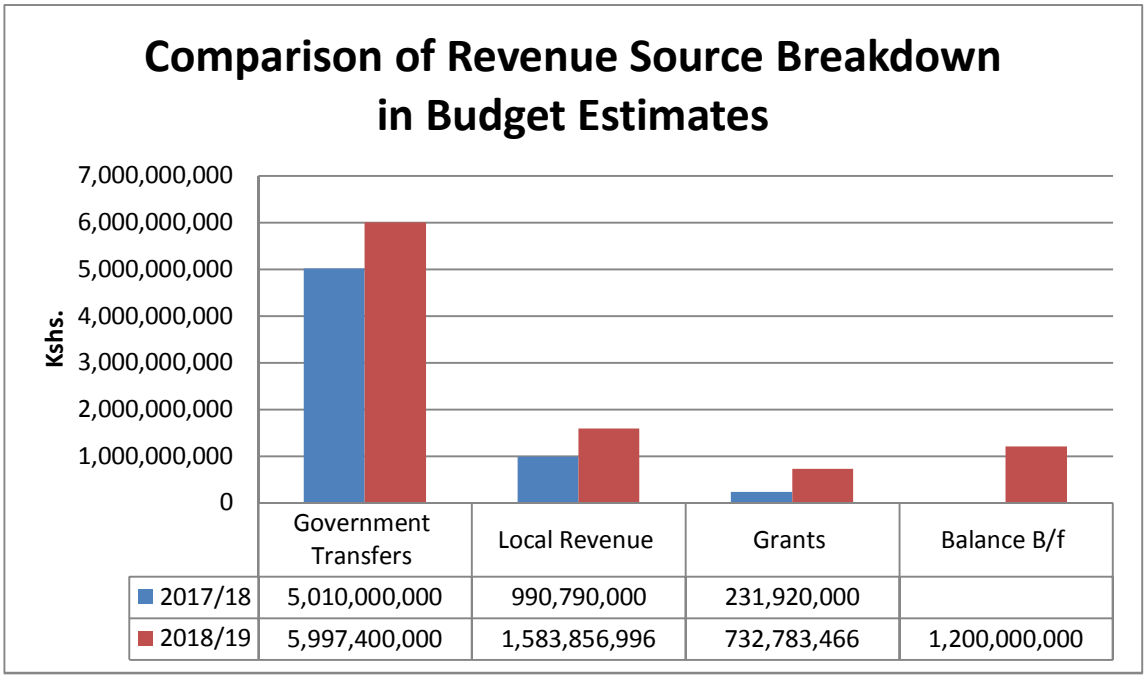


Figure 9.7: Comparison of Revenue Source

The high reliance on revenue sources from the national government poses a major threat to the development of the County. Recent cuts in budget allocations to County government from the national kitty threaten future projects and those already in progress. Besides, the national government often delays disbursing funds to County governments. Projects funded by these funds may get delayed, resulting in additional costs. Kajiado County should seek to build its capacity by streamlining its revenue collection activities and finding additional revenue sources.

CHAPTER 10: LAND USE PLANNING

10.1 Overview

The planning component of the Spatial Plan establishes the framework for the future development of land use in the County. It has been informed by the known resources and constraints of the planning area while recognizing the significant role of the key urban centres in Kajiado County as service centres for a vast region.

Physical planning is a design exercise that uses the land use plan as a framework to propose the optimal land use for a settlement or an area (urban or rural). The land uses include residential, industrial, educational, recreational/conservation, economic activities, infrastructure, and agricultural activities.

A Physical Development Plan can be presented in the form of an urban physical development plan, city/municipal development plan or a CSP. A CSP is a spatial framework, covering the entire area of the County, designed to promote optimal use of land and to achieve sustainable development by addressing development challenges and exploiting opportunities in various sectors. CSP addresses development in urban and rural areas in an integrated manner. It indicates how land-use, transportation, infrastructure and service provision should be coordinated to contribute to a competitive, economically robust, socially livable, and sustainable regions that meet the day-to-day aspiration for the prosperity of the residing population.

The core function of physical planning is to designate various land use zones for optimal and efficient exploitation of resources, thus preventing land-use conflicts. Land use planning is done to identify alternatives land use models and to select and adopt the best land use options. Land-use planning therefore means, the scientific, and orderly disposition of land, resources, facilities and services with a view of securing the physical, social, economic and environmental and health well-being of urban and rural communities. This section looks at the land use trends in Kajiado, challenges in planning and the synthesis of opportunities in the County. This forms a basis for the development of the CSP.

10.2 Land Use in Kajiado County

The dominant land uses in Kajiado County can broadly be categorized as rural and urban land uses.

Rural Development

The rural developments comprise of:

a) Agricultural activities, both farming and livestock production
b) Industrial development and primary production such as mining
c) Rural residential developments (homesteads).
d) Conservation and rangeland

The structure of rural developments in the county is influenced by the nomadic nature of life in the county. The rural developments are arranged in a dispersed manner throughout the county with clustering of developments in nodes.

Crop production is mostly practiced in areas that receive more rainfall such as near Ngong hills and Oloitokitok. These areas enjoy climatic patterns that can support crop production. The patterns are however changing with the availability of groundwater, has helped improved crop production through irrigation. Second in proportion is wildlife conservation. Amboseli National park contributes strongly to the overall aggregate and is supplemented by conservancies and sanctuaries as seen in Map 10.1.

The rural developments face development challenges including:

1) Insufficient infrastructure such as water, power
2) Poor road connectivity
3) Increasing land subdivision eating into agricultural land
4) Land use conflicts with wildlife

Urban Developments

The urban developments in the county include:

a) Residential development
b) Industrial developments such as manufacturing
c) Educational/social facilities
d) Recreational
e) Commercial developments
f) Infrastructure
g) Urban agriculture

While as the dominant land use in urban areas is residential, there has been a significant change in land use trends with industrial and commercial land use gaining momentum. In the recent past, land use has had three key drivers. These are: population, proximity to major urban centres like Nairobi and road corridors. Road corridors have created opportunities that influence urbanization.

The urban areas in the County are faced by various challenges including:

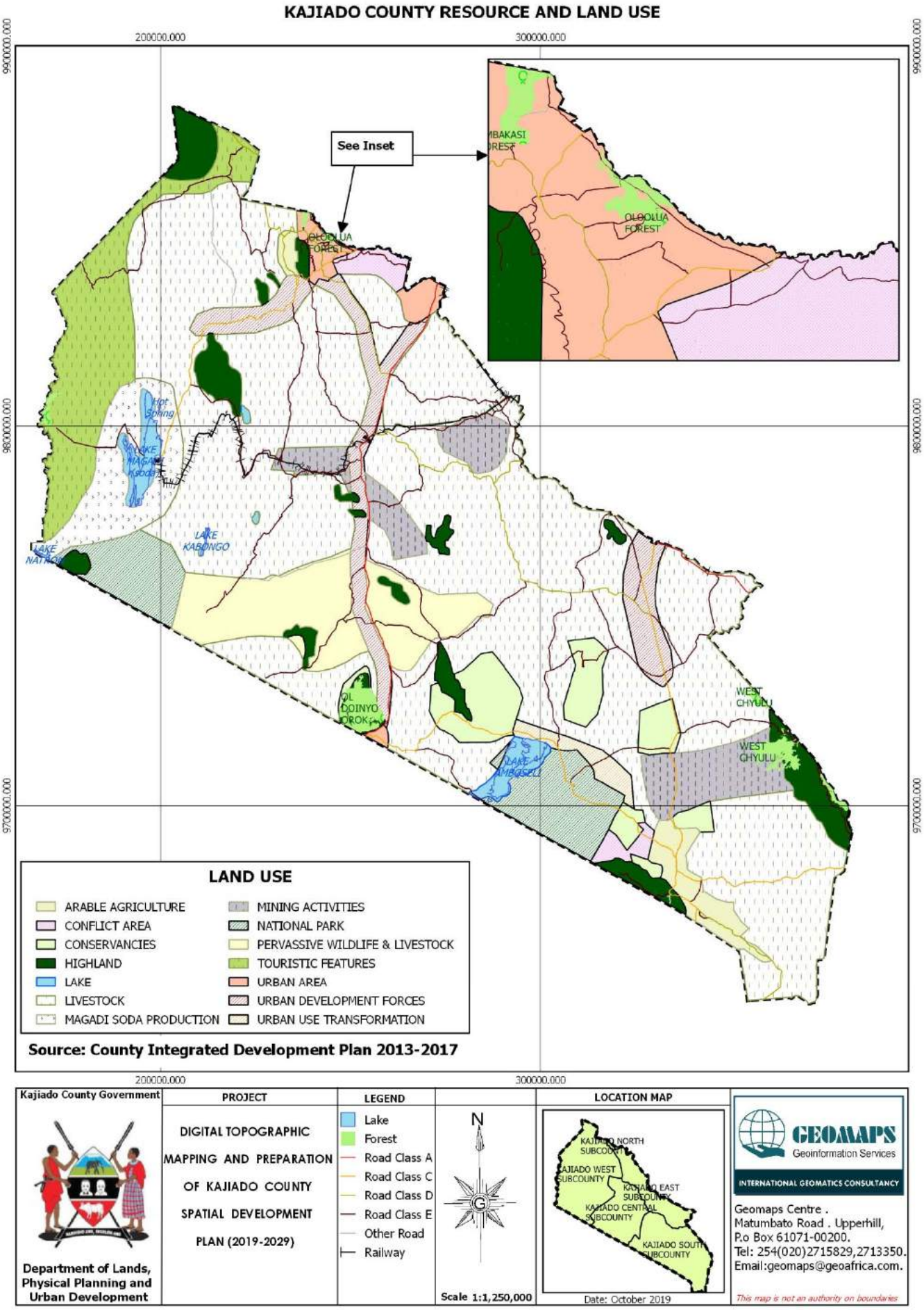
1. Increasing urban sprawl

2. Insufficient public utilities such as sewer and open spaces
3. Traffic congestion
4. Insufficient urban infrastructure

The land use within the urban areas can further be detailed as shown in table

Table 10.1: Urban Land Use Activities

Land use Categories	**Activities included within the land use**
Residential Areas	- Primary residential - Mixed residential - Unplanned/ informal residential
Commercial Area	- Retails shopping - General business and commercial centres -Wholesale, godowns/ warehousing - Regulated markets
Industrial area	- Service and light industry - Extensive and heavy industry - Agro industries
Open spaces	- Playground/stadium/ sports complex - Parks and gardens-public open spaces - Multi-purpose open space
Public and semi-public	- Govt./semi govt./public offices - Govt. land - Educational and research - Medical and health - Social, cultural and religious - Utilities and services - Cremation and burial grounds



Map 10.1: Resource and Land Use in Kajiado County

Source: Geomaps 2019

10.3 Average Land Holding Size

According to the Kajiado CIDP 2018-2022, it is estimated that about 16% (3,468.4 km^2) of the total County land is arable, with the average land holding size being approximately 9 Ha on small scale and 70 Ha in the rural areas. However, due to the dynamics affecting land use in Kajiado such as increase in population that exerts pressure on land use, proposals for sustainable lot sizes for both rural and urban areas have been given in section 10.5. There is however growing level of land speculation in the urban areas of the County, leading to excessive subdivision of land to small and sometimes uneconomical plots. The increased subdivision of land in the urban areas and their surrounding has resulted in reduced land for grazing and wildlife conservation. Further, the increased demand for land has also resulted in the encroachment into environmentally sensitive areas such as forests.

10.4 Land Ownership and Documentation

Other than in the areas having group ranches, most of the rural areas have had land parcellated and having either title deeds or letters of allotment. It is noted that the rural areas have more cases of unregistered land as compared to the urban areas. For the land parcel where the homesteads are located, the most common land tenure ownership is with title or allotment letter at 65%. (Household Baseline Survey Report - Kajiado County 2014).

10.5 Development Trends

Kajiado County being located within the Nairobi Metropolitan area has seen increased urban development's mostly in the areas near Nairobi. The urbanization growth in Kajiado has been noted in the Nairobi Metro 2030 to be among the highest in the country at over 7%. The urban developments in Kajiado have mostly taken a dispersed arrangement with numerous urban centres developing throughout the County.

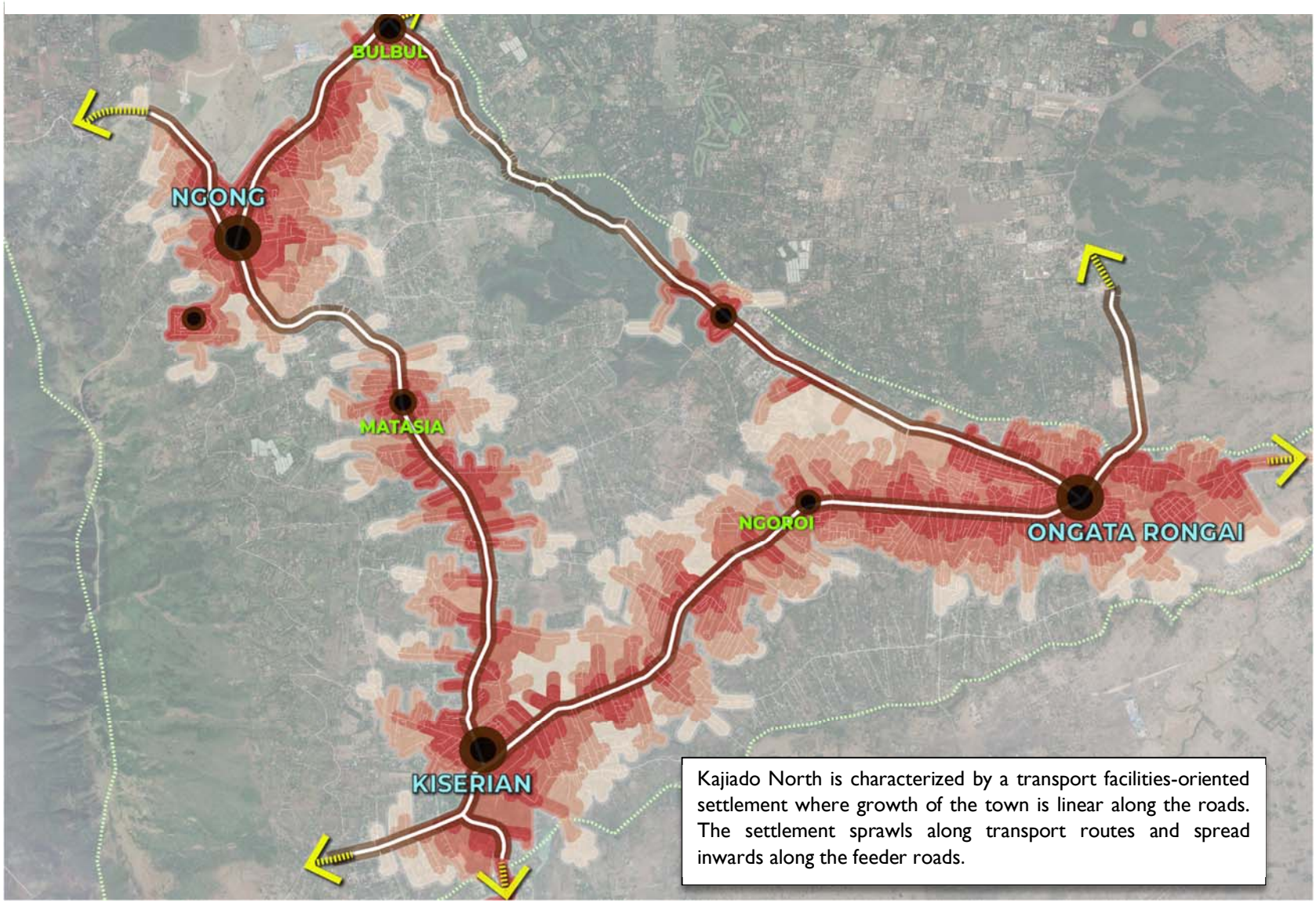
The urban areas have however been heavily influenced by road developments with the major urban centres taking a linear development trend. This is common in centres such as Kitengela, Ong'ata Rongai, Kiserian, Isinya, Oloitokitok and Ngong as indicated in the following Figures 10.2. The County however also has nodal urban developments such as in road intersections such as Isinya.

The development of some urban areas such as Ngong, Ong'ata Rongai, Kajiado, Isinya, Kitengela and Kiserian exhibits increased agglomeration of the urban developments which requires proper urban management to reduce the sprawl effect. In the last decade, there has been a tremendous expansion of the three major centers, Ngong, Ong'ata Rongai and Kiserian.

The increasing urbanization has led to the fragmentation of land and highly appreciating land values for residential use. The increased subdivision has

resulted to encroachment into agricultural land leading to the decline of agricultural productivity and diminishing grazing areas. This has also seen people settling in riparian zones and some encroachment into the natural forests. Figure 10.1 shows the linear development pattern in Kajiado North Sub-County.

Figure 10.1: Linear-oriented development in Kajiado North



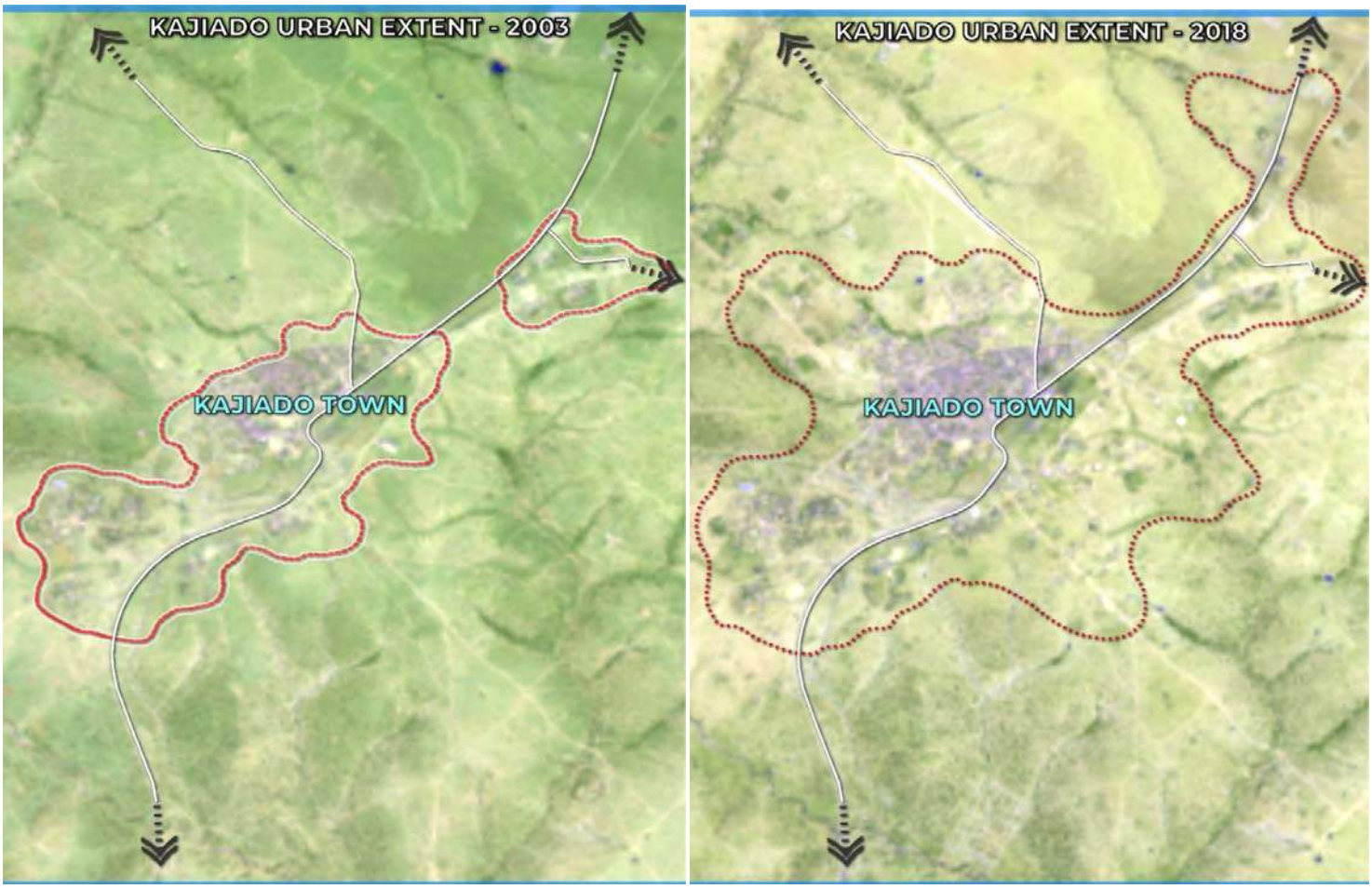
Source: Geomaps Aerial Mapping 2018

Figure 10.2: Nodal development in Oloitokitok

The rapid urbanisation in Kajiado can majorly be attributed to the increased urban growth of Kajiado County and increased developments occasioned by developments form the Nairobi metropolitan area growth. A spatial-temporal analysis of Kajiado town shows the increased urban growth of the town from the year 2003 to 2018. The analysis in figure 1.04 shows the increased urban growth and urban sprawl occurring in the town. The expanding urban areas necessitate proper planning to ensure managed developments.
The urbanization is majorly caused by:

a) Increased urban population
b) Availability of land for urban developments
c) Accessibility linkage to urban areas in the neighbouring counties

Figure 10.3: Spatial Temporal Analysis of development in Kajiado Town



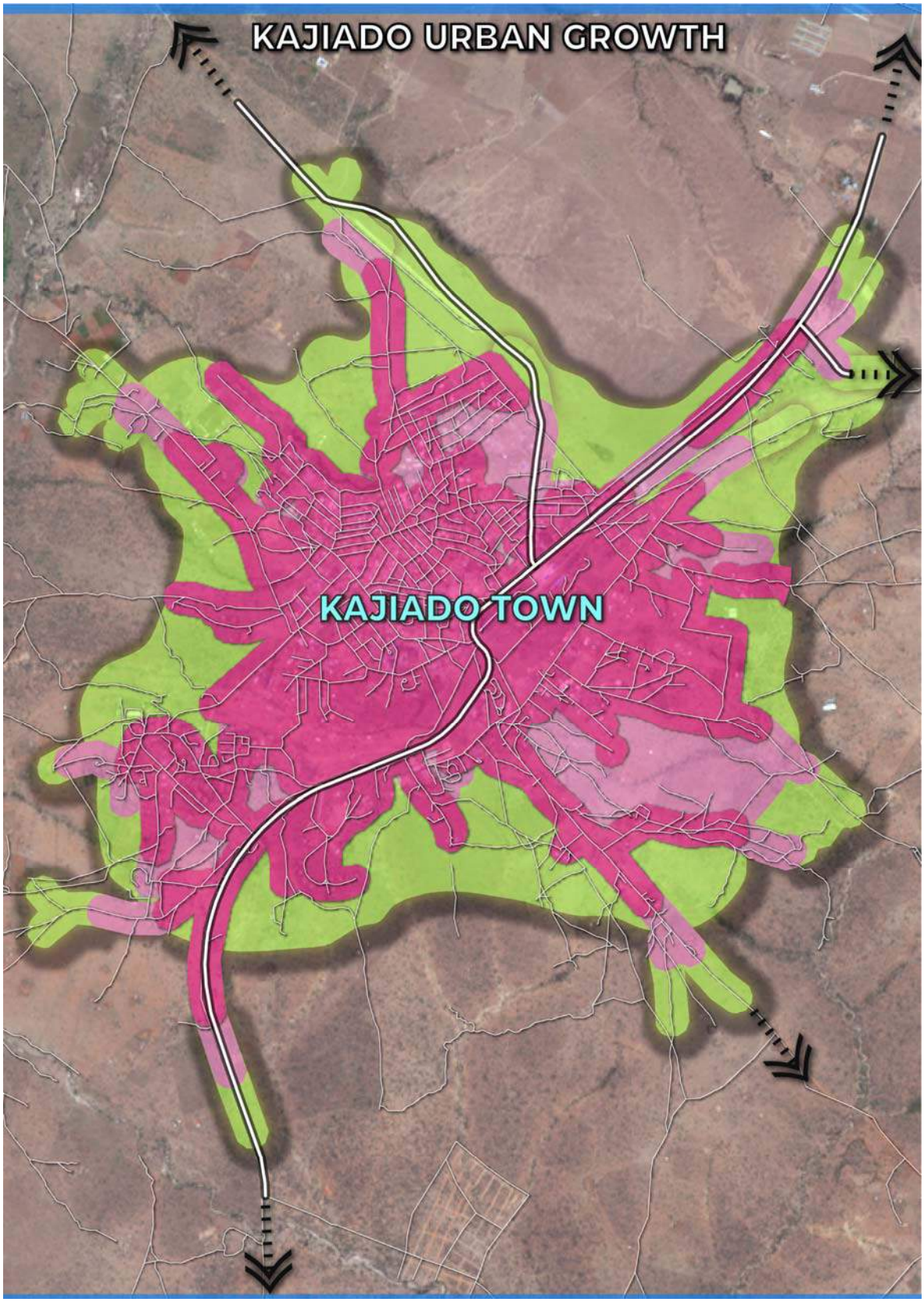


Figure 10.4: Urban Growth Trend analysis of Kajiado Town

10.6 Land Use Challenges

The major issues of physical planning that were discussed in the stakeholder consultations at the Sub-Counties were categorized into five broad areas: Urban sprawl, urban expansion into agricultural land, uncontrolled urban development, insufficient physical & social infrastructure and environmental degradation. These problems are caused by the demand for urban services in the context of non-existent urban development plans, lack of comprehensive development management system, and insufficient capacity of urban development management.

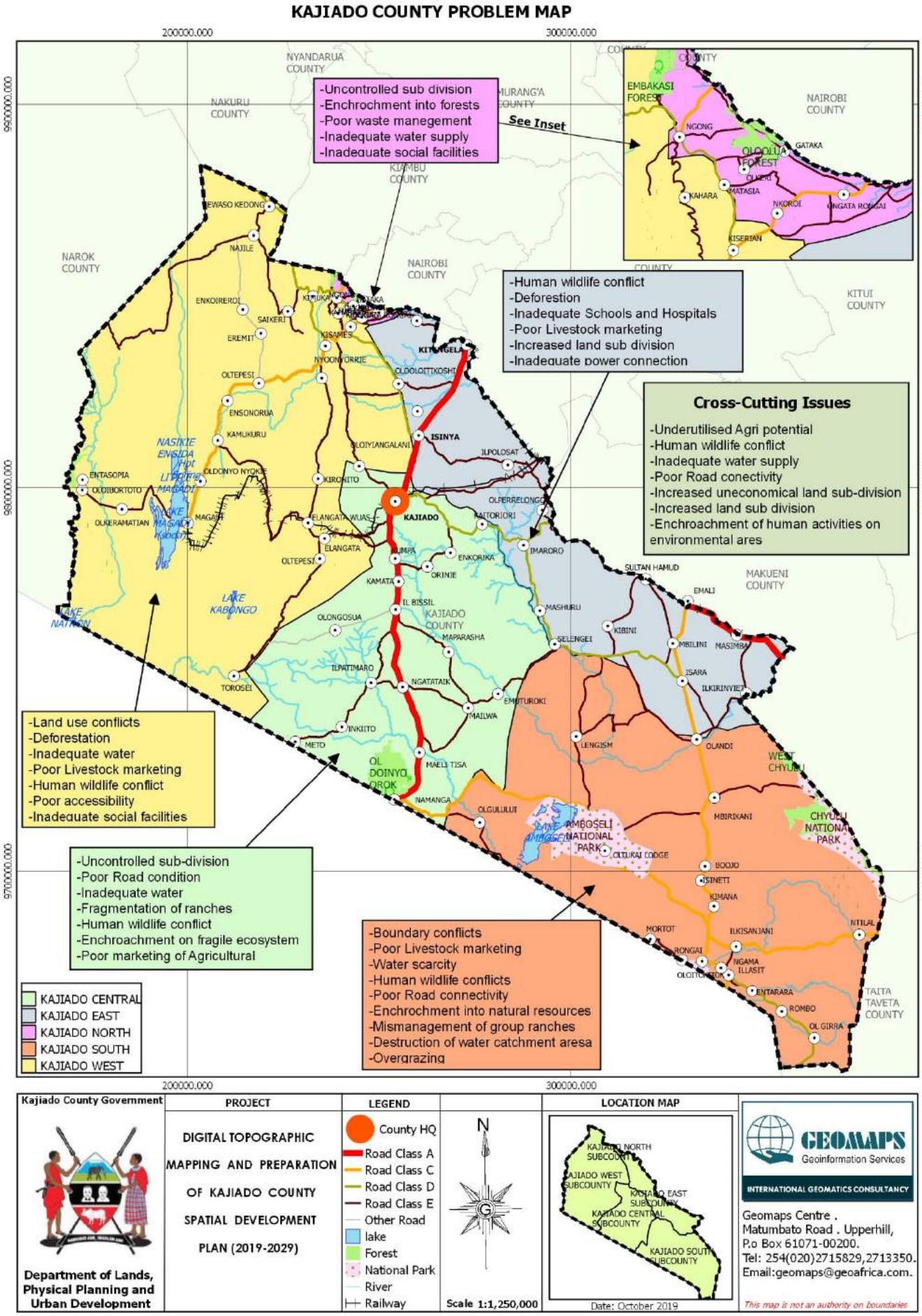
Table 10.2: Challenges identified by the stakeholders

Sub-County	Sector	Challenges	Priorities
Kajiado Central	Land	• Poor planning especially in urban areas e.g. Namanga • Double allocation of plots • Undefined urban boundaries • Land grabbing • Uncontrolled land subdivision	• Proper town planning • Proper land use planning • Guided land subdivision • Development of a resource map
	Planning	• Poor planning • Lack of investment framework e.g. Industrial areas • Lack of zoning framework	• Proper planning for land use, investment framework, infrastructure
Kajiado West	Land	• Human-wildlife conflict • Land conflicts • Sale of individual land • Lack of interlinking roads • Grabbing of public land • Poor town planning	• To empower the community on their rights • Titling • Proper planning • Awareness creation
Kajiado South	Land	• Boundaries conflict between Kajiado and Taita Taveta • Multiple allocations of land • Unidentified areas for grazing and farming • Poor planning • Mushrooming informal settlements • Management of group ranches • Encroachment on riparian reserves • Uncontrolled subdivision	• Land registration • The intervention of the National government • Public consultation meetings • Planning of towns •
Kajiado East	Land	• Land subdivision but no Title Deeds (Imaroro and Emartic Group Ranch) • Land degradation • Boundary conflicts • Encroachment into public lands • Wildlife animals	• New committee to spearhead and resolve the conflict • Sensitization on overstocking • Adjudication of survey • Reserve parks
Kajiado North	Land	• Improper land planning and use • Land grabbing	• Land planning policy • Land audit

Sub-County	Sector	Challenges	Priorities
		• Encroachment of public land and riparian areas • Population explosion • Un-uncontrolled subdivision • Double allocation	• Urban development plan • Repossession • Litigation • Land use • Sub-division guide

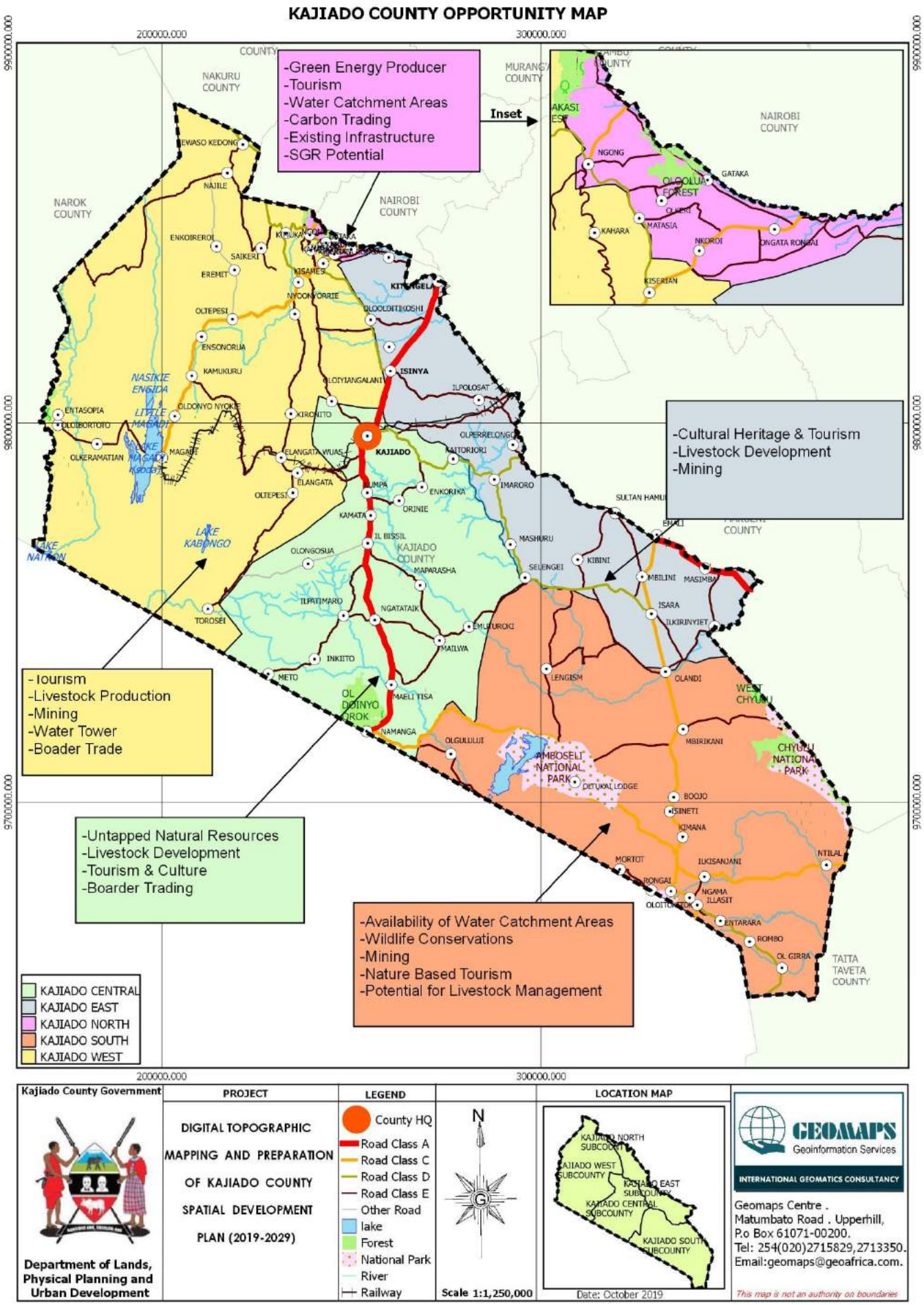
Table 10.3: Summary of planning Issues in Kajiado County

S/No.	Planning Issue	Manifestation
1	Urban Sprawl	• Scattered Settlements spreading haphazardly in the urban centres. • Urban developments along major roads
2	Urban expansion into livestock and agricultural land	• Settlements spreading fast into grazing and agricultural land • Increased subdivision around urban areas
3	Uncontrolled urban development	• Unauthorized developments encroaching onto road reserves. • Unauthorized developments in the towns • Temporary developments – expansion of informal settlements
4	Insufficient urban infrastructure	• Insufficient access to safe water, • Poor solid waste management • Insufficient and poor quality of public transportation • Poor road condition
5	Insufficient social facilities	• Insufficient public open space, • Insufficient public cemetery • Insufficient solid waste management system • Insufficient liquid waste management system • Inadequate markets
6	Environmental degradation	• Pollution of water bodies • Dusts



Map 10.2: Kajiado County Problem Map

Source: Geomaps 2019



Map 10.3: Kajiado Opportunity Map

Source: Geomaps 2019

PART III: PLAN FORMULATION

CHAPTER 11: SCENARIO BUILDING

This chapter brings out the various development scenarios that could be adopted as a basis for regional development in Kajiado County. These scenarios/ models are developed through the overlay of various spatial depictions such as population, infrastructure, human settlement, environmentally sensitive areas, natural features, climate, etc. so as to identify the clustering of issues to be addressed and optimal layout for development of the county.

The scenarios are based on various aspects such as the identified development challenges and opportunities in the county as well as the regional setting of the county. These scenarios are then evaluated and the one or hybrid of scenarios that covers the best development approach chose. It is then on the basis of the identified preferred model/scenario that the spatial plan is developed.

11.1 Planning Considerations

The following five major considerations were the basis upon which the CSP was developed.

11.1.1 Plan Vision

The development vision is important as it provides strategic direction for the Plan and focuses the development interventions to follow on a specific outcome. The development vision focuses on the desired future development of the County. The vision encapsulates the goals and objectives.

From the technical analysis and the stakeholder participation, it was possible to craft a vision to guide the development of a planning framework and implementation strategy.

Vision Statement: *"A County with sustainable development anchored on livestock, agriculture, tourism, industry and commerce".*

11.1.2 Guiding Principles

The proposed land use is guided by the following principles aimed at achieving balanced growth for the entire Kajiado County.

- Economic Sustainability
- Environment Sustainability
- Protection of livestock and agricultural zones
- Integration of land use with transportation
- Balancing between urban development and agriculture and livestock activities.
- Inclusiveness and collaboration of stakeholders
- Provision of sufficient social infrastructure
- Achievement of the plan vision.

11.1.3 Structuring Elements

Structuring elements are the physical elements that influence the density and direction of growth within the planning area. The major ones in Kajiado are: the topography, international boundary, transportation network, human settlement, natural features, the forests and parks, ranches and conservancies.

These structuring elements influence the direction and intensity of growth in the manner that while as developments naturally tend to take place around and along the transport corridors, the natural features, on the other hand, may act as barriers to developments. The planning designs will thus aim at providing a framework for guided development to minimize the effects of unplanned liner developments and also propose developments that are compatible with the natural character of the planning area.

- **International Boundary-**

Kajiado County borders the Republic of Tanzania to the South. There are two major border towns in the County namely; Namanga and Loitokitok. The two border towns play a major role in the regional trade between Kenya and Tanzania. After the launch of the East African Community common market, the borders have played a significant role of promoting trade in terms of goods, services, and capital. The developments within these border areas will influence the trend of development in the County and the nature of activities proposed.

- **Natural Features and Topography**

The main physical features of Kajiado County are plains, valleys and occasional volcanic hills ranging from an altitude of 500 meters above sea level at Lake Magadi to 2500 meters above sea level in Ngong Hills. Topographically, the County is divided into three different areas namely; Rift Valley, Athi Kapiti plains and Central Broken Ground. The development proposals will be affected by the topography and natural features such as hills, forests and the lake in the planning area. These features will limit the type and density of activities that can be proposed near them.

- **Transportation corridors**

Kajiado County acts as a major transport corridor linking Kenya to Tanzania through the Namanga border point which is served by the Namanga-Nairobi highway which forms part of the Great North Road running from Cape Town in South Africa to Cairo, Egypt. Most of the urban growth within the County is also linear therefore highlighting the importance of transport corridors in the growth of the County. Since mostly the existing developments have taken place linearly, the major roads will form an important urban influence structure. Some of these corridors in the County are Emali-Oloitokitok, Nairobi-Magadi etc.

- **Forests and Parks-**

Kajiado County has a total forest area of approximately 16,866.88 Ha comprising of indigenous and exotic forests. A total of 15,626.8 Ha of the forest land is gazetted forest while 1,240 Ha is trust land. Gazetted forest areas are found at the border areas of the County, mainly Ngong hills (3,077 Ha), Loitokitok (765.8 Ha), and Namanga (11,784 Ha). Forest in trust land includes Embakasi (573 Ha) and Oloolua (667 Ha).

The major national park in Kajiado County is the Amboseli National park formerly known as the Masai Amboseli Game Reserve. Its magnificent situation at the foot of Mount Kilimanjaro, combined with its excellent opportunities to view Kenya's animals, make it one of the most-visited safari parks in Kenya. The park is 39,206 hectares in size at the core of an 8,000 square kilometers ecosystem that spreads across the Kenya- Tanzania border. These parks and forests form a major land use in the plan and will influence the type of developments in these areas.

- **Group Ranches**

There are 10 group ranches in Kajiado County. Majority of the ranches are located in Kajiado South and Kajiado West Sub-Counties. These ranches will largely influence the structuring of developments within the County. Since the ranches take up large portions of land, they will influence the availability of land and structure of development in the County.

11.1.4 Strategic Development Direction

From the sectoral analysis of the potentials for Kajiado, the following areas have been identified as key strategic sectors on which the CSP is based. Further, the strategic direction is **informed by the vision to have Kajiado as a hub for livestock, agriculture and tourism**. The consolidated County vision being *"A County with sustainable development anchored on livestock, agriculture, tourism, industry and commerce"***.** The identified sectors to base the broad County development are:

1. **Livestock Development**

The basis for development in Kajiado will be largely dependent on the promotion of sustainable livestock development. The livestock sector in the County has continued to face various challenges such as persistent drought from the effects of climate change, poor husbandry, increased diseases and poor marketing of the livestock products. Further, the livestock sector has been under threat from the increasing land fragmentation and subdivisions which has continued to diminish the land available for livestock keeping.

In order to enhance livestock as the basis for development in the County, the plan provides several guiding measures which include;

- Controlling land subdivisions in livestock production areas
- Prudent management of group ranches

- Development of agro-based industries to support livestock products value addition
- Water and fodder provision for dry seasons
- Commercialization of livestock production
- Improved animal husbandry

These strategies will result into the establishment of zones for livestock production, enhanced marketing and value addition.

2. Tourism and Conservation

Kajiado County has been identified as one with a wide range of tourist attractions including historical sites, parks, scenic lakes, geomorphosites and cultural heritage. Tapping into these tourism potentials is one of the strategies that the plan aims at adopting so as to bring out tourism as a key driver of the County development. Further, the identification and conservation of tourism areas will be a key element that the plan will emphasize on. Development strategies will then be given to promote cultural heritage and tourism within the County.

3. Urban Planning Development and Management

The location of Kajiado County within the Nairobi metropolitan area and near Nairobi city gives it a locational advantage that can be utilized to boost the County's development. Despite the location close to Nairobi being also a contributor to some of the urban challenges such as increased land subdivision, increased demand for infrastructure and increased pressure on available resources in Kajiado, it also brings opportunities for development. Such opportunities come in the form of the increased population which leads to an increase in retail potential.

The plan aims at transforming various residential zones within the County into attractive neighbourhoods to serve the NMR. The zoning and development control within these areas and the provision of necessary infrastructure will be emphasized as among the key development issues. With this underpinning, Kajiado County will have controlled urbanization with urban users that complement the other users within the NMR while retaining ample space for the livestock production function. The strategy will also look at the reduction of urban sprawl for the towns.

4. Infrastructure Development

The existence of major infrastructure within Kajiado County such as the Namanga road, the SGR route and an expansive road network will be an advantage that the plan utilizes to enhance urban and rural development. While as most of the rural link roads have been identified as being in poor conditions, their improvement and opening up of missing links will be emphasized in the plan. The provision of other infrastructure such as water

and waste management will also be the basis upon which the plan will be based to promote sustainable development and spur economic growth.

5. **Mining and Industrial Development**

Kajiado County has been identified as a mineral rich County having deposits such as soda ash, sand, limestone among others. Recently there has also been the discovery of various gases within the County. The plan proposes an intensified exploration of minerals in the County coupled with strict development guidelines for their exploitation. The plan will give the natural mineral base prominence and provide for development guidelines for these zones. Further, the identified rich zones should be well serviced with appropriate infrastructure.

6. **Agriculture**

Kajiado County is classified as an ASAL region; however, agriculture is still a major land use for not only food security in the County but also for the larger NMR. Small scale agriculture is advocated for in the high density areas such as Kajiado North while Kajiado South and Kajiado Central are to be promoted for larger scale agriculture. These agricultural zones are to have strict subdivision guidelines to ensure productivity.

11.2 Development Scenarios

The development scenarios are an expression of the various models upon which the developments in the County can be based. The scenarios are based on the strategic resource base of the county. The scenarios outline thematically based development options from which the various development strategies can be developed. The considered scenarios for Kajiado are as follows.

11.2.1 Agriculture and Industrial Scenario

This scenario acknowledges Agriculture; both crop production and livestock, as an important economic base for the county. While as the county is classified as an ASAL county, the areas receiving high rainfall amounts and irrigation schemes have made it possible to make Kajiado an important food basket. The scenario would be based on:

a) Promotion of irrigation agriculture,
b) Diversification of crops produced
c) Promotion of sustainable livestock production practices
d) Development of agro-industries for crops and value addition industries for livestock products

Further, this scenario seeks to promote sustainable utilization of natural resources in the county and developing of industrial zones. To this end the scenario would advocate for:

a) Exploration and identification of minerals in the county
b) Zoning of industrial areas and development of appropriate infrastructure
c) Development of policies to guide sustainable utilisation of natural resources

11.2.2 Urbanisation Scenario

This scenario considers the strategic location of the county in the Nairobi Metropolitan context and seeks to complement the regional development and spur planned developments within the county. The scenario seeks to promote the development of urban centers across the county to manage urbanization and strengthen the existing urban centers with proper infrastructure and urban management. Other important elements that this scenario would employ are:

a) Proper planning of urban areas to delineate the various zones
b) Promoting functional specialisation for the urban centers
c) Provision of infrastructure for the urban areas

The success of this scenario would also be based on the provision of planned residential function to serve the growing population in the Nairobi Metropolitan Region. The promoting of towns such as Kitengela, Ngong and Kiserian as residential towns of choice for the people working in the NMR would spur their development and complement the regional development. This scenario would, however, have to be accompanied by detailed plans for the urban areas and strict development control measures.

11.2.3 Kajiado as a Tourism Hub

This scenario is based on the natural capital of Kenya as a world-renown tourism hub. The scenario seeks to anchor and strengthen tourism development in Kajiado County. This scenario identifies the various tourism attraction activities in the county such as cultural tourism, wildlife and conservation tourism, archeological tourism among others.

The main elements that this scenario would adopt are;

a) Opening up and developing infrastructure to the tourism sites accompanied by provision of complementary services such as lodges
b) Packaging and promoting of the maa culture for tourism
c) Setting up of cultural centers in every sub-county
d) Promoting conservation tourism
e) Marketing of the olorgesailie museum

The achievement of this scenario would require the cooperation of the county government, national government agencies and the community in promoting and developing tourism packages and infrastructure.

11.2.4 Preferred Scenario

The preferred model adopts a hybrid development path borrowing from the strengths of each of the scenarios above to create an economically competitive and productive County with high quality of life. This preferred development path seeks to achieve the following objectives:

1. Promote industrial developments related to agriculture and livestock within Kajiado by diversification of agricultural activities, increasing production, setting up of specialised agro-industries such as slaughterhouses, planned urban areas and marketing of the products.
2. Promote sustainable utilisation of minerals and resources to ensure vibrant industrial production coupled with the designation of industrial zones.
3. Promote planned urbanisation with properly planned towns, provision of sufficient infrastructure and proper urban management to promote residential and commercial developments.
4. Awaken the cultural and tourism aspects of Kajiado and marketing of the various activities.

The achievement of this would be based on proper planning of the urban areas, provision of infrastructure and services to promote industrial, tourism and urban developments. Figure 11.1 shows the elements considered for the preferred scenario.

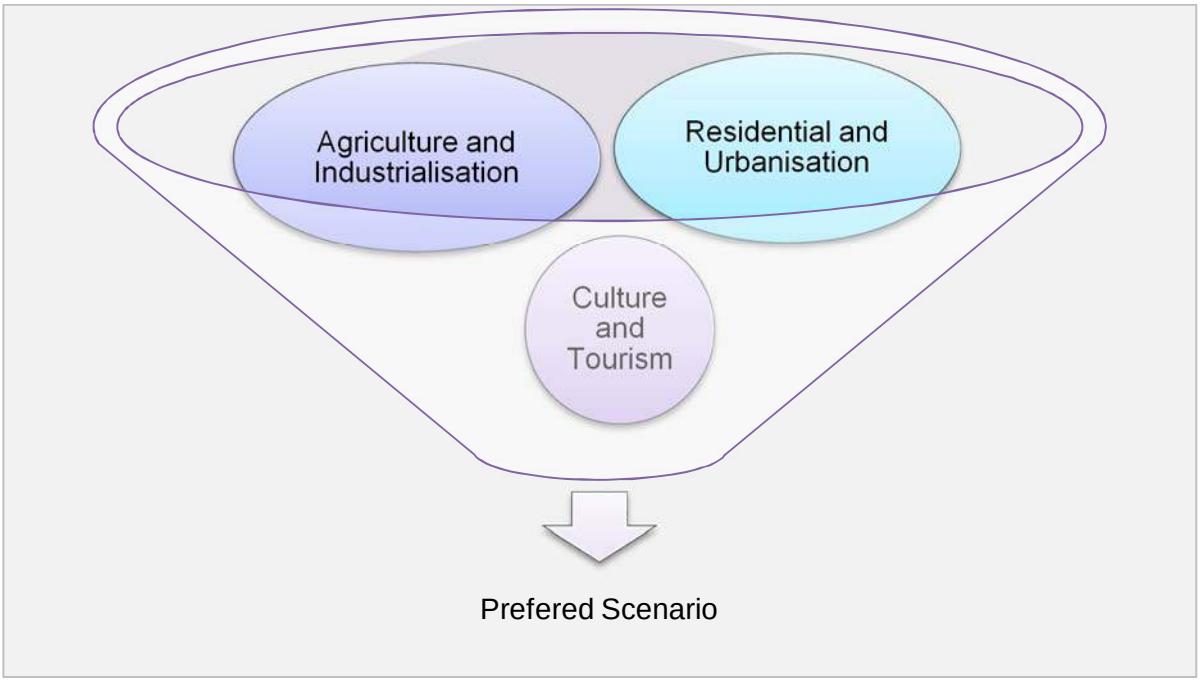


Figure 11.1: Preferred Scenario Elements

PART IV: PLAN PROPOSALS

CHAPTER 12: DEVELOPMENT STRATEGIES

12.1 Overview

This section outlines the key sectoral challenges identified and the proposed strategies to ensure that the sectors develop in a sustainable way. The proposals in this section are preliminary and comprehensive and more detailed strategies will be prepared for the subsequent draft plan submission.

12.2 Environment and Natural Resources

The environmental strategy proposes mitigation measures to the various environmental challenges identified in the County.

12.2.1 Strategy for County Disaster Management for Geologic, Climatic and Human Disasters

The geologic disasters (earthquakes, land subsidence, and landslides and mudflows), climatic disasters (floods and droughts), and human disasters (road accidents, rift valley fever, HIV/AIDS, etc.) will be planned and managed. The tasks will include research, mapping and determining levels of vulnerability amongst the residents.

- To build and maintain IT assisted capacity in EARS countries with the involvement of governments
- To revive and extend the KNSN for greater coverage and effective seismic monitoring in Kenya.
- To undertake public education and make concrete plans on disaster management and prepare for volcanic eruptions, fractures, floodplains, sensitive areas of slopes,
- To carry out disaster mapping of the entire County to guide building standards and land use bylaws.
- To revise the Code of Practice for the Design and Construction of Buildings and other Structures in relation to Earthquake (1973)
- To establish a quick response disaster management team at the sub County level. The National Operation Centre of the Office of the President chaired a key stakeholders meeting of emergency stakeholders and agencies.

12.2.2 Strategy for Solid Waste Management (SWM)

- To identifying and carry out environmental feasibility of land for solid waste management
- To provide for litter bins in all the urban nodes and source areas.
- To acquire and provide waste transfer trucks

- To encourage public-private partnerships in waste collection and disposal
- To promote public awareness on methods of sorting waste

12.2.3 Strategy for Storm Water Drainage and Sewerage Treatment

- To expand the existing stormwater drainages and provide new drainage channels in areas within the County that are prone to floods.
- To construct water retention facilities like retention ponds, dams, and tanks in areas within the County that are prone to flooding
- To make water harvesting a mandatory requirement in all development approvals.
- To enhance planting of trees in areas prone to flooding to reduce surface runoff

12.2.4 Promotion of Agro-Forestry and Green Economy

The issues include uncontrolled tree cutting, bush clearing, logging and deforestation; high demand for timber, charcoal and wood fuel; forest encroachment for farming; non- adherence to existing policies; Forest and bush fires.

- To enforce the policy on 'Farm Forestry Rules' in 2010 which requires that all farmlands increase their trees species to 10 percent per land hectare.
- To introduce farm forests as an income-generating activity.
- To establish active Women and youth groups in producing seedling and selling the same, such as "Trees for jobs programme" in the Department of Youth Development.

12.2.5 Strategy for Wildlife Conservation and Tourism Promotion

In order to resolve human-wildlife conflict, the following activities will be implemented:

- To identification and zoning of corridors for wildlife to remove the encroachment.
- To establish wildlife conservancies along corridors to maintain the habitat

12.2.6 Strategy for Water Resources Management, Water Supply and Sanitation

The following activities have been planned for the protection of water catchment areas:

- To harvest best practices in catchment management based on great improvement in water resources management.

- To control pollution of lakes and rivers by planting trees along the riparian reserves.
- To control encroachment and cultivation on riparian reserves/wayleaves, riparian areas.
- To support formation of Water Resource Users Associations (WRUAs) at the sub County levels.
- To provide sewerage networks for all urban areas.

12.2.7 Strategy for Conservation of Environmentally sensitive areas

- To protect and conserve National parks, wildlife corridors and wildlife dispersal areas.
- To zone and protect Wetlands, riparian areas and river banks.
- To demarcate and protect Water catchment areas including Ngong Hills, Loitokitok hills.

12.3 Transport and Infrastructure

12.3.1 Road Transport Development Strategies

- To upgrade C102 road from Oloitokitok through Kimana, Isara to Emali to class B.
- To upgrade class D road from Isara through Mashuru, Imaroro, Kaitoriori to Kajiado to class B status.
- To upgrade the Amboseli-Chyulu hills class E road to class B status.
- To upgrade the Oloiyiangani, Kisames, Kimuka to Ngong town to class B status.
- To upgrade to class B the road from Ngong town through Saikeri to Mosiro in Kajiado west subcounty. The road should eventually connect to Narosura in Narok county road C11 to Narok town.
- To limit direct access from properties to class A roads and have service lanes as an alternative to accessing properties adjacent to the roads especially in towns such as Ong'ata Rongai, Kitengela and Ngong towns.
- To limit the development of urban centres to only one side off Class A roads
- To introduce pedestrian walkways and cycling lanes on Ngong road from Embulbul into Ngong township to the junction with Kahara road.
- To introduce pedestrian walkways and cycling lanes on Forest line road to serve the settlements clustered along the route.
- To introduce cycling lanes along Kahara road and Ololua roads within the Ngong township boundary.

- Pedestrian walkways and cycling lanes to be constructed along Magadi road from Maasai Lodge area to Kandisi River.
- Pedestrian walkway and cycling lanes should be introduced along Magadi road C58 from the junction of Magadi road with Rimpa roads to the junction of Magadi road with the Kiserian-Isinya road.
- Pedestrian walkways and cycling lanes should be furnished with well-maintained streetlights for safety.

12.3.2 Railway Transport Development Strategies

- To have an impact in Kajiado it is proposed that the Magadi rail be upgraded to SGR standards.
- In addition to the proposed Kiserian SGR commuter rail and SGR commuter link should be considered between Kajiado town and Nairobi.

12.3.3 Air Transport

- It is proposed that the airstrip at Oloitokitok and Kajiado be upgraded to carry heavier traffic
- To upgrade all airstrip runways into bitumen standards

12.3.4 Water Provision

- To service the existing water services company and equip them to maximise output
- To service the current water reticulation system to reduce water losses.
- To ensure water services companies are adequately staffed
- To ensure water tariffs are affordable by offering incentives to water companies in the County.
- Expand the capacity of existing water companies by exploring alternative sources of water and increasing their water storage capacity.

12.3.5 Sanitation and Drainage

- To provide sewerage systems into Ngong, Ong'ata Rongai, Kitengela, Kiserian, Namanga, Isinya, Bissil, Kajiado and Magadi towns
- To equip Oldonyo Orok, Oloolaiser, Olkejuado and Nol-Turesh water companies with modern efficient sewerage treatment facilities.
- To ensure all roads especially in towns such as Ong'ata Rongai, Kitengela, Ngong, Kajiado town and Kiserian have storm drain.
- To have regular maintenance of roads to ensure drainage facilities are not blocked by solid waste or other foreign material.
- Control development to ensure laws regarding riparian land are enforced.
- Control development to allow green areas and avoid excessive surface runoff during storms.
- Encourage rainwater harvesting by building dams upstream of rivers.

- Control sand water harvesting in rivers across the County.
- Encourage reforestation and afforestation whereas controlling charcoal burning.

12.3.6 ICT and Mobile Connectivity

- To clear road reserves of illegal structures to reduce the cost of laying the fiber optic cables.
- To increase power connectivity through alternative sources of energy such as solar and wind energy.
- To collaborate with private companies providing voice and data services to invest more in ICT infrastructure increase signal strength and coverage.

Table 12.1: Transport and Infrastructure strategies

Problem	Project	Location	Actors	Timeframe
Poor intra-connection between Kajiado south sub county and Kajiado Town	To do a class A road between Olondi town joining Kitengela-Namanga road at Ngatatoek (Approximately 77Km)	Kajiado South and Kajiado central	KeNHA	Long term
Poor intra-county connectivity between Kajiado East and Kajiado West sub counties	To do a class A road between Oloibortoto town and Ilpolosat town through Kajiado town (Approximately 124Km)	Kajiado East, Kajiado central and Kajiado west	KeNHA	Long term
Poor inter-county connectivity between Kajiado county and the neighboring Narok County	To have a class A road from Ngong town towards the border of Kajiado and Narok counties (Approximately 56)	Kajiado North and Kajiado West	KeNHA	Long term
High Road Fatality	Have Zebra crossing on busy urban roads in Ong'ata Rongai across Magadi road, in Kitengela across Athi-river Namaga road and in Ngong towns	Kajiado North and Kajiado East	KeNHA/KURA	Short term
	To crack down on unlicensed public transport operators	All sub counties	CGK and Kenya National Police Service	Short term
	To ensure strict enforcement of traffic rules	All sub counties	Kenya National Police Service	Short term
	To construct pedestrian footbridges across truck roads in urban areas	Kajiado North and Kajiado East	KeNHA/KURA	Medium term

Problem	Project	Location	Actors	Timeframe
	To sensitize the public on road safety	All sub counties	CGK and NTSA	Short term
	To identify and mark blackspots with proper signage	All sub counties	KeNHA, KURA and NTSA	Short term
Traffic congestion in Ngong, Ong'ata Rongai and Kitengela	Clear road encroachment	Kajiado North and Kajiado East	CGK	Short term
	To have dedicated service lanes and limit direct access to properties adjacent to class A roads (Approximately 40Km)	Kajiado North and Kajiado East	KURA	Medium term
	To expand roads areas (Approximately 40Km)	Kajiado North and Kajiado East	KURA	Medium Term
	Construct adequate dedicated footpaths and cycling lanes to encourage the use of non-motorized transport	Kajiado North, Kajiado East and Kajiado central	CGK and KURA	Medium Term
	To have a Class A roads bypassing major towns (Approximately 70Km)	Kajiado North and Kajiado East	KeNHA	Long term
Poor rail connectivity	To expand and equip the rolling stock of the existing Magadi railway	Kajiado East, Kajiado Central and Kajiado West	CGK, and Tata chemicals	Short term
	To maintain the existing railway line in good working condition	Kajiado East, Kajiado Central and Kajiado West	Magadi Limited (TCML)	Short term
	To have the Athi river-Magadi railway line upgraded to SGR standards	Kajiado East, Kajiado Central and Kajiado West	National Government (LAPSET),CGK,	Medium term

Problem	Project	Location	Actors	Timeframe
			and Tata chemicals	
	To have the route extended for passengers from Kajiado through Athi river to Syokimau railway station	Kajiado East	National Government (LAPSET	Medium term
	To have Ngong, Ong'ata Rongai, Kiserian, Kajiado and Kitengela connected to Nairobi via the SGR commuter rail service	Kajiado North, Kajiado East and Kajiado central	National Government (LAPSET	Long term
Lack of pipeline transport and potential for Natural gas/oil	To step up sustain efforts to find natural gas and oil	All sub counties	National government	Long term
	To have an oil terminus in Kajiado town	Kajiado central	Kenya Pipeline Company(KPC)	Long term
	To establish a pipeline between Nairobi terminus and Kajiado town	Kajiado Central and Kajiado East	Kenya Pipeline Company(KPC)	Long term
Limited use of air transport usage	To upgrade all airstrip runways to bitumen standards	All sub counties	Kenya Airport Authority (KAA)	Medium term
	To lengthen runways to allow the landing of larger planes	All sub counties	Kenya Airport Authority (KAA)	Long term
Inadequate supply of safe drinking water	To service the existing water services company and equip them to maximize output	All sub counties	CGK	Short term
		All sub counties	CGK	Short term

Problem	Project	Location	Actors	Timeframe
	To service the current water reticulation system to reduce water losses			
	To ensure water services companies are adequately staffed	All sub counties	CGK	Short term
	To ensure water tariffs are affordable by offering incentives to water companies in the county	All sub counties	CGK	Medium term
	Expand the capacity of existing water companies by exploring alternative sources of water and increasing their water storage capacity	All sub counties	CGK	Medium term
	To construct dams to store stormwater	All sub counties	National government and CGK	Long term
	To develop a policy on water rain harvesting	All sub counties	CGK	Short term
	To sensitize the community on water conservation	All sub counties	CGK	Short term
	To expand water reticulation into rural areas	All sub counties	CGK	Long term
Flash floods	To ensure all roads especially in towns such as Ong'ata Rongai, Ngong, Kajiado towns and Kiserian have a storm drain	Kajiado North, Kajiado Central, Kajiado East	CGK and KURA	Short term
	Control development to ensure laws regarding riparian land are enforced	All sub counties	CGK	Short term

Problem	Project	Location	Actors	Timeframe
	To have regular maintenance of roads to ensure drainage facilities are not blocked by solid waste or other foreign material	All sub counties	KeNHA, KURA and CGK	Short term
	Control development to allow green areas to avoid excessive surface runoff during storms	All sub counties	CGK	Short term
	Control sand harvesting in rivers across the county	All sub counties	CGK	Short term
	Encourage reforestation and afforestation whereas controlling charcoal burning	All sub counties	Kenya forest Services	Long term
Poor Power Connectivity	To sensitize locals on solar energy harvesting technologies	All sub counties	CGK	Short term
	To extend the national grid in Kajiado county especially in Kajiado south	Kajiado South	Kenya Power and lightening company	Long term
Poor Access to ICT services	To have well-equipped community ICT centers in each sub county	All sub counties	PPP (Public private partnership) and CGK	Long term
	To clear road reserves of illegal structures to reduce the cost of laying the fiber optic cables	All sub counties	CGK	Short term

Problem	Project	Location	Actors	Timeframe
	To increase power connectivity through alternative sources of energy such as solar and wind energy	All sub counties	Kenya Power and Lightening company	Long term
	To collaborate with private companies providing voice and data services to invest more in ICT infrastructure, increase signal strength and coverage	All sub counties	CGK	Short term
	To expand the fiber optic network to cover more areas in the county	All sub counties	PPP (Public private partnership) and CGK	Long term
Lack of proper sanitation facilities	Public sensitization on alternative healthy waste disposal methods.	All sub counties	CGK	Short term
	Construction of sewerage treatment plants in each sub county complete with sewerage connection for household especially in urban areas	All sub counties	CGK	Long term

Emerging Issues	Short term strategy	Long term strategy	Responsibility
Poor connection intra-County between Kajiado south sub County and the County headquarter, Kajiado town		• To do a class A road between Olondi town joining Kitengela-Namanga road at Ngatatoek (Approximately 77Km)	KeNHA
Poor intra-County connectivity between Kajiado East and Kajiado West sub counties.		• To do a class A road between Oloibortoto town and Ilpolosat town through Kajiado town (Approximately 124Km)	KeNHA
Poor inter-County connectivity between Kajiado County and the neighbouring Narok County		• To have a class A road from Ngong town towards the border of Kajiado and Narok counties (Approximately 56)	KeNHA
Inadequate inter-County connectivity between Oloitokitok and Emali		• To upgrade the class C road from Oloitokitok to class A (Approximately 100Km)	KeNHA

Emerging Issues	Short term strategy	Long term strategy	Responsibility
Traffic congestion in Ngong, Ong'ata Rongai, Kitengela and other towns	• Clear road encroachment	• To limit town development to one side of major trunk roads	County government, and
		• To have a class A road bypassing major towns (Approximately 70Km)	KeNHA
	• To have dedicated service lanes and limit direct access to properties adjacent to class A roads (Approximately 40Km)		KURA
	• To expand roads in urban areas (Approximately 40Km)		KURA
	• Construct adequate dedicated footpaths and cycling lanes to encourage the use of non-motorised transport		County governments/KURA
High road fatality rates	• Have zebra crossing on busy urban roads in Ong'ata Rongai across the Magadi road, in	• To construct pedestrian foot bridges across trunk roads in urban areas	

Emerging Issues	Short term strategy	Long term strategy	Responsibility
	Kitengela cross Athi river- Namanga road and in Ngong town. • To crack down on unlicensed public transport operators. • To ensure strict enforcement of traffic rules.	• To sensitize the public on road safety. • To identify and mark blackspots with proper signage.	
Poor rail connectivity	• To expand and equip the rolling stock of the existing Magadi railway. • To maintain the existing railway line in good working condition • To have the route extended for passengers from Kajiado through Athi river to Syokimau railway station	• To have the Athi river-Magadi railway line upgraded to SGR standards • To have Ngong, Ong'ata Rongai, Kiserian, Kajiado and Kitengela connected to Nairobi via the SGR commuter rail service.	National Government (LAPSET), County government and Tata Chemicals Magadi Limited (TCML
Lack of pipeline transport and potential for natural gas/oil	• To step up and sustain efforts to find natural gas and oil	• To have a have an oil terminus in Kajiado town • To establish a pipeline between Nairobi terminus and Kajiado town	Kenya Pipeline Company

Emerging Issues	Short term strategy	Long term strategy	Responsibility
Limited use of air transport usage	• To upgrade all airstrip runways to bitumen standards.	• To lengthen runways to allow landing of larger planes	Kenya Airport authority (KAA)
Inadequate supply of safe drinking water	• To service the existing water services company and equip them to maximise output • To service the current water reticulation system to reduce water losses. • To ensure water services companies are adequately staffed • To ensure water tariffs are affordable by offering incentives to water companies in the County.	• Expand the capacity of existing water companies by exploring alternative sources of water and increasing their water storage capacity. • To construct dams to store storm water • To come up with policy on water rain harvesting • To sensitize the community on water conservation • To expand water reticulation into rural areas.	Oldonyo Orok, Oloolaiser, Olkejuado, Nol-Turesh water companies and the County government of Kajiado
Flash floods	• To ensure all roads especially in towns such as Ong'ata Rongai, Kitengela, Ngong, Kajiado town and Kiserian have storm drain.	• Control development to ensure laws regarding riparian land are enforced. • To have regular maintenance of roads to ensure drainage facilities are not blocked by	Kajiado County government, KURA and national government

Emerging Issues	Short term strategy	Long term strategy	Responsibility
		solid waste or other foreign material. • Control development to allow green areas and avoid excessive surface runoff during storms. • Control sand water harvesting in rivers across the County. • Encourage reforestation and afforestation whereas controlling charcoal burning.	
Poor power connectivity	• To sensitize locals on solar energy harvesting technologies.	• To extend the national grid in Kajiado County especially in Kajiado south	Kenya Power and Lightening company
Poor Access to ICT services	• To have well equipped community ICT centers in each sub County • To clear road reserves of illegal structures to reduce the cost of laying the fiber optic cables.	• To increase power connectivity through alternative sources of energy such as solar and wind energy. • To collaborate with private companies providing voice and data services to invest more in ICT infrastructure increase signal strength and coverage	

Emerging Issues	Short term strategy	Long term strategy	Responsibility
		• To expand the fiber optic network to cover more areas in the County	
Lack of proper sanitation facilities	• Public sensitization on alternative heathy waste disposal methods	• Construction of sewerage treatment plants in each sub County complete with sewerage connection for household especially in urban areas.	Kajiado County government

12.4 Human Settlement

The human settlement strategy outlines the solutions to the challenges that are faced by the human settlement sector in the County. The overall objectives of the human settlement improvement strategy are to improve social, economic and environmental qualities of human settlements. Table 12.2 shows the proposed strategies for improvement of human settlement.

Table 12.2: Human Settlement Strategies

Problem	Causes	Objectives	Strategy	Programme	Indicators
Rapid Urbanization	Rapid urban immigration especially Rural urban migration. High population natural growth rate.	To accommodate the bourgeoning urban population sustainably.	Plan all towns in the County.	Planning all unplanned towns.	Planned towns. Enforcement of development control
Uneven distribution of settlements and Population	Differential in natural resources endowment, infrastructure and social amenities. Land holding patterns	To attain a sustainable distribution of settlements and population	Establish the sustainable settlements and population carrying capacities for the various agro ecological zones.	Land carrying capacity assessment.	Improved infrastructure A justifiable & sustainable human settlements & population spatial distribution
Subdivision of land into small parcels	High population densities. Uncontrolled land subdivision and land use development	To attain sustainable land parcels. To control land subdivision into unsustainable sizes.	Control land subdivision without a guiding land use plan.	Prepare & enforce land use plans (towns & regional spatial plans) indicating minimum land sizes in different areas/zones.	County & towns spatial plans. Controlled Land subdivision
High Levels of Poverty	Falling agricultural production.	To reduce levels of poverty.	Economically empower the poor	Employment & economic opportunities creation.	Increase household income

Problem	Causes	Objectives	Strategy	Programme	Indicators
	Unemployment.				Reduced poverty levels
Poor quality of housing	Poverty	To improve housing quantity and quality.	To improve housing quality To encourage urban renewal	Domesticate national housing Policy. Promote low-cost housing projects. Slum upgrading. Research on affordable building materials.	Affordable quality houses especially for the low-income population.
Inadequate infrastructure and Social amenities	Low public investment in infrastructure & social amenities. Lack of spatial planning.	To increase & improve infrastructure and social amenities	Improve the quantity & quality of the infrastructure and social amenities	Assessment, Planning & installation of infrastructure and social amenities.	Additional & improved infrastructure & social amenities.
Unplanned urban centres	Limited planning capacity and resource allocation	To ensure all markets & towns are planned.	To plan all markets & towns. Define urban boundaries	Planning all unplanned centres	More planned markets & towns.
Urban sprawl	Undefined urban boundaries & uncontrolled urban growth	To ensure all markets & towns are planned & development control is enforced.	To contain urban sprawl through spatial planning and development control.	Planning all unplanned centres	More planned markets & towns. Compact towns

Problem	Causes	Objectives	Strategy	Programme	Indicators
Development of settlements on road reserves.	Landlessness. Lack of enforcement. Political influence	To remove illegal developments on road reserves.	To keep all road reserves free from illegal developments & encroachment	Removing all encroachments on road reserves. Enhance capacity for development control.	No illegal developments on road reserves.
Traffic congestion in growing towns	Unplanned towns. Lack of vehicle parking spaces. Increase of number of vehicles & overreliance on private vehicles as a mode of transport Encroachment on road reserve	To reduce traffic jams in towns.	Reduce traffic congestion/ jams in towns	Plan the towns & provide adequate vehicle parking spaces. Discourage overreliance on motor vehicles & Promote NMT	Less vehicle congested urban centres with more NMT.
Informal businesses on the road reserves and open areas	Lack of markets for trading	To reduce informal businesses on the road reserves.	To provide markets for the traders.	Identify areas for markets for the informal businesses.	Less trading on the road reserves. More markets.
Scattered Rural Settlements	Nomadic way of life.	To reduce dispersed human settlements.	To encourage nucleated settlements surrounded by farmlands.	Plan the markets and towns and provide them with adequate infrastructure, social services, affordable houses, employment and economic opportunities.	Well planned centres. Reduced rural settlement densities

Problem	Causes	Objectives	Strategy	Programme	Indicators
Poor Urban-Rural Linkages	Low allocation of resources.	Improve Rural-urban Linkages	Improve roads linking urban to Rural areas	Rural Roads improvement	Improved rural roads.
Increasing human settlements around ecologically sensitive areas.	Lack of an area action plan. Uncontrolled development.	To ensure development that promotes lake conservation	Prepare & enforce an action area plan. Enforce the lake management plan	Area spatial plan. Creating Enforcement capacity.	Development that is compatible with lake conservation

12.5 Agriculture

The agriculture strategy aims at achieving the following:

1. **Improve agriculture-** Parts of Kajiado County especially Kajiado south are high potential agriculturally. This potential is highest in Kajiado south and it can be exploited for the benefit of the whole County. Farmers' cooperatives are key to organized marketing systems for agricultural produce. There is also need to develop a cash crop for the County that can be fully exploited as a value chain, i.e. melons, tomatoes, onions.

2. **Utilize farmers training centres as centres of excellence-** There are farmers training centres in the County. They need to be developed into centres of excellence. Likewise, improved extension services in all sub counties are critical for increasing agricultural productivity.

3. **Support Pastoralism**

   Some of the sub counties highly rely on pastoralism as the mainstay of their people's livelihoods. This is a vital sector that should be developed optimally through the exploitation of the full value chain of livestock keeping.

   The ranches should be clustered in groups and services be provided at a convenient central location. This central location should be planned and developed as a digital village with amenities such as housing, abattoir/slaughter slab, cold rooms, water and electricity. Farmers to bring their animals for slaughter at this central location on designated days based on an off-take programme for marketing.

   Support services like veterinary service and Grass production should be fully harnessed as climate change vagaries will in times to come adversely affect the natural grasslands.

4. **Develop modern markets and Marketing structures.**
   The rate of self-employment in Kajiado County is very high, however, the trader either work in *makeshift sheds* or rented premises. This category of workers requires decent working spaces, therefore the need to develop market structures.

Sub-County Shared Vision for Agriculture

The sub counties of Kajiado County all had their aspirations wrapped in a sub County vision. The vision, for most sub counties is to have a conducive environment for trade, business education etc. Below is a summary of participants' agriculture aspirations for their sub-counties by the year 2035.

Agriculture aspirations of participants by Sub-County (Vision 2035)

- Kajiado North: Modern market
- Kajiado South: Developed markets in the area; Well-structured market
- Kajiado West:
- Kajiado East: Water for agricultural production, Agriculture extension services to the locals
- Kajiado Central: Industry for leather and milk in Kajiado County; An open market for livestock produce

Table 12.3: **Agriculture Strategy Implementation Matrix**

Problem	**Causes**	**Objectives**	**Locality**	**Strategy**	**Programme(s)**	**Actor**	**Time Frame**	**Indicators**
Traditional Mind set	Cultural beliefs	Farming as a business	Countywide	Mindset change	Awareness creation and education	Kajiado County Gov (KCG)	Immediate and continuous	Adoption of commercial farming practices
Land subdivision esp group ranches	Population growth and modernity	To halt land subdivision esp. group ranches	Countywide	Community empowerment	Awareness creation and education	Kajiado County Gov (KCG)	Immediate and continuous	Reduced rate of land subdivision
Increased drought/climate change	Global warming	Climate-smart agriculture	Countywide	Holistic Management of rangelands	Soil/water conservation Grazing Management Fodder conservation	Kajiado County Gov	Immediate and continuous	Fodder and water availability Soil cover and animal body condition
Low productivity for crops, livestock and fisheries	Poor crop husbandry Practices	Increase crop productivity	Countywide	Improve crop production services	Robust extension services • Farmer training schools • Improve inputs supplies • irrigation projects	(KCG), Department of Agriculture	Immediate and continuous	• Number of extension workers per ward • Farmer visitations • Number of trainings • Availability of inputs
	Poor livestock husbandry Practices	Improve Livestock Productivity	Countywide	Enhanced livestock services	• Enhanced extension services	KCG Department of livestock	Immediate and continuous	• Farmer visitations • Number of trainings

Problem	Causes	Objectives	Locality	Strategy	Programme(s)	Actor	Time Frame	Indicators
					• Improved fodder production • Disease control and AI • disease free zones • Range management			• per capita fodder production • Inseminations per month • decrease in disease incidence
	Low fish production	Enhance fisheries Production	Countywide	Increase fish production	• Fisheries extension services • Fingerlings production • Fish ponds expansion	KCG Department of fisheries	Immediate and continuous	• Number of fisheries extension workers • Fingerlings production per month • Number of fish ponds and kgs of fish produced
	Lack of agricultural credit	Avail credit to farmers	Countywide	Create agricultural credit revolving fund	• loan scheme	KCG	Immediate and continuous	• number of agribusiness loans
High post-harvest Losses	Nonexistent to inadequate	Provide adequate agricultural produce storage facilities	Countywide	Public private partnerships (PPPs)to build	• Crops produce storage facilities	KCG	Short term	Number and capacity of storage / cooling facilities

Problem	Causes	Objectives	Locality	Strategy	Programme(s)	Actor	Time Frame	Indicators
	storage facilities			storage facilities	• Milk Cooling plants • Fish cooling plants • Slaughter houses			
Lack Value addition	Inadequate to nonexistent value addition	• Establish / enhance agricultural produce value chains • Establish agribusiness industries/ parks	Countywide	Public private partnerships (PPPs)to build storage facilities	• Crops value chains • Milk Value chain • Meats value chains • Leather value chain	KCG	Immediate and continuous	• Number of value chains • PPPs in operation • jobs created • Revenues earned • Number of agribusiness industries/ parks
Inadequate marketing systems	inefficient markets	• To provide new/efficient markets • Create new/strengthen cooperatives	Countywide	• Create and support markets in urban centers • Establish Produce cooperatives	• Build wholesale farmers markets • Agriculture information centers • farmers cooperative societies	KCG	Immediate and continuous	• Number of wholesale markets • Number of agriculture information centers • New markets created • Number of new cooperatives

12.6 Economic Strategy Proposals

Numerous challenges have been identified that inhibit the economic potential of major income-generating sectors in Kajiado County. This section outlines the strategies that can address these challenges and enhance the potential for County revenue generation and household incomes.

Table12.6: Economic Strategy Proposals

Problem	Causes	Objectives	Locality	Strategy	Programme(s)	Actor	Time Frame	Indicators
- Fluctuations in revenue collection. - Inefficiencies in revenue collection.	Poor efficiency and lack of accountability in tax collection	To enhance tax collection efficiency and accountability	Countywide	Use of technology in tax collection	Implementation of an electronic tax collection system	KCG	Immediate and continuous	Percentage of taxes collected using the e-tax system
- Businesses located in unauthorized areas (road reserves, roundabouts and streets) - Barriers to trade among SMEs.	Lack of adequate and affordable spaces for conducting business.	Kajiado, Ngong, Kitengela, Oloitokitok, Kiserian, Namanga and Masimba.	Kajiado, Ngong, Kitengela, Kiseria, Namanga and Masimba	Construction of jua kali shades	Construction and leasing of juakali shades by the County government	KCG	1-3 years	Construction of 320 shades by 2021
-Low industrial activity in the county	Lack of adequate land set aside for	Enhance Kajiado attractiveness as an	Kajiado East	Establishment of an industrial park	Setting land aside to establish an industrial park	KCG	4-6 years	An established industrial park by 2025

Problem	Causes	Objectives	Locality	Strategy	Programme(s)	Actor	Time Frame	Indicators
-Failure to capitalize on the proximity to Nairobi and the Athi River industrial park -High unemployment	industrial development	industrial hub. Boost employment Increase revenue generation for the county						
High cost of doing business	Multiple regulatory requirements, especially for SMEs	Ease business establishment and running in the county	Countrywide	Implementation of measures to lower the cost of doing business and limit the regulatory hurdles.	- Give tax breaks to new investors in hotel and hospitality industry - Give loan facilities to SMEs - Reduce the operational requirement of SMEs to only a single business permit	KCG	Immediate and continuous	Increase in the number of new businesses and increased business survival for the first 3 years.

CHAPTER 13: SPATIAL DEVELOPMENT FRAMEWORK

13.1 Overview

From the analysis of the existing conditions in Kajiado County identifying the development challenges and potentials, the future development of the County can be defined in different concepts. A structure plan for the County is prepared based on a comprehensive analysis of the County using various tools such as land capability analysis, land availability/ suitability analysis, transportation analysis, infrastructure gap analysis, human settlements analysis, and environmental sensitivity analysis. In particular, is also informed by inputs collected from stakeholder engagements.

As outlined by the analysis in the previous chapters, Kajiado County is facing a myriad of challenges which if unchecked could result in unsustainable urban development in the County. The consequences include increased forest degradation, the subdivision of land into uneconomic sizes, and unchecked urban sprawl all of which would have devastating impacts on incomes and the general livelihoods of the residents. The spatial structure plan is therefore important because the various County problems all have an implication on land and therefore require a land-based solution. The structure plan is prepared with the aim of guiding the integrated development of all sectors on space.
The plan describes how land use distribution patterns would best accommodate the various types of development and activities at various stages of the County's growth. This is seen in terms of population growth and the demand for land to accommodate housing, industry, commercial, institutional, public utility and public purpose. This was derived from the analysis of existing development and development needs identified by stakeholders and the commonly agreed on vision for the County. The strategies are based on the possible theoretical regional growth concepts giving rise to various development alternatives.

The plan seeks to harmonize the various sectoral developments and give broad guidelines for their linkage and implementation. In this way, the CSP provides a spatial tool for multi-sectoral development which is aimed at providing sustainable development to respond to the formulated County vision.

13.2 Proposed Spatial Structure

From the analysis conducted on the development conditions, constraints and opportunities for Kajiado County, the importance of land and control of uses on it has been demonstrated. The critical role of space as a bedrock for economic development and sound environmental management has been identified and the need to guide the use of that space. In Kajiado, the plan

seeks to use a double-pronged strategy to enhance development and achieve the plan vision by:

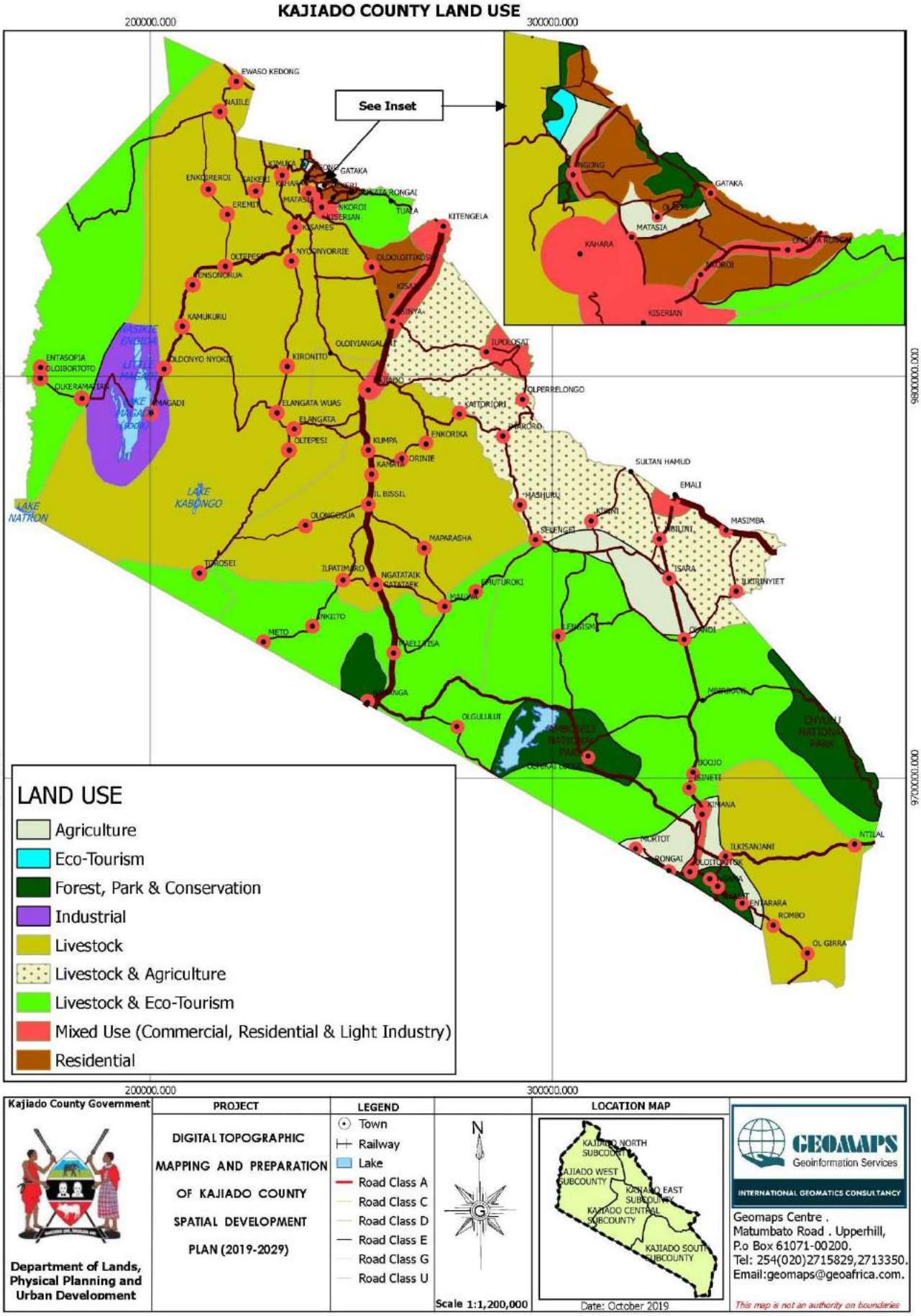
1. Equitable distribution of development in all the Sub-Counties and
2. Securing the competitiveness of Kajiado County within the NMR.

To achieve these aspirations and make the County a competitive livestock, agriculture, and tourism hub, the following spatial concept is developed. The structure plan is informed by the synthesis of the thematic analysis. The broad objectives that the spatial structure seeks to achieve are:

1. Promotion of livestock development and value addition
2. Promoting conservation and sustainable utilisation of natural resources
3. Improving service provision and infrastructure throughout the County
4. Promoting sustainable urban developments
5. Promoting tourism and cultural heritage
6. Improving the people's livelihood

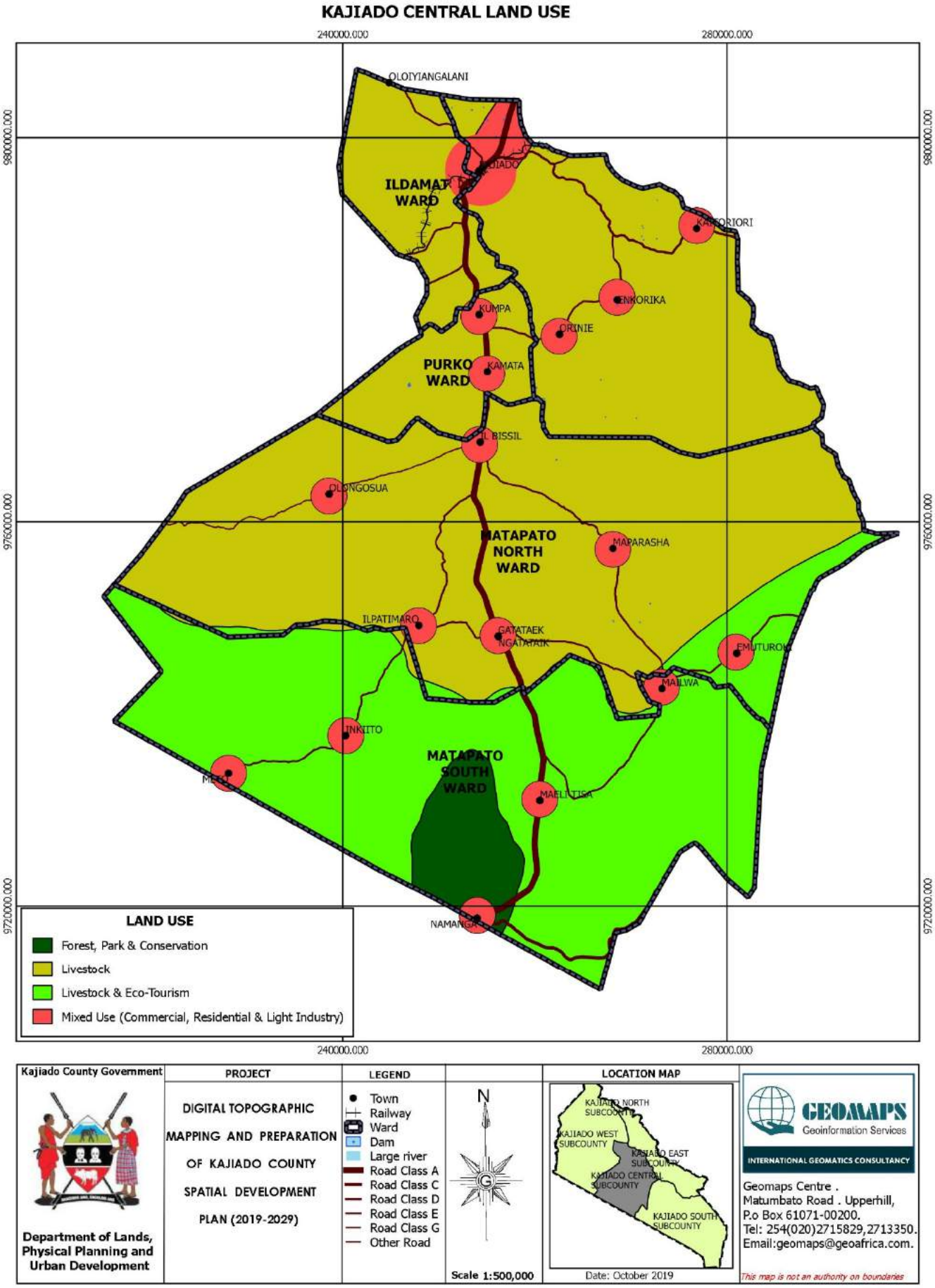
13.3 Proposed Land Use Plan and Guidelines

Map 13.1 gives a proposal on how land use in the county should be structured. The land use proposals have also been provided at sub-county level and illustrated using different maps (see Maps 13.2 to 13.6). The classification of the land uses has been proposed to include the following:



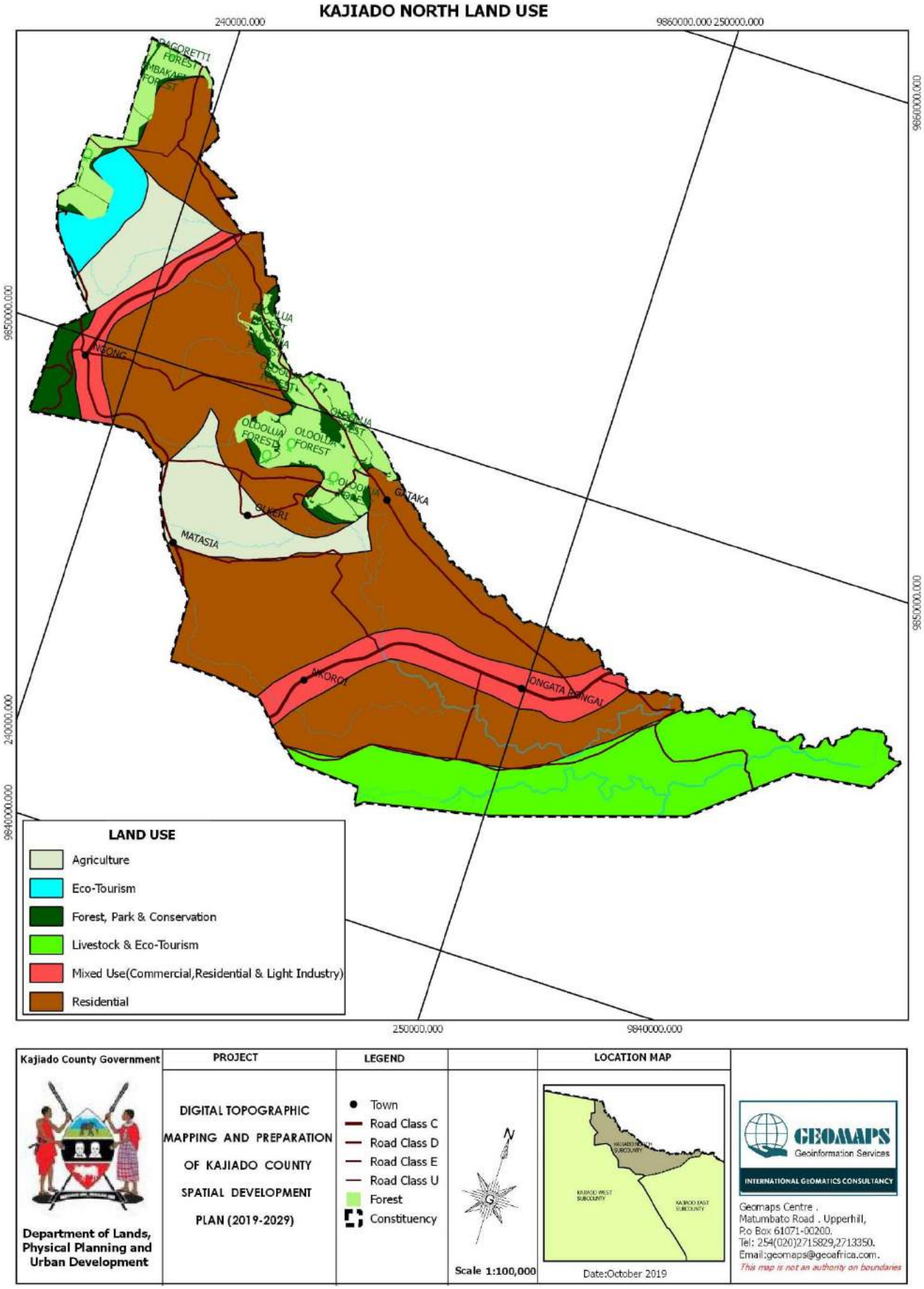
Map 13.1: Proposed Land Use Structure

Source: Geomaps 2019



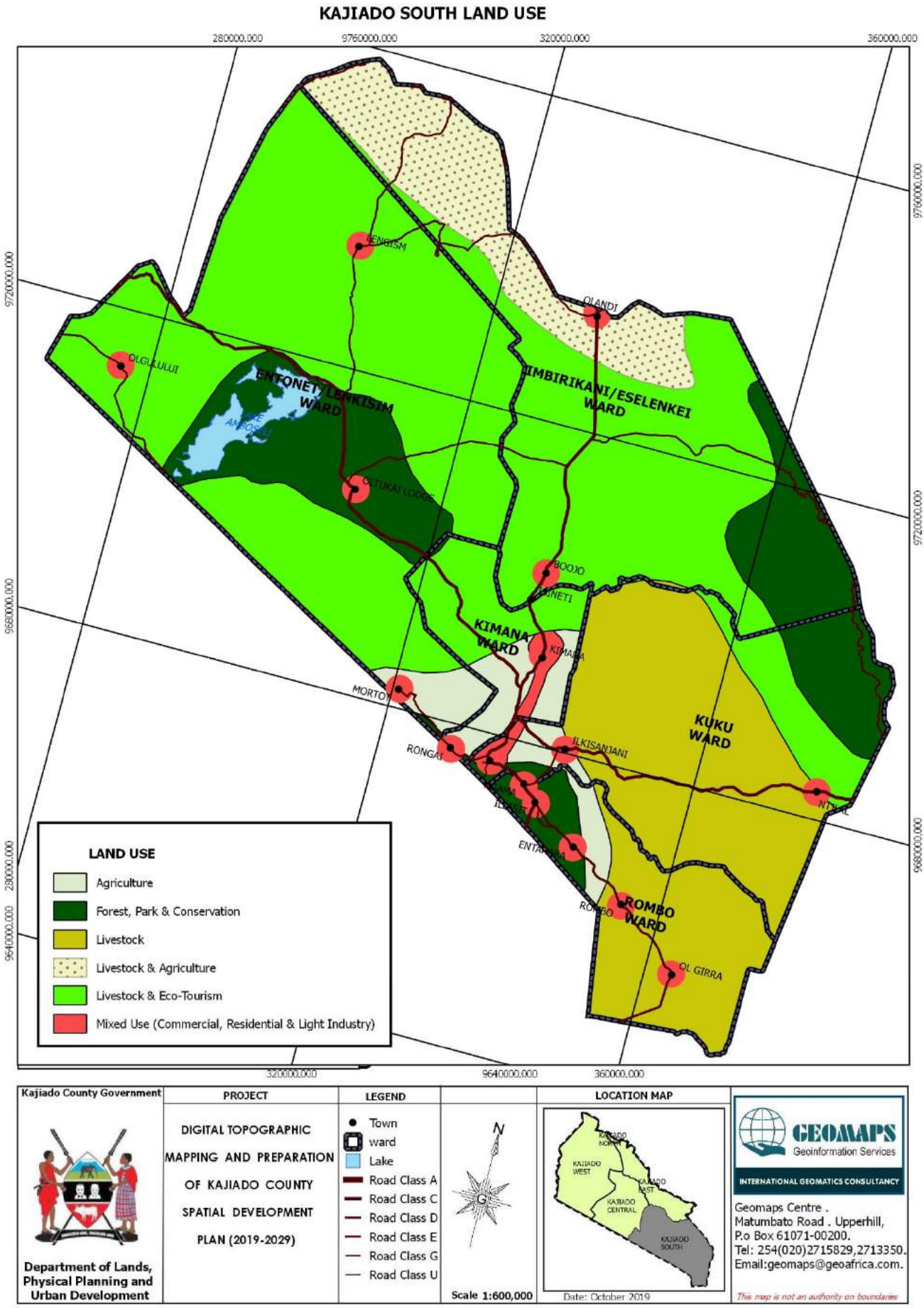
Map 13.2: Proposed Land Use Structure for Kajiado Central

Source: Geomaps 2019



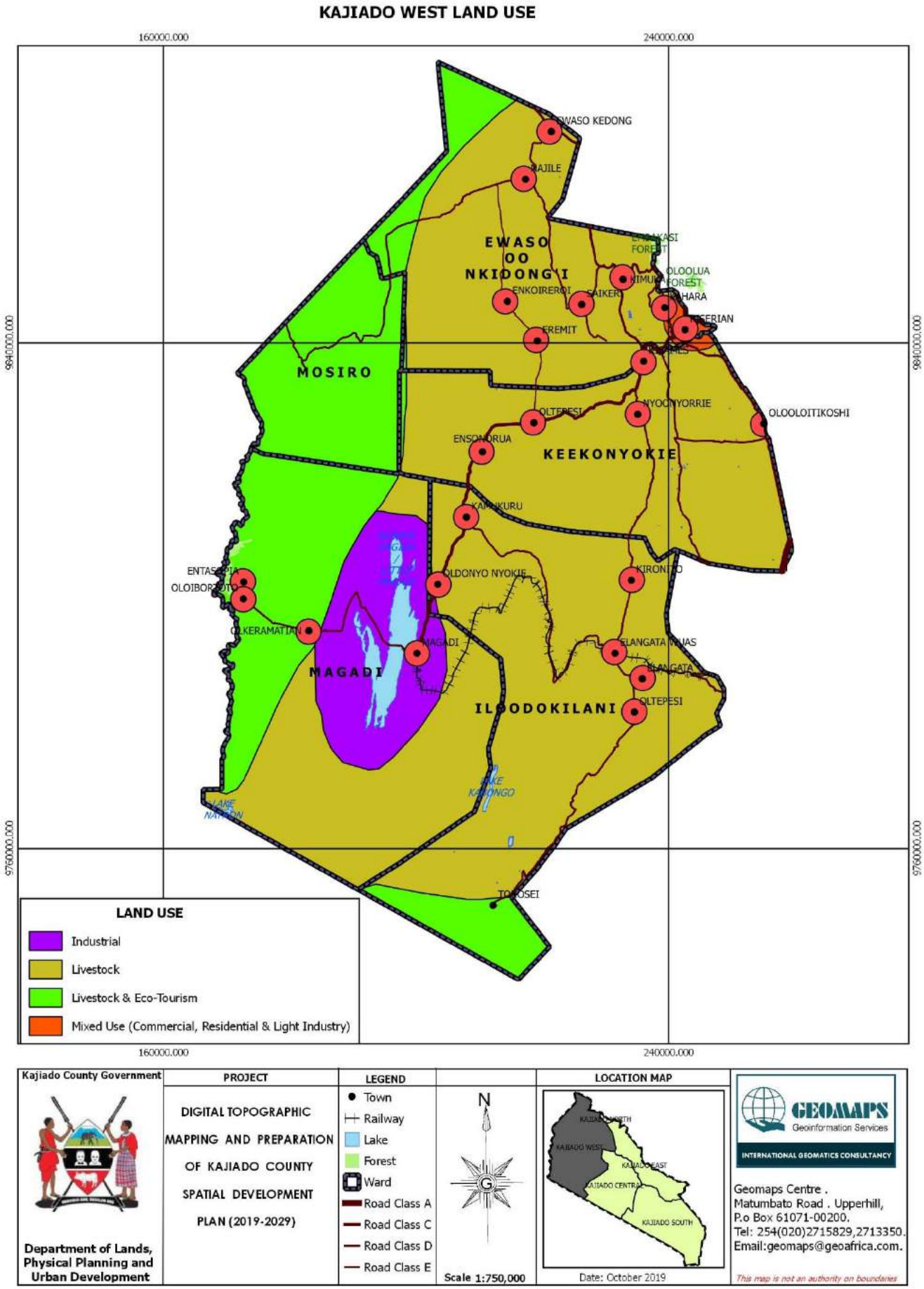
Map 13.3: Proposed Land Use Structure for Kajiado North

Source: Geomaps 2019



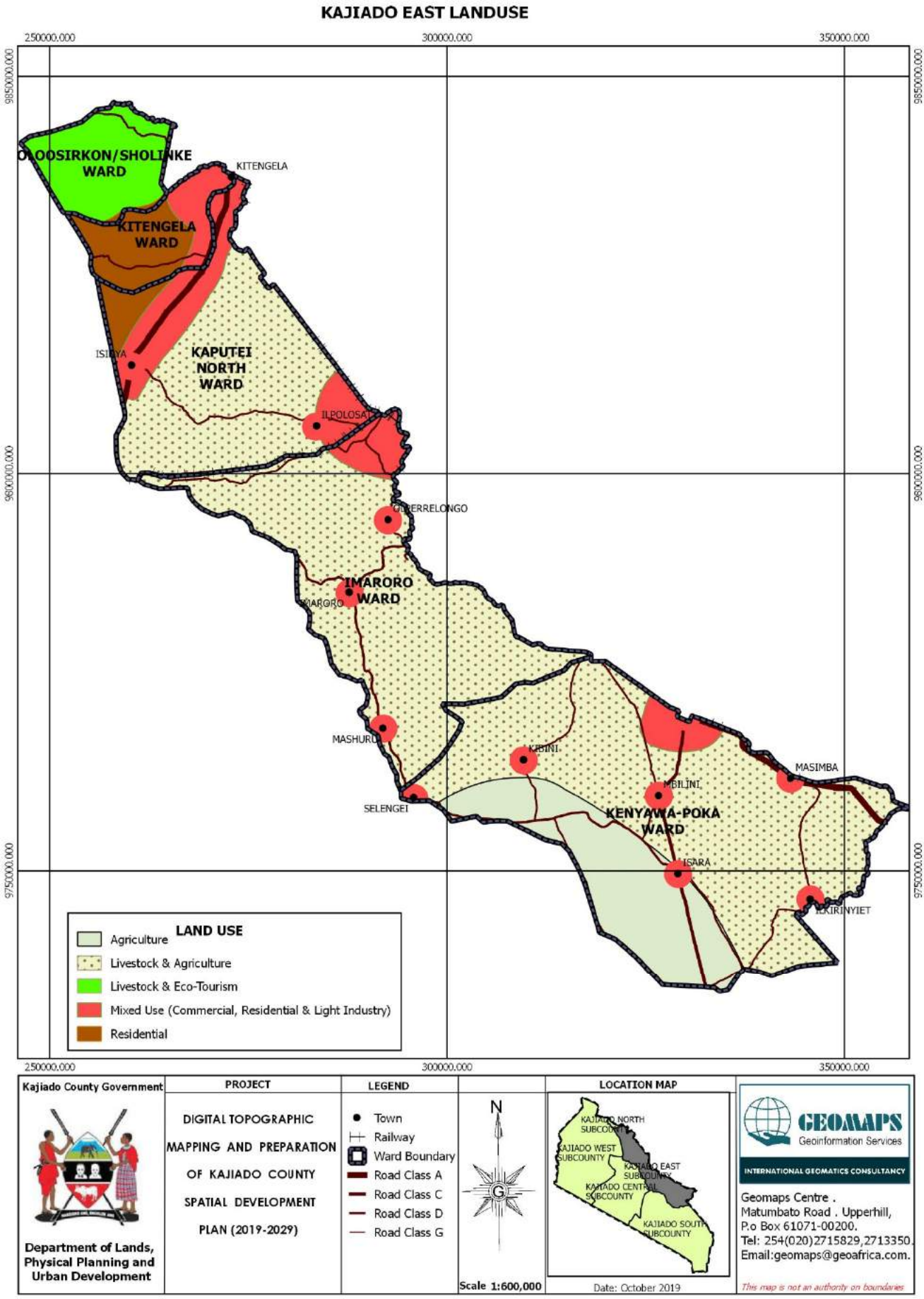
Map 13.4: Proposed Land Use Structure for Kajiado South

Source: Geomaps 2019



Map 13.5: Proposed Land Use Structure for Kajiado West

Source: Geomaps 2019



Map 13.6: Proposed Land Use Structure for Kajiado East

Source: Geomaps 2019

Table 13.1: Development Guidelines

Land Use Zone	Sub Zone	Key Defining Element	Permitted Use	Land Use Regulation
Settlement	Urban Areas	Towns Development Corridors	• Urban settlement development	• Proper planning of all the urban areas • Prevent linear sprawl • Upgrading of services • Promote mixed-use developments • Strict development control • Min land size 0.045ha
	Rural Settlements	Entire County	• Villages and service center development •	• Promote clustering around small urban centers, promote as service centers as primary areas of industrialization • Promote specialization of centers • Strict control of land subdivision
Conservation and Protection	Forestry/ Agroforestry	Steep areas all over the county	• Tourism • Afforestation • Agro-forestry	• Terracing, gabions, • Protection of forests and wetlands
	Riparian Zone	• Along major rivers • Wetlands	• Afforestation • Agroforestry	• Riparian buffer demarcation and gazettement • Water abstraction control • Sand harvesting control

Land Use Zone	Sub Zone	Key Defining Element	Permitted Use	Land Use Regulation
	Protected Area	Existing forest and parks	• Ecological conservation. • Eco-tourism promotion	• Demarcation and gazetting • Targeted afforestation • Re-establishment of brush and grass cover
Agriculture	Intensive Mixed Farming Zone Livestock development	Undulated terrain with steep slopes	Cultivation • Mixed farming • Fruit cultivation Livestock production	• Control of land subdivision • Sustainable cultivation practices • Intensification of production • Automated production • Development of complementary value addition industries
	Irrigation Horticulture Zone	Along major rivers Identified lowlands and wetlands	Irrigated Agriculture	• Proper soil conservation strategies • Efficient water use • Control use of farming chemicals. •
Industrial	Proposed Agro-processing Zone	At every sub county throughout the county	Agro-processing Industries Livestock value addition industries	• Demarcation and land banking • Proper planning • Pollution control
	Proposed Industrial Zones	At Kitengela, Kisaju, Imbirikani	• Heavy Industries	• Demarcation and land banking • Proper buffers to industrial zones • Pollution control and proper waste management • Min land size 1ha
Commercial		At Kajiado Kitengela Ngong	• Commerce and trade • Administration • Civic functions	• Detailed planning

Land Use Zone	Sub Zone	Key Defining Element	Permitted Use	Land Use Regulation
		Kiserian Ong'ata Rongai Namanga All urban centers	• Social Services and facilities • Recreation and hospitality	• Provision of appropriate infrastructure • Enforcement of plans • Landscaping and enhancement of outdoor spaces • Min land size to be prescribes

For purposes of implementation of the land use plan, it is recommended that all the towns and zones should have detailed integrated spatial development plans so as to allocate different spatial representation for each activity. This integrated spatial development plan will provide detailed development guidelines.

13.4 Development Guidelines

The following standards have been proposed to guide each proposed land use development. However, it is noted that detailed land use plans for the various urban areas and development zones will be prepared giving detailed development guidelines for each.
Broadly, the land uses in the County can be grouped into rural and urban uses.

Rural Land Development

The rural land which covers the largest part of the County is utilized for livestock development, agriculture and conservation.

1. For the agricultural land the following guidelines are proposed.

Table 13.2: Proposed guidelines for agricultural land

Scale	Acreage (acres)
Small Scale	1-5
Medium	5-10
Large Scale	Over 10
Range land	Over 30

2. For the livestock development zones and ranches subdivisions are to be prohibited and instead the planning of centres within the livestock

zones provided with all necessary infrastructure and services while the rest of the land is left for grazing. Figure 11.1 below shows a conceptual model for a center within the livestock ranching zone. The philosophy behind this model is that as the nomadic life continues within the ranches, there can be integrated settlement centers of about 500ha with support facilities and where a majority of the population within the ranches can settle.

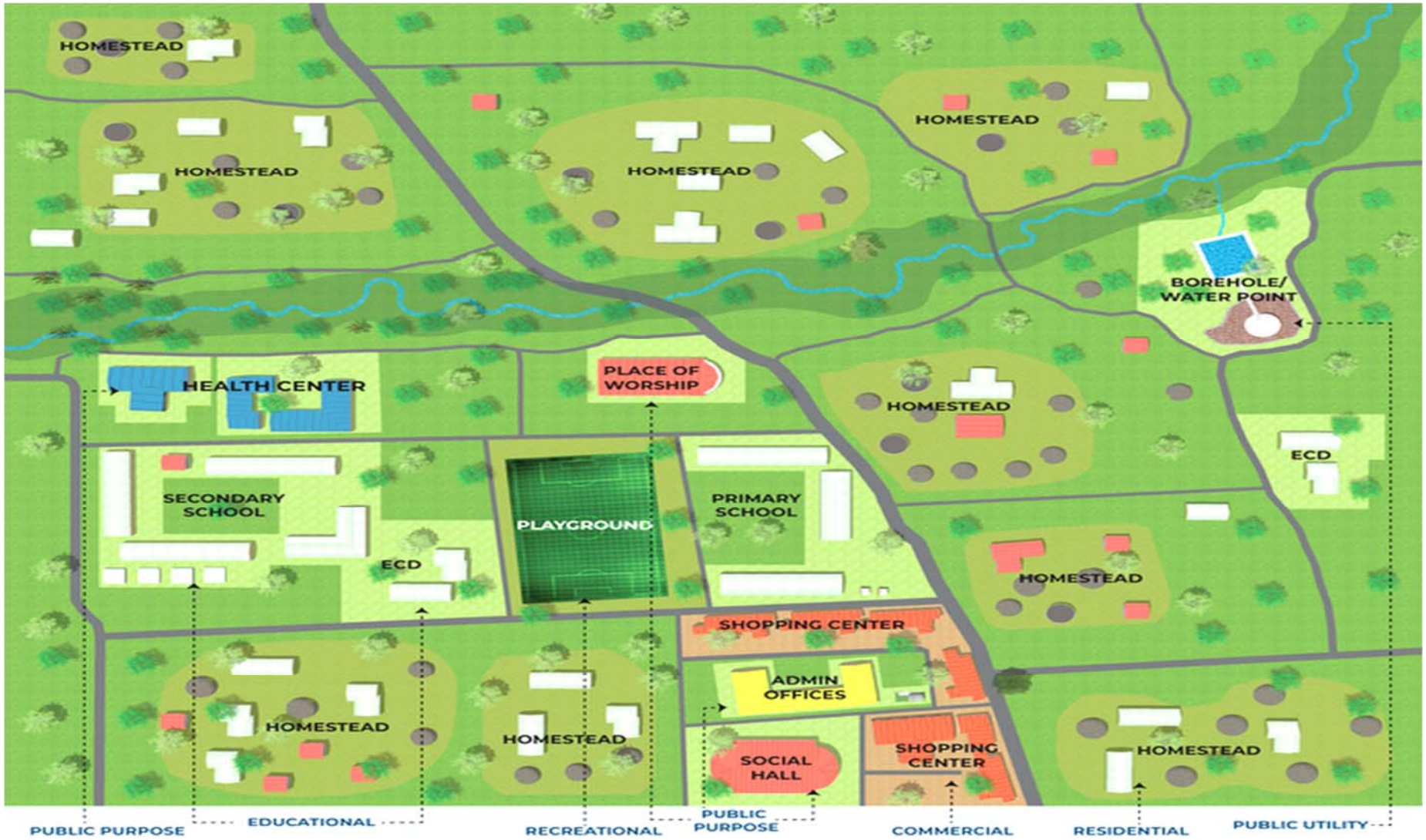


Figure 13.1: Conceptual model for service center in the ranches

3. The areas for conservation are proposed to have a 5Km buffer around them.

Urban Land Development

Under Urban Areas and Cities Act, 2011, urban areas are classified into three categories and with defined population thresholds. These categories are as follows:

- Town with a population threshold of 10,000
- Municipality with a population threshold of at least 50,000
- City with a population of at least 250,000

From the above population thresholds, none of the urban centers can qualify for the status of a city or municipality unless amendments to the Act are effected or under special consideration as provided for in the Act. However, Ngong, Kiserian and Ong'ata Rongai have been merged to constitute Ngong Municipality while Kajiado has been given special consideration due to its status as County headquarters. To effectively manage urban development and minimize on urban sprawl, the following area thresholds are recommended.

Table 13.3: Classification of Urban centres

Urban Area Category	Area (Km^2)
*Market center	1
Town	15
Municipality	60

**the market centers provide lower level services to rural areas and later may grow to bigger urban centers.*

For sustainable development of these urban areas, support services both physical and social infrastructure should be provided.

It is proposed that detailed urban plans will be prepared for all the centres in the County. For a general guide, it is proposed that the following be observed.

1. **Residential Development**

Table 13.4: Proposed Land Use Development for Residential Development

Housing Densities	Proposed Minimum Land Sizes	Necessary Facilities
Low Density	½ Acre (0.2 Ha)	• Recreational facilities • Community facilities • Roads and streets • 10% of residential area should be covered by urban agriculture

Medium Density	1/4 Acre (0.1 Ha)	• Recreational facilities • Community facilities • Roads and streets • 10% of residential area should be covered by urban agriculture
High Density	Below 1/8 Acre (0.05 Ha)	• Commercial water points should be provided for informal settlements (At a distance of 500m from each other, preferably occupying an area of 3m x 3m. • 1 toilet block is required for every 100m where there is no sewer.

The residential zones are proposed to have necessary infrastructure such as roads, water, power and waste management.

2. Industrial developments are proposed to have a minimum of 2.5 acres plots.
3. Commercial development
   Neighborhood commercial- 0.05 ha minimum land size
   Main commercial- 0.1ha minimum land size
   The commercial plots are to be served with the necessary infrastructure and access.

Detailed development guidelines prepared in consultation with the stakeholders in Kajiado County have provided in Table 13.4. The guidelines give policy guiding the minimum subdivisions and the development application procedure for Kajiado County.

Table 13.5: Subdivision Guidelines

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
Kajiado south	Kimana-tikondo	Kimana town	- <0.5 km radius - 0.045 - 0.5 – 1km radius – 0.10 - 1 – 2 km radius – 0.40	- Mixed urban use
		- Other trading centres, be confined to original boundaries	- 0.045	- Mixed urban use
		- Irrigation zones,	- 0.4	- Agricultural
		- 0-10 km from Amboseli National Park	- 8.0	- Eco-tourism
		- 1 km buffer along Loitokitok – Kimana - Isinet road (except within urban areas)	- 0.8	- Mixed commercial use
		Other areas	- 2.0	- Agricultural
	Nkama	- Illasit Trading Centre, 0.5 Km Radius	- 0.045	- Mixed urban use
		- Other Areas	- 0.4	- Agricultural
	Entarara	- Entarara trading centre, 0.5 Km	- 0.1	- Mixed urban use
		- Other Areas	- 0.8	- Agricultural
	Rombo 'A'	- Rombo town, Confined to the original boundary	- 0.045	- Mixed urban use
		- Irrigation Zones	- 0.6	- Agricultural
		- Other Areas	- 2.0	- Agricultural
	Rombo 'B'			

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
		All Trading Centres, be confined to original boundaries	- 0.045	- Mixed Urban Use
		- Other Areas (Adjudicated)	- 2.0	- Agricultural
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
	Enkariak-Rongena and Empiron	Loitokitok Town	- <0.5 km radius – 0.045 - 0.5 – 1km km radius – 0.10 - 1 – 2 km radius – 0.20	- Mixed Urban Use
		- All other Trading Centres, Confined to original boundaries	- 0.045	- Mixed Urban Use
		- Other Areas	- 0.4	- Agriculture
	Entonet	- All Trading Centres, be confined to original boundaries	- 0.045	- Mixed Urban Use
		- Other Areas	- 2.0	- Agriculture
	Olgulului/Ololarashi	- All Trading Centres, confined to original boundaries	- 0.045	- Mixed Urban Use

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
	Eselenkei	- All Trading Centres, confined to original boundaries	- 0.045	- Mixed Urban Use
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
	Kuku	All Trading Centres, confined to original boundaries	- 0.045	- Mixed Urban Use
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
	Mbirikani	All Trading Centres, confined to original boundaries	- 0.045	- Urban Use
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
Kajiado Central	Mailua, Osilalei, Lorng'osua, Meto, Purko	- Namanga Town	- 1 km radius – 0.045 - 1 – 2 km radius – 0.10 - 2 – 3 km radius – 0.20	- Mixed Urban Use

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
		- Maili-tisa, Ng'atataek, Ilbisil, Orum	- <0.5 km radius – 0.045 - 0.5 - 1 km radius – 0.20 - 1 – 2 km radius – 0.40	- Mixed Urban Use
		- All Trading Centres, confined to original boundaries	- 0.045	- Mixed urban use
		- 1 Km buffer along Namanga Road (between Kajiado and Namanga town)	- 2.0	- Mixed commercial use
		- 1 – 5 Km from Namanga road (between Kajiado and Namanga town)	- 4.0	- Agricultural
		- 6 – 10 Km from Namanga road (between Kajiado and Namanga town)	- 8.0	- Agricultural
		- Other areas	- 12.5	- Agricultural
	Dalalekutuk and Ildamat	Kajiado Town, confined to gazetted boundary	- <1 km radius – 0.045 - 1 – 2 km radius – 0.10 - 2 – 3 km radius – 0.20	- Mixed urban use as per town plan
		- All Trading Centres, confined to original boundaries	- 0.045	- Mixed Urban Use

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
		- 1 km Buffer along Namanga road (between Kajiado and Isinya)	- 1.0	- Mixed commercial
		- 1 - 5 Km from Namanga Highway	- 2.0	- Agricultural
		- 5 – 10 km from Namanga road	- 4.0	- Agricultural
		- Other Areas	- 8.0	- Agriculture
	Elang'ata-wuas and Kilonito	All Trading Centres, confined to original boundaries	- 0.045	- Mixed urban use
		Other Areas	12.5	- Agricultural
	Kipeto	- Trading centres along Pipeline road, 1 Km Radius	- 0.045	- Mixed urban use
		- All other trading centres, confined to original boundaries	- 0.045	- Mixed urban use
		- 1 Km buffer along Pipeline Road	- 1.0	- Mixed commercial use
		- 1 – 5 Km from Pipeline Road (between Isinya and Olooloitikoshi)	- 2.0	- Agricultural
		- Other Areas	- 4.0	- Agricultural

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
	Olchoro-Onyore	- Olooltepes – Kiserian Dam area	- 0.2	- Residential (medium density)
		- Olerai school - Oloseos school area	- 0.4	- Residential (low density)
		- 0 - 1 Km buffer along Pipeline Road (between Olooloitikoshi and Olooltepes)	- 0.8	- Mixed commercial
		- 1 - 5 Km from Pipeline Road (between Olooloitikoshi and Olooltepes)	- 2.0	- Agricultural
		- Other	- 4.0	- Agricultural
	Ntashart	- Trading centres along Ngong – Suswa road, 0.5 km radius	- 0.045	- Mixed urban use
		- All other Trading Centres, confined to original boundaries	- 0.045	- Mixed urban use
		- Other Areas	- 8.0	- Agricultural
	Iloodoariak and Ilkisumet	- Trading centres along Magadi road, 0.5 radius	- 0.045	- Mixed urban Use
		- All Trading Centres, confined to original boundaries	- 0.045	- Mixed urban use

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
		- Other Areas	- 4.0	- Agricultural
	Ewuaso-Kedong'	- All Trading Centres, confined to original boundaries	- 0.045	- Mixed urban use
		- Other Areas	- 16.0	- Agricultural
	Olkiramatian, Oldonyo-Onyokie, Torosei, Mosiro Olkeri and Shompole	All Trading Centres, confined to original boundaries	- 0.045	- Mixed urban Use
		- Group Ranch Area	- Retain Status quo	- Pastoralism and Conservation
Kajiado North	Ngong/Ngong	- Ngong township, radius of 2.5 km	- 0.045	- Mixed urban use
		- Ong'ata Rongai town, radius of 4 km	- 0.045	- Mixed urban use
		- Kiserian town, radius of 2 Km	- 0.045	- Mixed urban use
		- Embulbul, Kerarapon and Noomatasiani trading centres, 0.5 km radius	- 0.045	- Mixed urban use
		- 0.5 km along Ngong Road (from (Ngong township to Embulbul Road)	- 0.045	- Commercial and high density residential

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
		- 0.5 – 2 km along Ngong Road (from (Ngong township to Embulbul Road)	- 0.045	- Residential (single-family dwelling units)
		- 0.5 along Ngong – Kiserian Road (between Ngong and Kiserian town)	- 0.045	- Commercial and high density residential
		- 0.5 - 2 km from Ngong – Kiserian Road (between Ngong and Kiserian town)	- 0.045	- Residential (single-family dwelling units)
		- 0.5 km along Magadi road (between Kiserian and Ong'ata Rongai)	-	- Commercial and high density residential
		- 0.5 - 3 Km along Magadi road (between Kiserian and Ong'ata Rongai)	- 0.045	- Residential (single-family dwelling units)
		- Upper Kibiko, Oloolua, Kerarapon, Upper Matasia, Lower Matasia, Kahara, Kandisi, Nkoroi, Rimpa, Gataka	- 0.1	- Residential (low density)
		- Areas falling within a distance of 1.5 km from environmentally sensitive areas e.g Ngong Forest, Oloolua Forest, Ngong Hills	- 0.2	- Small-scale agriculture

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
	Olekasasi	Olekasasi trading centre	- 0.045	- Mixed urban use
		- Nazarene and Kandisi	- 0.1	- Residential (low density)
		- Areas between Olekasasi and Maasai Lodge (Areas fronting the Nairobi National Park)	- 5.0	- Low density residential and ecotourism
Kajiado East	Kitengela, Kaputiei North and Kisaju	- Olooloitikoshi/Nkukuon Trading Centre	- <0.5 km radius - 0.045 - 0.5 – 1km radius – 0.10 - 1 – 2 km radius – 0.20 - 2 – 3 km radius – 0.40	- Mixed urban use
		- Kitengela Town	- <2 km radius – 0.045 - 2 – 3 km radius – 0.10 - 4 – 5 km radius – 0.20 - 5 – 6 km radius – 0.40	- Mixed urban As per existing zoning plan
		- Oloosirkon trading centre	- <0.5 km radius – 0.045 - 0.5 - 1 km radius – 0.10	- Residential

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
			- 1 – 2 km radius – 0.20	
		- Isinya town	- <0.5 km radius - 0.045 - 0.5 – 1 km radius – 0.10 - 1 - 2 km – 0.20 - 2 – 3 km – 0.40	- Mixed urban use
		- Kisaju and Olturoto trading centre, 0.5 km radius	- 0.045	- Mixed urban use
		- 1 km buffer along Namanga road (between KAG – East University and Isinya town)	- 0.40 (Except within town area)	- Mixed use developments
		- 1 - 5 km from Namanga road (between KAG – East University and Isinya town)	- 1.0	- Agricultural
		- 5 - 10 km from Namanga road (between KAG – East University and Isinya town)	- 2.0	- Agricultural
		- 1 km buffer along Pipeline road	- 1.0	- Agricultural
		- 1 - 5 km from Pipeline road	- 2.0	- Agricultural
		- 5 - 10 km from Pipeline road	- 2.0	- Agricultural

SUB-COUNTY	REGISTRATION SECTION NAME	AREA/ZONE	MINIMUM PERMITTED SUBDIVISION (in hectares)	PERMISSIBLE USE
		- 5 km from the Nairobi National Park	- 4.0	- Eco-tourism
		- Other areas	- 4.0	- Agricultural
		Sultan-Hamud, Emali, Masimba and Konza Trading Centres	- <0.5 km radius – 0.045 - 0.5 – 1 km radius – 0.20 - 1 – 2 km radius – 0.40	- Mixed urban use
		- All Trading Centres, confined to original boundaries	- 0.045	- Mixed urban Use
		- 1 km buffer along Emali – Loitokitok road	- 4.0	- Agricultural
		- Other Areas	- 8.0	- Agricultural

13.5 Urban Development and Design

Urban design is a planning approach emphasizing on the relation of physical development with space and with each other. The design approach to planning boosts creativity in planning as it explores various design options for the urban areas and allows for evaluation of the impacts of each to the overall form and aesthetics of the area. Further, the urban design allows visualization of the various activity spaces in an urban area and their interaction with each other. Through urban design, planners are also able to explore various regional interaction models linking the planning zones within a planning region. This section outlines the urban design framework for Kajiado County.

13.5.1 Design Interventions

Urban design interventions play a role in enhancing planning in urban areas. Some of the design areas that will be considered for Kajiado include:

1. Redevelopment of urban centres
2. Highway front developments
3. Redevelopment of urban parks
4. Development of riparian zones
5. Urban containment

1. Redevelopment of Urban Areas

While this CSP provides a broad development guideline framework for the whole of the County, the development of detailed urban plans for the urban areas is advocated. In the preparation of these urban areas plans, elements of urban design are recommended to complement the planning efforts to give the areas a distinct character and making the urban areas more attractive.

The urban design concepts that could be utilized in this include massing (densification/consolidation) where major developments are concentrated in clusters. This ensures that less transport is required to access services and that land to the outskirts is left for other uses. Through massing, the developments are well structured and green buffers are provided to the various land uses. The following figures show the urban areas and how urban design could enhance zoning.

Figure 13.2: Urban Design concepts clustering

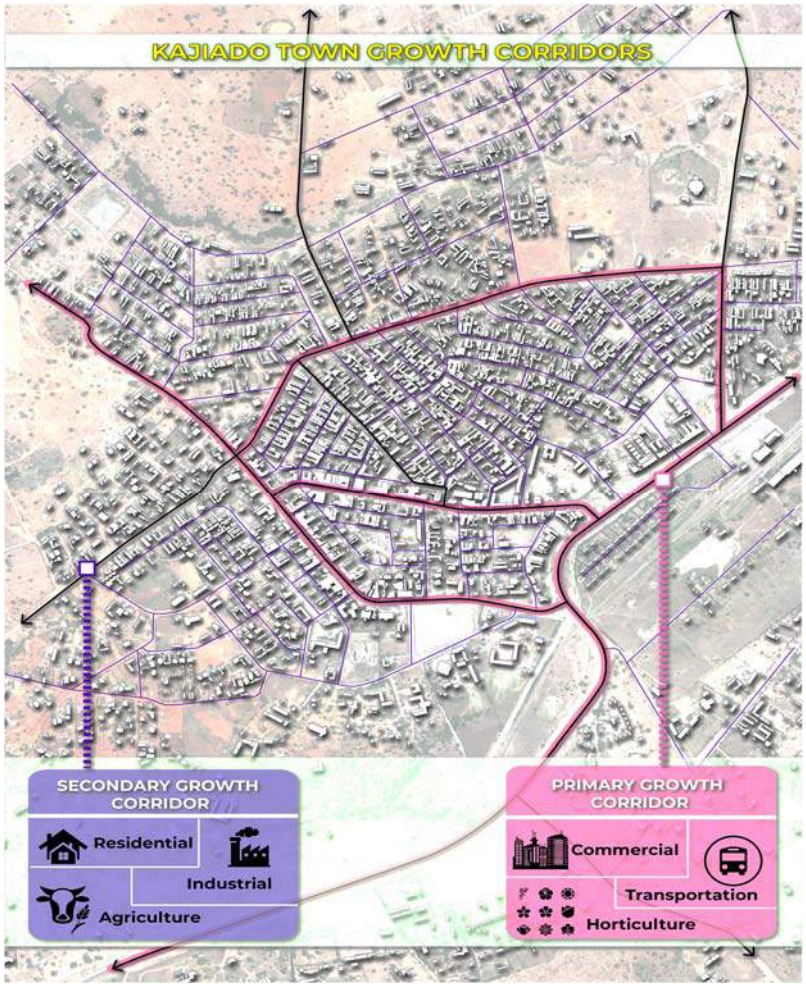


Figure 13.3: Kajiado Town Growth Corridors

Figure 13.4: Proposed Development Model

2. Development and Management of Riparian Zones

The development of the zones along rivers, around lakes and other environmentally fragile areas requires proper guidelines. An urban design framework for the management of riparian is proposed for adoption as in figure 11.3. This will ensure that compatible users are located on the riparian and that the ecological function of the natural resources is enhanced while making them usable. The figure below shows a model for river riparian development that could be adopted in Kajiado.

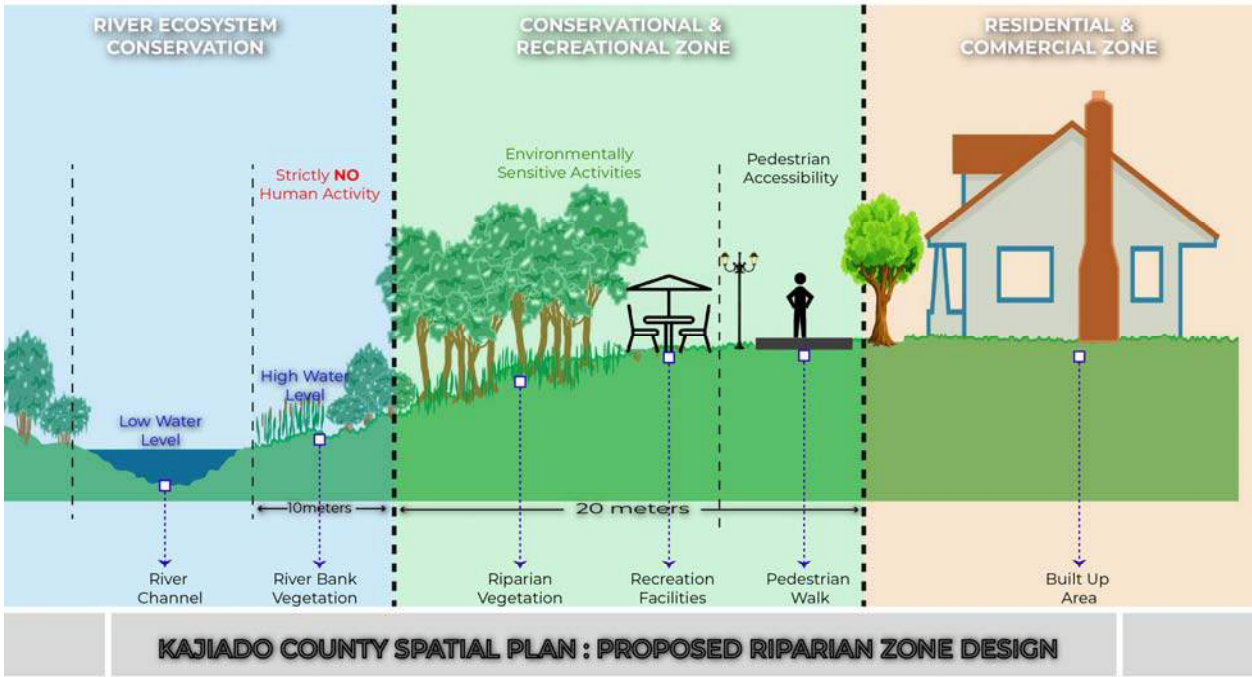


Figure 13.5: Riparian development model

13.5.2 Urban Containment

Urban developments in Kajiado have constantly been increasing and the urban limits extending from the planned zones to areas further and further into the hinterlands. This has caused increased urban sprawl and subdivision of the rich livestock production areas. Further, the increasing urban boundaries have caused the increased cost of servicing the developments. While the detailed urban plans provide for consolidated urban centres to tame the sprawl, the urban design could complement this by incorporating models that restrict urban developments into a contained area and offering buffer and transition zones to the hinterland.

Figure 11.4 shows an urban containment model that could be used to guide urban development from the center to the periphery. The model provides for immediate planning of the areas beyond the delineated urban boundary.

Maps 11.7 to 11.15 indicate the indicative urban extent for the major urban areas in the county. However, it is important that exact boundaries be set while conducting the detailed planning recommended for each urban area.

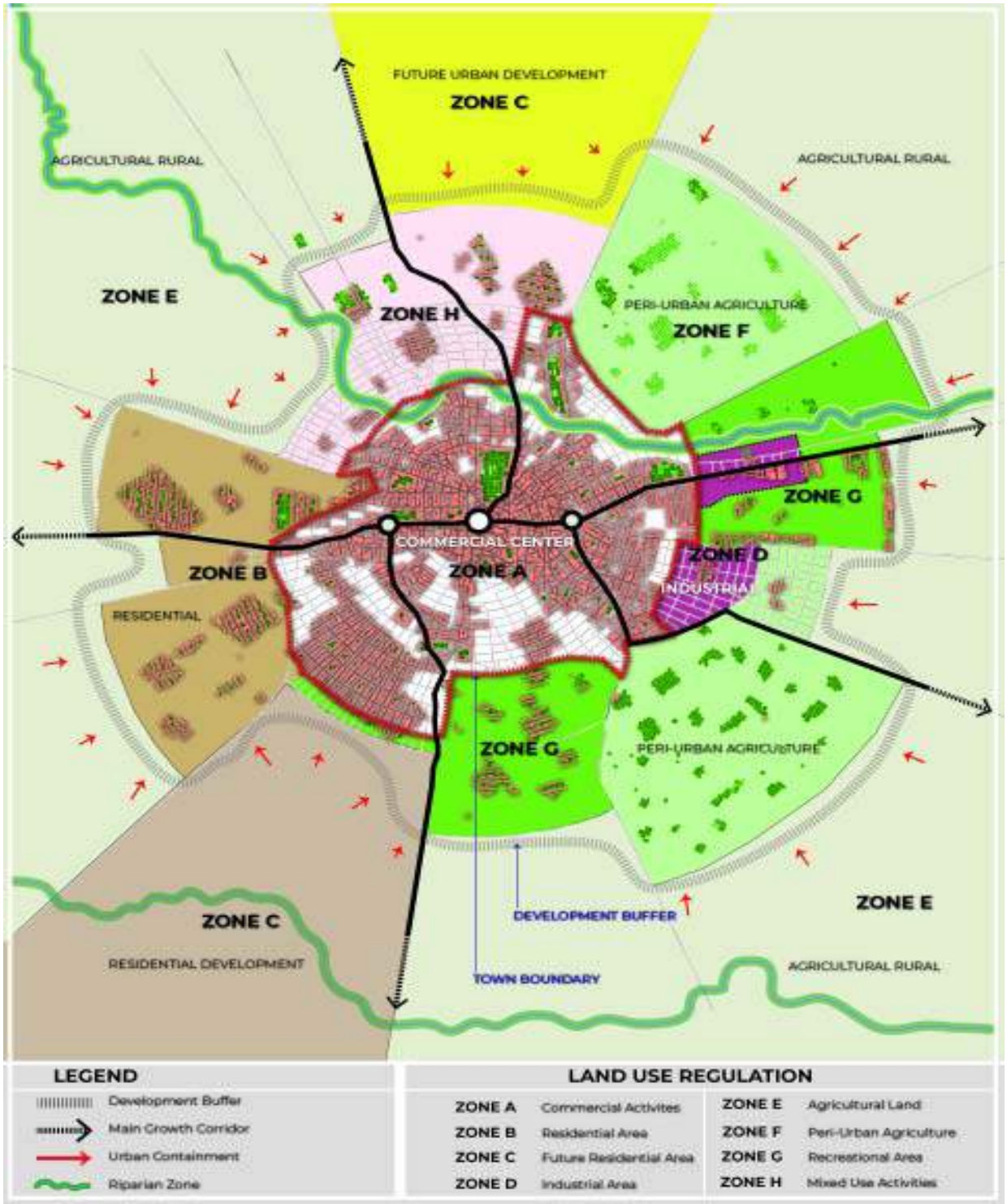


Figure 13.6: Urban Containment model

Ngong Municipality

Ngong Municipality is approximately 125Km^2. It comprises of three major towns: Ngong, Ong'ata Rongai and Kiserian. Being a municipality, all major land uses exist within the area. Its potential for growth is still high due to its proximity to Nairobi city.

Growth should therefore be restricted through proper land zoning and development control to avert unplanned sprawl which would lead to informal settlements and inadequate infrastructure to support the sprawl.

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Growth should therefore be restricted through proper land zoning and development control to avert unplanned sprawl which would lead to informal settlements and inadequate infrastructure to support the sprawl.

Kitengela Town

Kitengela Town is approximately 3.6Km^2. Its development is linear along the Namanga-Athi River Road. Its potential for growth is highly influenced by its proximity to Nairobi and the Mombasa highway. Land Use Zoning is recommended to prevent unpanned sprawl and to control development.

Ilbisil Town

Ilbisil Town is approximately 1.3 km^2. The town has potential to grow as it has usable undeveloped land. Through zoning has the potential for various land uses such as commercial due to high volumes of livestock in the area. Potential to develop livestock selling yards and slaughter houses is very high.

Isinya Town

Isinya Town is approximately 1km^2. It is mainly dominated by industries both light and heavy. The land around it can be zoned to incorporate various land uses which are compatible.

Kimana Town

Kimana Town is approximately 0.9km^2. It has potential for growth as an agricultural center as agriculture is one of the main economic activities around the town. Through land use zoning and development control it has potential to become a major agricultural center in Kajiado South Subcounty.

Mahuru Town

Kisaju Town is approximately 0.1 km^2. The main land uses around the town is Industrial. Through a land use zoning plan the town can be zoned and

different land uses incorporate to support the major land use which is Industrial.

Namanga Town

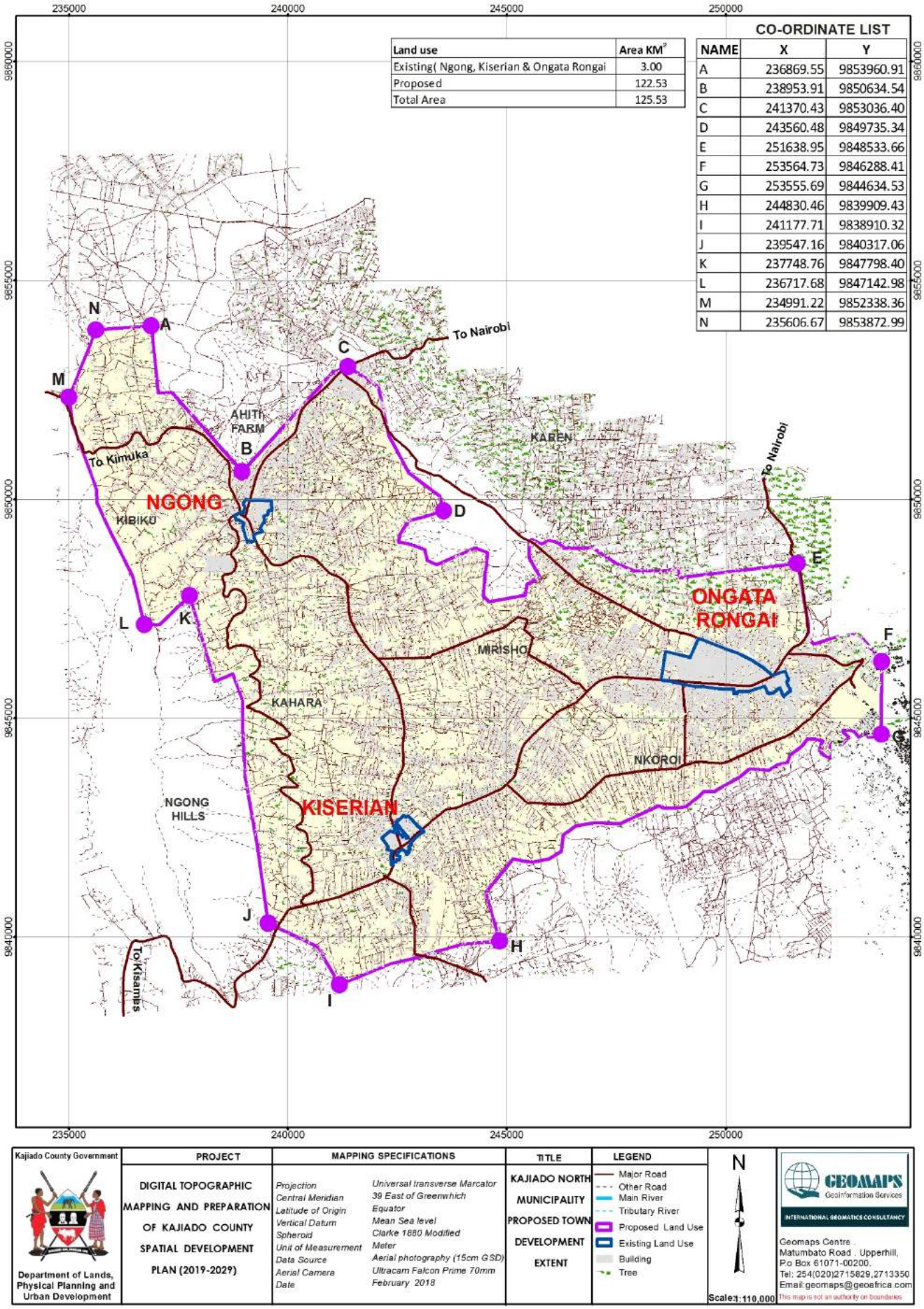
Namanga Town is approximately 0.7 Km^2. It's a border town between the Republic of Tanzania and the Republic of Kenya. Being a border town, its zoning and development control should be carefully considered. It mainly acts a transit center and therefore transport oriented land uses are more suitable and sustainable

Oloitokitok Town

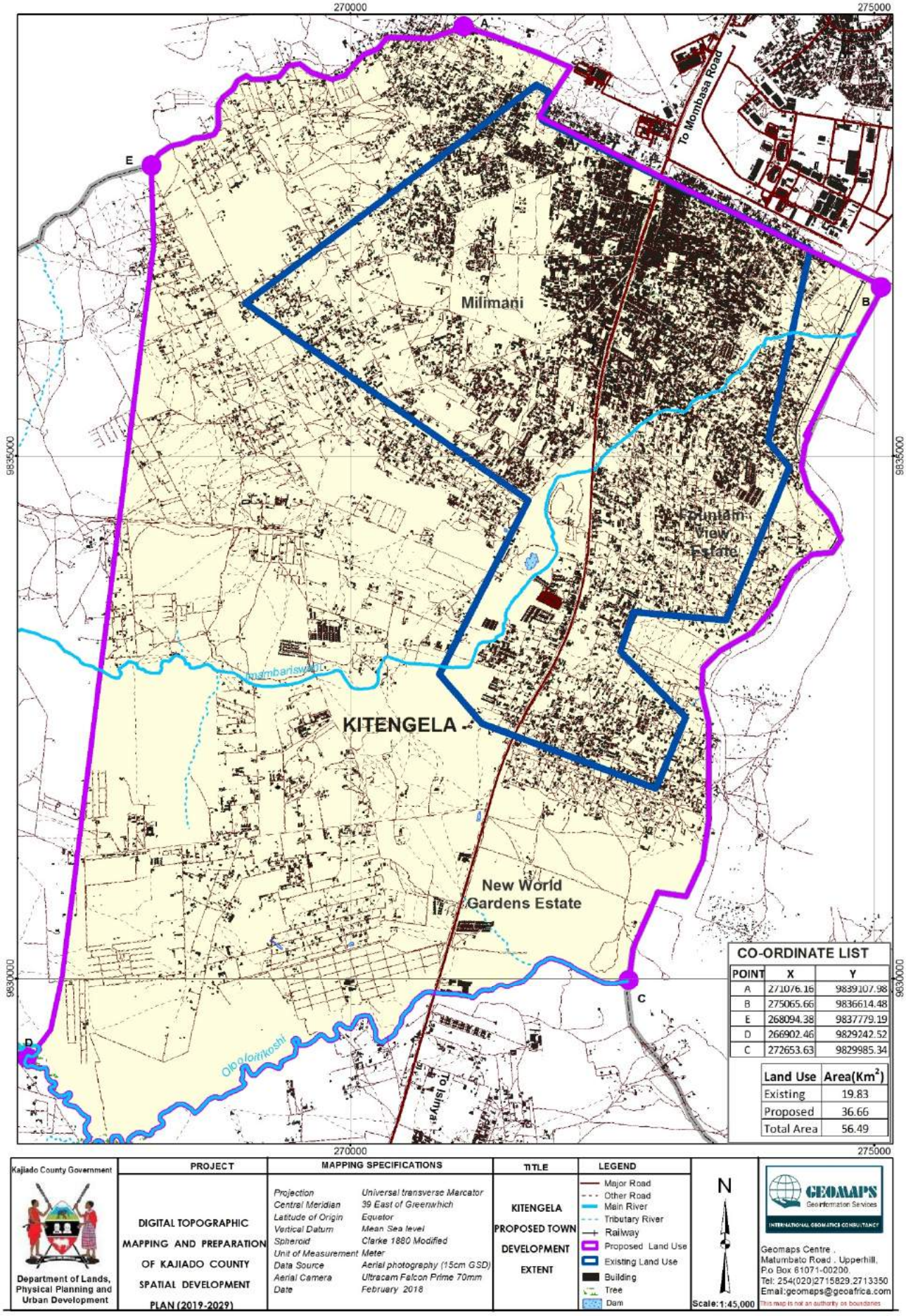
Oloitokitok Town is approximately 0.44 Km^2. It is located in an agricultural and a tourism zone. Through detailed land use zoning, other land uses that are compatible with agricultural and tourism should be considered.

Rombo

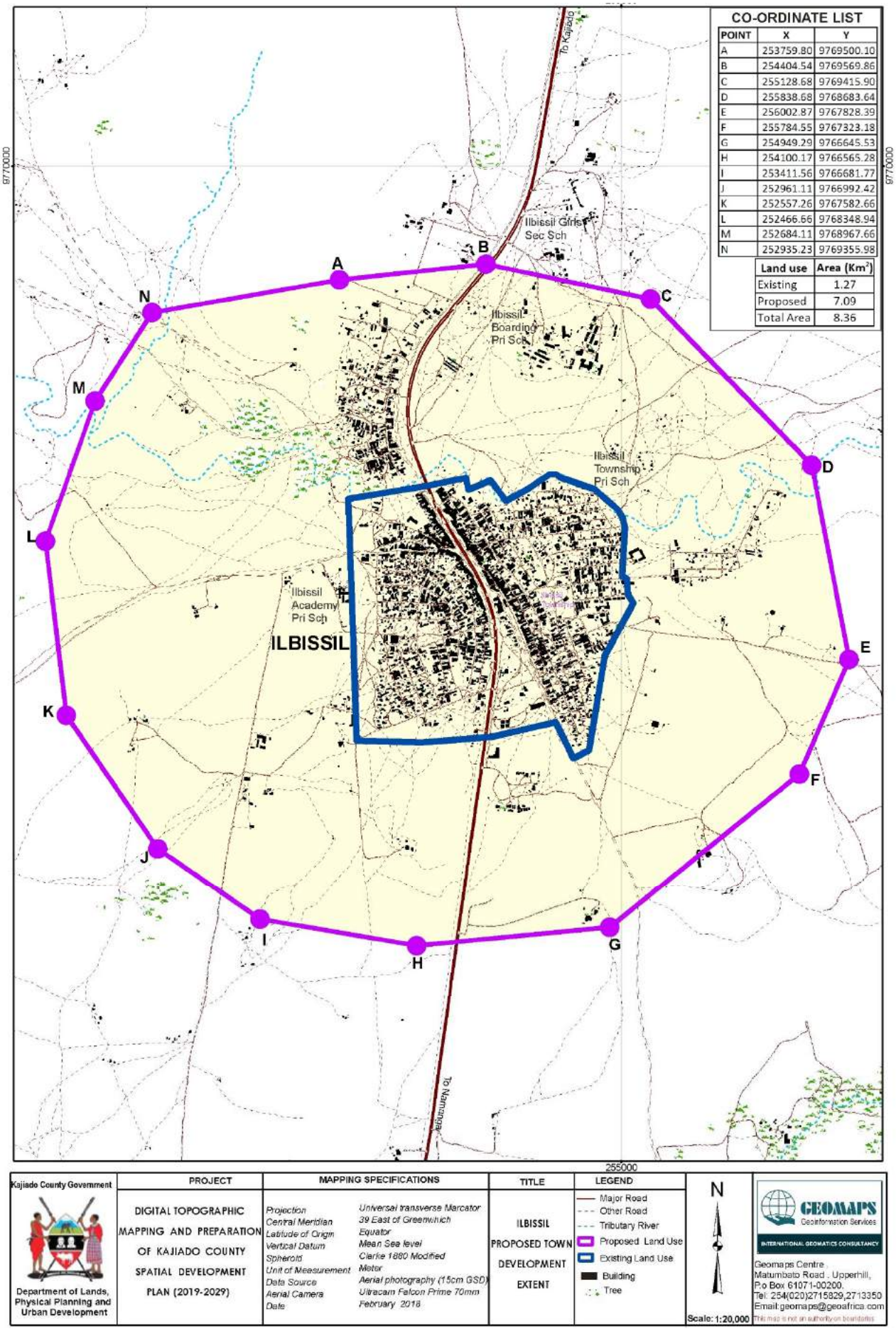
Rombo Town is approximately 0.64Km2. Through detailed land use zoning it can be planned to incorporate different land uses that are sustainable.



Map 13.7 Urban Delineation for Ngong Municipality

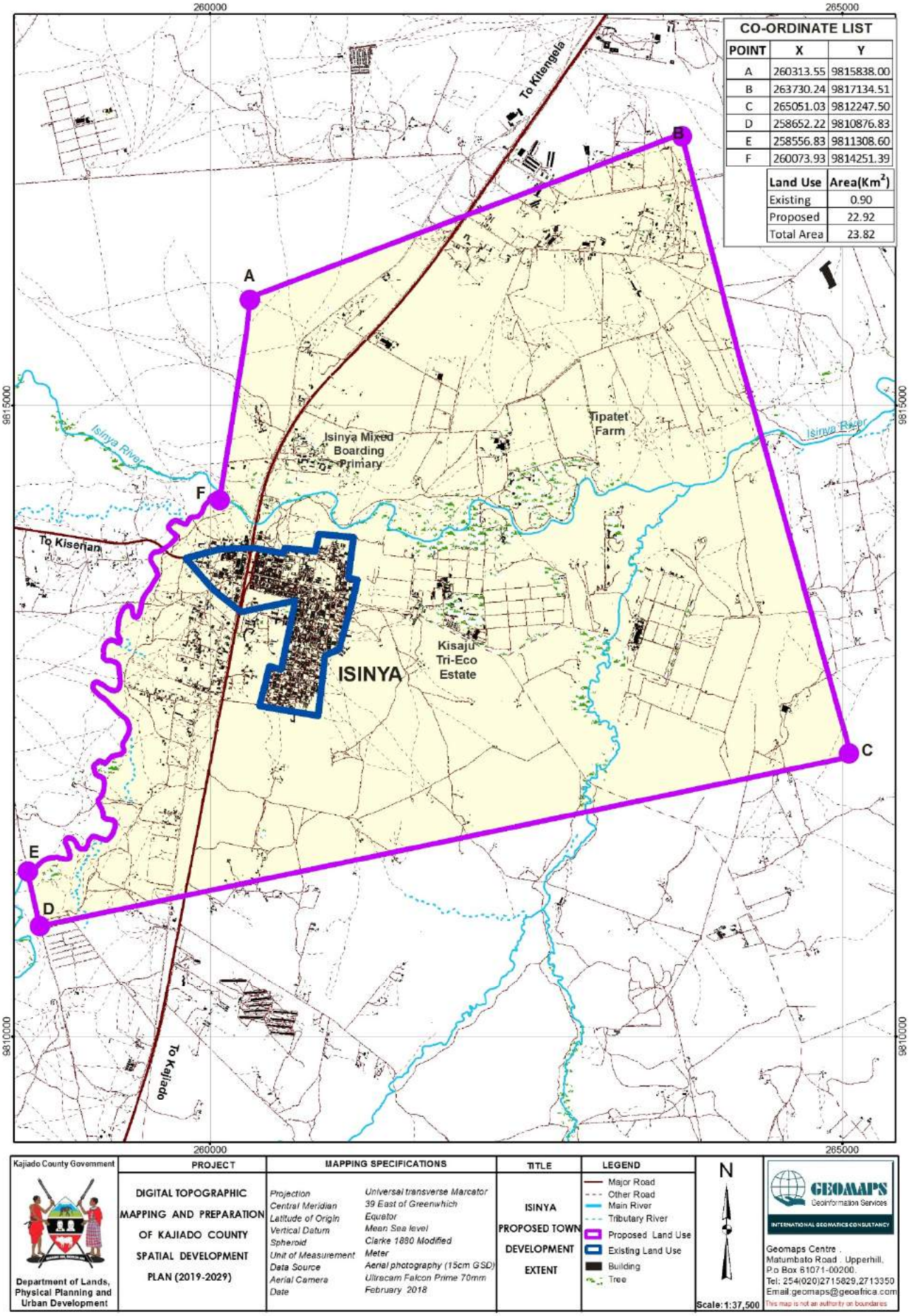


Map 13.8: Kitengela Existing Urban Limit

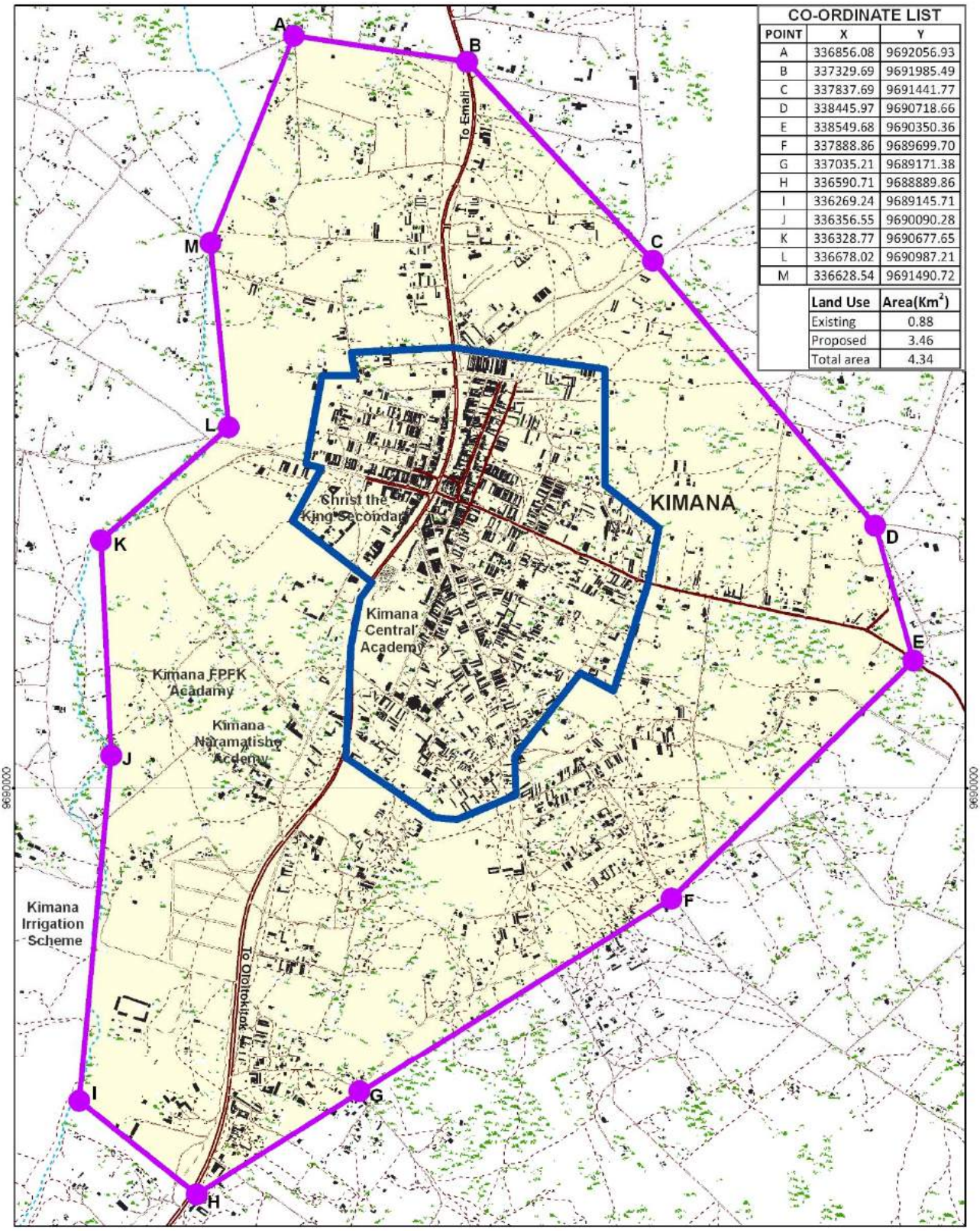


Kajiado County Government	PROJECT	MAPPING SPECIFICATIONS		TITLE	LEGEND		
Department of Lands, Physical Planning and Urban Development	DIGITAL TOPOGRAPHIC MAPPING AND PREPARATION OF KAJIADO COUNTY SPATIAL DEVELOPMENT PLAN (2019-2029)	Projection Central Meridian Latitude of Origin Vertical Datum Spheroid Unit of Measurement Data Source Aerial Camera Date	Universal transverse Mercator 39 East of Greenwhich Equator Mean Sea level Clarke 1880 Modified Meter Aerial photography (15cm GSD) Ultracam Falcon Prime 70mm February 2018	ILBISSIL PROPOSED TOWN DEVELOPMENT EXTENT	Major Road Other Road Tributary River Proposed Land Use Existing Land Use Building Tree	N Scale: 1:20,000	GEOMAPS Geoinformation Services INTERNATIONAL GEOMATICS CONSULTANCY Geomaps Centre . Matumbato Road . Upperhill, P.o Box 61071-00200. Tel: 254(020)2715829,2713350 Email:geomaps@geoafrica.com This map is not an authority on boundaries

Map 13.9: Ilbisil Urban Limit



Map 13.10: Isinya Urban Limit



CO-ORDINATE LIST		
POINT	X	Y
A	336856.08	9692056.93
B	337329.69	9691985.49
C	337837.69	9691441.77
D	338445.97	9690718.66
E	338549.68	9690350.36
F	337888.86	9689699.70
G	337035.21	9689171.38
H	336590.71	9688889.86
I	336269.24	9689145.71
J	336356.55	9690090.28
K	336328.77	9690677.65
L	336678.02	9690987.21
M	336628.54	9691490.72

Land Use	Area(Km^2)
Existing	0.88
Proposed	3.46
Total area	4.34

Kajiado County Government

Department of Lands, Physical Planning and Urban Development

PROJECT: DIGITAL TOPOGRAPHIC MAPPING AND PREPARATION OF KAJIADO COUNTY SPATIAL DEVELOPMENT PLAN (2019-2029)

MAPPING SPECIFICATIONS

Projection	Universal transverse Mercator
Central Meridian	39 East of Greenwhich
Latitude of Origin	Equator
Vertical Datum	Mean Sea level
Spheroid	Clarke 1880 Modified
Unit of Measurement	Meter
Data Source	Aerial photography (15cm GSD)
Aerial Camera	Ultracam Falcon Prime 70mm
Date	February 2018

TITLE: KIMANA PROPOSED TOWN DEVELOPMENT EXTENT

LEGEND
- Major Road
- Other Road
- Tributary River
- Proposed Land Use
- Existing Land Use
- Building
- Tree

N

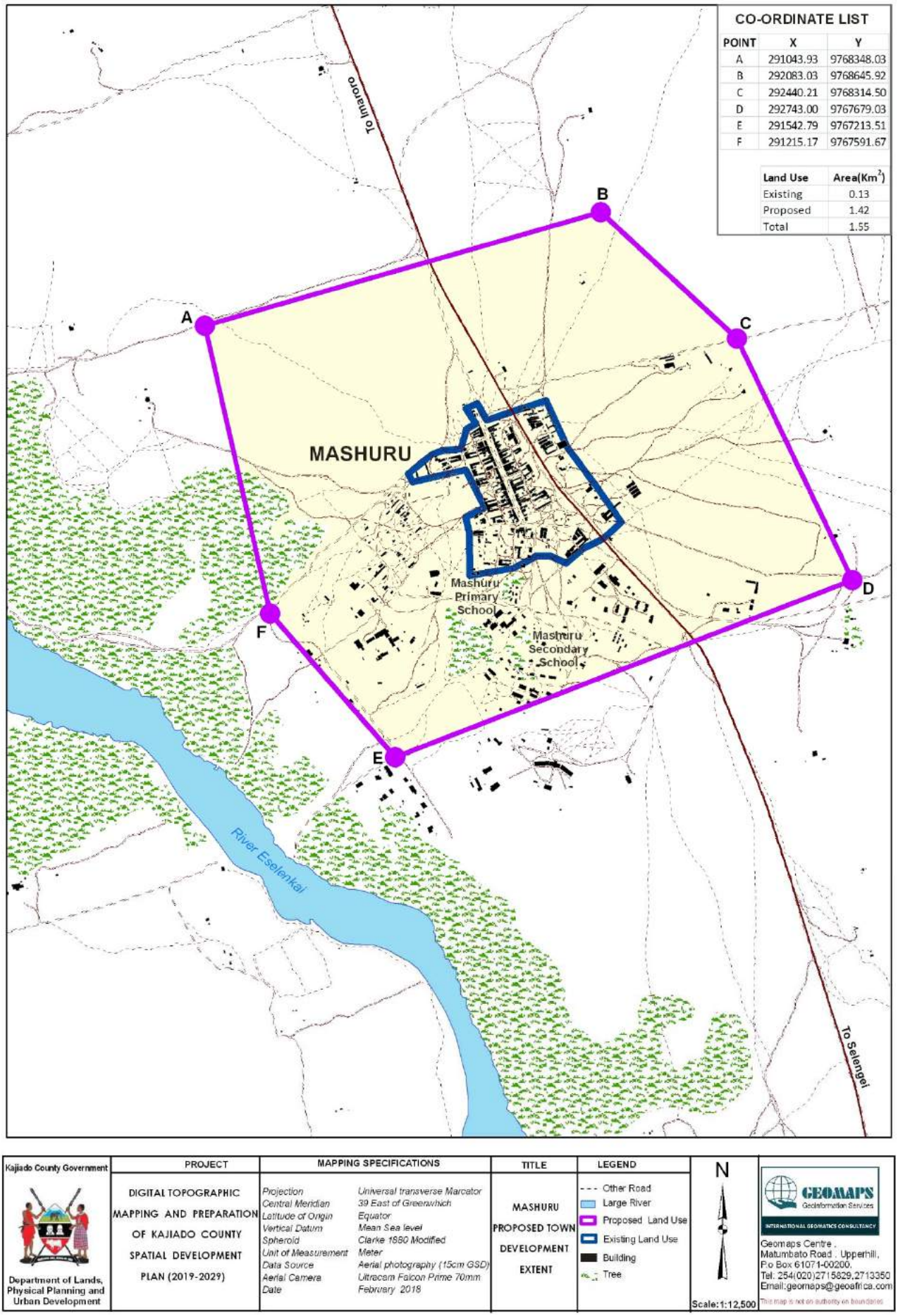
Scale: 1:14,000

GEOMAPS Geoinformation Services
INTERNATIONAL GEOMATICS CONSULTANCY

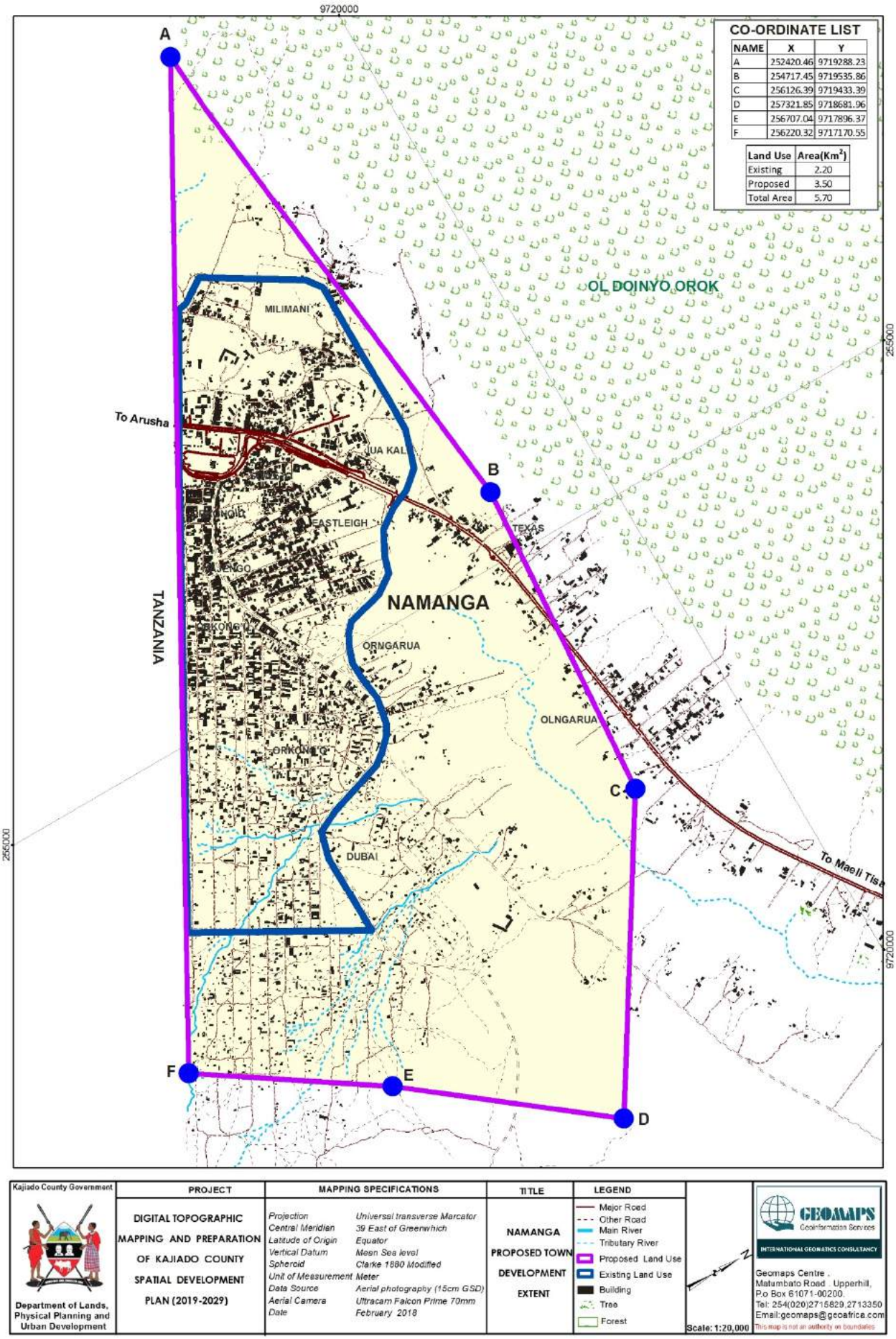
Geomaps Centre .
Matumbato Road . Upperhill.
P.o Box 61071-00200.
Tel: 254(020)2715829,2713350
Email:geomaps@geoafrica.com

This map is not an authority on boundaries

Map 13.11Kimana Town Urban Limit

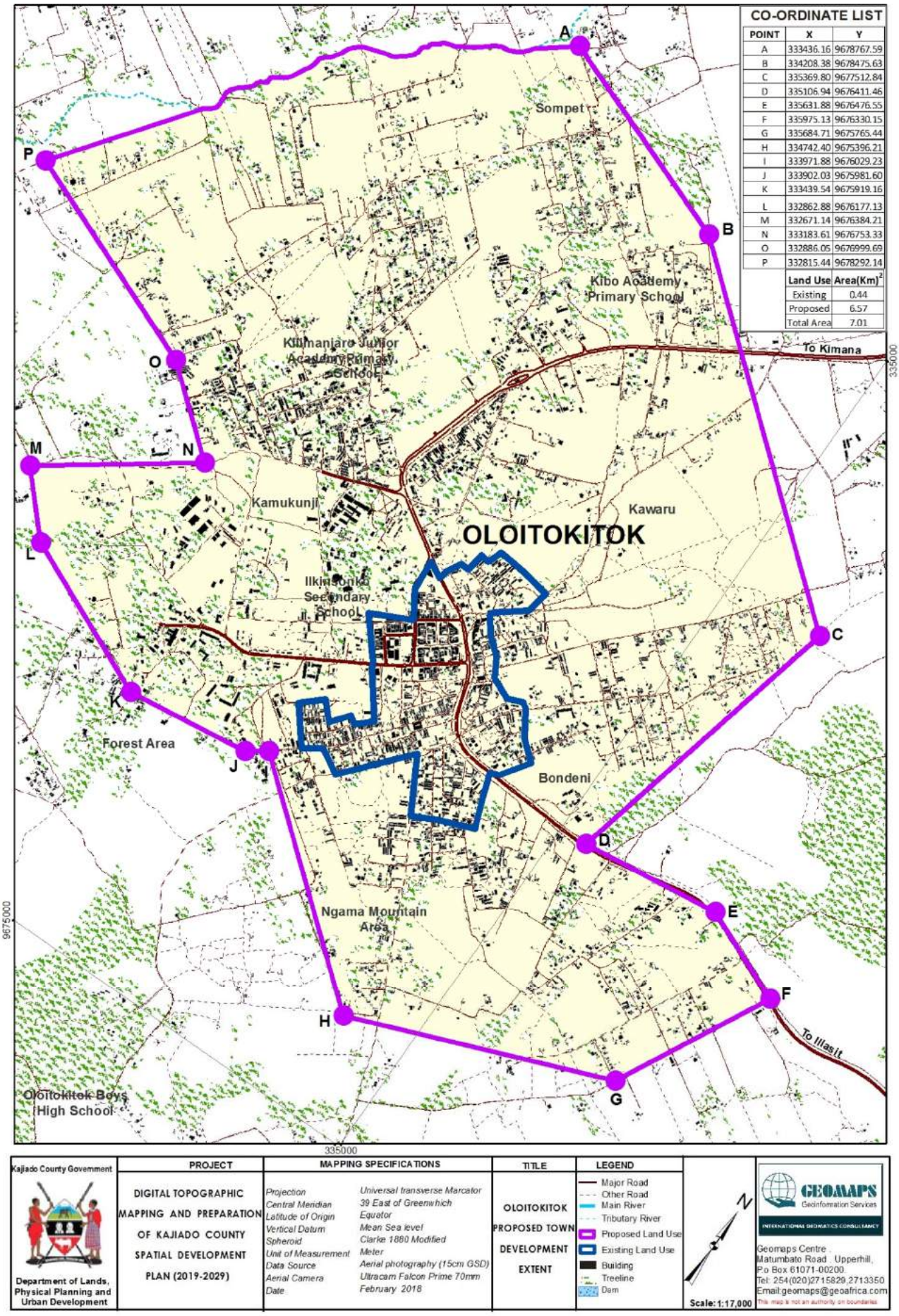


Map 13.12: Mashuru Urban Limit

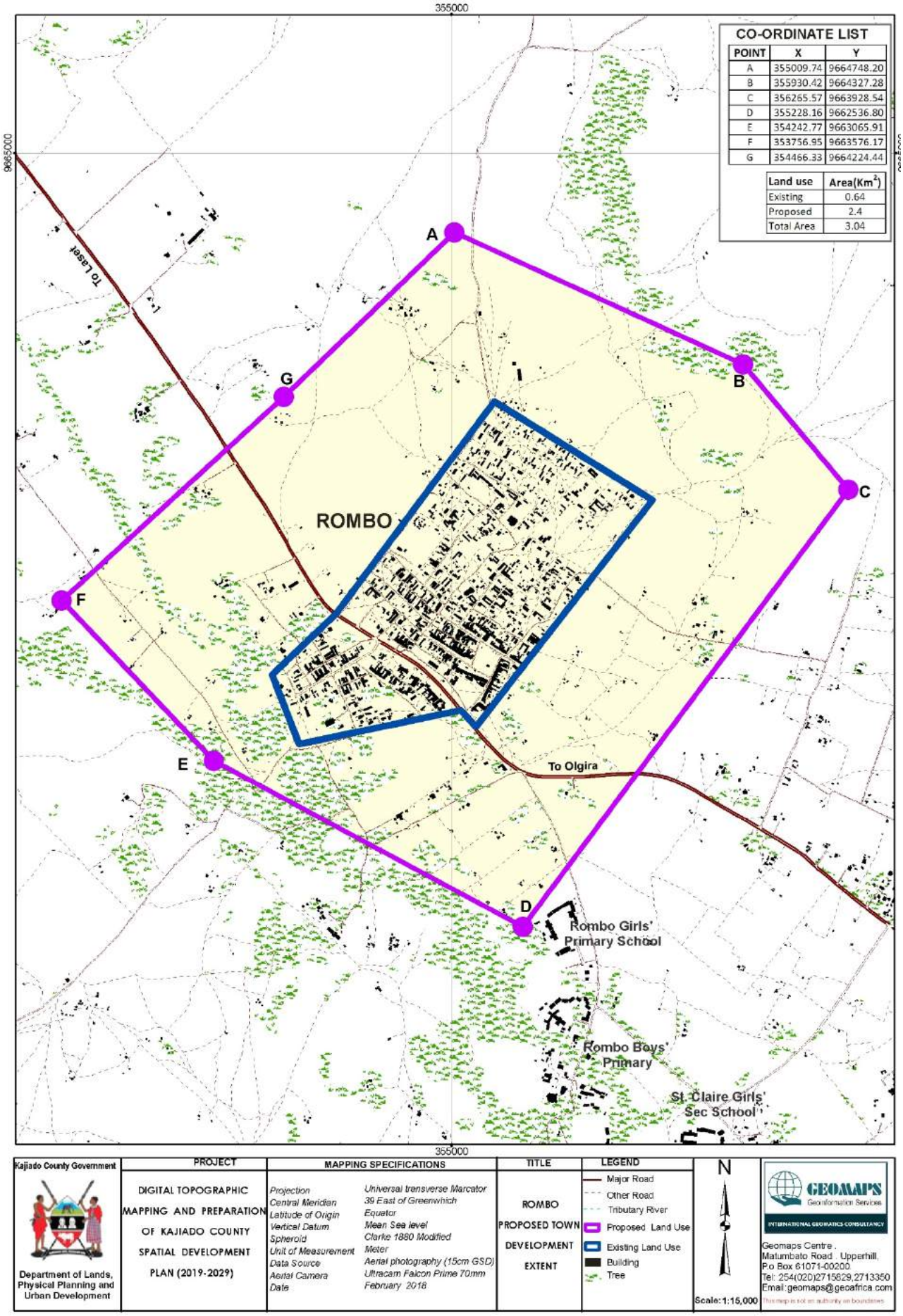


Kajiado County Government	PROJECT	MAPPING SPECIFICATIONS	TITLE	LEGEND		
Department of Lands, Physical Planning and Urban Development	DIGITAL TOPOGRAPHIC MAPPING AND PREPARATION OF KAJIADO COUNTY SPATIAL DEVELOPMENT PLAN (2019-2029)	Projection: Universal transverse Mercator Central Meridian: 39 East of Greenwhich Latitude of Origin: Equator Vertical Datum: Mean Sea level Spheroid: Clarke 1880 Modified Unit of Measurement: Meter Data Source: Aerial photography (15cm GSD) Aerial Camera: Ultracam Falcon Prime 70mm Date: February 2018	NAMANGA PROPOSED TOWN DEVELOPMENT EXTENT	Major Road Other Road Main River Tributary River Proposed Land Use Existing Land Use Building Tree Forest	Scale: 1:20,000	GEOMAPS Geoinformation Services INTERNATIONAL GEOMATICS CONSULTANCY Geomaps Centre, Matumbato Road, Upperhill, P.o Box 61071-00200. Tel: 254(020)2715829,2713350 Email:geomaps@geoafrica.com This map is not an authority on boundaries

Map 13.13: Namanga Urban Limit



Map 13.14: Oloitokitok Urban Limit



Map 13.15: Rombo Urban Limit

13.5.3 Recommendation

The incorporation of design in the planning and management of urban areas is an important aspect that ensures the envisaged urban form is achieved and that the urban areas are aesthetically designed. The plan proposes the development of an Urban Design Section under the Planning Department. This section will be responsible for the development of urban design policy and the implementation of the same.

CHAPTER 14: IMPLEMENTATION FRAMEWORK

14.1 Overview

The implementation of the County Spatial Plan will be a key step that will lead to improving the livelihoods of every household as envisaged in the plan's vision. It will provide a framework for coordinated implementation by the various actors. The implementation matrix provides a guide on the implementation of the County Spatial Plan to ensure the achievement of its objectives. It identifies activities associated with the implementation of the plan and ties them with responsible actors and timeframes adequate for their execution. A linkage to the investment and the Monitoring and evaluation frameworks ensure that all the aspects of the proposed projects are catered for.

Various approaches can be used to implement the CSP, they include:

- Formulation of policies, regulations and standards to guide development control.
- Incorporating policies and regulations in the CSP to other plans, projects and programs.
- Preparation of other spatial plans to integrate and conform to the proposals of the County Spatial Plan.

For the matrices below, the following timelines have been proposed.

Short term- 0-3 years
Medium-term 3-7 years
Long term 7-10 years

14.1.2 Environment and Natural Resources

Problem	Programme(s)	Location	Actors	Timeframe
No County Disaster Management for Geologic, Climatic and Human Disasters	Carry out disaster mapping of the entire County to guide building standards and land use bylaws	Countywide	CGK	Immediate and continuous
	Undertake public education and make concrete plans on disaster management and prepare for volcanic eruptions, fractures, floodplains, sensitive areas of slopes	Countywide	CGK	Immediate and continuous
	Establish a quick response disaster management team at the sub County level. The National Operation Centre	Countywide	CGK	Immediate and continuous
No adequate Solid Waste Management (SWM) plans in urban areas	Identify and carry out environmental feasibility of land for solid waste management.	All urban areas	CGK Department of Environment and Urban Planning.	Immediate and continuous
	Establish sustainable solid waste management in all urban areas	All urban areas	CGK Department of Environment and Urban Planning.	Short term

Problem	Programme(s)	Location	Actors	Timeframe
In adequate storm water drainage and sewerage treatment	Review planning regulation to expand the existing stormwater drainages and or construct new storm water drainage.	All urban areas	CGK Department of Environment and Urban Planning	Immediate and continuous
	Promote water harvesting as a mandatory requirement in all development approvals.	Countrywide	CGK Department of Environment and Urban Planning.	Immediate and continuous
Deforestation and encroachment in forest areas	Promote agro-forestry tree planting	Countrywide.	CGK	Immediate and continuous
	Enforce the policy on 'Farm Forestry Rules' in 2010			Immediate and continuous
Conservation and protection of environmentally sensitive areas	Zone, protect and conserve wildlife conservation and encourage ecotourism	National parks, wildlife corridors, wildlife dispersal areas	CGK	Immediate and continuous
	Water resources and water catchment areas	Wetlands, riparian areas	CGK	Immediate and continuous

Problem	Programme(s)	Location	Actors	Timeframe
	Conserve and protect Group Ranches for sustainable livestock and tourism development	Group ranches adjacent to wildlife areas	CGK	Immediate and continuous
Under-developed mineral resources	Carry out minerals resources potential	Countrywide	CGK	Medium
	Regulate and ensure environmentally managed mining and extraction of minerals	Countrywide	CGK	Medium and Long-term

14.1.2 Livestock and Agriculture Sector

Problem	Programme(s)	Location	Actors	Timeframe
Traditional Mindset	Awareness creation and education	Countywide	CGK	Immediate and continuous
Land subdivision especially group ranches	Awareness creation and education	Countywide	CGK	Immediate and continuous
Increased drought/climate change	• Soil/water conservation • Grazing Management • Fodder conservation	Countywide	CGK	Immediate and continuous
Low productivity for crops, livestock and fisheries	• Robust extension services • Farmer training schools • Improve inputs supplies • Irrigation projects • Enhanced extension services • Improved fodder production • Disease control and AI	Countywide	CGK Department of Agriculture, Livestock & Fisheries	Immediate and continuous
High post-harvest Losses	• Crops produce storage facilities • Milk Cooling plants • Fish cooling plants	Countywide	CGK	Short term
Lack of Value addition	• Crops value chains • Milk Value chain • Meats value chains • Meats value chains	Countywide	CGK	Immediate and continuous
Inadequate marketing systems	• Build wholesale farmers markets • Agriculture information centers • Farmers' cooperative societies	Countywide	CGK	Immediate and continuous

14.1.3 Transport and Infrastructure

Problem	Project	Location	Actors	Timeframe
Poor intra-connection between Kajiado south sub county and the county headquarter, Kajiado Town	To upgrade the Oloitokitok, Kimana, Isara mashuru, Imaroro Kaitoriori Kajiado road to class B status. (Approximately 194Km)	Kajiado South and Kajiado central	KeNHA	Long term
Poor inter-county connectivity between Kajiado county and the neighboring Narok County	To upgrade to class B the road from Ngong town through Saikeri to Mosiro in Kajiado west subcounty. The road should eventually connect to Narosura in Narok county road C11 to Narok town. (Approximately 109Km)	Kajiado North and Kajiado West	KeNHA	Long term
High Road Fatality	Have Zebra crossing on busy urban roads in Ong'ata Rongai across Magadi road, in Kitengela across Athi-river Namaga road and in Ngong towns	Kajiado North and Kajiado East	KeNHA/KURA	Short term
	To crack down on unlicensed public transport operators	All sub counties	CGK and Kenya National Police Service	Short term
	To ensure strict enforcement of traffic rules	All sub counties	Kenya National Police Service	Short term

Problem	Project	Location	Actors	Timeframe
	To construct pedestrian foot bridges across truck roads in urban areas	Kajiado North and Kajiado East	KeNHA/KURA	Medium term
	To sensitize the public on road safety	All sub counties	CGK and NTSA	Short term
	To identify and mark blackspots with proper signage	All sub counties	KeNHA, KURA and NTSA	Short term
Inadequate inter-county connectivity between Oloitokitok and Emali	To upgrade the C102 road from Oloitokitok to Email to class B (Approximately 100Km)	Kajiado east and Kajiado central	KeNHA	Long term
Traffic congestion in Ngong, Ong'ata Rongai and Kitengela	Clear road encroachment	Kajiado North and Kajiado East	CGK	Short term
	To have dedicated service lanes and limit direct access to properties adjacent to class A roads (Approximately 40Km)	Kajiado North and Kajiado East	KURA	Medium term
	To expand roads areas (Approximately 40Km)	Kajiado North and Kajiado East	KURA	Medium Term
	Construct adequate dedicated foot paths and cycling lanes to encourage use of non-motorized transport	Kajiado North, Kajiado East and Kajiado central	CGK and KURA	Medium Term
	To have appropriate by-pass route in Kitengela, Ngong and Ong'ata Rongai townships (Approximately 70Km)	Kajiado North and Kajiado East	KeNHA	Long term

Problem	Project	Location	Actors	Timeframe
Poor rail connectivity	To expand and equip the rolling stock of the existing Magadi railway	Kajiado East, Kajiado Central and Kajiado West	CGK, and Tata chemicals	Short term
	To maintain the existing railway line in good working condition	Kajiado East, Kajiado Central and Kajiado West	Magadi Limited (TCML)	Short term
	To have the Athi river-Magadi railway line upgraded to SGR standards	Kajiado East, Kajiado Central and Kajiado West	National Government (LAPSET),CGK, and Tata chemicals	Medium term
	To have the route extended for passengers from Kajiado through Athi river to Syokimau railway station	Kajiado East	National Government (LAPSET	Medium term
	To have Ngong, Ong'ata Rongai, Kiserian, Kajiado and Kitengela connected to Nairobi via the SGR commuter rail service	Kajiado North, Kajiado East and Kajiado central	National Government (LAPSET	Long term
Lack of a pipeline transport and potential for Natural gas/oil	To step up sustain efforts to find natural gas and oil	All sub counties	National government	Long term
	To have an oil terminus in Kajiado town	Kajiado central	Kenya Pipeline Company(KPC)	Long term
	To establish a pipeline between Nairobi terminus and Kajiado town	Kajiado central and Kajiado East	Kenya Pipeline Company (KPC)	Long term
Limited use of air transport usage	To upgrade all airstrip runways to bitumen standards	All sub counties	Kenya Airport Authority (KAA)	Medium term

Problem	Project	Location	Actors	Timeframe
	To lengthen runways to allow 0the landing of larger planes	All sub counties	Kenya Airport Authority (KAA)	Long term
Inadequate supply of safe drinking water	To service the existing water services company and equip them to maximize output	All sub counties	CGK	Short term
	To service the current water reticulation system to reduce water losses	All sub counties	CGK	Short term
	To ensure water services companies are adequately staffed	All sub counties	CGK	Short term
	To ensure water tariffs are affordable by offering incentives to water companies in the county	All sub counties	CGK	Medium term
	Expand the capacity of existing water companies by exploring alternative sources of water and increasing their water storage capacity	All sub counties	CGK	Medium term
	To construct dams to store stormwater	All sub counties	National government and CGK	Long term
	To come up with a policy on water rain harvesting	All sub counties	CGK	Short term
	To sensitize the community on water conservation	All sub counties	CGK	Short term
	To expand water reticulation into rural areas	All sub counties	CGK	Long term
Flash floods	To ensure all roads especially in towns such as Ong'ata Rongai, Ngong, Kajiado towns and Kiserian have storm drain	Kajiado North, Kajiado central, Kajiado East	CGK and KURA	Short term

Problem	Project	Location	Actors	Timeframe
	Control development to ensure laws regarding riparian land are enforced	All sub counties	CGK	Short term
	To have regular maintenance of roads to ensure drainage facilities are not blocked by solid waste or other foreign material	All sub counties	KeNHA, KURA and CGK	Short term
	Control development to allow green areas to avoid excessive surface runoff during storms	All sub counties	CGK	Short term
	Control sand harvesting in rivers across the county	All sub counties	CGK	Short term
	Encourage reforestation and afforestation whereas controlling charcoal burning	All sub counties	Kenya forest Services	Long term
Poor Power Connectivity	To sensitize locals on solar energy harvesting technologies	All sub counties	CGK	Short term
	To extend the national grid in Kajiado county especially in Kajiado south	Kajiado South	Kenya Power and lightening company	Long term
Poor Access to ICT services	To have well-equipped community ICT centers in each sub county	All sub counties	PPP (Public private partnership) and CGK	Long term
	To clear road reserves of illegal structures to reduce cost of laying the fiber optic cables	All sub counties	CGK	Short term
	To increase power connectivity through alternative sources of energy such as solar and wind energy	All sub counties	Kenya Power and Lightening company	Long term
	To collaborate with private companies providing voice and data services to invest	All sub counties	CGK	Short term

Problem	Project	Location	Actors	Timeframe
	more in ICT infrastructure, increase signal strength and coverage			
	To expand the fiber optic network to cover more areas in the county	All sub counties	PPP (Public-private partnership) and CGK	Long term
Lack of proper sanitation facilities	Public sensitization on alternative healthy waste disposal methods.	All sub counties	CGK	Short term
	Construction of sewerage treatment plants in each sub county complete with sewerage connection for household especially in urban areas	All sub counties	CGK	Long term

Source: Project team

14.1.4 Social Infrastructure

Challenge	Location	Project	Actor	Time frame
Uneven distribution of educational facilities	Kajiado County	Construction of new schools	National Government and CGK	Short term
Low transition rate in the education sector	Kajiado County	- Promoting social support activities in schools - School feeding program implementation	National Government and CGK	Long term
Inadequate teaching personnel	Kajiado County	Training and employment of qualified teaching personnel	National Government and CGK	Short term
Insufficient land for educational facilities	Kajiado County	Proper land use allocation	National Government and CGK	Medium term
Continued execution of outdated cultural practices	Kajiado County	Women empowerment program	National Government and CGK	Long term
Insufficient land for recreational spaces	Kajiado County	Proper land use allocation and zoning practices	CGK	Long term
Shortage of medicine in health facilities	Kajiado County	Ethical discourse campaign	CGK	Medium term
Inadequate health personnel	Kajiado County	Training and employment of qualified medical personnel	National Government and CGK	Short term
Uneven distribution of health facilities	Kajiado County	Strengthening integration of health services and community systems	National Government and CGK	Short term
High infant and child mortality rate	Kajiado County	Strengthening integration of health services and community systems	National Government and CGK	Long term

13.1.5 Human Settlement

Problem	Project	Location	Actors	Timeframe
Poor intra-connection between Kajiado south sub county and the county headquarter, Kajiado Town	To do a class A road between Olondi town joining Kitengela-Namanga road at Ngatatoek (Approximately 77Km)	Kajiado South and Kajiado central	KeNHA	Long term
Poor intra-county connectivity between Kajiado East and Kajiado West sub counties	To do a class A road between Oloibortoto town and Ilpolosat town through Kajiado town (Approximately 124Km)	Kajiado East, Kajiado central and Kajiado west	KeNHA	Long term
Poor inter-county connectivity between Kajiado county and the neighboring Narok County	To have a class A road from Ngong town towards the border of Kajiado and Narok counties (Approximately 56)	Kajiado North and Kajiado West	KeNHA	Long term
High Road Fatality	Have Zebra crossing on busy urban roads in Ong'ata Rongai across Magadi road, in Kitengela across Athi-river Namaga road and in Ngong towns	Kajiado North and Kajiado East	KeNHA/KURA	Short term
	To crack down on unlicensed public transport operators	All sub counties	CGK and Kenya National Police Service	Short term
	To ensure strict enforcement of traffic rules	All sub counties	Kenya National Police Service	Short term
	To construct pedestrian foot bridges across truck roads in urban areas	Kajiado North and Kajiado East	KeNHA/KURA	Medium term

Problem	Project	Location	Actors	Timeframe
	To sensitize the public on road safety	All sub counties	CGK and NTSA	Short term
	To identify and mark blackspots with proper signage	All sub counties	KeNHA, KURA and NTSA	Short term
Inadequate inter-county connectivity between Oloitokitok and Emali	To upgrade the class C road from Oloitokitok to class A (Approximately 100Km)	Kajiado east and Kajiado central	KeNHA	Long term
Traffic congestion in Ngong, Ong'ata Rongai and Kitengela	Clear road encroachment	Kajiado North and Kajiado East	CGK	Short term
	To have dedicated service lanes and limit direct access to properties adjacent to class A roads (Approximately 40Km)	Kajiado North and Kajiado East	KURA	Medium term
	To expand roads areas (Approximately 40Km)	Kajiado North and Kajiado East	KURA	Medium Term
	Construct adequate dedicated foot paths and cycling lanes to encourage use of non-motorized transport	Kajiado North, Kajiado East and Kajiado central	CGK and KURA	Medium Term
	To have a Class A road by passing major towns (Approximately 70Km)	Kajiado North and Kajiado East	KeNHA	Long term
Poor rail connectivity	To expand and equip the rolling stock of the existing Magadi railway	Kajiado East, Kajiado Central and Kajiado West	CGK, and Tata chemicals	Short term
	To maintain the existing railway line in good working condition	Kajiado East, Kajiado Central	Magadi Limited (TCML)	Short term

Problem	Project	Location	Actors	Timeframe
		and Kajiado West		
	To have the Athi river-Magadi railway line upgraded to SGR standards	Kajiado East, Kajiado Central and Kajiado West	National Government (LAPSET), CGK, and Tata chemicals	Medium term
	To have the route extended for passengers from Kajiado through Athi river to Syokimau railway station	Kajiado East	National Government (LAPSET	Medium term
	To have Ngong, Ong'ata Rongai, Kiserian, Kajiado and Kitengela connected to Nairobi via the SGR commuter rail service	Kajiado North, Kajiado East and Kajiado central	National Government (LAPSET	Long term
Lack of a pipeline transport and potential for Natural gas/oil	To step up sustain efforts to find natural gas and oil	All sub counties	National government	Long term
	To have an oil terminus in Kajiado town	Kajiado central	Kenya Pipeline Company(KPC)	Long term
	To establish a pipeline between Nairobi terminus and Kajiado town	Kajiado central and Kajiado East	Kenya Pipeline Company (KPC)	Long term
Limited use of air transport usage	To upgrade all airstrip runways to bitumen standards	All sub counties	Kenya Airport Authority (KAA)	Medium term
	To lengthen runways to allow landing of larger planes	All sub counties	Kenya Airport Authority (KAA)	Long term
Inadequate supply of safe drinking water	To service the existing water services company and equip them to maximize output	All sub counties	CGK	Short term
	To service the current water reticulation	All sub counties	CGK	Short term

Problem	Project	Location	Actors	Timeframe
	system to reduce water losses			
	To ensure water services companies are adequately staffed	All sub counties	CGK	Short term
	To ensure water tariffs are affordable by offering incentives to water companies in the county	All sub counties	CGK	Medium term
	Expand the capacity of existing water companies by exploring alternative sources of water and increasing their water storage capacity	All sub counties	CGK	Medium term
	To construct dams to store storm water	All sub counties	National government and CGK	Long term
	To come up with policy on water rain harvesting	All sub counties	CGK	Short term
	To sensitize the community on water conservation	All sub counties	CGK	Short term
	To expand water reticulation into rural areas	All sub counties	CGK	Long term
Flash floods	To ensure all roads especially in towns such as Ong'ata Rongai, Ngong, Kajiado towns and Kiserian have storm drain	Kajiado North, Kajiado central, Kajiado East	CGK and KURA	Short term
	Control development to ensure laws regarding riparian land are enforced	All sub counties	CGK	Short term
	To have regular maintenance of roads to ensure drainage facilities are not blocked by solid waste or other foreign material	All sub counties	KeNHA, KURA and CGK	Short term

Problem	Project	Location	Actors	Timeframe
	Control development to allow green areas to avoid excessive surface runoff during storms	All sub counties	CGK	Short term
	Control sand harvesting in rivers across the county	All sub counties	CGK	Short term
	Encourage reforestation and afforestation whereas controlling charcoal burning	All sub counties	Kenya Forest Services	Long term
Poor Power Connectivity	To sensitize locals on solar energy harvesting technologies	All sub counties	CGK	Short term
	To extend the national grid in Kajiado county especially in Kajiado south	Kajiado South	Kenya Power company	Long term
Poor Access to ICT services	To have well equipped community ICT centers in each sub county	All sub counties	PPP (Public private partnership) and CGK	Long term
	To clear road reserves of illegal structures to reduce cost of laying the fibre optic cables	All sub counties	CGK	Short term
	To increase power connectivity through alternative sources of energy such as solar and wind energy	All sub counties	Kenya Power company	Long term
	To collaborate with private companies providing voice and data services to invest more in ICT infrastructure, increase signal strength and coverage	All sub counties	CGK	Short term

Problem	Project	Location	Actors	Timeframe
	To expand the fibre optic network to cover more areas in the county	All sub counties	PPP (Public private partnership) and CGK	Long term
Lack of proper sanitation facilities	Public sensitization on alternative healthy waste disposal methods.	All sub counties	CGK	Short term
	Construction of sewerage treatment plants in each sub county complete with sewerage connection for household especially in urban areas	All sub counties	CGK	Long term

Source: Project team

14.1.6 Planning Sector

Problem	Project	Location	Actors	Timeframe
Unplanned Urban Centers-Kajiado	Preparation of Detailed ISUDP for Kajiado	Kajiado Central	CGK Dev. Partners	Short term
Unplanned Urban Centers-Kitengela	Preparation of Detailed ISUDP for Kitengela	Kajiado East	CGK NaMSIP	Ongoing
Unplanned Urban Centers-Ngong	Preparation of Detailed ISUDP for Ngong	Kajiado North	CGK NaMSIP	Ongoing
Unplanned Urban Centers-Namanga	Preparation of Detailed ISUDP for Namanga	Kajiado Central	CGK Dev. Partners	Short term
Unplanned Urban Centers-Ong'ata Rongai	Preparation of Detailed ISUDP for Ong'ata Rongai	Kajiado North	CGK Dev. Partners	Ongoing
Unplanned Urban Centers-Kiserian	Preparation of Detailed ISUDP for Kiserian	Kajiado North	CGK Dev. Partners	Short term
Unplanned Urban Centers-Isinya	Preparation of Detailed ISUDP for Isinya	Kajiado East	CGK Dev. Partners	Short term
Unplanned Urban Centers-Oloitokitok	Preparation of Detailed ISUDP for Oloitokitok	Kajiado South	CGK Dev. Partners	Short term
Unplanned Urban Centers-IlBisil	Preparation of Detailed ISUDP for Bisil	Kajiado Central	CGK Dev. Partners	Medium term
Unplanned Urban Centers-Sultan Hamud	Preparation of Detailed ISUDP for Sultan Hamud	Kajiado East	CGK Dev. Partners	Short term
Unplanned Urban Centers-Magadi	Preparation of Detailed ISUDP for Magadi	Kajiado West	CGK Dev. Partners	Short term
Unplanned Market Centers	Preparation of Detailed ISUDP for Market centers	County wide	CGK Dev. Partners	Medium Term

14.1.7 Economics Sector

Problem/Issue	Project/Program	Location/Area	Actor	Timeframe
-Fluctuations in revenue collection. -Inefficiencies in revenue collection.	Implementation of a mobile revenue collection system	Countywide (Parking fees, single business permits, licensing)	CGK – County Treasury	1 year
-Businesses located in unauthorized areas (road reserves, roundabouts and streets) - Barriers to trade among SMEs.	Construction of jua kali shades	Kajiado, Ngong, Kitengela, Oloitokitok, Kiserian, Namanga and Masimba.	CGK - Trade, Tourism and Industrialization	Kajiado, Ngong, Kitengela and Kiseria – Year 1-2 Oloitokitok, Namanga and Masimba – Year 3
-Low industrial activity in the county -Failure to capitalize on the proximity to Nairobi and the Athi River industrial park -High unemployment	Establishment of an industrial park	Kitengela	CGK - Trade, Tourism and Industrialization	4-6 years
-High cost of capital for SMEs.	Establishment of a fund to provide loans to SMEs through group lending	Countywide	CGK - Trade, Tourism and Industrialization	1 year

CHAPTER 15: CAPITAL INVESTMENT PLAN

15.1 Overview

The Capital Investment Plan (CIP) is a plan meant for funding major purchases, land acquisitions, construction and restoration projects. The CIP is not a funding nor project authorization process but rather a planning tool intended to:

- Identify all capital needs anticipated for five years
- Plan, schedule, and implement capital projects
- Identify appropriate actors to fund selected development projects
- Estimate the impact of capital projects on the operating budget

Inform the public about proposed investments

15.1 Environment and Natural Resources

Programmes	Location	Programme Cost (Ksh Millions)	Actors	Timeframe
Public awareness and make concrete plans on disaster management	Countywide	150	CGK Dev. Partners	Short term
Disaster mapping and establish appropriate land use bylaws including buildings and other structures.	Countywide	300	CGK, National Government Dev. Partners	Short term
Quick response disaster management team at the. County Disaster Management	All sub county	500	CGK, National Government Dev. Partners	Short term
Promote public awareness on sustainable solid waste management.	All urban areas	1000	CGK Dev. Partners	Short term
Identify, protect and conserve national parks, wildlife corridors and wildlife dispersal areas.	All areas adjacent to national parks and game reserves	250	CGK, National Government Dev. Partners	Intermediate
Environmental feasibility of land zoning for solid waste management.	All urban areas	1000	CGK Dev. Partners	Medium term
Develop/review ecosystem management of wildlife area.	Athi-Kaputiei	270	CGK	Medium/Long term

Programmes	Location	Programme Cost (Ksh Millions)	Actors	Timeframe
	ecosystem; South Rift (Magadi and Natron lakes region); Amboseli and West Kilimanjaro ecosystem			
Establish wildlife conservancies along corridors to maintain the habitat	Countywide	270	CGK, National Government Dev. Partners	Immediate and continuous
Promote ecotourism in Group ranches	Countywide	130	CGK, private sector	Immediate and continuous
Support formation of Water Resource Users Associations (WRUAs)	Countywide	78	CGK, National Government Dev. Partners	Medium term
Tree nurseries and engage women and youth groups in producing seedling and selling the	Countywide	120	CGK Dev. Partners	Intermediate and Short term

Programmes	Location	Programme Cost (Ksh Millions)	Actors	Timeframe
same, such as "Trees for jobs programme" in the Department of Youth Development				
Study of mineral resources and sustainable exploitation.	Countywide	250	CGK, National Government, private sector, Dev. Partners	Medium term
Expansion of the existing stormwater drainages and planning new one in urban areas.	Kajiado, Kitengele, Ngong, Isinya	5,000	CGK Dev. Partners	Long-term
Water harvesting and construction of water retention facilities like retention ponds, dams, and tanks.	Countywide	7,000	CGK, National Government Dev. Partners	Long term
Protection of water catchment areas, control pollution of lakes and rivers by planting trees along the riparian reserves, control encroachment and cultivation on riparian reserves/wayleaves, riparian areas.	Ngong Hills, Loitokitok hills.	1,000	CGK, National Government Dev. Partners	Long term

15.2 Livestock and Agriculture Sector

Programmes	Location	Programme Cost (Ksh Millions)	Actors	Timeframe
Awareness creation and education to change traditional mindsets	Countywide	50	CGK Dev. Partners	Short term
Awareness creation and education to reduce Land subdivision especially group ranches	Countywide	50	CGK Dev. Partners	Short term
Soil/water conservation Grazing Management Fodder conservation	Countywide	5000	CGK Dev. Partners	Short term
Robust extension services Farmer training schools Improve inputs supplies Irrigation projects Enhanced extension services Improved fodder production Disease control and AI	Countywide	1000	CGK Dev. Partners	Short term
Crops produce storage facilities Milk Cooling plants Fish cooling plants Slaughterhouses	Countywide	1000	CGK Dev. Partners	Short term
Crops value chains Milk Value chain Meats value chains Leather value chain	Countywide	50	CGK Dev. Partners	Short term
Build wholesale farmers markets Agriculture information centers Farmers' cooperative societies	Countywide	3,000	CGK Dev. Partners	Short term

15.3 Transport and Infrastructure

Project	Location	Cost (Ksh)	Actors	Timeframe
To upgrade the Oloitokitok, Kimana, Isara mashuru, Imaroro Kaitoriori Kajiado road to class B status. (Approximately 194Km)	Kajiado South and Kajiado central	4.62b	KeNHA	Long term
To upgrade to class B the road from Ngong town through Saikeri to Mosiro in Kajiado west subcounty. The road should eventually connect to Narosura in Narok county road C11 to Narok town. (Approximately 109Km)	Kajiado North and Kajiado West	6.6b	KeNHA	Long term
Have Zebra crossing on busy urban roads in Ong'ata Rongai across Magadi road, in Kitengela across Athi-river Namanga road and in Ngong towns	Kajiado North and Kajiado East	1m	KeNHA/KURA	Short term
To crackdown on unlicensed public transport operators	All sub counties	NIL	CGK and Kenya National Police Service	Short term
To ensure strict enforcement of traffic rules	All sub counties	NIL	Kenya National Police Service	Short term
To construct pedestrian footbridges across truck roads in urban areas	Kajiado North and Kajiado East	320m	KeNHA/KURA	Medium term
To sensitize the public on road safety	All sub counties	60m	CGK and NTSA	Short term

To identify and mark blackspots with proper signage	All sub counties	10m	KeNHA, KURA and NTSA	Short term
To upgrade the C102 road from Oloitokitok to Emali to class B status (Approximately 100Km)	Kajiado East and Kajiado Central	6b	KeNHA	Long term
Clear road encroachment	Kajiado North and Kajiado East	10m	CGK	Short term
To have dedicated service lanes and limit direct access to properties adjacent to class A roads (Approximately 40Km)	Kajiado North and Kajiado East	1.6b	KURA	Medium term
To expand roads in urban areas (Approximately 40Km)	Kajiado North and Kajiado East	600m	KURA	Medium Term
To introduce pedestrian walkways and cycling lanes on Ngong road from Embulbul into Ngong township to the junction with Kahara road. Pedestrian walkways and cycling lanes should be furnished with well-maintained streetlights for safety	Kajiado North	80m	CGK and KURA	Medium Term
To introduce pedestrian walkways and cycling lanes on Forest line road to serve the settlements clustered along the route.	Kajiado North	47m	CGK and KURA	Medium Term
To introduce cycling lanes along Kahara road and Ololua roads within the Ngong township boundary.	Kajiado North	40m	CGK and KURA	Medium Term

Pedestrian walkway and cycling lanes should be introduced along Magadi road C58 from the junction of Magadi road with Rimpa roads to the junction of Magadi road with the Kiserian-Isinya road.	Kajiado North	35m	CGK and KURA	Medium Term
Pedestrian walkways and cycling lanes to be constructed along Magadi road from Maasai Lodge area to Kandisi River.	Kajiado North	98m	CGK and KURA	Medium Term
To have appropriate by-pass route in Kitengela, Ngong and Ong'ata Rongai townships (Approximately 70Km)	Kajiado North and Kajiado East	4.2b	KeNHA	Long term
To expand and equip the rolling stock of the existing Magadi railway	Kajiado East, Kajiado Central and Kajiado West	1b	CGK, and Tata chemicals	Short term
To maintain the existing railway line in good working condition	Kajiado East, Kajiado Central and Kajiado West	5b	Magadi Limited (TCML)	Short term
To have the Athi river-Konza-Magadi railway line upgraded to SGR standards	Kajiado East, Kajiado Central and Kajiado West	70b	National Government (LAPSET),CGK, and Tata chemicals	Medium term
To have the route extended for passengers from Kajiado through Konza, Athi river to Syokimau railway station	Kajiado East	4b	National Government (LAPSET	Medium term

To have Ngong, Ong'ata Rongai, Kiserian, Kajiado and Kitengela connected to Nairobi via the SGR commuter rail service	Kajiado North, Kajiado East and Kajiado central	33.425b	National Government (LAPSET	Long term
To step up sustain efforts to find natural gas and oil	All sub counties	3b	National government	Long term
To have an oil terminus in Kajiado town	Kajiado central	6b	Kenya Pipeline Company(KPC)	Long term
To establish a pipeline between Nairobi terminus and Kajiado town	Kajiado central and Kajiado East	11.86b	Kenya Pipeline Company(KPC)	Long term
To upgrade all airstrip runways to bitumen standards	All sub counties	900m	Kenya Airport Authority (KAA)	Medium term
To lengthen runways to allow the landing of larger planes	All sub counties	540m	Kenya Airport Authority (KAA)	Long term
To service the existing water services company and equip them to maximize output	All sub counties	2b	CGK	Short term
To service the current water reticulation system to reduce water losses	All sub counties	1b	CGK	Short term
To ensure water services companies are adequately staffed	All sub counties	430m	CGK	Short term
To ensure water tariffs are affordable by offering incentives to water companies in the county	All sub counties	570m	CGK	Medium term

Expand the capacity of existing water companies by exploring alternative sources of water and increasing their water storage capacity	All sub counties	1b	CGK	Medium term
To construct dams to store stormwater	All sub counties	13b	National government and CGK	Long term
To come up with a policy on water rain harvesting	All sub counties	NIL	CGK	Short term
To sensitize the community on water conservation	All sub counties	460m	CGK	Short term
To expand water reticulation into rural areas	All sub counties	3b	CGK	Long term
To ensure all roads especially in towns such as Ong'ata Rongai, Ngong, Kajiado towns and Kiserian have storm drain	Kajiado North, Kajiado central, Kajiado East	1.3b	CGK and KURA	Short term
Control development to ensure laws regarding riparian land are enforced	All sub counties	20.8m	CGK	Short term
To have regular maintenance of roads to ensure drainage facilities are not blocked by solid waste or other foreign material	All sub counties	1.3b	KeNHA, KURA and CGK	Short term
Control development to allow green areas to avoid excessive surface runoff during storms. The rules on offset distances on all new land development projects should be observed during the approval stage and enforced on site. This is not project	All sub counties	500m	CGK	Short term

specific and should apply to all new projects in the county.				
Control sand harvesting in Kajiado, Turoka and Mataraguesh and other seasonal rivers	All sub counties	700m	CGK	Short term
Encourage reforestation and afforestation whereas controlling charcoal burning particularly in Ngong hill, Posimuni, Oletukat, Oloitokitok, Namanga and Entarara forests.	All sub counties	1b	Kenya Forest Services	Long term
To sensitize locals on solar energy harvesting technologies	All sub counties	1b	CGK	Short term
To extend the national grid in Kajiado county especially in Kajiado south	Kajiado South	22.8b	Kenya Power	Long term
To have well-equipped community ICT centers in each sub county	All sub counties	1.2b	PPP (Public private partnership) and CGK	Long term
To clear road reserves of illegal structures to reduce cost of laying the fiber optic cables	All sub counties	10m	CGK	Short term
To increase power connectivity through alternative sources of energy such as solar and wind energy	All sub counties	2b	Kenya Power and Lightening company	Long term
To collaborate with private companies providing voice and data services to invest more in ICT	All sub counties	2b	CGK	Short term

infrastructure, increase signal strength and coverage				
To expand the fiber optic network to cover more areas in the county	All sub counties	2b	PPP (Public private partnership) and CGK	Long term
Public sensitization on alternative healthy waste disposal methods.	All sub counties	600m	CGK	Short term
Construction of sewerage treatment plants in each sub county complete with sewerage connection for household especially in urban areas	All sub counties	5b	CGK	Long term

15.4 Social Infrastructure

Location	**Project**	**Actor**	**Cost**	**Time frame**
Kajiado County	Construction of new schools in identified areas	National Government and CGK	200m	Short term
Kajiado County	- Promoting social support activities in schools - School feeding program implementation	National Government and CGK	50m	Long term
Kajiado County	Women and youth empowerment programs through provision of basic education and daily household knowledge to supplement the available sources of livelihoods	CGK	5m	Medium term

Kajiado County	Strengthening integration of health services and community systems	National Government and CGK	50m	Short term
Kajiado County	Renovation and upgrading of the existing stadium in Kajiado North Sub County	National Government and CGK	200m	Long term
Kajiado County	Provision of mobile clinics in remote areas	National Government and CGK	40m	Short term

14.5 Human Settlement

Project	**Actor**	**Costs (Kshs)**	**Time Frame**
Land carrying capacity assessment.	CGK, Ministry of lands, NLC, Ministry of agriculture, Ministry of environment & natural resources.	100m	Short term
Prepare & enforce land use plans (towns & regional spatial plans) indicating minimum land sizes in different areas/zones.	CGK	100mpa	long term
Employment & economic opportunities creation.	CGK, National Government	200mpa	Long term
Domesticate national housing Policy. Promote low-cost housing projects. Slum upgrading. Research on affordable building materials.	CGK, NGOs, CBOs, NG, NHC, private sector, PPPs, Housing Cooperatives, Organized groups, Residents and engaging development partners.	500mpa	Long term

Assessment, Planning & installation of infrastructure and social amenities.	CGK, NG	5bpa	Long term
Controlling linear development	"	200mpa	
Removing all encroachments on road reserves. Enhance capacity for development control	CGK, Road agencies (Kenha, Kura, Kerra).	5mpa	Short term, long term.
Identify areas for markets for informal businesses.	CGK	100mpa	Short term
Provision of adequate infrastructure, social services, affordable houses, employment and economic opportunities.	CGK	2b pa	Long tern
Area spatial plan. Creating Enforcement capacity.	CGK	100m	Short term

15.6 Planning Sector

Project	**Location**	**Project Cost**	**Actors**	**Timeframe**
Preparation of Detailed ISUDP	Kajiado Central	50m	CGK Dev. Partners	Short term
Preparation of Detailed ISUDP for Namanga	Kajiado Central	45m	CGK Dev. Partners	Short term
Preparation of Detailed ISUDP for Isinya	Kajiado East	25m	CGK Dev. Partners	Short term
Preparation of Detailed ISUDP for Oloitokitok	Kajiado South	30m	CGK Dev. Partners	Short term
Preparation of Detailed ISUDP for Sultan Hamud	Kajiado East	20m	CGK Dev. Partners	Short term

15.7 Economics Sector

Project	Actor	Costs	Time Frame
Implementation of a mobile revenue collection system	CGK – County Treasury and Department of Public Service, Administration, Citizen Participation and ICT	10 million.	Short term
Construction of jua kali shades in Kajiado, Ngong, Kitengela, Oloitokitok, Kiserian, Namanga and Masimba.	CGK - Trade, Tourism and Industrialization	15 million.	Short term
Establishment of an industrial park in Kitengela (25 ha)	CGK - Trade, Tourism and Industrialization	500 million	Medium term
Establishment of a fund to provide loans to SMEs through group lending	County Treasury and Trade, Tourism and Industrialization	30 million p.a.	Short-term

CHAPTER 16: MONITORING AND EVALUATION FRAMEWORK

16.1 Overview

One of the key stages of all development projects is the progress tracking of the implementation of the development project and the continual feedback run shaped by an elaborate monitoring and evaluation framework. The Kajiado County Spatial Plan aims to bridge the gap that has existed between physical and economic planning and with that, the County Investment Plan brings out the economic aspects that will drive the proper execution of the physical developments.

Monitoring and evaluation provide a basis for adaptive management and continuous improvement of the environmental conditions of the County, and guides the continuous measurement of progress indicators throughout the plan implementation stage. It is necessary as it guides the measurement of the achievement of various aspects of proposed projects and assessment of a project's viability as projected in the plan.

Monitoring and Evaluation Phases

As projects and programmes progress from one stage to the next, the smooth transition is a marker that is vividly brought out as a sign of good output evaluation. Progress indicators are necessary especially during the monitoring stage. Evaluation ensures that all the intended outputs and outcomes are as positive as they are indicated within the implementation schedule.

Through public participation, stakeholders play key and crucial roles, with reference to their professions and as a way to uphold public participatory trend that Kajiado County has practiced throughout the formulation of the CSP, a monitoring and evaluation committee will be selected from all the key stakeholder groups including the County Government of Kajiado, the County Assembly of Kajiado, the Consultant Team, the NLC, interested investors and property owners as well as representatives from the local community. This committee will be in charge of deliberating as to whether or not the strategic development areas adhere to the development models in achieving the vision of the Kajiado CSP.

Indicators

Sustainable development indicators are intertwined within the; economic, social, environmental and spatial realms. Indicators of progress define whether the expected outcomes, as predicted in the implementation schedule, positively reflect sustainability. The matrix below explains the progress indicators per sector.

16.1.1 Environment and Natural Resources Management

Programme (s)	Location	Monitoring Indicator
Public awareness and make concrete plans on disaster management	Countywide	• No. trainees, no. of training in each subcounty. • No. of plans completed.
Disaster mapping and establish appropriate land use bylaws including buildings and other structures.	Countywide	• Maps completed. • Bylaws taken to the County Assembly
Quick response disaster management team at the. County Disaster Management	All sub county	• Sub county teams trained and established
Promote public awareness on sustainable solid waste management.	All urban areas	• No. trained • No. of urban areas completed
Identify, protect and conserve national parks, wildlife corridors and wildlife dispersal areas.	All areas adjacent to national parks and game reserves	• Completed survey wildlife routes
Environmental feasibility of land zoning for solid waste management.	All urban areas	• No. urban areas completed
Awareness and establish wildlife conservancies along corridors to maintain the habitat	Countywide	• No. of awareness seminars on beneficial land use types

Programme (s)	Location	Monitoring Indicator
Promote ecotourism in Group ranches	Countywide	• No. brocures produced on ecotourism • No. of initiatives in marketing ecotourist sites.
Support formation of Water Resource Users Associations (WRUAs)	Countywide	• Awareness seminars haeld • No. of WRUA established • Evidence of funding in support by WRA
		•
Tree nursaries and engage women and youth groups in producing seedling and selling the same, such as "Trees for jobs programme" in the Department of Youth Development	Countywide	• No. established tree nursery groups
Study of mineral resources and sustainable exploitation.	Countywide	• Report on minerals potential.
Expansion of the existing storm water drainages and planning new one in urban areas.	Kajiado, Kitengele, Ngong, Isinya	• No. of feasibility plans completed
Water harvesting and construction of water retention facilities like retention ponds, dams, and tanks.	Countywide	• No. of consultation meetings with the Water Storage Authority, Ministry of Water and Irrigation.
Protection of water catchment areas, control pollution of lakes and rivers by planting trees along the riparian reserves, control	Mt. Kilimanjaro aquifer, Ngong Hills, Loitokitok hills.	• No. of seminars and consultations with the Water Towers Authority. • Completed reports on surface and groundwater resources for each water tower.

Programme (s)	Location	Monitoring Indicator
encroachment and cultivation on riparian reserves/wayleaves, riparian areas.		• No. of completed sub catchment management strategies. • Budgetary support for water catchment management
Development/review of ecosystem management of wildlife area.	Athi-Kaputiei ecosystem; South Rift (Magadi and Natron lakes region); Amboseli and West Kilimanjaro ecosystem	•

16.1.2 Livestock and Agriculture Sector

Programme (s)	Location	Monitoring Indicator
Awareness creation and education to change traditional mindsets	Countywide	• Adoption of commercial farming practices • Mindset change
Awareness creation and education to reduce Land subdivision especially group ranches	Countywide	• Reduced rate of land subdivision • Community empowerment
• Soil/water conservation • Grazing Management • Fodder conservation	Countywide	• Fodder and water availability • Soil cover and animal body condition
• Robust extension services • Farmer training schools • Improve inputs supplies • Irrigation projects • Enhanced extension services • Improved fodder production • Disease control and AI	Countywide	• Number of extension workers per ward • Farmer visitations • Number of training • Availability of inputs • Per capita fodder production • Inseminations per month • A decrease in disease incidence • Number of agribusiness loans
• Crops produce storage facilities • Milk Cooling plants • Fish cooling plants • Slaughterhouses	Countywide	Number and capacity of storage/cooling facilities
• Crops value chains • Milk Value chain	Countywide	• Number of value chains • PPPs in operation

• Meats value chains • Leather value chain		• Jobs created • Revenues earned • Number of agribusiness industries/ parks
• Build wholesale farmers markets • Agriculture information centers • Farmers' cooperative societies	Countywide	• Number of wholesale markets • Number of agriculture information centers • New markets created • Number of new cooperatives

16.1.3 Transport and Infrastructure

Project	Location	Monitoring Indicator
To upgrade the Oloitokitok, Kimana, Isara Mashuru, Imaroro Kaitoriori Kajiado road to class B status. (Approximately 194Km)	Kajiado South and Kajiado central	Presence of the road done to recommended standards
To upgrade to class B the road from Ngong town through Saikeri to Mosiro in Kajiado west subcounty. The road should eventually connect to Narosura in Narok county road C11 to Narok town. (approximately 109Km)	Kajiado North and Kajiado West	Presence of the road done to recommended standards
Have Zebra crossing on busy urban roads in Ong'ata Rongai across Magadi road, in Kitengela across Athi-river Namaga road and in Ngong towns	Kajiado North and Kajiado East	Presence of zebra crossing done to recommended standards
To construct pedestrian footbridges across truck roads in urban areas	Kajiado North and Kajiado East	Reduce road traffic incidences involving pedestrians and reduced road congestion

Project	Location	Monitoring Indicator
To sensitize the public on road safety	All sub counties	Reduced road accidents
To identify and mark blackspots with proper signage	All sub counties	Presence of road signs and Reduced road accidents
To upgrade the C102 road from Oloitokitok to Emali to class B status (Approximately 100Km)	Kajiado East and Kajiado central	Presence of the road done to recommended standards
Clear road encroachment	Kajiado North and Kajiado East	
To have dedicated service lanes and limit direct access to properties adjacent to class A roads (Approximately 40Km)	Kajiado North and Kajiado East	Presence of a dedicated service lanes done to recommended standards
To expand roads areas (Approximately 40Km)	Kajiado North and Kajiado East	Increase in documented serviceable road network mileage in the county
Construct adequate dedicated footpaths and cycling lanes to encourage use of non-motorized transport	Kajiado North, Kajiado East and Kajiado central	Presence of footpaths and cycling lanes done to recommended standards
To have appropriate by-pass routes in Kitengela, Ngong and Ong'ata Rongai townships (Approximately 70Km)	Kajiado North and Kajiado East	Presence of bypass roads done to recommended standards
To expand and equip the rolling stock of the existing Magadi railway	Kajiado East, Kajiado Central and Kajiado West	Presence of new and refurbished rolling stock
To maintain the existing railway line in good working condition	Kajiado East, Kajiado Central and Kajiado West	Consistency of train trips

Project	Location	Monitoring Indicator
To have the Athi river-Magadi railway line upgraded to SGR standards	Kajiado East, Kajiado Central and Kajiado West	Presence of SGR between Athi River and lake Magadi
To have the route extended for passengers from Kajiado through Athi river to Syokimau railway station	Kajiado East	Presence of SGR from Kajiado through Athi river to Syokimau train station
To have Ngong, Ong'ata Rongai, Kiserian, Kajiado and Kitengela connected to Nairobi via the SGR commuter rail service	Kajiado North, Kajiado East and Kajiado central	Presence of an SGR connection between Ngong, Ong'ata Rongai, Kiserian, Kitengela and Nairobi
To step up sustain efforts to find natural gas and oil	All sub counties	Increase in available data in natural gas and oil within Kajiado county
To have an oil terminus in Kajiado town	Kajiado central	Presence of oil terminus in Kajiado
To establish a pipeline between Nairobi terminus and Kajiado town	Kajiado Central and Kajiado East	Presence of a pipeline between Nairobi and Kajiado town
To upgrade all airstrip runways to bitumen standards	All sub counties	Presence of bitumen standards runways
To lengthen runways to allow landing of larger planes	All sub counties	Increased length of runway
To service the existing water services company and equip them to maximize output	All sub counties	Increased water supply in quantity, quality and consistency
To service the current water reticulation system to reduce water losses	All sub counties	Increased water supply in quantity, quality and consistency
To ensure water services companies are adequately staffed	All sub counties	Increased water supply in quantity, quality and consistency

Project	Location	Monitoring Indicator
To ensure water tariffs are affordable by offering incentives to water companies in the county	All sub counties	Reduced water tariffs
Expand the capacity of existing water companies by exploring alternative sources of water and increasing their water storage capacity	All sub counties	Increased customer numbers and increased consistency in water supply. Increased output volumes
To construct dams to store storm water	All sub counties	Presence dams
To come up with a policy on water rain harvesting	All sub counties	Drafting and passing of water harvesting policy by the county assembly
To sensitize the community on water conservation	All sub counties	Reduction in water scarcity
To expand water reticulation into rural areas	All sub counties	Increased customer numbers and increased consistency in water supply. Increased output volumes
To ensure all roads especially in towns such as Ong'ata Rongai, Ngong, Kajiado towns and Kiserian have storm drain	Kajiado North, Kajiado central, Kajiado East	Presence of adequate storm drains done to approved standards
Control development to ensure laws regarding riparian land are enforced	All sub counties	Reduction in riparian land encroachment
To have regular maintenance of roads to ensure drainage facilities are not blocked by solid waste or other foreign material by having regular maintenance programs.	All sub counties	Reduction in flash floods hazards in the county

Project	Location	Monitoring Indicator
Control development to allow green areas to avoid excessive surface runoff during storms. This should be done by strict enforcement of plot coverage and offset distance regulations at the approval and construction stages of all developments	All sub counties	Reduction in flash floods hazards in the county
Control sand harvesting in rivers across the county by licensing sand harvesters and rehabilitating abandoned sand quarries.	All sub counties	Increase in licensed sand harvesting quarries. Reduction in illegal/hazardous sand harvesting practices
Encourage reforestation and afforestation whereas controlling charcoal burning	All sub counties	Increased forest/ tree cover in the county
To sensitize locals on solar energy harvesting technologies	All sub counties	Increased access to power by locals
To extend the national grid in Kajiado county especially in Kajiado south	Kajiado south	Increase in the number of households and industries connected the national grid
To have well equipped community ICT centers in each sub county	All sub counties	Increased digital literacy levels
To clear road reserves of illegal structures to reduce cost of laying the fiber optic cables	All sub counties	Increased digital literacy levels
To increase power connectivity through alternative sources of energy such as solar and wind energy	All sub counties	Increased power connection to households and industries
To collaborate with private companies providing voice and data services to invest	All sub counties	Increased digital literacy levels

Project	Location	Monitoring Indicator
more in ICT infrastructure, increase signal strength and coverage		
To expand the fiber optic network to cover more areas in the county	All sub counties	
Public sensitization on alternative healthy waste disposal methods.	All sub counties	Reduced incidences of hygiene related diseases
Construction of sewerage treatment plants in each sub county complete with sewerage connection for household especially in urban areas	All sub counties	Presence of adequate sewerage installations in the county

16.1.4 Social Infrastructure

Location	Project	Actor	Indicator
Kajiado county	Construction of new schools in identified areas	National Government and CGK	**Number of schools build**
Kajiado county	- Promoting social support activities in schools - School feeding program implementation	National Government and CGK	Number of students in school Rate of transition
Kajiado North	Renovation and upgrading of the existing stadium in	National Government and CGK	**Complete stadium**

Location	Project	Actor	Indicator
	Kajiado North Sub County		
Kajiado county	Provision of basic education and daily household knowledge Women empowerment programs	• The County Government of Kajiado • Ministry of Education, Science and Technology • Human Rights and Women Empowerment Organizations	• Reduction in the number of early/child marriages and other outdated cultural practices • More women representatives in both the county and national assemblies • Increased sources of livelihoods
Kajiado county	Provision of mobile clinics in remote areas	• The County Government of Kajiado • Ministry of Health • Non-governmental organizations	• Low infant and child mortality rate • Reduced morbidity • Advanced maternal and child health
Kajiado county	• Employment of trained teaching staff • Construction of new schools in areas where there is uneven distribution of schools	• The County Government of Kajiado • Ministry of Education, Science and Technology	• Reduction in the number of early/child marriages and other outdated cultural practices • Increased

Location	Project	Actor	Indicator
	• Setting up of social support activities in education centers		

16.1.5 Human Settlement

Project	Locality	Strategy	Programme	Actor	Indicators
To accommodate the bourgeoning urban population sustainably.	Markets, urban centres & towns.	Plan all towns in the county.	Planning all unplanned towns.	CGK	Planned towns.
To attain a sustainable distribution of settlements and population	County wide	Establish the sustainable settlements and population carrying capacities for the various agro ecological zones.	Land carrying capacity assessment.	CGK, Ministry of lands, NLC, Ministry of agriculture, Ministry of environment & natural resources.	A justifiable & sustainable human settlements & population spatial distribution
To attain sustainable	County wide	Control land subdivision	Prepare & enforce land use plans (towns &	CGK	County & towns spatial plans.

Project	Locality	Strategy	Programme	Actor	Indicators
land parcels. To control land subdivision into unsustainable sizes.		without a guiding land use plan.	regional spatial plans) indicating minimum land sizes in different areas/zones.		Controlled Land subdivision
To reduce levels of poverty.	Rural areas & Urban slums	Economically empower the poor	Employment & economic opportunities creation. Use of modern techniques and practices in livestock production	CGK, National Government	Reduced poverty levels
To improve housing quantity and quality.	Poor rural and Urban slums	To improve housing quality To encourage urban renewal	Domesticate national housing Policy. Promote low-cost housing projects. Slum upgrading. Research on affordable building materials.	CGK, NGOs, CBOs, NG, NHC, private sector, PPPs, Housing Cooperatives, Organized groups, Residents and engaging development partners.	Affordable quality houses especially for the low-income population.
To increase & improve infrastructure	County wide & especially in markets,	Improve the quantity & quality of the	Assessment, Planning & installation of	CGK, NG	Additional & improved

Project	Locality	Strategy	Programme	Actor	Indicators
and social amenities	urban and towns.	infrastructure and social amenities	infrastructure and social amenities.		infrastructure & social amenities.
To ensure all markets & towns are planned.	Unplanned markets and towns.	To plan all markets & towns. Define urban boundaries	Planning all unplanned centres	CGK	More planned markets & towns.
Managing urban sprawl	All markets & towns	To contain urban sprawl through spatial planning and development control.	Planning all unplanned centres	CGK	More planned markets & towns. Compact towns
Controlling linear development	All markets & towns	To contain urban linear development through spatial planning and development control.	Planning all unplanned centres	CGK	More planned markets & towns. Compact towns
To ensure all markets & towns are planned & development control is enforced.	All markets & towns	To control unplanned development at the road junctions.	Planning all road junction areas and ensuring strict development control.	CGK	Less haphazard development at the road junctions. Well planned road junctions.

Project	Locality	Strategy	Programme	Actor	Indicators
To remove illegal developments on road reserves.	Most road reserves	To keep all road reserves free from illegal developments & encroachment	Removing all encroachments on road reserves. Enhance capacity for development control.	CGK, Road agencies (Kenha, Kura, Kerra).	No illegal developments on road reserves.
To reduce traffic jams in towns.	Major towns	Reduce traffic congestion/ jams in towns	Plan the towns & provide adequate vehicle parking spaces. Discourage overreliance on motor vehicles & Promote NMT	CGK	Less vehicle congested urban centres with more NMT.
To reduce informal businesses on the road reserves.	Urban areas, market centres & other roads	To provide markets for the traders.	Identify areas for markets for the informal businesses.	CGK	Less trading on the road reserves. More markets.
To reduce dispersed human settlements.	County wide.	To encourage nucleated settlements surrounded by farmlands.	Plan the markets and towns and provide them with adequate infrastructure, social services, affordable houses, employment and economic opportunities.	CGK	Well planned centres. Reduced rural settlement densities
Improve Rural-urban Linkages	County wide	Improve roads linking urban to Rural areas	Rural Roads improvement	KURA, KERRA	Improved rural roads.

Project	Locality	Strategy	Programme	Actor	Indicators
Revive economic activities in the “dead” market centres.	Small market centres	Channel more public investments to the “dead” market centres, improve their road linkages and stimulate economic activities.	Intra and inter roads improvements. Public investment in the centres. Provide security. Create Private sector investment incentives	CGK, NG	
To ensure development that promotes conservation	Area next to parks, wildlife and livestock corridors, international frontiers, water catchment areas and wetlands	Prepare & enforce an action area plan. Enforce the lake management plan	Area spatial plan. Creating Enforcement capacity.	CGK	Development that is compatible with ecologically sensitive areas.

16.1.6 Planning Sector

Project	Location	Monitoring Indicator
Preparation of Detailed ISUDP for Kajiado Town	Kajiado Central	-Presence of approved Plan -Developments conforming to approved plan
Preparation of Detailed ISUDP for Kitengela	Kajiado East	-Presence of approved Plan -Developments conforming to approved plan
Preparation of Detailed ISUDP for Ngong	Kajiado North	-Presence of approved Plan -Developments conforming to approved plan
Preparation of Detailed ISUDP for Namanga	Kajiado Central	-Presence of approved Plan -Developments conforming to approved plan
Preparation of Detailed ISUDP for Ong'ata Rongai	Kajiado North	-Presence of approved Plan -Developments conforming to approved plan
Preparation of Detailed ISUDP for Kiserian	Kajiado North	-Presence of approved Plan -Developments conforming to approved plan
Preparation of Detailed ISUDP for Isinya	Kajiado East	-Presence of approved Plan -Developments conforming to approved plan
Preparation of Detailed ISUDP for Oloitokitok	Kajiado South	-Presence of approved Plan -Developments conforming to an approved plan
Preparation of Detailed ISUDP for IlBisil	Kajiado Central	-Presence of approved Plan

Project	Location	Monitoring Indicator
		-Developments conforming to approved plan
Preparation of Detailed ISUDP for Sultan Hamud	Kajiado East	-Presence of approved Plan -Developments conforming to approved plan
Preparation of Detailed ISUDP for Magadi	Kajiado West	-Presence of approved Plan -Developments conforming to approved plan
Preparation of Detailed ISUDP for Market centers		-Presence of approved Plan -Developments conforming to approved plan

16.1.7 Economics Sector

Project	Location	Monitoring Indicator	Target
Implementation of a mobile revenue collection system	Countywide (Parking fees, single business permits, licensing)	-Percentage of revenue collected through the mobile system	-25% of county fees collected through mobile system in 2021. -50% of county fees collected through mobile system in 2024. -75% of county fees collected through mobile system in 2028.
Construction of jua kali shades in Kajiado, Ngong, Kitengela, Oloitokitok, Kiserian,	Kajiado, Ngong, Kitengela, Oloitokitok, Kiserian, Namanga and Masimba.	-The number of jua kali shades constructed.	- 50 jua kali shades in Kajiado by 2020 - 50 jua kali shades in Ngong by 2020 - 50 jua kali shades in Kitengela by 2020 - 50 jua kali shades in Kiserian by 2020 - 30 jua kali shades in Masimba by 2021 - 30 jua kali shades in Magadi by 2021 - 30 jua kali shades in Oloitokitok by 2021

Project	Location	Monitoring Indicator	Target
Namanga and Masimba.			
Establishment of an industrial park	Kitengela	Completion of the industrial park. The number of manufacturing plants established in the industrial park.	-Completion of all construction activities and provision of support infrastructure in 2024 -10 manufacturing firms operating in the industrial park by 2026. -15 manufacturing firms operating in the industrial park by 2028.
Establishment of a fund to provide loans to SMEs through group lending	Countywide	-Number of SMEs using the county loan facilities.	- 1,000 SMEs by 2021. - 3,000 SMEs by 2024 - 5,000 SMEs by 2026 - 7,000 SMEs by 2028

CHAPTER 17: ANNEXES

References

1. Agricultural Sector Development Support Programme. 2014.
2. Baker, B.H., Williams, L.A.J., Miller, J.A. and Fitch, F.J., 1971: Sequence and Geochronology of the Kenya Rift volcanics. Tectonophysics 11, 191-215.
3. Baker, B.H., Williams, L.A.J., Miller, J.A. and Fitch, F.J., 1988: Stratigraphy, geochronology and volcano-tectonic evolution of the Keding-Naivasha-Kinangop, JGS, 145(1), 107-116.
4. Campbell, D.J, Lusch, D.P, Smucker, L and Wangui, E.A. (no date). Root causes of Land Use change, Impacts and Dynamics Project. Working Paper No. 19.
5. Croze H. 1978. Aerial surveys undertaken by Kenya Wildlife Management Project: Methodologies and results. Wildlife Management and Conservation Department and UNEP/FAO Wildlife Project, Nairobi, Kenya. 79 pp.
6. Gichuki, N.N, Oyieke, H.A. and Ndiritu, G.G Assessment and monitoring of wetlands for conservation and development in dry lands: A case study of Kajiado District, Kenya. http://citeseerx.ist.psu.edu/viewdoc/
7. Gichuki, N. N., H. A. Oyieke & G. G. Ndiritu, 1998. Assessment and monitoring of wetlands for conservation and development in drylands: A case study of Kajiado District, Kenya. In Fin-layson, C. M., N. C. Davidson, N. J. Stevenson (eds), Wetland Inventory, Assessment and Monitoring. Practical Techniques and Identification of Major Issues. Supervising Scientist Report 166: 99–107.
8. Guth, A. and Wood, J. 2013 (a). Geology of the Magadi Area. Geological Map of the Southern Kenya Rift. Michigan Technological University Michigan Technological University.
9. Guth, A. and Wood, J. 2013 (b). Geology of the Nairobi Region. Geological Map of Southern Kenya Rift. Michigan Technological University Michigan Technological University.
10. Hemson, G., Maclennan, S., Mills, G., Johnson, P. & Macdonald, D., 2009, 'Community, lions, livestock and money: A spatial and social analysis of attitudes to wildlife and the conservation value of tourism in a human-carnivore conflict in Botswana', *Biological Conservation* 142, 2718–2725. https://doi.org/10.1016/j.biocon.2009.06.024
11. Kajiado County Environmental Management Bill 2015. Kajiado County Gazette Supplement No. 13 (Bills No. 13). Special Issue, Government Printers.

12. Matheson, F.J. 1966. Geology of the Kajiado Area Degree Sheet 51, S.E. Quarter. Government Printers.
13. Kenya Wildlife Conservancy Association (KWCA). 2016. State of Wildlife Conservancies in Kenya. 2016.
14. Kenya Wildlife Service.2008. Amboseli Ecosystem Management Plan, 2008-2018. Nairobi.
15. Kenya Wildlife Conservancies Association (KWCA). 2016. State of Wildlife Conservancies in Kenya Report. 2016.
16. Mbadi, I.J. 2017. Assessment of the environmental effects of quarrying in Kitengela subCounty of Kajiado, Kenya. Project Report, University of Nairobi.
17. MoALF. 2017. Climate Risk Profile for Kajiado County. Kenya County Climate Risk Profile Series. The Ministry of Agriculture, Livestock and Fisheries (MoALF), Nairobi, Kenya.
18. Murage, M. 2018. Kajiado County: Smart Survey. Kajiado County Government/Government of Kenya/UNICEF.
19. Mwende, J. 2016. Foreign investors bet big on Kenya's real estate market. Construction Kenya, April 12, 2016.
20. Nyamai, C. Opiyo-Aketch, N. Mathu, E. and Wallbrecher, E. 2004. A reappraaisal of the geology, geochemistry, structures and tectonics of the Mozambique belt in Kenya, east of the rift system. African Journal of Science and Technology (AJST) Science and Engineering Series Vol. 4, No. 2, pp. 51-71
21. Nyhus, P., Osofsky, S., Ferraro, P. J., Madden, F., Fischer, H., 2005. Bearing the costs of human-wildlife conflict: the challenges of compensation schemes, in: Woodrooffe, R., Thirgood, S., Rabinowitz, A. (Eds.), People and Wildlife: Conflict or Coexistence? Cambridge University Press, London.
22. Obunde, P., Omiti, J., &Sirengo, A.N. (2005).Policy dimensions in human- wildlife conflict in Kenya: Evidence from Laikipia and Nyandarua District. Nairobi, Kenya: Institute of Policy Analysis and Research.
23. Ojwang, G O., Wargute, P W., Said, M Y. Worden J S., Davidson Z, Muruthi, P, Kanga, E. F Ihwagi and Okita-Ouma, B. 2017. Wildlife Migratory Corridors and Dispersal Areas: Kenya Rangelands and Coastal Terrestrial Ecosystems. Government of Kenya. ISBN: 978-9966-107-19-0.Pratt, D. J. and Gwynne, M. D., eds., 1977: Rangeland management and ecology in East Africa. London: Hodder and Stoughton. x + 310 pp.
24. Omoti, K.M, Kitetu, J.J. and Joseph M. Keriko, J.M. 2016. An assessment of the impacts of Gypsum mining on water quality in

Kajiado County, Kenya. Kabarak Journal of Research & Innovation Volume 4 Number 1 (2016)

25. Panizza, E.R.M. 2005. Geomorphosites: definition, assessment and mapping: An introduction. Geomorphogie, vol. 11, no.3, 2005. p. 177-180.
26. Saggerson, E.R. 1991. Geology of the Nairobi Area Degree Sheet 51, NE Quarter, Republic of Kenya Ministry of Environment and Natural Resources Mines and Geological Department 1991 Report No. 98 Republic of Kenya
27. Rattray, J.M. 1960. *The grass cover of Africa.* FAO, Rome, Italy.
28. Selection Using GIS and Remote Sensing for Kajiado County, Kenya. Journal of Earth Science and Engineering 4 (2014) 693-702 doi: 10.17265/2159-581X/2014. 11. 005
29. Sombroek, W.G., H.M. N Braun and B.J.A. van der Pouw, 1982. Exploratory Soil Map and agro-climatic zone map of Kenya. Report E l, Kenya Soil Survey, Nairobi.
30. Republic of Kenya. 2013. Wildlife Conservation and Management Act (2013) No. 47 of 2013.
31. Wildlife Conservation and Management Act (2013)
32. Wahome, C.N. 2013. Contamination Levels of Groundwater, Antimicrobial Resistance Patterns, Plasmid Profiles and Chlorination Efficacy in Ong'ata Rongai, Kajiado North County, Kenya. Thesis Submitted in Partial Fulfilment of the Requirement for Award of the Degree of Master of Science (Microbiology), School of Pure and Applied Sciences of Kenyatta University, November 2013,
33. Warden, A.J. and Horkel, A.D. 1988. Geological evolution of the Northeast Branch of the Mozambique Belt. Mittelungen der Ostter. Geol. Ges. 77, 161-184.

Appendix 1: Stakeholder Consultations

Consultations in Kajiado North

Consultations in Kajiado South

Consultations in Kajiado Central

Consultations in Kajiado East

Consultations in Kajiado West

Appedix 2: Primary Data Collection Tools

Household Questionnaire

Tool 1 –Household Questionnaire for Digital Topographical Mapping and the Preparation of Spatial Plan for Kajiado County

Name of interviewer		Time commenced	Time finished	Date

Introduction: *I am working for a company that has been appointed to prepare plans for Kajiado County. As part of this we are undertaking a survey of households to find out how many people are living here, what work they are doing and the services they are receiving. It will help us plan for the future of the County, and make it work more efficiently and serve you better. This survey is confidential. To the Head of Household: Would you kindly help us by answering a few questions? It should not take more than half an hour to complete.*

Name of County:	Ward:	Sub County:
Length of stay in the area	Years:	Months:

No	Questions	Answers	Indicate the number code
	1.SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS		
1.	Record sex of the respondent	01=Male 02=Female	
2.	How old are you? Record age in years	Record actual number of years (years) 99= Don't know	
3.	For how long have you lived in this County? (years)		
4.	What is the highest level of schooling you have attained? *(Different from a literacy program)*	00=None 01=Some primary education 02=Completed primary 03=Secondary 04=College 05=University 06=Other (specify) 98=No answer 99=Don't know	
5.	What is your main source of income? *(Only one is possible. Record the principal income sector.)*	00= None 01= Agriculture 02= Trading 03= Pastoralism 04= Transport 05= Fishing 06= Crafts 07= Private services 08= Public services 09= Humanitarian or development group 10= Remittance 11= Other (specify) 98= No answer 99= Don't know	
6.	What is your marital status?	01= Married 02= Divorced /separated 03= Widow/widower 04=not married	

No	Questions	Answers		Indicate the number code
			98= No answer 99= Don't know	
7.	Do you have any child/ children living with you?		01= Yes 02= No 98= No answer	
8.	If YES above, how many children do you have?		Record EXACT number	
9.	How many of the above children are in school?		Record ACTUAL number	
10	Are there any of your children who are of school going age and are currently not attending school?		01= Yes 02= No 98= No answer	
11	If YES above, what are the reasons that they are not attending school?		01= Lack of fees 02= Lack of/ inadequate schools 03= Refused to go to school 04= Married 05= Working 06= Other(specify) 98= No answer	

	2. MIGRATION TRENDS (For respondents born elsewhere)		
1.	District of Birth of the respondent		
2.	When did you migrate to this County?	Year…	
3.	Reasons for migration from place of birth to this County.	…… …….. ……..	
4.	Have you at any time moved out of this County?	01= Yes 02= No 98= No answer 99= Don't know	
5.	What were your reasons for emigration?		

3. Employment

3 a. Please list the occupations of all adults (over 18) in the household indicate whether the tasks/ work is skill or unskilled. Tick and describe as appropriate.

Name	Gender	Employee	Self employed	Unpaid family worker	Unemployed	Student	Housewife
1							
2							
3							
4							
5							

3 b. *For all the workers described above (employed, self-employed, and unpaid family workers)* Where do the people work from/ place?			
Name	At home	Centre of County	Other area (be specific) *
1			
2			
3			
4			
5			

4. Self-employment details

I	Is anyone in the household self-employed?	01 = Yes 02 = No	
Ii	If yes, please give me the details of their businesses *(In the table on the next page there is space for up to four persons in the household having their own business. Complete one line for each business)*		

Name	Type of Business	Number of employees	Location of business*
1			
2			
3			
4			

4 b.	**The business premises -Please give me details of the business premises**		
I	Where are the business premises located?	Record	
Ii	Does he/she own the premises?	01 = Yes 02 = No	
Iii	If not, does he/she pay rent?	01 = Yes 02 = No	
Iv	How much rent is paid per month?	Record Actual Amount	
V	How big is it? (in terms of built-up area in Square Feet)	Record Actual measurement	
Vi	Does he/she have a water connection?	01 = Yes 02 = No	
vii	Does he/she have electricity?	01 = Yes 02 = No	
viii	Does he/she have a telephone land line/ mobile/ cell phone?	01 = Yes 02 = No	
ix	Does he/she have an internet connection?	01 = Yes 02 = No	
x	Does he/she have any problems in connection with the business premises you would like to tell me about?	01 = Yes 02 = No	

5. Household Income and Expenditure

i. What is your main source of income?	1…… 2……	

	3…… 4……	
ii. What was your total household expenditure (in Kshs.) last month? *(Tick where applicable)*	01=Below Kshs 5,000 02=Between Kshs 5,000 - 10,000 03=From Kshs 10,000- 25,000 04=Above Kshs 25,000	
iii. What was your total household income (In Kshs)? Last month?	Total amount	

6. Property ownership, Housing Typology and Tenancy

A. **Owners**

i.	What type of house do you occupy? (Observation)	01=Bungalows 02=Flats 03=Single rooms 04= Maisonettes 05= Huts 06= Traditional Swahili 07= Others(specify)	
ii.	How is the Housing typology?	01= Permanent 02= Semi –permanent 03= Temporary 04= Others (specify)	
iii.	What are the dominant construction materials of the house?	**House structure** / **Type of materials** [ ] / [ ] [ ] / [ ] [ ] / [ ]	
iv.	How many rooms does your house contain, including sitting room?		
v.	Are you the owner of this house/ structure?	01 = Yes 02 = No	
vi.	If not, who owns this house/ dwelling?	01= Landlord 02= Employer 03= Rental 04= Squatter 05= Others (specify)	
vii.	If yes, do you rent out any rooms?	01 = Yes 02 = No	
viii.	If yes, how many rooms do you rent?	Record ACTUAL number	
ix.	How much do you charge per room?	Record ACTUAL number	
x.	Have you built any rooms to your house specially to rent out?	01 = Yes 02 = No	
xi.	If so, how many have you built?	Record ACTUAL number	
xii.	How did you get the money to build these rooms?	Record ACTUAL number	
xiii.	If you borrowed money to build rooms, who did you borrow from?		
xiv.	How much did you borrow?	Record ACTUAL number	
xv.	What was the interest rate?	Record ACTUAL number	

xvi.	What was the repayment period Over what period?	Record ACTUAL number	
vii.	Would you like to build more rooms for renting?	01 = Yes 02 = No	
viii.	What is the size of your land in acres	Record ACTUAL number	
B	**Tenants (*This section will only be applied where the respondent is a tenant)***		
i.	Are you a tenant?	01 = Yes 02 = No	
ii.	Please explain your situation (like staying with friend/relative or whether you rent the house / room)	Explain	
iii.	What do you pay for?	01=Rent only 02= Rent and Water 03= Rent +Water+ Electricity	
iv.	How much do you pay in total?	Record Actual Amount	
v.	Do you have a lease agreement?	01 = Yes 02 = No	
vi.	If so, for how long Is The Lease period?	Record ACTUAL number of years or months	

7. Access to social services

i How far are the following facilities in km from your residence?

Facility	**Distance (kilometers) Record actual kms**	**Where would you consider a good location**
Nursery school		
Primary school		
Secondary school		
Health center		
Mortuary		
Community (social halls)		
Market		
Shopping facilities		
College/ higher education institution		
Parks, playgrounds Stadium		
Postal services		
Fire station		
Police/chief station		
Bus park		
Agricultural facilities		

ii What are some of the challenges facing the social service provision sector?

(At least 3 main areas)

Service/ facility	**Challenge**

iii Suggest ways of improving social services

How	**By whom**

8. Infrastructure

8a. sources of energy

I	Does your house have electricity?	01 = Yes 02 = No	
Ii	If yes, how much does it cost you per month?	Record ACTUAL number	
Iii	If not, how much would you be prepared to pay for a connection?	Record ACTUAL number	
iv	What is your main source of cooking and lighting energy and how much do you spend per month?		

Source	**How much per month (record)**
1=Electricity	
2=Kerosene	
3=Charcoal	
4=Wood	
5=LPG	
6=Solar	
7=Biogas	
8=Others (specify)	

b.Access to Water

	Question	Answer	Indicate the Number code
I	What is the PRIMARY WATER SOURCE of your household? TICK **ALL** that apply.	01=Pipe into dwelling 02=Piped into yard/plot 03Neighbour's tap 04=Public tap/standpipe 05=Water Kiosk 06=borehole 07=Protected dug well 08=Unprotected dug well 09=Protected spring 10=Unprotected spring 11=Supplied by water vendor	
ii	Reliability of Primary Water Source –How many days per week is your PRIMARY water source NOT available because of breakdown or interruption of service?	**Days per week NOT available** 0 (Always available) 1 2 3 4 5 6 7	
iii	Distance from your house to the primary water Point	01= 0 – 1 km 02= 1 – 2 km 03= 2 – 5 Km 04= > 5 Km 05=Don't know/Not sure	
iv	How much do you spend on water per month?	Record ACTUAL number	

c. Access to Sanitation facilities

i	Does your household have access to toilet/s?	01= Yes 02= No 98=No answer	

ii	What type of toilet do you have access to?	01=Pit Latrine 02=Flush Toilet/WC 03=VIP Latrine 04=Public Latrine 05=No facility/flying toilets 06=Bush 07=Other	
d. Solid Waste Management			
i	Is there a garbage collection service in your neighborhood?	01= Yes 02= No	
ii	Are you satisfied with refuse / garbage collection services within your neighborhood/ County?	01= No –refuse collection 02= Unsatisfied 03= Satisfied	
iii	If the answer to 5 (i) above is (02) unsatisfied, Give reasons.	i. ii.	
iv	What is the most commonly used mode of Disposing refuse from this household?	01=Dumping in your neighborhood 02=Burning in your compound 03=Burying in your compound 04=Compositing 05-Designated collection point 06=Other methods, specify	
e. Waste water Management			
i	"Grey Water" (i.e. used kitchen or bathroom water) How do you dispose grey water?	01=Pour it into the drain 02=Pour it onto the road or pavement 03=Pour it onto the garden 04=Pour it into a pit latrine 05=Re-use it 06=Other, specify	
f. Health Issues			
1	Please tell me in your own opinion, which are the leading health problems in your County?	01=HIV/AIDS 02= Malaria 03=Typhoid 04=TB 05=Respiratory Tract infections 06=Skin diseases 07=Diarrhea 08=Kwashiorkor 09=Eye Infections 10=STDs 11=Dental problems 12=Others (specify) --	
2	How frequent do you experience ill health in this household?	01=Very frequent 02=Frequent 03=Rarely 04=Never	
3	In your opinion how serious is the problem of HIV/AIDS in your County?	01=Very serious 02=Serious 03=Not serious 04=Not a problem 05=Don't Know	
4	Do you have a VCT centre in this Sub County?	01= Yes 02= No	
5	When a member of this household experiences ill health, what do you do?	01=Purchase medicine (from 02=shop or pharmacy)	

		03=Use public dispensary 04=Use public hospital 05=Use private clinic 06=Use private hospital 07=Use traditional medicine 08=Others (specify) ----	
8	Who often gets sick in this household?	01=Infant (less than 5 years) 02=Children (6 – 12 years) 03=Youth (13 - !8 years) 04=Adults (18 – 65 years) 05=Elderly (66+) 06=Other (specify) ---	
9	Do you often get medicine in the health facility that you frequent?	01= Yes 02= No	
10	In your opinion, what is the name of the most reliable health facility used by the people of this village?	Name of health facility	
g. Environmental issues			
1	How does drought affects households	i. ii. iii.	
2	What drought mitigation/adaptation measures have households put in place?	i. ii. iii.	
3	Who is supporting the implementation of mitigation measures?	i, ii. iii.	

9. Transportation

	Mode of transport		
1	What mode of transport do you use to get to your place of work / business?	01= Walk 02= Boda boda 03= Motor cycle (rider) 04= Motor cycle (Passenger) 05= Private car (self-drive) 06= Private car (Passenger) 07= Matatu 08= Bus 09=Others, (Specify)	
2	What are some of the problems associated with the specific modes of transportation in the County?	**Mode** / **Problems** Walking Boda boda Motorcycle Car Matatu	

		Bus		
		donkey		
		Others (Specify)		
3	What are some of the problems / challenges associated with the specific mode of transportation?	**Means**	**Challenges**	
		Road		
		Air		
		Water		
4	Transport (Total) Fare	Record actual Amount		
9.1	**What is your opinion on the service provided by following types of public transport system operating in your County?**			
1	Matatu	Very Good = 1 Good = 2 Satisfactory = 3 Poor = 4 No Reply = 0		
2	Bus / mini bus	Very Good = 1 Good = 2 Satisfactory = 3 Poor = 4 No Reply = 0		
3	Tuk tuk	Very Good = 1 Good = 2 Satisfactory = 3 Poor = 4 No Reply = 0		
4	Boda boda	Very Good = 1 Good = 2 Satisfactory = 3 Poor = 4 No Reply = 0		
5	Donkey	Very Good = 1 Good = 2 Satisfactory = 3 Poor = 4 No Reply = 0		

9.2. How many trips per day does the household make to different destinations?

	Type of trip	**Number of trips**	**Mode of transport**
1	Home to work		
2	Home to school		
3	Home to leisure points		
4	Home to shopping areas		
5	Home to…(.specify)		

9.3. What is the furthest that members of your household travel to access the following facilities/ places and how long does it take?

	Place / facility	**Location**	**Distance**	**Time taken**
1	Work areas			
2	Leisure/ recreation			
3	Shopping areas			
4	Educational facilities			
5	Health facilities			

10.Land issues			
1	Do you own land in this County?	01= Yes 02= No 98= No answer 99= Don't know	
2	If yes, Which part of the County?	Name:----------	
3	What is the size of your land? (acres/ hectares)	Record EXACT size (acres/ hectares)	
4	What is the nature of ownership?	01= Trust/ community land 02= Freehold / private land 03= Lease hold 04= Others (Specify)	

11. Agriculture			
1	What type of agriculture do you practice on the land?	01= Subsistence 02=Commercial 03=Both 98= No answer	
2	Which crops do you plant on your land? a) Cash crops? b) Food crops?	01=Cash crops 02=Food crops 03=Both 98= No answer	
	c) What is the acreage under crops?	01= <1 acre 02= 1-2 acres 03= 3-5 acres 04=5-10 acres 05=>10 acres 98= No answer	
	d) What is the amount produced from this land?	01= <5 bags(90kgs) 02=5-10 bags 03=10-20 bags 04=20-50 bags 05= >50 bags 98= No answer	
3.	Where do you get your seeds from?	01=previous harvests 02=buy from seed companies 03=from agricultural societies 04=given by well wishers 05=borrow from farmers 98= No answer	
4.	a) Do you practice unconventional farming on your land?	01= Yes 02= No	
	b) If Yes above, Which one?	01= Organic Farming 02= Conservation/Evergreen agriculture 03= Greenhouse farming 04= Hydroponics 05= Mushrooms farming 06= Other. Specify.....	
4	Which livestock/animals do you rear on your land? And how many?	01= Cattle 02= Goats 03= Sheep 04= Poultry	

		05= Pigs 06=Donkeys 07= Fish 98= No answer	
5.	Do you keep unconventional livestock/any new animals?	01=Yes 02=No	
	If answer above is yes, which one?	01= Bees 02= Ornamental animals eg birds, fish, butterflies 03=Guinea Fowl 04= Chameleon 05= Others. Specify.....	
6.	Do you have crop storage facilities at your homestead?	01=Yes 02=No.....	
	If answer above is No, where do you incur postharvest losses	01= Storage 02= Transport 03= Market 04= Others. Specify	
7.	Do extension workers reach your area?	01=Yes 02=No	
	If answer above is No, how do you get agriculture related information?	01= Other farmers 02= Media outlets eg newspaper, radio 03= other stakeholders e.g. NGOs, experts 04= Others. Specify	
8.	Are there any farmer training centers in this area?	01=Yes, 02=No	
	If Yes, how often do they meet?	01= Quarterly 02= Semi annually 03= Annually 04= Never	
9.	Where and how do you sell your farm produce?	01= Market Centers 02= Neighborhood 03= Cooperatives 04= Companies/Institutions 05= Brokers 04= Others. Specify	

12. Tourism

Tourist& leisure facilities			
i	How far is the closest tourist/ leisure facility from your household	Record ACTUAL number	
ii	What is the furthest point that members of your household travel to access tourist/ leisure facilities (Specify location and distance)	Record ACTUAL Location and distance	
iii	How frequent do members of your household visit tourist/ leisure facilities? (No of visits in a month)	Record ACTUAL number of visits	
iv	Does your household derive employment/ income from tourism?	01 = Yes 02 = No	

v	If your answer to (iv) is yes, is it through permanent employment, casual labour, routine business, or occasional income?	01 = Permanent 02= Casual Labour 03=Routine Business 04= Occasional Income	
12 b. Cultural Heritage			
I	Are there historical heritage buildings and monuments in this County?	01= Yes 02= No 98=No answer 99=Don't know	
ii	If your answer to (i) is yes, do members of your household visit these? If so, how frequently	01= yes 02= No Record Number of times	
Iii	Are they near the existing roads?	01= Yes 02= No 98=No answer	
iv	Are you satisfied with the state of historical heritage buildings and monuments in this County?	01= Yes 02= No 98=No answer 99=Don't know	
v	If unsatisfied, what improvement can you suggest?	1…… 2…… 3…… 4……	

Suggestions

Is there any special request or proposal you would like us to inform the County Government about? If yes, explain it briefly for me:

Record here.

Focus Group Questionnaire

Tool 2: Focus Group Discussions Checklist

Name of Sub County:----------

Name of Ward: ----------

Type of FGD:----------

Name of Facilitator:----------

Date:----------

1.Socio- Demographic Data			
Sub County:		**Ward:**	
No.	**Name**	**Sex (m/f)**	**Position in the HH**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

2. General Background Data		
1	What do most residents in this sub County do to earn a living?	
2	How long have you lived in In this sub County?	No of Years…
3.	Is this sub County planned?	Yes ☐ No ☐
3. Community Vision		
1	Community Vision for this sub County by 2035 i. ii. iii.	
2	What facilities would you want to see in place in your sub County? list i. ii. iii.	
3	What facilities would you want to see improved? i. ii. iii.	

4. Agriculture	
1	Which crops do farmers around In this sub County grow as cash crops and food crops? *Cash crops:* i. ii. iii. *Food crops:* i. ii. iii.
2.	Do farmers get maximum produce during harvest time from the land they cultivate? Yes ☐ No ☐ If No, why is that
3.	What farm inputs are needed by farmers in this sub County? i ii iii
4.	Where do farmers get farm inputs from? i ii iii

5.	What problems do farmers encounter in readiness for the planting season with regards to inputs (seeds, fertilizer, and manure, labour) from these crops? i. ii. iii.
6.	What problems do farmers experience when the crops are growing in the farms? list i ii iii
7.	Do you know of any value addition (increasing the economic value and consumer appeal of an agricultural commodity through packaging, processing) for crops produced in this area? Yes ☐ No ☐ If yes, name the produce and the process? describe
8.	Where or to whom do you sell your produce?
9.	Do you encounter any problems when selling your produce? i ii iii
10.	How do farmers transport their produce to their destinations (market, storage, companies, and cooperatives? i ii iii Is it efficient? Yes ☐ No ☐ Give reasons for your answer i ii iii
11.	What are the consumption patterns of agricultural produce in this area? Describe

12.	Where do you get information about agriculture from? i ii iii Is it timely? Yes ☐ No ☐
13.	a) Are there farmers training centres in this area? Yes ☐ No ☐ b) If yes, where / Name
14.	a) Are there any crop storage facilities in this area? Yes ☐ No ☐ b) If Yes, is the capacity adequate? Yes ☐ No ☐
15.	What problems do farmers encounter in crop farming? i ii iii
16.	What can be done to minimize these problems to ensure maximum returns? i ii iii
17.	What is the alternative crop that can support many households living around this sub County? i. ii. iii.
11.	Why don't farmers/households grow these crops? i. ii. iii.
12.	How can these new crops be promoted? i. ii. iii.
13.	Who can be major promoters or stakeholders? i. ii. iii.

14.	What would you like the County government to do to improve the livelihoods of crop farmers in the sub County? i. ii. iii.
5	**Livestock**
1	Do you own any livestock
2	Which type of livestock, list in order of importance i. ii. iii.
3.	What inputs are needed by livestock keepers in this sub County? i ii iii
4.	Where do the livestock farmers get inputs from? i ii iii
5.	What are the problems related to inputs supply (labour, feeds) for these livestock? i. ii. iii.
6.	What are the problems related to production from these livestock? i ii iii
4.	What products do you sell from your livestock? i ii iii
5.	When do you sell livestock and Where do you sell them? Where | when |
6.	To who do farmers sell their livestock produce? i ii iii
7.	What type of transport do farmers use to transport their produce?

	i ii iii Is it transportation system efficient? Yes ☐ No ☐
8.	What are the problems encountered when farmers are selling their livestock produce? i ii iii
9.	Are there any storage facilities or cooling facilities in this area? Yes ☐ No ☐ If yes, are they government or privately owned? Government owned | Privately owned [ ] | [ ]
10.	a) Do farmers receive any extension services from livestock experts? Yes ☐ No ☐ b) If yes, How often?
11.	What are the consumption patterns for livestock produce in this area? Describe i. ii. iii.
12.	a) Do you know of any value addition (increasing the economic value and consumer appeal of an agricultural commodity through packaging, processing) for livestock produce in this area? Yes ☐ No ☐ b) If yes, name the produce and the process? i. ii. iii.
13.	Are there livestock farming training centres in this area? Yes ☐ No ☐ Which ones, name them i. ii. iii.

14.	What problems do you face in livestock keeping? i. ii. iii.
15.	How can the problems be solved? i. ii. iii.
16.	Which other livestock enterprises do you think can be done in this area? i ii iii
17.	Why are farmers not putting up livestock enterprises? Give reasons i ii iii
18.	What would you like the County government to do to improve the livelihoods of livestock farmers in the sub County?? i. ii. iii.

6. Education		
1	Types of institutions in your sub County?	

Types of institutions existing	**Private**	**Public**	**boarding**
- nursery schools			
- Colleges			
- Secondary Schools			
- Primary Schools			
- Nursery Schools			
-Vocational training institutes			
- Others(specify)			

2	Are their training and Education facilities that you need? Yes ☐ No ☐ if yes, Which ones? i. ii. iii.
3	State problems associated with Education facilities i. ii. iii.
4	State possible solutions associated with Education facilities

	i. ii. iii.

7	Gender Analysis- Twenty four hour day activity profile					
1	Women daily activities		Men daily activities		Youth daily activities	
	Time	Activity	Time	Activity	Time	Activity
		Wake Up		Wake Up		Wake up
		Sleep		Sleep		Sleep
		Total no.of activities		*Total no.of activities*		*Total no. of activities*
2	Comments and conclusion on women's roles, men's role in the community i. ii. iii.					

8. Income Analysis				
1	List sources of income			
	Sources' of income for men	**Amount**	**Sources of income for women**	**amount**
	1			
	2			
	3			
	4			
	5			
2	*Household Income & Expenditure*			
	Income	**Per month**	**Expenditure**	**Per month**
	-		-	
3	Calculate how much used on;			
	Food			

		Health	
		Rent/ mortgage	
		Education	
		Water %	
		Sanitation %	
4	Ask the group who in their opinion is rich, poor, medium person in this sub County?		
5	List the different categories of assets owned		

Poor	***Medium***	***Rich***
1	*1*	*1*
2	*2*	*2*
3	*3*	*3*
4	*4*	*4*
5	*5*	*5*
6	*6*	*6*

9. Livelihood Analysis and Community Asset Analysis	
1	Identify the types of economic activity in the area. i. ii. iii.
2	Identify the economic activities taken up by women

Economic activities taken up by women	Economic activities taken up by Youth	Activities taken up by men

3	Type of enterprises in the area i. ii. iii.
4	Women specific enterprises i. ii. iii.
5	Men specific enterprises i. ii. iii. iv.
6	Youth specific enterprises i.

	ii. iii.
7	Approximate number of people employed in an enterprises

Jobs -Men enterprises	Jobs-Women enterprise	Jobs-Youth enterprises

10. Mobility mapping for sub- County residents	
1	Draw a mobility map sketch for in this sub County residents (to clinics, schools, markets etc. (*draw in your exercise book)*
2	Where do most people live? i. ii. iii.
3	Which places do they visit on daily basis in order to access services? i. ii. iii.
4	Where do most people work or trade? i. ii. iii.
5	Which important facilities don't you have in this sub County? i. ii. iii.
6	Where would you prefer the facilities to be located *(in line with the mobility map)* Bus park, market, commercial, residential, dumpsite, sewerage treatment plant, cemetery, hospital, university, primary school, secondary school, nursery etc)
11. Community Participation and Engagement	
1	Do community members participate in meetings organized by government? Yes ☐ No ☐
2	How are community members encouraged to attend meetings? i.

	ii. iii.
3	Which meetings do community members like attending and why? i. ii. iii.
4	In cases where the community has worked with the government, what have been the benefits or successes observed? i. ii. iii.
5	What have been the weaknesses or failures observed? While working with government i. ii. iii.
6	How can communities be encouraged to participate in development meetings? i. ii. iii.

12. Local Economic Development		
1	Are you aware of any strategy for this sub County that promotes economic development?	Yes ☐ No ☐
2	What attracts economic activities to in this sub County? i. ii. iii.	
3	What promotes or hinder income-generating activities in this sub County i. ii. iii.	
4	What is making this sub County change/move?	
5	Which economic sectors/ activities are on a growth trend?	

Economic Sectors	Why

6	What economic sectors/ activities are on decline trend? Why? i. ii. iii.	
7	What are the major obstacles to the economic performance of the sub County? i. ii. iii.	
8	To what extent can these factors be influenced or managed at the local level? i. ii. iii.	
9	What should be done to improve the environment for growth and accelerate investment? i. ii.	

13. Drainage	
1	What is the state of drainage in the County? i. ii. iii.
2	Are the channels lined? Yes ☐ No ☐
3	Do people use the drainage channels? Yes ☐ No ☐
4	State problems associated with drainage i. ii. iii.
5	State possible solutions i. ii. iii.
14 .County Roads	
1	Are there internal roads in the sub County? Yes ☐ No ☐
2	Who uses them?
3	When was the last time they were upgraded?

4	State problems with internal roads
5	State solutions to internal roads problems

15. Rural link roads	
1	Are there link roads between the sub County and the rural areas? Yes ☐ No ☐
2	Who uses them?
3	When was the last time they were upgraded? .....Year
4	State problems with access roads
5	State solutions to the problems of access roads

16. Non- motorised transportation	
1	How are the pedestrians taken care of in In this sub County?
2	How are the boda boda services organized?
3	Are individual cyclists catered for? Yes ☐ No ☐
4	Which other non-motorised means of transport is available in the sub County?
5	How can non -motorised transportation be improved?
17	**Livestock corridors**
1	Are there livestock corridors in your sub County? Yes ☐ No ☐ if no ,are they needed? Yes ☐ No ☐
2	If yes, Are they maintained?
3	What other facilities do you have along the corridor and what don't you have?
4	Any suggestion regarding livestock corridors?

Existing facilities along the corridor	Facilities that are not there

	i. ii. iii.
18	**Cattle tracks**
1	Are there cattle trucks in the sub County? Yes ☐ No ☐
2	Are they maintained? Yes ☐ No ☐
3	Do they cause any problem in the County? Yes ☐ No ☐
4	How can the problems be solved? i. ii. iii.

19.Bus parks	
1	Are there bus parks in the County? Yes ☐ No ☐
2	How many bus parks are there? No……. Names
3	What are the problems with bus parks? i. ii. iii.
4	What are the possible solutions? i. ii. iii.

20. Lorry parks	
1	Are there lorry parks in the County? Yes ☐ No ☐
2	How many and where are they? No……. Names
3	What are the problems on lorry parks? i. ii. iii.
4	What are the possible solutions? i. ii. iii.

21.Markets

1	Are there markets in the County? Yes ☐ No ☐
2	How many and where are they? No……. Names
3	What are the problems with markets? i. ii. iii.
4	What category of the traders uses the markets? i. ii. iii.
5	Are there traders without a market space existing in the market? Yes ☐ No ☐
6	What are the possible solutions i. ii. iii.
22	**Livestock market**
1	Is there a livestock market in this County? Yes ☐ No ☐
2	How many?
3	For what type livestock is sold in the markets? i. ii. iii.
4	Where do the livestock originate from?
5	Where do the traders come from?
6	Are there facilities you require that are not available in the market?
7	Are there any problems with the market? Yes ☐ No ☐
8	How can they be solved? i. ii. iii.

23.Co-operatives	
1	Which cooperative society do you know and like?
2	What activities do co-operatives undertake?

3	What do you like about cooperatives? i. ii. iii.
4	What don't you like, why? i. ii. iii.
5	What can be done to strengthen cooperatives?
6	What other activities can cooperatives undertake? i. ii. iii.
7	Can Cooperative Societies be used as tools for institutions that can steer the development of infrastructure/management in kajiado Yes ☐ No ☐
8	What can they exactly undertake?

24.Stakeholders Analysis	
1	List the main stakeholders in this County i. ii. iii.
2	State those who are most active i. ii. iii.
3	Who are the strongest and weakest stakeholders in this County

Strong	weak

4	

The stakeholder you would want to relate with in the County	Are there any disinterested stakeholders

25.Safety	
1	Where, when and why do you feel unsafe? *Where* | *When* | *Why* | | | | | | | | |
2	How safe are the learning institutions in this County?
3	What is being done to address issues of safety in the County? i. ii. iii.
4	Who is working on safety improvement? i. ii. iii.
26.	**Security**
1	Are there ☐ Police posts in your area? Yes ☐ No ☐ ☐ Police stations in your area? Yes ☐ No ☐
2	Are there vigilante groups in the County? Yes ☐ No ☐
3	Is the Nyumba Kumi security system working in your area? Yes ☐ No ☐
4	Are there KPRs in you County? Yes ☐ No ☐
5	What do you think could be done to improve security? i. ii. iii.
27	**Disaster management**
1	What types of disaster occur in this County? i. ii. iii.
2	Is the County government able to respond to disasters like fire in time? Yes ☐ No ☐
3	If no, why? i.

	ii. iii.
4	What are the problems associated disaster management in your area? i. ii. iii.
5	What are the possible solutions to safety security problems? i. ii. iii.
28.Governance	
1	Who decides on major improvements of this County? tick ☐ County Government? ☐ The people ☐ NGOs ☐ Others? Specify
2	Are men/women/ youth consulted? Yes ☐ No ☐
3	How? i. ii.
4	Is there a forum where they are invited? Yes ☐ No ☐
5	Are there CBOs in this area? Yes ☐ No ☐
6	List them and their activities? CBO Name | Activity | | | | | | | |
7	Are there NGOs in this County? Yes ☐ No ☐
8	List them and their activities? NGO Name | Activity | | | | | | | |
9	What are the problems associated with leadership in this County? i. ii. iii.

10	What are the possible solutions? i. ii. iii.

29.Informal settlements	
1	Are there unplanned settlements in the County or area? Yes ☐ No ☐
2	What proportion of land in percentage does it occupy? ……%
3	Who owns the land/structure in the unplanned settlements? ☐ Private? ☐ Government? ☐ community ☐ Council? ☐ Others? Specify
4	What problems are associated with these settlements? i. ii. iii.
5	Give possible solutions to these problems i. ii. iii.

30.Recreational Facilities	
1	Are there any public open spaces in County and or your neighbourhood? Yes ☐ No ☐
2	Who uses and when are most used? *Who* | *When* | *Where* | | | | | |
3	If not where would you suggest that they be located? i. ii.
4	Are there recreation parks to relax when one is tired? Yes ☐ No ☐
5	Are there children play parks? Yes ☐ No ☐
6	Are there football pitches etc.? Yes ☐ No ☐
7	Give suggestions and possible solutions on having recreational facilities in In this sub County

	i. ii. iii.

31.Problem ranking	
1	Problems faced in this sub County and neighbourhood

sub County level problem	Neighbourhood problem

32.Opportunities ranking	
1	Identify the existing opportunities

Opportunity	Why

33.Quick wins and priority projects	
1	Identify and list three quick wins and priority projects that will make a difference in In this sub County if implemented

Priority projects
i)
ii)
iii)

Key Informant Questionnaire

PROJECT; DIGITAL TOPOGRAPHICAL MAPPING AND THE PREPARATION OF SPATIAL PLAN FOR KAJIADO COUNTY
TOOL 3: KEY INFORMANT CHECKLIST

Good Morning,
We are from the County Government of Kajiado. We are going round soliciting for views from the residents of this town on the priorities for development. Therefore we are kindly asking you to answer the following questions to help us capture the views of the residents. Thank you.

Name of respondent	**Sex**	**Age**	**Occupation**	**Length of stay in the sub County**
Name of sub County				
Name of the Ward				

1) What are the **5** things that you like about the way this sub County is planned (be specific)

	Things I like about how this sub County is planned
1	
2	
3	
4	

2) What are the **5** things that you do not like about the planning of this sub County?

	Things I don't like about how this sub County is planned	Reason
1		
2		
3		
4		

3) Give us your vision of how you would like to see in this sub County in the year 2035.

4) What other facilities would you want to see in this sub County and where?

Facility	**Place/ Area**

5) Cultural Heritage- Are there historical heritage buildings and monuments in the sub County? And are they maintained?

The sites/ monuments	Maintained or not	Who is responsible

6) Any other suggestions for the improvement of the sub County

Appendix 3: Sampling in Socioeconomic Survey

Sub-county	No. of Wards	Sampled Wards (Rural & Urban)	Households	Population	Households Sample (estimate)	No. of respondents in selected wards
Kajiado North	5	Ong'ata Rongai and Nkaimurunya	44,231	191,565	89	208
		Ngong	17,849		36	
		Olkeri	41,162		83	
Kajiado East	5	Imaroro	17,028	133,179	49	220
		Kaputei North	28,874		83	
		Kitengela	30,453		88	
Kajiado Central	5	Purko	29,590	102,819	111	364
		Ildamat	9,472		35	
		Dalalekutuk	27,554		103	
		Matapato South Ward	30,868		115	
Kajiado West	5	Kiserian	38,361	143,240	129	303
		Keekonyokie	18,782		23	
		Magadi	24,791		83	
		Ewuaso Nkidong'	10,010		34	
Kajiado South	5	Kuku Ward	36,523	134,748	104	170
		Entonet-Lenkism	23,043		66	

Appendix 4: Land Use Development Guidelines

*Adopted from Physical Planning Handbook

Commercial /CBD

	Standards
Plot size	Minimum plot sizes should be 0.045 Ha.
Construction Standards	• Building setbacks should be provided to act as traffic islands. • The concept of corner shops at each corner plot should be discouraged. • Where roads range between 6-18 meters wide the building line shall be 6 m. • For any roads above 18m the building line shall be 18m.
Accessibility	• Remove through traffic by constructing a by-pass or relief road. • There shall be no direct access. • A provision of accelerated and deceleration lanes should be made at a 100m stretch. • Beautification of the main highway- green area network along the highway should be done. • Urban road reserves require more generous space provision because of additional street furniture and infrastructural facilities that have to be provided.
Parking	• Parking facilities should be related to the level of commercial activities created. • In central commercial and business zones, parking should be considered, particularly by encouraging storeyed parking in town centres (minimum plot size of 0.025 Ha). • For every 100m2 of land in the central Business District a minimum of 1½ parking space may be provided except where basement parking is provided. • However, for small centres, car park may be provided for every 500m2.
Major Shopping Malls	• Need to be located along major outlet corridors from the town. • Minimum plot size to be 4 acres (2 ha). • Allow 25% plot coverage • Minimum parking space of one and half meters car park space per every 100m2 plinth.
Informal Economy	• Kiosks should only be confined to areas adjacent to markets, bus parks and certain institutions. Minimum size of a kiosk should be 3m x 3m. • Specific areas need to be designated for hawking (e.g. hawking grounds or hawking streets).
Pedestrian Movement	• Provide vertical separation of vehicles and pedestrians by constructing roads and pedestrian's ways at different levels. • Interrupt continuity of streets within the centre by bollards or other means. • Remove vehicles from street and provide vehicular access and parking at rear of buildings
Sanitation	Provide 1 public toilet on each street

Transport

	Planning Standards
Road Network	**International trunk road (class A road)** • They are provided with a road reserve of 60-110 meters. • No direct access of a property to a Class A road • Buffer zones of 10 meters should be provided all along giving access abutting properties • Developments should come after the buffer zone and should be provided with acceleration and deceleration lanes • The junctions should be at minimum of 300meters • Petrol Service Station can be planned with acceleration and decelerations of 80-100meters after the 10metre buffer **National trunk road (class B roads**) • They are provided with a road reserve of 60-110 meters. **Primary roads (Class C roads)** • All designated urban centres should be linked by means of primary roads as a minimum. They are provided with a road reserve of 40 meters. **Secondary roads (class D roads)** • All designated rural centres should be linked by means of secondary roads as a minimum. They are provided with a road reserve width of 25 – 30 meters. **Minor roads (class E roads)** • They range between 3 to 5 Km and are provided with a road reserve width of 20-25 meters.
Railway Network	• 60m way leave • A buffer of 30m to be reserved on either side of the railway line • Design gradient • Sub-stations should be located in:- Areas of high population concentration Factories, warehousing • Areas of high production Industrial sites • Mining areas.
Airport and Airstrip	**Basic requirements for location of an airport/airstrip include:** • Bird Strikes-Land use planning around the airport to ensure no dumping sites which attract birds. • Flying Objects-Ensure no quarrying or charcoal burning in airport vicinity. • Availability of ample flat land. • Developments in vicinity should not go beyond 15m high. • Location away from town (isolated) • Feasibility should be done to ensure stability of the rock

Educational Facilities

Type of Institutions	Land Requirements (Ha)	Population Catchment	Requirements
Day care centres	Minimum 0.05	350	To be located within residential neighbourhoods Not to be accessed from a major road exceeding 15m. Not on high rise buildings exceeding two levels. Not within a commercial and industrial area/premises The recommended walking distance is 300-500 meters
ECD centres	Minimum of 0. 1 Single stream (0.1) Double stream (0.15) Triple stream (0.25)	They follow the pattern of distribution of primary school at 4000 catchment population. A kindergarten independent of primary school should be provided for 2500 catchment population.	Within residential neighbourhood Not to be accessed from a major road exceeding 18m. Not to be accessed from a public transport road route. Not in a designated commercial area Not on high rise buildings exceeding one floor. The recommended walking distance is 300-500 meters
Primary schools	Single stream (1.2) Double stream (2.0) Triple stream (3.0)	The pattern of distribution should be for every 4000 catchment population in rural areas and 3500 population in urban areas	Have an access road of a minimum of 12m. Tuition blocks building height not exceeding 3 levels. Not within 300 m of a liquor outlet Accommodation for key staff for boarding schools Co sharing of facilities is allowed Site planning be undertaken to ensure efficient land use. Vertical development is encouraged for optimal land use. Provision of adequate space per student at 4 meters sq. in a class room. At gross densities of 50 persons per hectare and above, each primary school should be within easy walking distance of 250-300 m.
Secondary schools	Single stream (3.4) Double stream (3.5) Triple stream (4.5)	8000	Site planning be undertaken to ensure efficient land use. Vertical development is encouraged for optimal land use Provision of adequate space per student at 4 meters sq. in a classroom Fronting a minimum of 15 m road Not within 300 m of a liquor outlet Tuition blocks building height not exceeding 3 levels Co-sharing of facilities is allowed Accommodation for subordinate and key staff for boarding schools

Type of Institutions	Land Requirements (Ha)	Population Catchment	Requirements
			Provision of a school dispensary in case of a boarding school
Special institutions/ Orphanages	Minimum of 0.4	Depending on the needs of the population	Within major primary schools in the area Have an access road of a minimum of 12m Provision of a boarding section that ought to include accommodation for caretaker, matron and support staff
Commercial colleges	Depending on needs and type of service offered	-	Not to be located within residential estates Preferably to be located within commercial area.
University	The land size for a University should be at least 50 hectares made up of the following: • 20 hectares or more to support up to 500 students. • 10 hectares or more for the main campus. • 2 hectares or more for any University land. • 2 hectares or more for open spaces and car parking exclusively. • 2 hectares of land set aside for sewerage plant where there lacks Local Authority sewerage system. • 5 hectares or more for outdoor sports for 500 students. • A University offering agriculture as a course should in addition provide 10 hectares of land for a farm.		

Public Purpose

	Proposed Standards	Land Allocation
Health Facilities	They should be easily accessible by an ambulance and be provided with basic infrastructural services. Dependent on the level of health service, it is necessary to reserve adequate land for future expansion and for public cemeteries. The public cemeteries should be conveniently located relative to the health facility, major open spaces and other compatible public utilities.	• National referral hospital- 20Ha • County hospital- 8Ha • Level 4 hospital- 8Ha • Level 3 hospital- 4Ha • Health centre- 3Ha • Sub health centre- 2Ha • Nursing homes- 0.4Ha • Veterinary clinics-0.1Ha
Fire stations	The land requirement is a minimum of 0.4 hectares to include station, staff accommodation and drilling area. A small fire station would require 1 fire engine and at least 30 staff members to cover a population of between 50,000-100,000 people.	
Police Station	They should be located within residential neighborhoods	•Police stations- 2 ha. • Police post- 2.0 ha • Patrol base- 0.2 ha
Community Resource centre	Every centre should have a community centre which will provide the following facilities: -	The proposed minimum area should be 1Ha.

	Library/Resource centre Social hall VCT centre Public telephone Amphitheatre	
Administrative areas	They should be sited away from the administrative zones e.g. professional, manufacturing and utility undertakers' offices to allow close interaction with general public. Factors for their location: • Geographical centrality • Spatial compactness • Public parking • Accessibility	

Public Utilities

Utility	Planning Guidelines
Water	• Provision of these facilities should consider catchments population to be served and the per capita consumption in the relation to the available water. • Ground water reserves require buffer zones of 100 meter (bore holes). • Springs protection require a buffer zone of 100meters. • Tree planting is therefore encouraged in these areas. **Water reticulation systems** • Provide for water facilities such as water intake points, and pipeline way leave. • Buffer zones should be provided in areas where these facilities are located. • Intake points treatments work and communal water points require buffer zone of 10 meters (radius) **Commercial water points** • Provided for in high density settlements. • They should be at a distance of 500m from one another. • They should preferably occupy an area of 3 x 3 m.
Sewerage	Sewage collection and sewage treatment plants be considered for all settlements with a population of 3,000 or more having an urban layout. In settlements where an integrated sewage scheme is not provided provision should be made for septic tanks.
Solid Waste Collection	• Ensure proper waste disposal in all settlements • Promote PPP in waste management chain • Provide for waste collection services in all urban areas • Dumping sites should be located on the leeward side and have a 100m-protection belt.
Electricity/Power	• Source and ability of electricity supply • According to electricity usage requirements for domestic, commerce and industry • Main receiving sub-stations require a minimum of 5% of the exterior spaces that are reserved for landscape.

	• Main receiving sub-stations 275KV are not suitable to be close to residential areas, open spaces and public facilities. • Require buffer zones in between sub-stations and other land uses (about 50m) • Observe provided wayleaves for transmission lines • Encourage use of renewable energy in new developments • Encourage exploration of green energy such as geothermal, wind and bio fuel energy

Recreational Areas

	Provisions
Recreation in regional context	• Provided with public access of a minimum 9m. • Cater for recreation use by providing car-parking spaces, picnic sites and refuse disposal facilities of at least 0.4 ha. • Compatibility of tourist and recreational developments with surrounding land use patterns, cultural values of the local population and not injurious to the natural attraction of the area.
Recreation at community level	(a) Parks • A small area of recreational space within walking distance. • Closely located within community centres and social halls, health centre, local shops, primary and secondary schools. • It can be used as a landscaping buffer between major roads and the housing areas and between industrial areas and housing. •(c) Social Halls and Community Centres: • The pattern of distribution should be for every 20,000 catchment population. • Land requirement of 0.25 hectares to be located in positions along main pedestrian routes

Industrial

Sector	Planning Provision	Land Requirement
Industrial Land Use	• Separation from residential areas through buffer zones is essential • Site planning and zoning • Minimum plot size to be observed • Provision for loading area • Vehicle parking spaces • Adequate access • Buffer zone • Provision for fire breaks • Provision for waste management • Workers hostels • Recreation • Shops and hawker centres • Require conducting EIA	

Category	Min Land Size(Ha)	Catchment Popn
Light	0.05	30,000
Medium	4	100,000 to 500,000
Heavy	20	Over 1M

Undeveloped Land

Zone	Standards
Riparian Reserves	• Must be a minimum of 30 metres of land on each side of a watercourse (both seasonal and perennial rivers). • Natural flow of river and tributary should be preserved and conserved. • Observe a 100 M buffer from highest water marks from the lake shores
Forest Areas	• A buffer zone of 60 metres from the forest reserve edge (including indigenous and plantation forests) should be maintained.
Wetlands	• A buffer zone of 30 metres from the high-water mark edge should be maintained. • Development permission for wetland zones must be sought. • Prohibited activities include car washing, location of sanitary facilities and solid waste disposal as they can cause pollution.
Slope Areas	• Development on slopes of over 5 degrees can be allowed but with implementation of control measures. • No development should be allowed on areas with slopes exceeding 25 degrees.
Tourism Zones	• Areas of scenic beauty and cultural villages • Provide a buffer zone of 50meters from the edge • The buffer zone can be used for provision of outdoor furniture, management of solid waste and sanitation • Provide major road access to these tourist sites • Provide for land for hotels and lodges **Protected Areas/ National parks and game Reserves** • Delineate areas • A buffer zone of 50 meters is recommended around the park. • • Wildlife corridor of 3 km. Is recommended
Flood Prone Areas	• A buffer zone of 30 metres from the high water mark edge should be maintained.
Mines and Quarries	• A buffer of 1 Km from the settlement should be maintained. • Exhausted mines should be rehabilitated