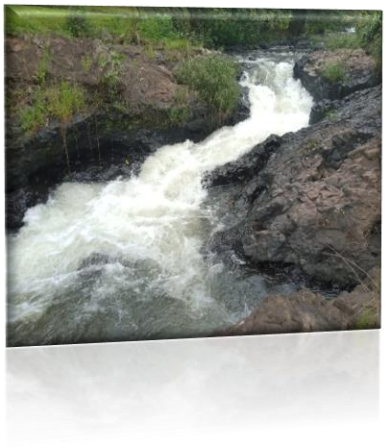
COUNTY GOVERNMENT OF KIRINYAGA

Department of Lands, Housing and Urban Development

KUTUS MUNICIPALITY LOCAL PHYSICAL AND LAND USE DEVELOPMENT PLAN, 2020-2030.


Situation Analysis Report

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Acronyms

ACK	Anglican Church of Kenya
ASL	Above Sea Level
CBD	Central Business District
CIDP	County Intergrated Development Plan
DP	Development Plan
ECDE	Early Childhood Development Education
G.I.S	Geographical information System
G4S	Group 4 Securicor
GSM	Global System for Mobile Communication
HA	Hectres
HDU	High Dependency Unit
HPI	Human Poverty Index
ICT	Information and Communication Technology
ICU	Intensive Care Unit
KDHS	Kenya Demographic Health Survey
KeNHA	Kenya National Highway Authority
KIRIWASCO	Kirinyaga Water and Sanitation Company
KM	Kilometre
KPHC	Kenya Population and Housing Census
KURA	Kenya Urban and Ruarl Authority
KUSP	Kenya Urban Support Program
KV	Kilo Volt
LPG	Liquid Petroleum Gas
LPLUDP	Local Physical and Land Use Development Plan
NEMA	National Environment Management Authority
NMT	Non-Motorised Transport
NSP	National Spatial Plan
PSV	Public Service Vehicles
SPSS	Statistical Package for Social Sciences
SQ.KM	Kilometres Square
UACA	Urban Areas and Cities Act
WHO	World Health Organization

1 INTRODUCTION

1.1 Background

Kerugoya/Kutus Municipality is located in Kirinyaga County. It's at the very centre of Kirinyaga County and is located on latitude -0.535676^0 and longitude 37.3030980. The planning boundary covers an area of 70.52 square kilometres. Areas covered include:

i. Kerugoya Town
ii. Kutus Town
iii. Mukinduri,
iv. Kiamwenja,
v. Karia,
vi. Kibingo,
vii. Ithare,
viii. Rukenya, and
ix. Kabare
x. Thiba Dam

The municipality lies at an altitude of 1,686 meters above sea level (asl) at Waigiri/Githioro with the lowest point being 1,240 meters above sea level (asl) at Ahiti Ndomba in Kutus Town. The municipality is the county headquarters for Kirinyaga County, established through Urban Areas and Cities Act (2011) and Urban Areas and Cities (Amendment) Act, 2019.

With increasing population, the municipality needs proper planning for the establishment of necessary services and infrastructure. Currently, the municipality faces challenges including improper waste management, unreliable road network in the rural areas and insufficinet infrastructure (water and sewerage), environmental pollution as well as inadequacy of social amenities. The development of a plan for the municipality will provide for programmes and policies to address the existing challenges as documented herein.

This document profiles the planning area in terms of it physiographic characteristics and the existing development situation in the municipality including:

i. Population and demographic characteristics
ii. Land and land use

iii. Housing and human settlement
iv. Infrastructure development
v. Transportation
vi. The local economy
vii. Environment
viii. Urban governance and institutional capacity

History of Kerugoya/Kutus Municipality

The word Kerugoya comes from Kikuyu words 'Kithaka kiri guoya' (Gichugu Dialect) which means 'the Fearful Bush'. The place was formerly covered with thick bushes. White settlers arrived and later renamed the villages to Kerugoya.

Kutus originated from the word Mucakuthi. The founding chief's name was Gutu (Kikuyu word for Ear). This location was named Gutu's which later with effort of the Gichugu dialect changed to what is modernly known as Kutus.

The Municipality started in 1980 as a town. In 1987, it was elevated to a town council and later elevated to a municipal council in year 1990. It remained so until the year 2012 when the county governments were formed. It has maintained this status by virtue of being the county headquarters for Kirinyaga as stipulated by the Urban Areas and Cities (Amendment) Act, 2019.

1.2 Terms of Reference

1.2.1 Purpose of the Assignment

The purpose of the urban development plan is to:

i. Define a Vision for future growth and development of the Municipality over the next 10 years
ii. Provide an overall integrated physical framework for urban growth of the municipality
iii. Provide a basis for coordinated programming of projects and budget, thereby serving as a downstream management tool

1.2.2 Objective of the Assignment

The main objectives of the assignment are:

i. To delineate/propose the jurisdiction of the Kerugoya/Kutus Municipal boundary according to the Urban Areas and Cities (Amendment) Act, 2019

ii. To undertake a detailed study of land suitability analysis, land carrying capacity, zoning regulations to contain and control sprawl development
iii. To prepare a ten (10) year G.I.S based Kerugoya/Kutus Municipality Plan which will provide a framework for growth and development of the municipality

1.2.3 Scope of Work

In order to achieve the above stated objectives, the consultant will undertake the following activities:

i. Delineation of Kerugoya/Kutus municipal growth boundary through a detailed study of land suitability analysis, growth trends evaluation and assessment of development constraints, potentials, land carrying capacity and provide a framework for future development and functioning
ii. Prepare a GIS plot level spatial database containing plot numbers, names of plot owners, plot users, acreage and attribute as available in cadastral sheets. Digitize and geo-reference existing land use/Physical attributes to form base map for planning purposes.
iii. Prepare an urban plan showing current and proposed land use and infrastructure (transport, water, drainage, power etc.), requirements to guide urban development, including, zoning plans and development control regulations.
iv. The problems of poor road linkages, haphazard development are to be dealt with meticulously while preparing the plan in addition to other problems and solutions.
v. Ensure public participation in the planning process as per the Physical and Land Use Planning Act, 2019, and other legislations.

1.2.4 Project Output and Deliverables

The outputs of the process should result in the following elements:

i. Kerugoya/Kutus Municipal growth boundary
ii. Urban Base Map including Digital Cadastral Layer
iii. Urban socio-economic database that includes household survey, land use survey, traffic and transport survey and other surveys
iv. Approved Municipal Urban Plan
v. Participatory training needs and training manuals and reference tools

1.2.5 Purposes and Objectives of the Plan

This plan will serve the following purposes:

i. Framework to guide land use within the planning area
ii. Basis for attracting investment
iii. Framework for provision of appropriate infrastructure and utility services
iv. Improving the towns livability index;
v. Basis for environmental management and conservation;
vi. Basis of regulating day to day development in the municipality.

In serving the outlined purposes this plan shall fulfill the following objectives in 10 years of the planning period.

i. Optimize the use of land and land-based resources.
ii. Spur local economic development
iii. Integrate land uses and activity areas
iv. Create a basis for provision of appropriate infrastructure.
v. Protect and conserve the natural environment while improving the built environment
vi. Promote good governance and leadership
vii. Create a basis for land use management and development control.

1.3 Methodology

A phased-process will be undertaken in preparation of the Kerugoya/Kutus Municipal Local Physical and Land Use Development Plan (LPLUDP). The study will be carried out through the steps and activities outlined in table 1-1.

Table 1-1: Project Methodology

Step	Key Activities	Output /outcome
Project Inception	• Publish a Notice of Intention to plan • Conduct Start-up meetings • Identification of stakeholders • Develop a mode of Operation/Action Plan • Conduct an appraisal of project area/reconnaissance	Inception Report

Step	Key Activities	Output /outcome
Scoping of context	• Conduct Urban Study that comprising: i. Literature review ii. Key Informant interviews iii. Stakeholder consultations/FGDs iv. Observation (including photography) v. Administration of questionnaires and instruments. • Stakeholder consultations;	
Mapping	• Acquire high resolution satellite image for the planning area; • Acquire digital topographical maps; • Digitize and compile digital information. • Prepare thematic maps; • Prepare a digital cadastral layer using RIMs • Create a GIS data base.	Urban Base Map Cadastral Layer
Identification of planning issues	• Analyze baseline information; • Sector consultations; • Conduct a Launch and preliminary Visioning. • Validate situational analysis findings and the planning issues identified; • Realign preliminary vision established at the launch of the project. • Incorporate stakeholder's concerns and comments.	Urban socio-economic database
Land optimization for Urban Development	• Project land requirements based on population needs; • Undertake Land suitability analysis entailing; i. Slope analysis; ii. Threshold analysis;	Draft Land Use Plan

Step	Key Activities	Output /outcome
	• Scenario building by developing various possible development options; • Select the preferred spatial structure to develop a structure plan.	
Preparation of Land use /Zoning plan	• Prepare a zoning/Land use Plan	Draft Zoning Plan
Formulation of Land Use and Land Management Policies.	• Formulate Land use and Land Management Policies /Guidelines based on the zoning/ land use plan.	Draft Zoning Regulations
Formulation of sector development strategies	• Formulate sector development strategies; • Identify strategic actions and measures to be taken in order to implement the plan; • Identify programs and projects to be implemented to realize the strategies.	Draft LPLUDP
Implementation Framework	• Establish timeframes and identify actors for implementation of identified policies, programs and projects.	
Stakeholder engagement (Draft Plan Validation Workshop)	• Present the Draft LPLUDP to the client and stakeholders. • Collect comments from the stakeholders.	
Preparation of the Final Draft Plan	• Incorporate the comments raised by the stakeholders into the draft plan • Submit the Final Plan to the client	Final Draft LPLUDP

Step	Key Activities	Output /outcome
Submission of the Plan for approval and adoption.	• Editing of the final draft • Packaging the reports for submission • Submission of the plan to County Assembly for approval respectively. • Publishing • Gazettement of the approved plan	Approved Municipal Urban Plan

1.4 How the Studies and Analysis Were Undertaken

The studies and analysis involved the following activities;

Secondary Data collection

Secondary data collection entailed review of existing documents, assessment of aerial photos, satellite images and maps with insights on Kerugoya/Kutus Municipality. A detailed literature review was carried out on the following thematic areas:

a. ***Physiographic Characteristics***

This chapter looks deeply into aspects of topography, climate, geology and drainage. It aims to assess the natural capital of Kerugoya/Kutus Municipality with special attention to features such as rivers, dams, forests and wetlands etc.

b. ***Population and Demography***

This chapter focuses primarily on population size, density and other demographic characteristics such as sex ratio, age cohort characteristics, birth rates, death rates, fertility rates, and labor force and dependency ratios.

c. Land and Land Use

Here, issues observed include the profiling of existing land uses including agricultural, residential, commercial, industrial, conservation as well as public purpose and utilities. A land suitability study was undertaken to determine suitable land for urban development.

d. Housing and Human Settlements

Settlement patterns and densities, structuring elements, housing areas, providers and typologies are profiled. Housing demand and supply, housing conditions (building materials and enabling infrastructure) are also studied.

e. Local Economy

This chapter analyses the major economic activities taking place in Kerugoya/Kutus Municipality such as agriculture, wholesale and retail trade, transportation, industry among others. In addition, it endeavors to investigate issues such as income sources as well as employment status.

f. Infrastructure

This section was discussed and analyzed with reference to social and physical infrastructure in the municipality.

Under this section, information regarding education facilities, enrollment levels, transition rates and teacher-pupil ratios are investigated. Furthermore, the number and distribution of health facilities, doctor and nurse-patient ratios as well as disease prevalence are investigated. Other issues of concern under social infrastructure include community facilities such as parks, open spaces, social halls, libraries, playgrounds, stadia and cemeteries.

Investigation of physical infrastructure involved an analysis of the conditions, potential and issues regarding water supply, sewerage networks, storm water drainage, solid waste management, electricity/energy as well as Information and Communication Technology (ICT).

g. Transport

The areas of interest include the analysis of the road network in the municipality in terms of conditions and the functions they play. The existing transport termini and parking availability were also profiled.

h. Environment and Disaster Management

The topics analyzed under this thematic area include existing environmental conditions, issues of degradation, pollution and solid waste management (in an environmental context).

i. Legal, Policy and Institutional Framework

Here, a review is carried out on the statutory obligations which inform and guide the planning process. Under institutional framework the aspects observed include organizational/governance structure (including functions of both national and county governments in county development), revenue, expenditure and institutional capacity (financial and human resources as well as availability of equipment).

Primary Data

Primary data collection involved the actual field visits where gathering of first-hand information was carried out. Primary data collection methods used included: observation, photography, oral interviews, administering of questionnaires and mapping.

a. Household survey

The household survey was undertaken between 20th and 27th January 2020. It involved administering a predesigned household questionnaire and conducting oral interviews with members of the public in the municipality.

Plate 1-1: Household Survey

Source: Field Survey, 2020

Sampling Design

A stratified random sampling approach was used. The sample was based on the density of the population analyzed from aerial photography whereby the sampled households were proportional to the size of the area of administration. To ensure balanced representation, households were sampled from each housing area within the municipality.

Sample Size

The sample size was calculated using the formula below.

$$n_o = \frac{N}{1 + N\ (e)^2}$$

Where:

n_o= sample size

N=total population

e= the margin of error expressed as a decimal (for the study 0.05)

The sample size was calculated based on the 2020 population projection for Kerugoya/Kutus Municipality which was 42,762 persons and adopted a 95 % confidence level. The study therefore used a sample size of 386 households which were distributed as shown in table 1-2.

Table 1-2: Distribution of Questionnaires

Urban Area/Node	Questionnaires Administered
Kerugoya	126
Kutus	110
Mukinduri	26
Karia	16
Ithare	18
Kabare	18
Rukenya	18
Kibingo	18
Kaitheri	18
Kiamwenja	18
Total	**386**

The household questionnaires were administered by both the Consultant and youth from within the municipality. The youth who participated were selected by the municipal manager from various localities within the municipality. The selected local enumerators were then trained and undertook a trial run of the survey tool to ensure the survey design was appropriate and to identify any unforeseen challenges. The training was mainly directed towards ensuring the enumerators were well versed with the survey tools and more so to use it appropriately for purposes of improving data quality. Through this approach, the team was more accepted by the community to work in the municipality.

Data entry and analysis

The collected data was thereafter entered in Statistical Package for Social Sciences (SPSS) version 16. Descriptive statistical and related analysis was done and presented in graphical and tabular formats. To ensure quality of the collected data, data entry personnel checked entered data and where errors were identified they were corrected accordingly. Some of the data limitations were identified as recall bias by the respondents and measurement errors resulting from population

parameters. These limitations were improved through validation of some of the responses from the respondent and adjusting the analysis level by cross examining the information with the Key Informants Interviews.

b. Key informant interviews

The third phase of data collection was the interviewing of key informants, which was done using subjective sampling methods. The Key informants included heads of departments, National Government representative based in the municipality and Non-governmental organizations.

The county departments interviewed were:

- Gender youth and sports
- Education and public service
- Lands housing and urban development
- Water, environment and natural resources
- Transport and public works
- Agriculture
- Health and sanitation
- Cooperatives and trade

Plate 1-2: Key Informant Interviews


Source: Field Survey, 2020

GIS Mapping

This involved preparation of up-to-date accurate digital topographical maps indicating all details including natural and manmade features and preparing a digital cadastre layer. The current and up-to date satellite image, secondary data as well as cadastral layer were used to develop the base map of the study area. The updated base map was applied as the backdrop to guide the further studies and analysis.

2 PLANNING CONTEXT

2.1 Locational Context

Kerugoya- Kutus Municipality is located 10 kilometers east of Karatina Town and 40 kilometers west of Embu Town. Kutus Town is located along the Sagana-Embu (B25) road while Kerugoya Town is located along the Kutus-Karatina (B27) road. These two towns form the two major urban nodes of the municipality. The planning area covers 70.52 square kilometers. It is situated at the center of Kirinyaga County touching three constituencies; Kirinyaga Central, Mwea East and Gichugu. It lies within seven wards; Kabare, Kerugoya, Inoi, Kangai, Kanyakiini, Nyangati and Baragwi. The location of the municipality is as presented in map 2-1.

2.2 Physiography

2.2.1 Topography

The municipality lies at an altitude of 1,686 meters above sea level (asl) at Waigiri/Githioro area with the lowest point being 1,240 meters above sea level (asl) at Ahiti Ndomba in Kutus Town. Mt. Kenya which lies on the northern side greatly influences the landscape of the Municipality. The municipality is characteristic of two landforms which include a ridge and plain. The ridge begins from Waigiri down to Kutus Town where the plain landform is characteristic. This has influenced both the drainage and agricultural activities within the municipality.

2.2.2 Climate

The municipality is on the windward side of Mt Kenya thus influencing its climatic condition. The average annual temperature is 18.7 °C. The average annual rainfall is 1,412 mm. The municipality has two rainy seasons. The long rains occur between March and May averaging 2,146mm while the short rains occur between October and November averaging 1,212 mm.

2.2.3 Drainage

The municipality has one major river: River Thiba. River Thiba has a major tributary namely river Rutui. Mukindu, Gakuo and Kagogo also drain into River Thiba. River Rutui has two tributaries namely river Ngaci and Kabuga. Kutus Town, the lowest point in the municipality, experiences frequent flooding during the rainy season due to most of these rivers busting banks. River Thiba drains into River Tana. These rivers are the principal sources of water in the municipality. The

water from these rivers has also been harnessed through canals to support irrigation especially in Kutus Town.

2.2.4 Geology

Rocks

The municipality is covered with two main types of volcanic rocks including: basic igneous and sedimentary rocks. A total of 84.85% of the municipality is covered by basalt rocks, 11.18% is covered by basic igneous rocks and 3.97% is covered by pyroclastic sedimentary rocks. This is as shown in table 2-1 below.

Table 2-1: Rock type and properties

Type of Rock	Properties	Location	Area covered	Percentage of total area
Pyroclastic rocks	• Formed from clastic sedimentary rocks composed of volcanic materials. • Range from large agglomerates to very fine ashes and tuffs	Githioro and Waigiri areas.	279.934 Ha	3.97%
Basalt rocks	• They can be either glassy or coarse in appearance. • Usually do not react with acids. • The mineral deposits are available in the form of patches with different sizes.	Kerugoya to Kutus Town	5982.483 Ha	84.85%
Basic Ingenious rocks		Gatuto to Ahiti Ndomba (cover the lower part of the Kutus)	788.55 Ha	11.18%

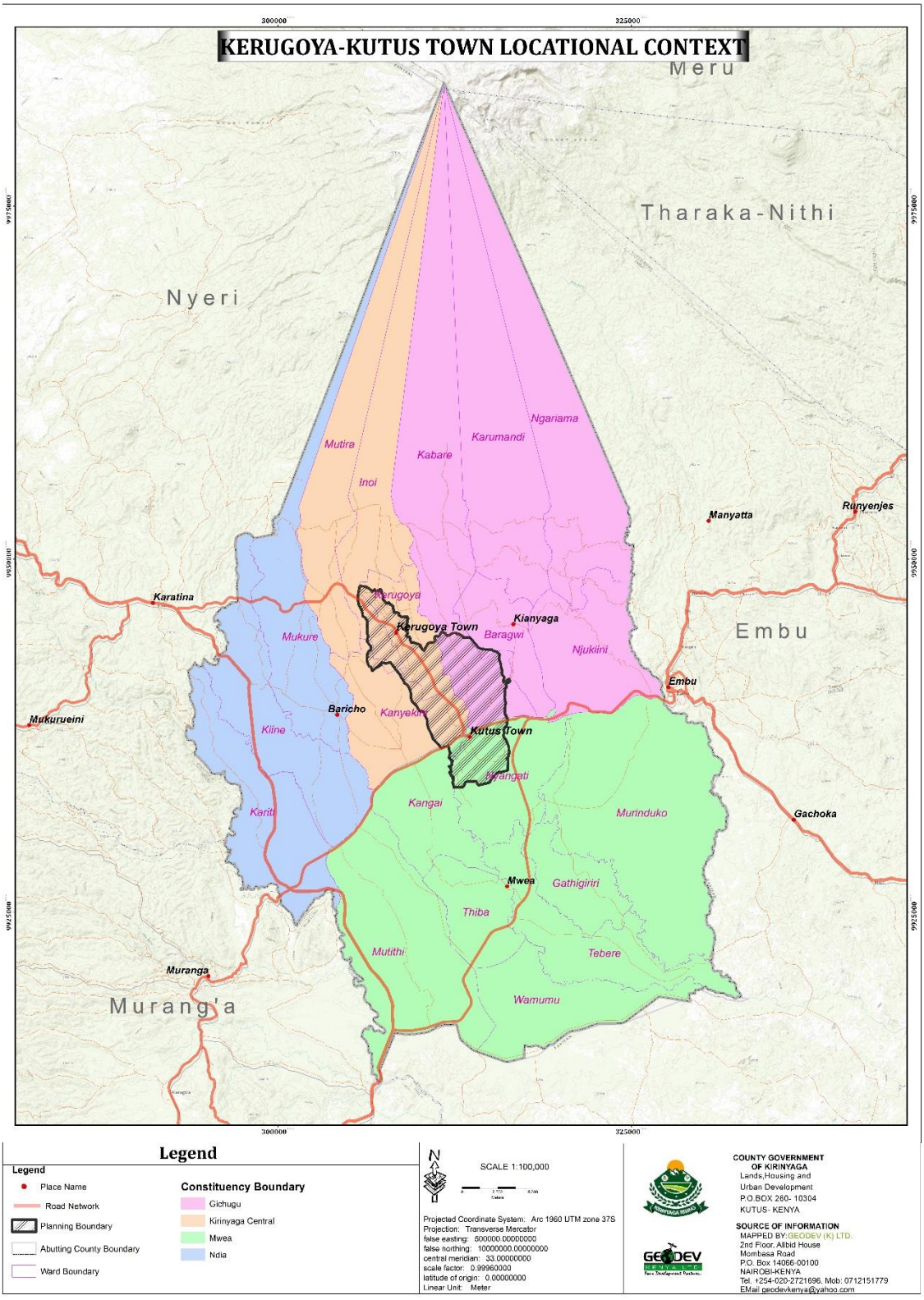
Soils

The municipality is covered with two types of volcanic soils as shown in table 2-2: The soils are deep, well drained red tropical soils. They are 30% clay hence have the ability to retain water and are essential for irrigation of paddy rice. They have a moderate to strong angular blocky structure. The soils are moderate to highly fertile due to presence of decay matter from agricultural activities in the area overtime. These soils have a low permeability tendency.

Table 2-2: Soil Type and Properties in the Municipality

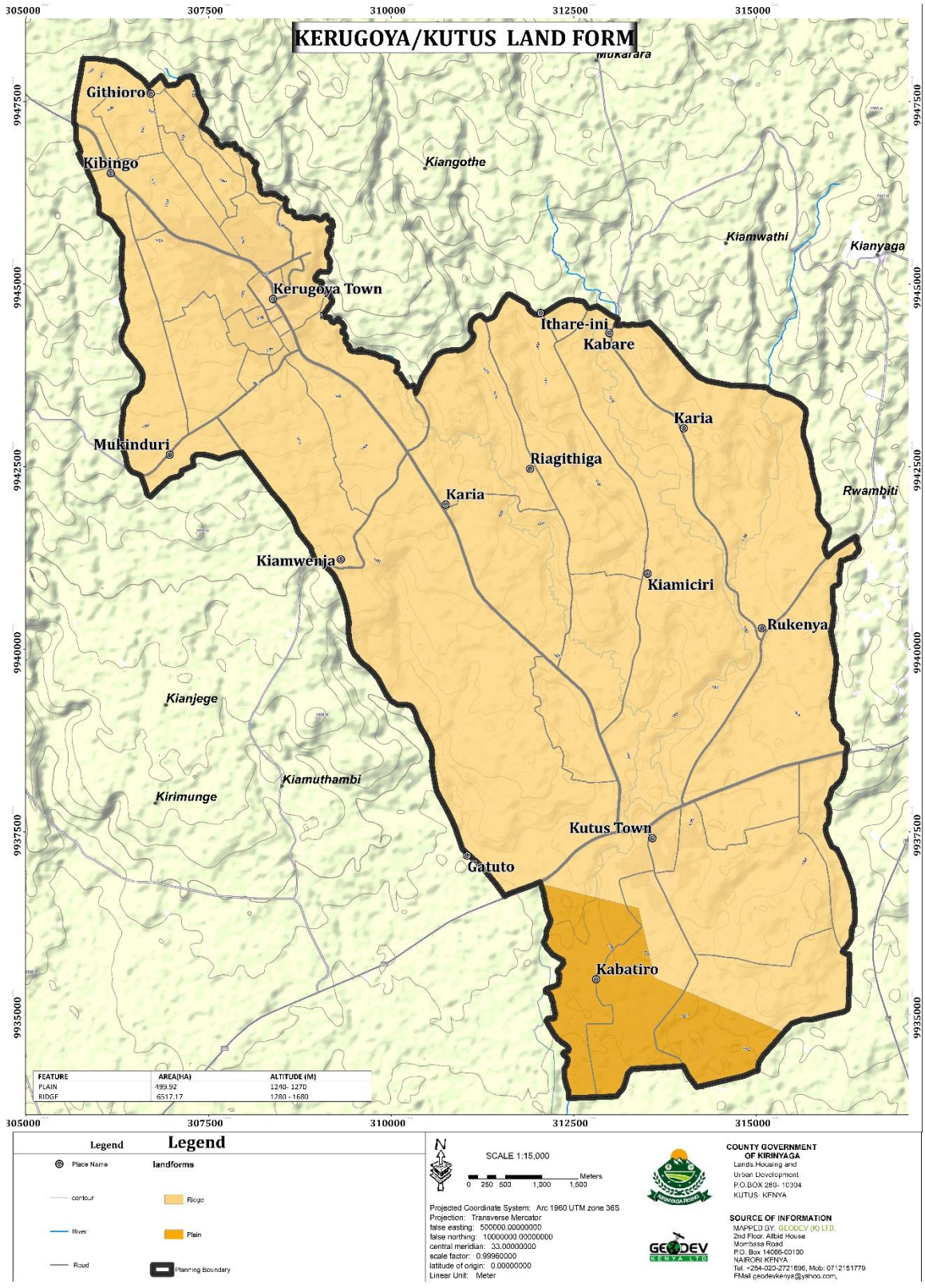
Type of Soil	Location	Area Covered
Humic Nitisols	Githioro to Gatuto	6223.08 Ha
Rhodic Nitisols	Gatutao to Ahiti Ndomba	794.01 Ha

Map 2-1: Locational Context of the Municipality

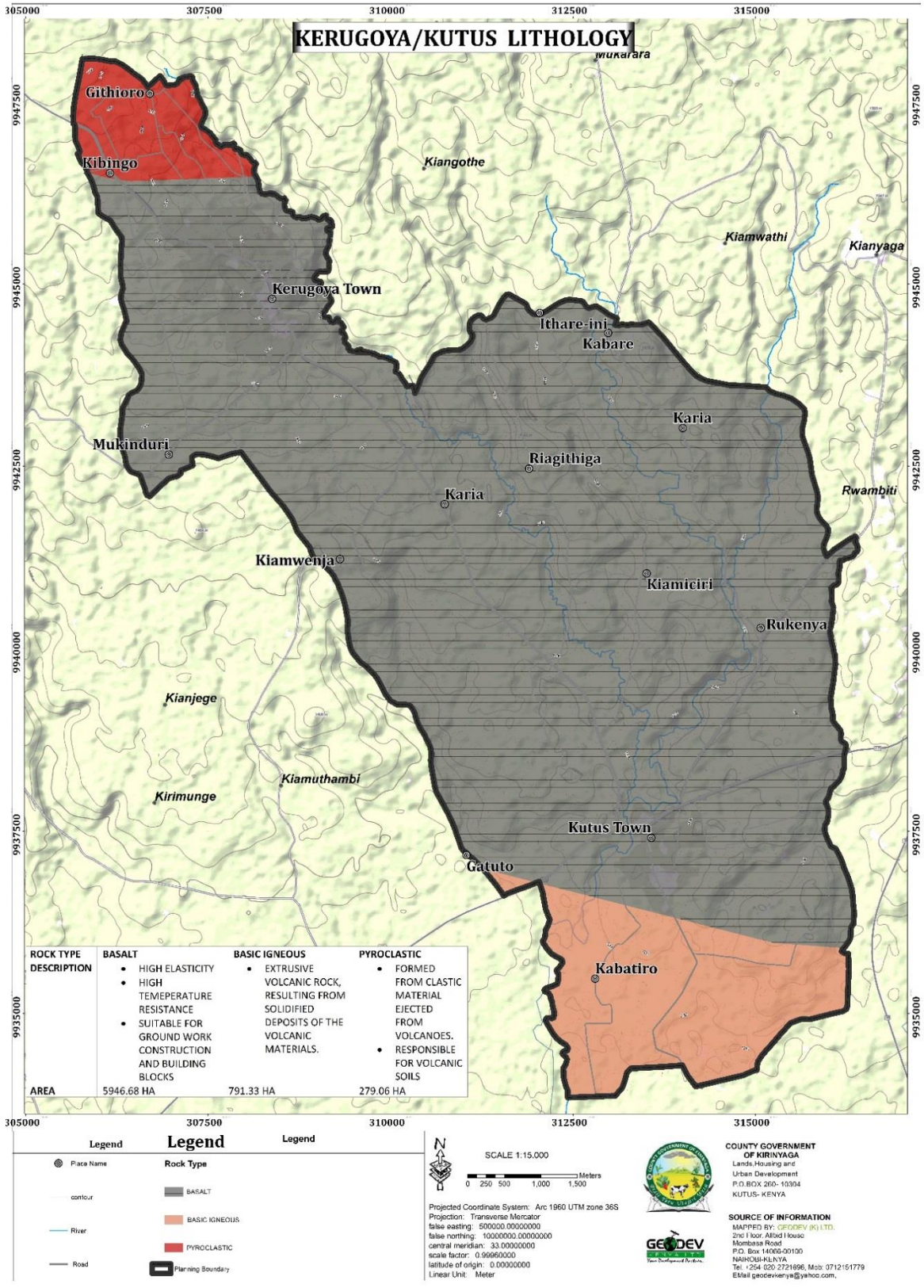


Source: Kenya Data (open source)

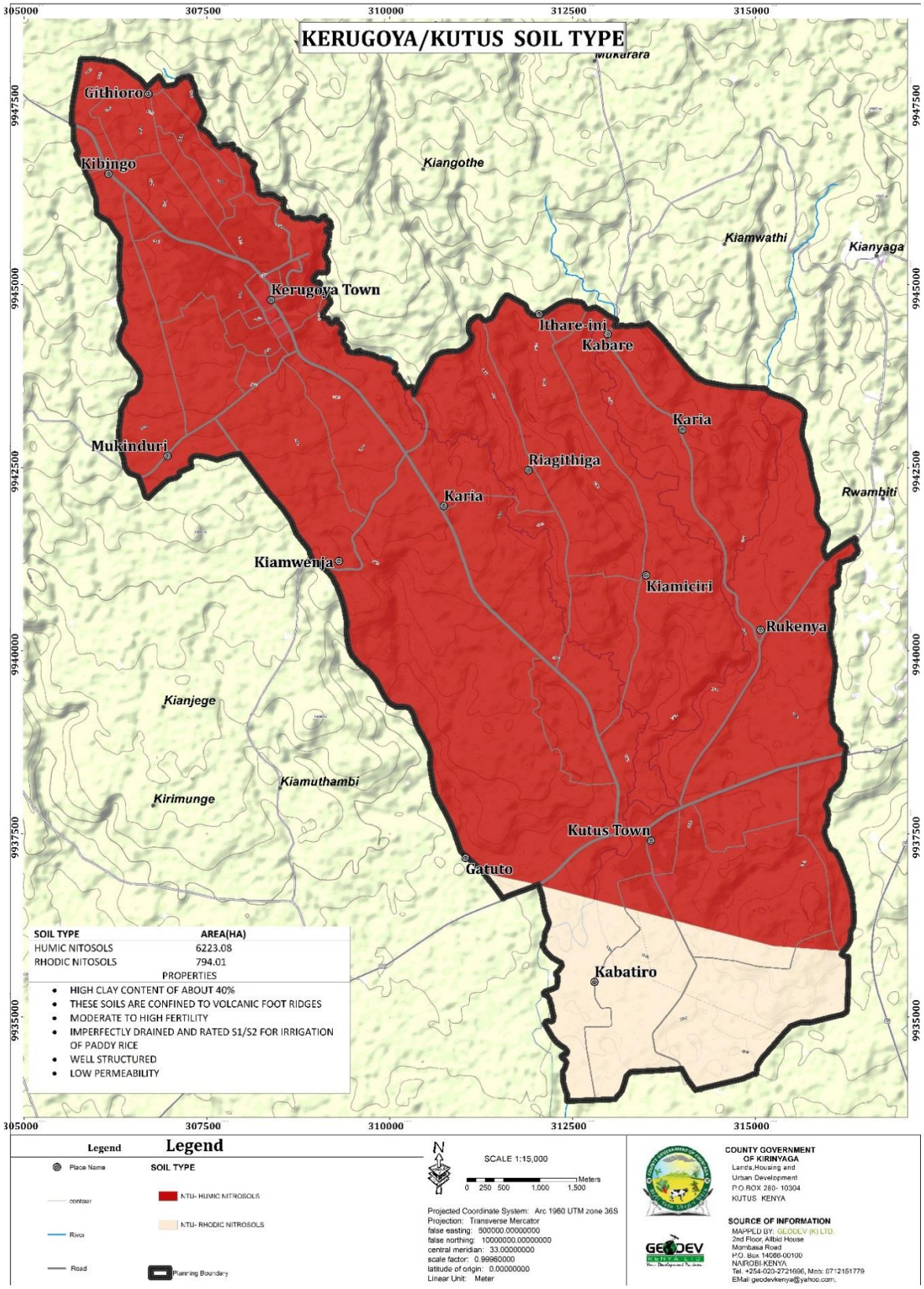
Map 2-2: Land forms in the municipality



Map 2-3: Rock Types in the Municipality



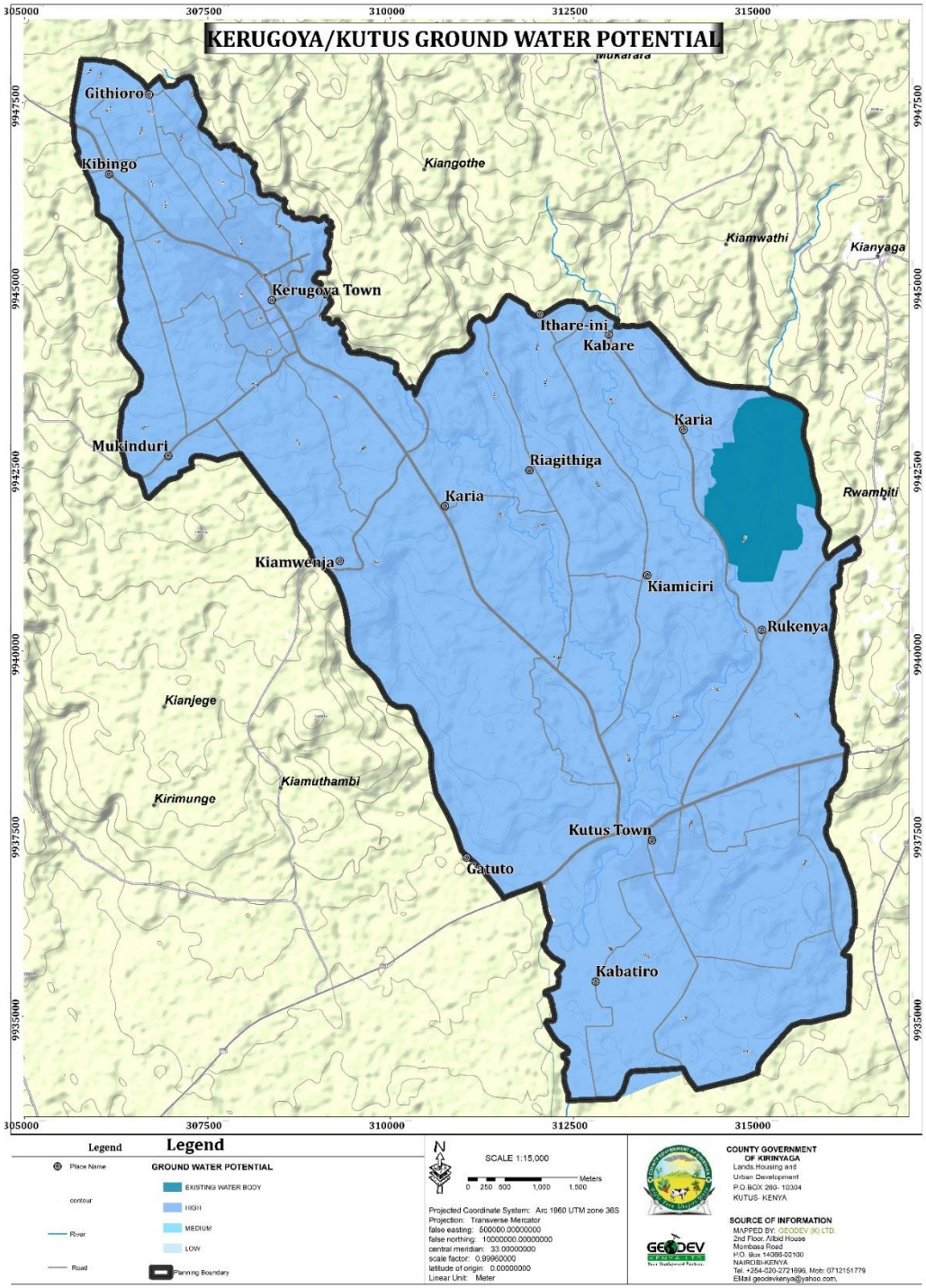
Map 2-4: Soil types in the municipality



2.2.5 Ground Water Potential

The whole Municipality lays in an area of high ground water potential. This is evident of the numerous springs found within the region that shows the high potential for existing ground water.

Map 2-5: Ground Water Potential in the Municipality



Implication of location and physiography

1. The central location of the municipality within the county offers improved access to the adjacent agricultural areas.
2. The plain landscape as well as soils within Kutus Town offers favorable conditions for rice farming.
3. High rainfall and low temperature experienced throughout the year offers favorable conditions for agriculture.
4. The basalt rock type covering the majority of the area offers rocks for construction as well as a firm foundation for urban development.
5. The fertile volcanic rocks provide good soils for agriculture which forms the economic backbone of residents in the municipality

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2.3 Functions of Kerugoya/Kutus Municipality

Table 2-3: Functions of Kerugoya/Kutus Municipality

Category	Function
Residential	The working population in the core urban areas resides in different areas within the municipality including Kerugoya Town, Kutus Town, Mukinduri, Kibingo, site and service as well as in the surrounding rural areas. The core urban areas are dormitory areas for a majority of the population in the municipality.
Economic	The municipality is a source of employment and production in the industrial, commercial, hospitality and service sectors. It is within the municipality that production and movement of manufactured goods from the agricultural hinterland to other centres is made possible.
Service	The following services are offered within the municipality: Provision of schools, health services, public utilities, commercial banks, co-operatives, administration, judicial services, recreational as well as transportation services.

2.4 Legal and Policy Context

The section below gives a highlight of the laws and policies that shall be used in preparation of the plan. Various sections within the stated laws have been highlighted to show their function to the delivery of the plan.

LAW/POLICY	FUNCTION TO THE PLAN
The Constitution of Kenya, 2010	• Section 60 (1) stipulates the principles of land management • Section 61 (2) stipulates the classification of land in Kenya. • Section 66 (1&2) insists on the regulations of land use and property • Section 69 (1) indicates the states' obligation in respect to the environment.

LAW/POLICY	FUNCTION TO THE PLAN
	• Section 70 (1&2) stipulates the enforcement of environment rights • Section 42 states the right for every person to have a clean and healthy environment
Urban Areas and Cities Act, 2011 and Urban Areas and Cities (Amendment) Act, 2019	• Article 5 instructs on the criteria used for classification of urban areas and cities. • Article 11 insists on the principles of governance and management of urban areas and cities. • Article 32 highlights on the service delivery by a municipal board • Article 36 stipulates the objectives of an integrated urban area and city development plan.
Physical and Land Use Planning Act, 2019	• Article 5 stipulates the principles and norms of physical and land use planning. • Section 10 indicates the responsibilities of the Cabinet secretary in relation to the physical land use planning. • Section 45 describes a local physical and land use development plan: its purpose, preparation, content, notices of objection and approvals as well as the publication of the LPLUDP. • Second schedule part A instructs matters that may be dealt with in a LPLUDP.
The County Government Act, 2012	• Article 5 states the responsibilities of the county government including county planning as provided in the fourth schedule of the constitution. • Article 49 introduces the urban areas and cities act as a tool for management of urban areas and cities.

LAW/POLICY	FUNCTION TO THE PLAN
	• Article 102 stipulates the principles of planning and development facilitation in a county • Article 104, indicates the obligations to plan by the county • Article 111, indicates the types of plans for both a municipality and a city. • Article 115, stipulates the process taken to carry out public participation.
Kenya Vision 2030	• Chapter 2, indicates the foundation for socio-economic transformation • Chapter 3, outlines the economic pillars such as tourism, agriculture, wholesale and retail trade, manufacturing, business process outsourcing/offshoring, and financial services. • Chapter 4, outlines the social pillars including education and training, health care delivery, water and sanitation, environmental management, gender youth and vulnerable groups, housing and urbanization and social equity and poverty reduction. • Chapter 5, focuses on the political pillar by explaining the guiding principles.
The National Land Policy, 2009	As contained in Sessional Paper No. 3 of 2009 recognizes that "development of land in urban and peri-urban areas has been inhibited by poor planning, rapid growth of human settlements and activities, unmitigated urban sprawl and inadequate provision of infrastructure." The policy, further, notes that proper planning will facilitate coordinated development of

LAW/POLICY	FUNCTION TO THE PLAN
	urban and peri-urban areas in terms of housing, commercial, industrial and infrastructure development to accommodate changes in lifestyle and economic activities.
Urban Development Policy	The policy objectives include ensuring the legal personality of cities and urban areas; ensuring planned, inclusive, and sustainable urban development that implies the recognition of urban centres as entities that strive to harmonize physical planning with economic development planning and are sensitive to stakeholders' participation and environment among others.
National Spatial Plan, 2015-2045	The policy seeks to achieve promises Kenyans furnished themselves under the new Constitution such as the right to a better economy; the need for balanced development across the country, the right to a clean and healthy environment and the right to property among others. It also lays a foundation for Article 66 of the Constitution on regulation of land uses.

2.5 Previous Planning Interventions

2.5.1 Kutus Development Plan (1994)

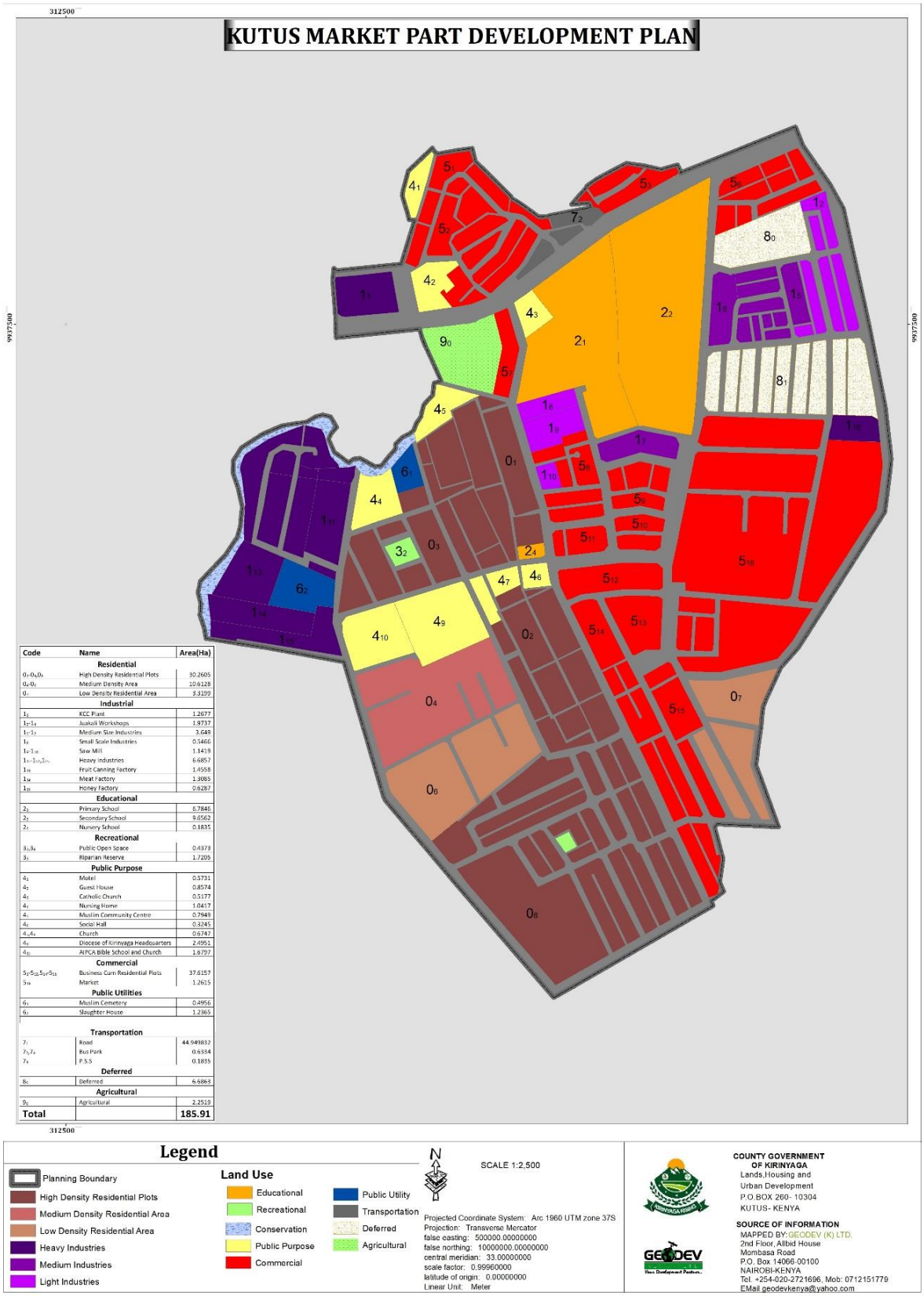
The Kutus Development plan was developed in 1994 but was not approved. The plan covered an area of 185.91Ha. Table 2-4 shows a comparison of the existing land use to the development plan. This comparison gives the level of implementation of the plan locally.

Table 2-4: Land use comparison to the Kutus DP

LAND USE	DP 1994 (Ha)	EXISTING (Ha)
Residential	44.193	42.134
Industrial	18.658	2.001
Educational	16.624	14.115
Recreational	2.158	14.008
Public Purpose	8.959	8.210
Commercial	38.877	27.201
Public utility	1.732	0.332
Transport	45.767	30.202
Deferred	6.686	-
Conservation	-	18.442
Agricultural	2.252	29.265
Total	185.9 Ha	185.9 Ha

The DP set aside 44.193Ha for residential use. Currently, 42.134Ha is being used for residential purposes. A total of 30.202Ha is currently being utilized for transport against an intended 45.767Ha. Moreover, agriculture currently covers 29.0265Ha against a possible 2.252Ha that was planned for the aforementioned purpose. Industrial use currently occupies 1.5 Ha while 18.658 Ha was set aside for industrial purposes in the DP. The DP is as shown in map 2…..

Map 2-6: Kutus Market PDP (1994)



Code	Name	Area(Ha)
	Residential	
0_4-0_6,0_8	High Density Residential Plots	30.2605
0_4-0_5	Medium Density Area	10.6128
0_7	Low Density Residential Area	3.3199
	Industrial	
1_3	KCC Plant	1.2677
1_{12}-1_{14}	Jua Kali Workshops	1.9737
1_{11}-1_{12}	Medium Size Industries	3.648
1_9	Small Scale Industries	0.5466
1_{16}-1_{18}	Saw Mill	1.1419
1_{11}-1_{12},1_{15}	Heavy Industries	6.6857
1_{16}	Fruit Canning Factory	1.4558
1_{18}	Meat Factory	1.3085
1_{19}	Honey Factory	0.6287
	Educational	
2_3	Primary School	8.7846
2_2	Secondary School	9.6562
2_1	Nursery School	0.1835
	Recreational	
3_1,3_4	Public Open Space	0.4373
3_2	Riparian Reserve	1.7205
	Public Purpose	
4_3	Motel	0.5731
4_5	Guest House	0.8574
4_7	Catholic Church	0.5177
4_6	Nursing Home	1.0417
4_9	Muslim Community Centre	0.7949
4_{10}	Social Hall	0.3245
4_4,4_8	Church	0.6747
4_2	Diocese of Kirinyaga Headquarters	2.4951
4_{11}	AIPCA Bible School and Church	1.6797
	Commercial	
5_1-5_{13},5_{15}-5_{19}	Business Cum Residential Plots	37.6157
5_{14}	Market	1.2615
	Public Utilities	
6_1	Muslim Cemetery	0.4956
6_2	Slaughter House	1.2365
	Transportation	
7_1	Road	44.949832
7_3,7_4	Bus Park	0.6334
7_2	P.S.S	0.1835
	Deferred	
8_0	Deferred	6.6883
	Agricultural	
9_0	Agricultural	2.2519
Total		**185.91**

2.5.2 Kerugoya Development Plan 2008

The Kerugoya Development plan was made in 2008 but was not approved. The plan covered an area of 2,217.172Ha.

Table 2-5: Land use comparison to the Kerugoya DP

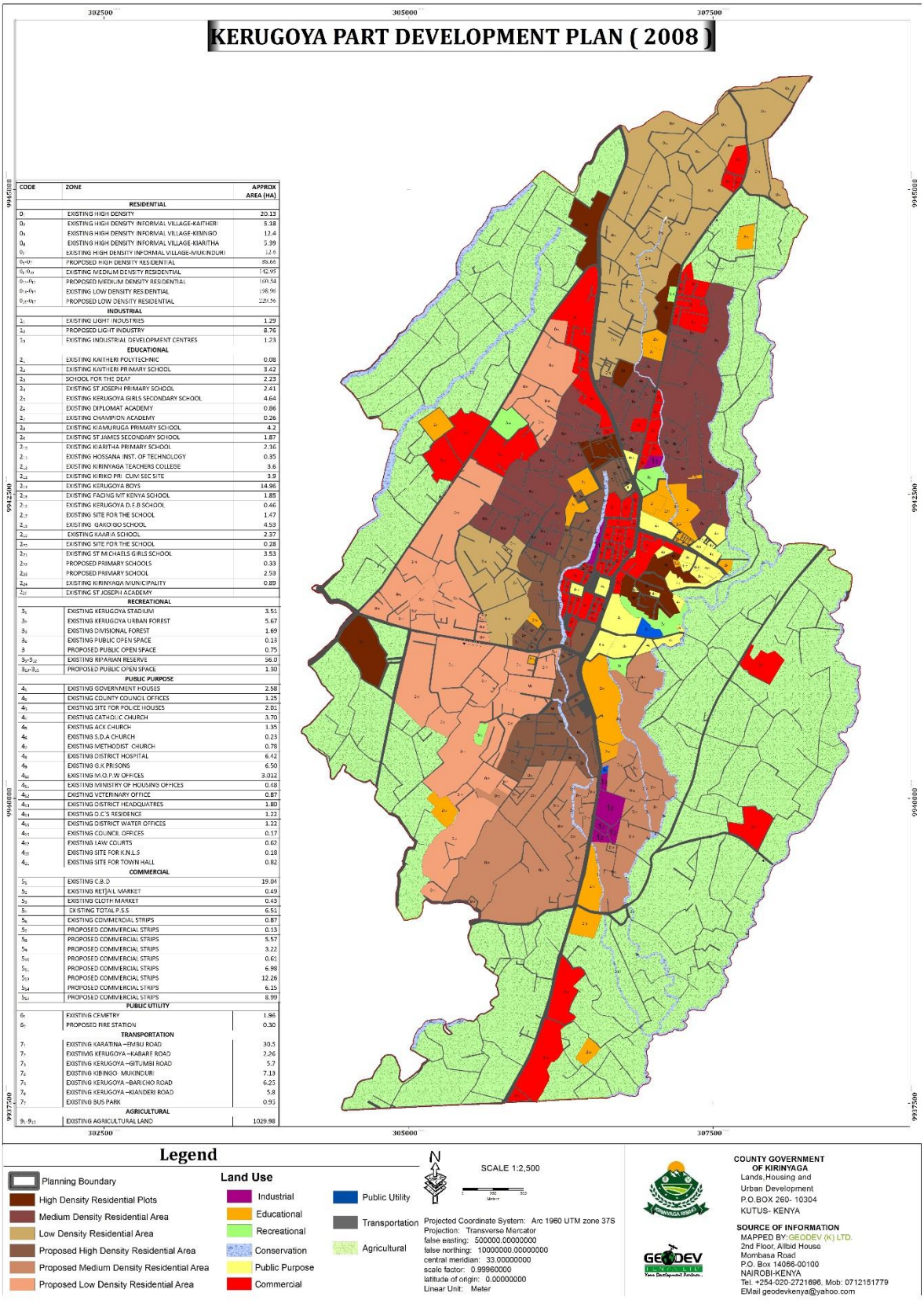
LAND USE	DP 2008 (Ha)	EXISTING (Ha)
Residential	876.37	527.294
Industrial	11.28	19.859
Educational	63.18	77.359
Recreational	69.05	5.162
Public Purpose	35.212	48.181
Commercial	71.25	23.058
Public utility	2.26	5.68
Transport	5.59	152.56
Conservation	-	68.366
Agricultural	1029.98	1093.48
Total	**2,217.172 Ha**	**2022.601 Ha**

The development plan covered Kerugoya Town as well as parts of Ndimi and Kiburi. Due to the year of the development of the plan, some land uses including Kaitheri Polytechnic, the current level 5 hospital exist in the same locations assigned. The plan did not set aside land for conservation purposes.

Challenges in Implementation of both plans

- Both Plans for Kerugoya and Kutus were not approved therefore lacked legal support/legitimacy for full implementation.
- Limited capacity of the former municipal council in terms of staff, equipment and finance to carry out their mandate in administration/management.
- Most land is under private land ownership therefore limiting investment in public facilities and utilities that were proposed.

Map 2-7: Kerugoya Town Part Development Plan, 2008



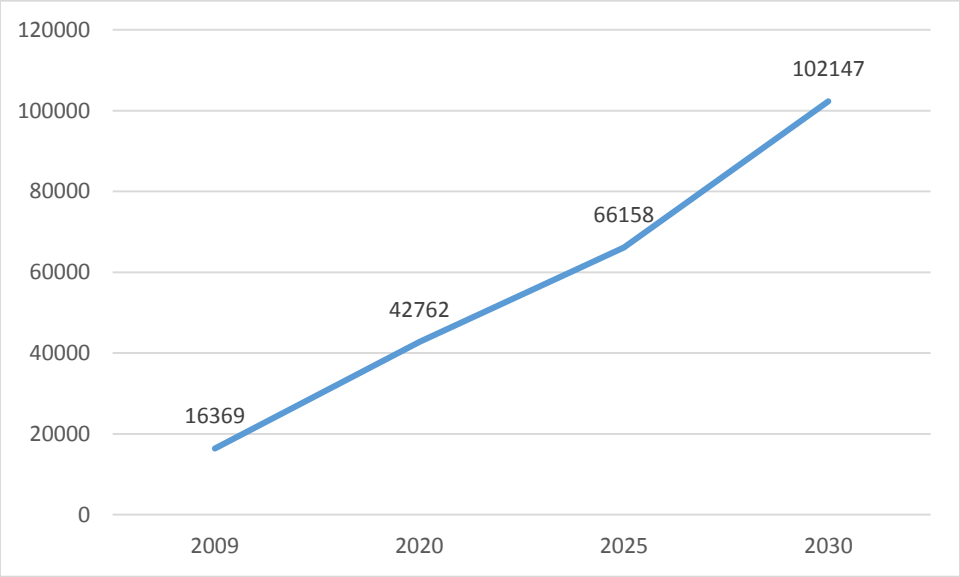
CODE	ZONE	APPROX AREA (HA)
	RESIDENTIAL	
0_1	EXISTING HIGH DENSITY	20.13
0_2	EXISTING HIGH DENSITY INFORMAL VILLAGE-KAITHERI	5.18
0_3	EXISTING HIGH DENSITY INFORMAL VILLAGE-KIBINGO	12.4
0_4	EXISTING HIGH DENSITY INFORMAL VILLAGE-KIARITHA	5.39
0_5	EXISTING HIGH DENSITY INFORMAL VILLAGE-MUKINDURI	12.6
0_6-0_7	PROPOSED HIGH DENSITY RESIDENTIAL	88.66
0_8-0_{10}	EXISTING MEDIUM DENSITY RESIDENTIAL	142.95
0_{11}-0_{13}	PROPOSED MEDIUM DENSITY RESIDENTIAL	169.54
0_{14}-0_{17}	EXISTING LOW DENSITY RESIDENTIAL	198.96
0_{18}-0_{21}	PROPOSED LOW DENSITY RESIDENTIAL	229.56
	INDUSTRIAL	
2_1	EXISTING LIGHT INDUSTRIES	1.29
2_2	PROPOSED LIGHT INDUSTRY	8.76
2_3	EXISTING INDUSTRIAL DEVELOPMENT CENTRES	1.23
	EDUCATIONAL	
2_1	EXISTING KAITHERI POLYTECHNIC	0.08
2_2	EXISTING KAITHERI PRIMARY SCHOOL	3.42
2_3	SCHOOL FOR THE DEAF	2.23
2_4	EXISTING ST JOSEPH PRIMARY SCHOOL	2.41
2_5	EXISTING KERUGOYA GIRLS SECONDARY SCHOOL	4.64
2_6	EXISTING DIPLOMAT ACADEMY	0.86
2_7	EXISTING CHAMPION ACADEMY	0.26
2_8	EXISTING KIAMURUGA PRIMARY SCHOOL	4.2
2_9	EXISTING ST JAMES SECONDARY SCHOOL	1.87
2_{10}	EXISTING KIARITHA PRIMARY SCHOOL	2.16
2_{11}	EXISTING HOSSANA INST. OF TECHNOLOGY	0.35
2_{12}	EXISTING KIRINYAGA TEACHERS COLLEGE	3.6
2_{13}	EXISTING KIRIKO PRI CUM SEC SITE	3.9
2_{14}	EXISTING KERUGOYA BOYS	14.96
2_{15}	EXISTING FACING IVT KENYA SCHOOL	1.85
2_{17}	EXISTING KERUGOYA D.E.B SCHOOL	0.46
2_{18}	EXISTING SITE FOR THE SCHOOL	1.47
2_{19}	EXISTING GAKOIGO SCHOOL	4.53
2_{20}	EXISTING KAARIA SCHOOL	2.37
2_{21}	EXISTING SITE FOR THE SCHOOL	0.28
2_{22}	EXISTING ST MICHAELS GIRLS SCHOOL	3.53
2_{23}	PROPOSED PRIMARY SCHOOLS	0.33
2_{24}	PROPOSED PRIMARY SCHOOL	2.53
2_{25}	EXISTING KIRINYAGA MUNICIPALITY	0.89
2_{27}	EXISTING ST JOSEPH ACADEMY	
	RECREATIONAL	
3_1	EXISTING KERUGOYA STADIUM	3.51
3_2	EXISTING KERUGOYA URBAN FOREST	5.67
3_3	EXISTING DIVISIONAL FOREST	1.69
3_4	EXISTING PUBLIC OPEN SPACE	0.13
3	PROPOSED PUBLIC OPEN SPACE	0.75
3_5-3_{12}	EXISTING RIPARIAN RESERVE	56.0
3_{13}-3_{15}	PROPOSED PUBLIC OPEN SPACE	1.50
	PUBLIC PURPOSE	
4_1	EXISTING GOVERNMENT HOUSES	2.58
4_2	EXISTING COUNTY COUNCIL OFFICES	1.25
4_3	EXISTING SITE FOR POLICE HOUSES	2.01
4_4	EXISTING CATHOLIC CHURCH	3.70
4_5	EXISTING ACK CHURCH	1.35
4_6	EXISTING S.D.A CHURCH	0.23
4_7	EXISTING METHODIST CHURCH	0.78
4_8	EXISTING DISTRICT HOSPITAL	6.42
4_9	EXISTING G.K PRISONS	6.50
4_{10}	EXISTING M.O.P.W OFFICES	3.012
4_{11}	EXISTING MINISTRY OF HOUSING OFFICES	0.48
4_{12}	EXISTING VETERINARY OFFICE	0.87
4_{13}	EXISTING DISTRICT HEADQUATRES	1.80
4_{14}	EXISTING D.C.'S RESIDENCE	1.22
4_{15}	EXISTING DISTRICT WATER OFFICES	1.32
4_{16}	EXISTING COUNCIL OFFICES	0.17
4_{17}	EXISTING LAW COURTS	0.62
4_{18}	EXISTING SITE FOR K.N.L.S	0.18
4_{19}	EXISTING SITE FOR TOWN HALL	0.82
	COMMERCIAL	
5_1	EXISTING C.B.D	19.04
5_2	EXISTING RETAIL MARKET	0.49
5_3	EXISTING CLOTH MARKET	0.43
5_4	EXISTING TOTAL P.S.S	6.51
5_6	EXISTING COMMERCIAL STRIPS	0.87
5_7	PROPOSED COMMERCIAL STRIPS	0.13
5_8	PROPOSED COMMERCIAL STRIPS	5.57
5_9	PROPOSED COMMERCIAL STRIPS	3.22
5_{10}	PROPOSED COMMERCIAL STRIPS	0.61
5_{11}	PROPOSED COMMERCIAL STRIPS	6.98
5_{13}	PROPOSED COMMERCIAL STRIPS	12.26
5_{14}	PROPOSED COMMERCIAL STRIPS	6.15
5_{15}	PROPOSED COMMERCIAL STRIPS	8.99
	PUBLIC UTILITY	
6_1	EXISTING CEMETRY	1.96
6_2	PROPOSED FIRE STATION	0.30
	TRANSPORTATION	
7_1	EXISTING KARATINA –EMBU ROAD	30.5
7_2	EXISTING KERUGOYA –KABARE ROAD	2.26
7_3	EXISTING KERUGOYA –KITUMBI ROAD	5.7
7_4	EXISTING KIBINGO MUKINDURI	7.13
7_5	EXISTING KERUGOYA –BARICHO ROAD	6.25
7_6	EXISTING KERUGOYA –KIANDERI ROAD	5.8
7_7	EXISTING BUS PARK	0.95
	AGRICULTURAL	
9_1-9_{10}	EXISTING AGRICULTURAL LAND	1029.98

3 POPULATION

3.1 Population Size and Growth Rate

Based on 2009 population census, Kerugoya -Kutus Municipality had a total population of 16, 369 persons which comprised of 7,586 (46.3%) males and 8,783 (53.7%) females. According to the 2019 Population and housing census, Kerugoya Town had a population of 30,045 and Kutus Town had a population of 9,143 amounting to a total of 39,188 forming the municipality. The population growth rate in the municipality is 9.1 % based on 2009 and 2019 population sizes. The population is projected to be 42,762 persons in 2020 comprising of 20,641 males and 22,121 females. The population is projected to rise to 102,147 persons by 2030 with 47,292 being males and 54,853 females.

Chart 3-1: Population Projections in the Municipality



Source: Consultant's analysis, 2020

Assumptions

1. The population in the municipality is growing and is projected to grow at a rate of 9.1% holding other factors such as fertility rate, birth rate, migration rate and death rate constant.
2. The population provided in the 2019 population and housing census for Kerugoya and Kutus urban areas is inclusive of peri-urban areas as shown in the proposed planning boundary.

3.2 Population Density and Distribution

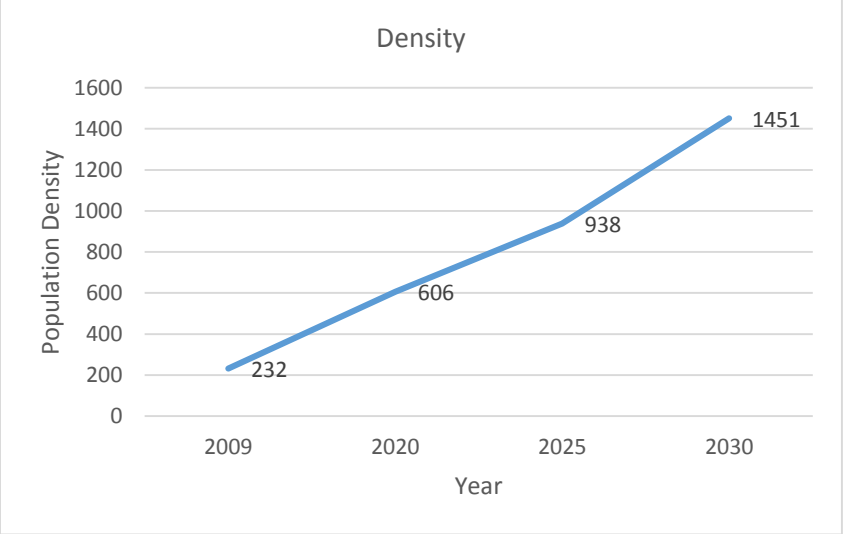
The municipality covers a total area of 70.52 Km^2 with a population of 42,762 persons in 2020. This gives a population density of 606 persons per square kilometer. By the year 2030, the population density is expected to rise to 1,448 persons per square kilometer. This necessitates an increase in social services and physical infrastructure over time to cater for the growing number of people while avoiding urban sprawl to the productive agricultural lands. Table 3-1 and chart 3-2 show the population densities of the municipality from 2009 up to 2030.

Table 3-1: Population densities in the Municipality

Year	**2009**	**2020**	**2025**	**2030**
Population Size	**16,369**	**42,762**	**66,158**	**102,147**
Area Km^2	**70.52**	70.52	70.52	70.52
Density (Persons/ Km^2)	**232**	**606**	**938**	**1448**

Source: Consultant's analysis, 2020

Chart 3-2: Population densities for the municipality from 2009 to 2030



Source: Consultant's analysis, 2020

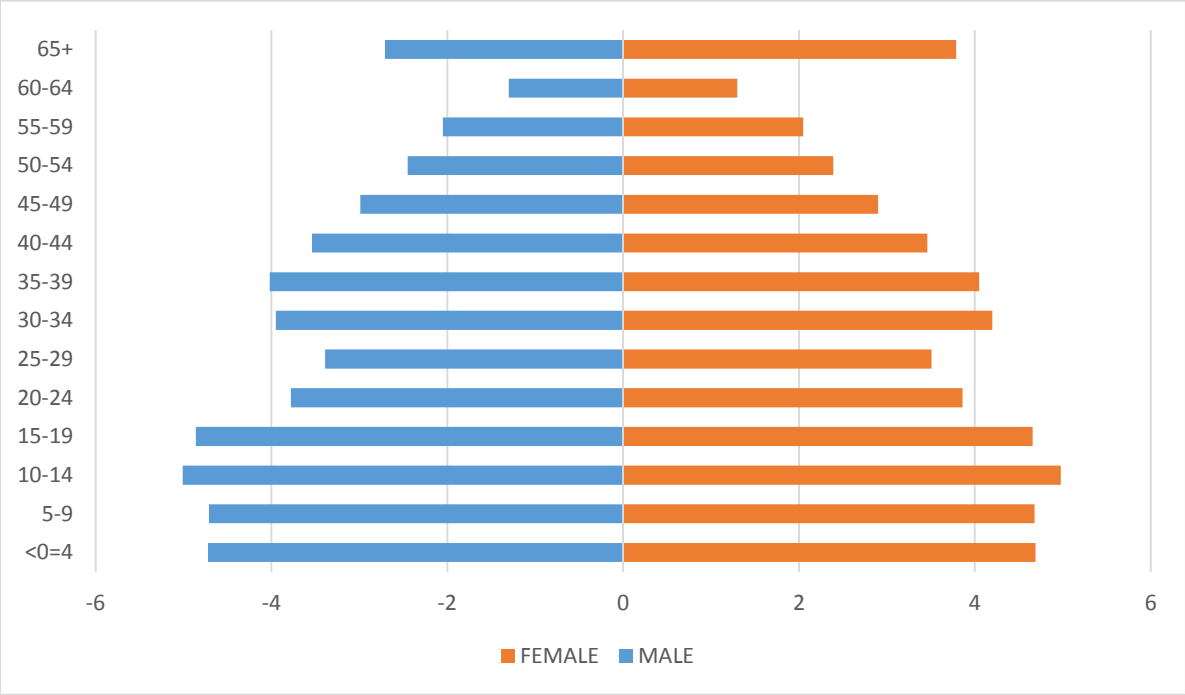
3.3 Population Characteristics

3.3.1 Population Structure

The population structure for Kirinyaga County is as shown in chart 3-3. The county has a big population size under the age of 19. The population however decreases from the ages of 20 to 29. It can be assumed that this population is seeking employment in other urban areas within the

country after completion of secondary and tertiary level education. The population however increases from the ages of 30 before undergoing a decline up to the years of 64. The number of the old age population then increases exponentially. This age represents the age for retirees who have come back to settle in their rural homes upon retirement.

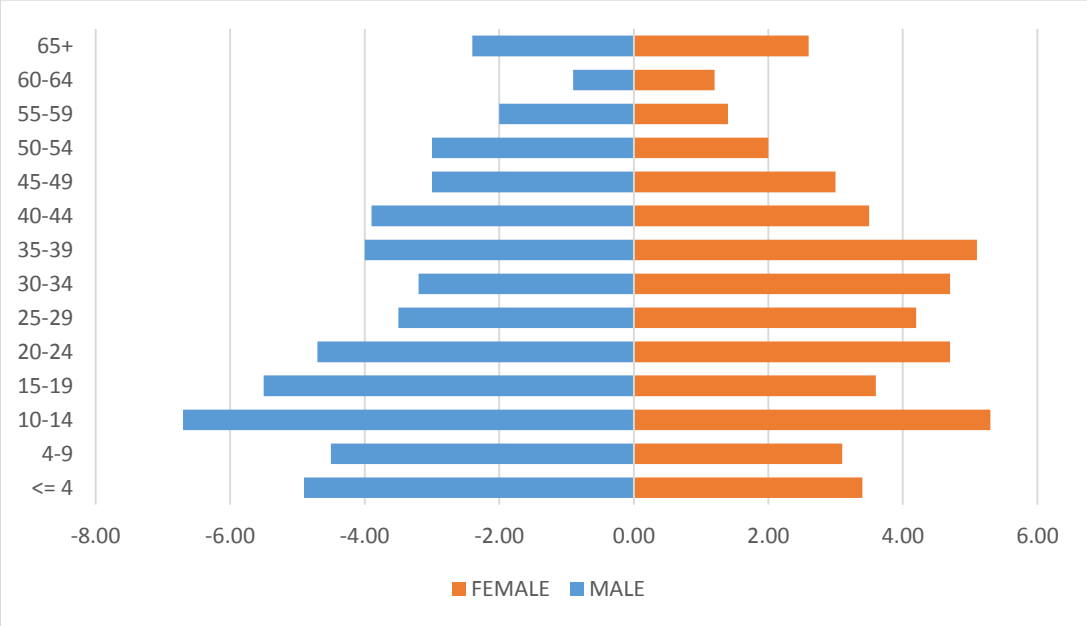
Chart 3-3: Age sex structure for Kirinyaga County



Source: KNBS, 2019

As per demographic characteristics obtained from household survey, 2020, the age sex structure for the municipality is as shown in chart 3-4. The population structure for the municipality is similar in structure to that of the county. It depicts a larger female population in comparison to the male. It can be assumed that the male population migrates more in search of employment opportunities as compared to the female population resulting to higher female population in the municipality.

Chart 3-4: Age sex structure, Kerugoya/Kutus Municipality



Source: Consultant's analysis, 2020

3.3.2 Age Cohorts and Implications

Under 1 year

This cohort takes a 3.8% proportion of the total population. It comprises of infants. There is need to provide quality and efficient pre and post-natal health care to cater for this cohort and prevent infant mortality.

Under 5 Years

This cohort takes a 5.58% proportion of the total population. It comprises of infants and nursery school going children. This implies the need to provide adequate Early Childhood Development (ECD) centres and health centres to cater for the under 5 years. Better health care facilities should also be provided to ensure good health for infants.

Primary school Going Age (6-13 yrs.)

This is represented by 15.55% of the total population and comprises the primary school going age. Primary schools should be provided with the relevant learning materials as well as adequate teachers in all public primary schools to meet the recommended teacher pupil ratio of 1:40 against the current ratio of 1:56. There is also need for investment in health care services to cater for this age cohort.

Secondary School Going Age (14-17 yrs.)

This cohort takes 8.13% proportion of the total population. It comprises of secondary school going children. This implies the need to provide and adequately equip secondary schools with necessary infrastructure including labs, libraries, dormitories etc. Employment of adequate teachers in all public secondary schools to meet the recommended teacher pupil ratio of 1:40.

Youth Population (15-34)

This cohort constitutes about 32.21% of the total population in Kerugoya/Kutus municipality. This constitutes the age group in labor market and in secondary and tertiary colleges. The youth should be equipped with the relevant skills in order to reduce the dependency ratio. This requires investment in vocational and technical training facilities to equip the youth with the relevant technical and innovative skills. Serviced light industrial areas should also be provided within the core urban areas (Kerugoya and Kutus) to encourage the youth to start workshops, fabrication stations among other self-employment startups. There is also need for sensitization on the use of appropriate family planning methods. Investment in youth development programmes that nurture art and sports talents through provision of relevant facilities including stadiums and community development centres.

Female Reproductive Age (15-49)

This group accounts for about 26.67% of the population and constitutes the female population of child bearing age. The cohort needs special health care for both newborns and mothers. Investments in health facilities and child care infrastructure should be a priority in ensuring safe and effective reproductive methods and reducing the number of infant and maternal mortality. There is also need for sensitization on the use of appropriate family planning methods.

Labour Force (15-64)

This group accounts for 64.69% of the total population. The group represents the population capable of providing labor for production of goods and services. It thus implies that 35.31% of the people are dependents. This scenario portrays a fairly good picture for the municipality's economy only if employment opportunities are created to engage the growing labor force so as to support the population of the dependents. It comprises of skilled, semi-skilled and unskilled labor force in the market. There is need to provide a conducive environment for investment within the municipality to increase employment opportunities, skill development and enhancement through

continuous professional development programs. Designate specific areas for *juakali*, workshops, better existing markets, serviced industrial parks among others. Invest in vocational and technical training facilities to equip the youth with the relevant technical and innovative skills.

Aged Population (65+)

Represented by 6.5 % of the total population. This comprises the immediate retired people to the very aged. The cohort requires special medical attention for old age-related health issues. Subsidize healthcare for the elderly through formulation of favorable policies. For the very aged population, homes for the elderly are a necessary infrastructure for the wellbeing of this population.

3.4 Household Size

According to field survey, 2020, the average household size for the municipality is 4.3 persons. This is higher than the county average household size of 3 persons *(KNBS PHC, 2019)*.

3.5 Demographic Characteristics

3.5.1 Infant and Child Mortality

The infant mortality rate in the county is 39 deaths per 1000 live births *(KDHS, 2014)*. The child mortality rate is 72 deaths per 1000 live births (*(Kirinyaga County CIDP, 2018-2022)*. There is need to provide quality and efficient pre and post-natal health care to prevent infant and child mortality.

3.5.2 Dependency Ratio

According to field survey, 2020, 51.8% is under gainful employment while 48.2% of the population is dependent. With a population of 42,762, nearly 20,611 residents are dependent while 22,151 constitute the working force. This therefore brings the dependency ratio to 0.93.

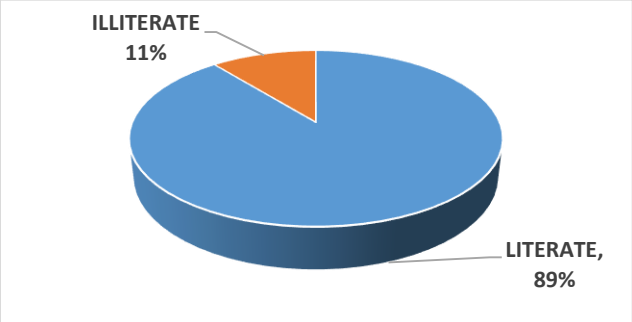
3.5.3 Poverty Rate

The Human Poverty Index (HPI) in the county is 25.2% which is lower compared to the national HPI of 29.1% *(KDHS, 2014)*. This can be attributed to the number of people engaging in agriculture.

3.5.4 Literacy Rate

According to field survey, 2020, 89% of the population within the municipality has the ability to read and write while 11% are illiterate as shown in chart 3-5.

Chart 3-5: Literacy in Kerugoya/Kutus Municipality

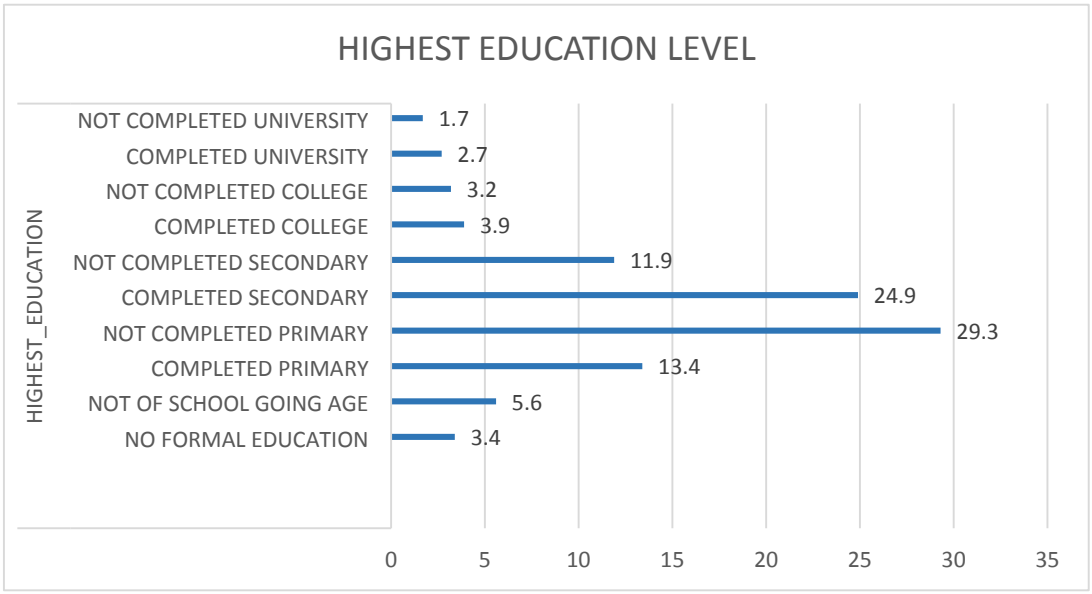


Source: Consultant's analysis, 2020

3.5.5 Level of Education

An assessment of highest level of education attained reveals that 3.4% of the population in the municipality has no formal education. It further indicates that 13.4% and 24.9% have completed primary and secondary school education respectively. Approximately 6.6% have attained post-secondary education (completed college and university). Education levels attained in the municipality are as presented in chart 3-6.

Chart 3-6: Highest education levels attained



Source: Field Survey, 2020

3.5.6 Maternal Mortality Rate

The maternal mortality rate in the county is 298/100,000 live births *(Kirinyaga County CIDP, 2018-2022).* Improvement of maternal health care and its access, increasing the number of professionally assisted births is essential to reduce maternal mortality in the county.

3.6 Population Needs Assessment

Population needs assessment helps in identifying gaps in provision of facilities and services to residents in any urban setting. With reference from the physical planning handbook and the Urban Areas and Cities (Amendment) Act of 2019, an analysis showing the facilities/services required in Kerugoya/Kutus Municipality and the land requirement/budget for the establishment of each up to 2030 has been provided as shown in table 3-2.

The growth rate used in determination of the population needs for the municipality is as per the intercensal growth rate of 9.1%. This translates to a population of 102,147 persons in the municipality by the year 2030. The intercensal growth rate has been used in the needs determination because it offers a true reflection of the current and anticipated realities. This is due to a shift in investment from the dominant cities in the country to the devolved units in counties. The county growth rate is 1.46% and the Kenya urban growth rate is 4.053% according to World Bank, 2018.

Chart 3-7: Comparison of population by growth rates

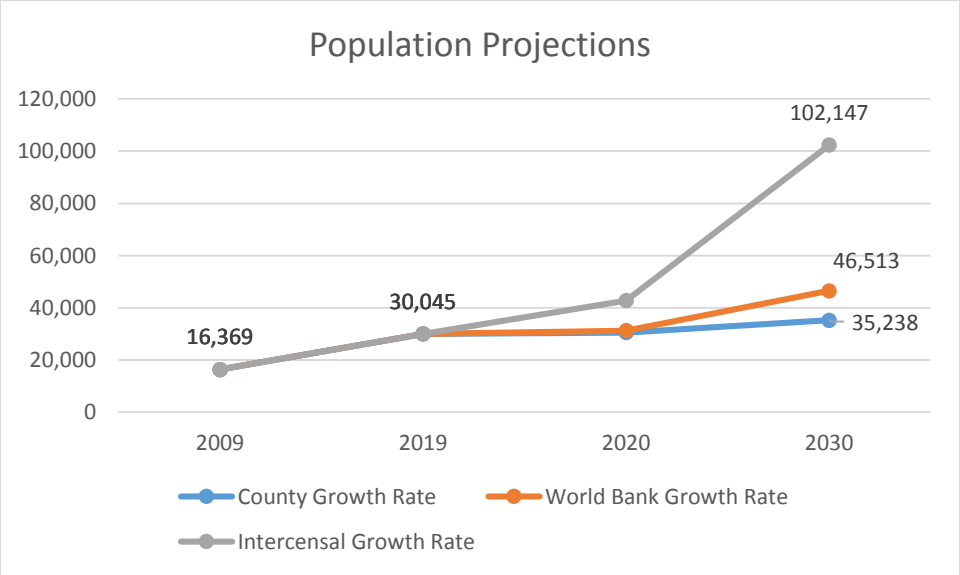


Table 3-2: Population needs assessment in the Municipality

Facilities	Standard Norms		2020				2030			Total land (Ha)
	Population	Size in (ha)	Population	Existing No. of facilities	Required no of facilities	Gap	Population	Required No. of Facilities	Gap	
ECDE	3,500	0.2	42,762	25	12	0	102,147	29	4	2.8
Primary Schools	4,000	3.9	42,762	19	12	0	102,147	26	7	101.4
Secondary schools	8,000	4.5	42,762	15	5	0	102,147	13	0	58.5
Polytechnic	60,000	3.5	42,762	1	1	0	102,147	2	1	7
Teachers Training College	500,000	10.2	42,762	1	1	0	102,147	1	0	10.2
Vocational and Technical Training Institutes	15,000	10.2	42,762	1	3	2	102,147	7	6	71.4
Special Schools	100,000	3.9	42,762	2	0	0	102,147	1	0	3.9
University	1,000,000	50	42,762	1	0	0	102,147	1	0	50
Level 5 hospital	1,000,000	8	42,762	1	1	0	102,147	1	0	8
Level 4 Hospital	100,000	4	42,762	0	1	1	102,147	1	1	4
Level 3 Hospital	30,000	3	42,762	3	1	0	102,147	3	0	9
Level 2 Hospital	10,000	2	42,762	3	4	1	102,147	10	7	20

Facilities	Standard Norms		2020				2030			Total land (Ha)
	Population	Size in (ha)	Population	Existing No. of facilities	Required no of facilities	Gap	Population	Required No. of Facilities	Gap	
Stadium	500,000	5	42,762	1	1	0	102,147	1	0	5
Recreational parks	150,000	1	42,762	1	1	0	102,147	1	0	1
Cemeteries	150,000	-	42,762	2(One to be decommissioned)	1	0	102,147	1	1	5
Abattoirs/Slaughterhouses	100,000	2	42,762	1	0	0	102,147	1	0	2
Markets	150,000	20	42,762	5	1	0	102,147	1	0	20
Libraries	100,000	0.4	42,762	0	1	1	102,147	1	1	0.4
Community Centers	100,000	0.25	42,762	1	1	1	102,147	1	0	0.5
Fire Station	100,000	3.4	42,762	0	1	1	102,147	1	1	3.4
Postal Office	40,000	0.04	42,762	2	1	0	102,147	2	0	0.08
Police Station	50,000	2	42,762	1	1	0	102,147	2	1	4
Dumpsite	50,000	-	42,762	2(One to be decommissioned)	1	0	102,147	2	1	

Facilities	Standard Norms		2020				2030			Total land (Ha)
	Population	Size in (ha)	Population	Existing No. of facilities	Required no of facilities	Gap	Population	Required No. of Facilities	Gap	
TOTAL										**387.58**

Source: Consultant's analysis, 2020

3.7 Emerging Issues and Recommendations

Emerging issues

The population is anticipated to double by the year 2030. There is therefore need to:

- Improve, expand and even establish more physical and social infrastructure to meet the population needs of the municipality.
- Create more employment opportunities and diversify income generating activities to help reduce unemployment as the labour force in the municipality stands at nearly 65% of the total population.

Recommendations

- Expand the existing infrastructure in order to cater for the increase in population. This includes investment in schools, health care facilities, water and sewerage services, recreational facilities etc.
- Invest in skills development, youth and women empowerment through creation of more vocational training centres.
- Designate specific activity areas promoting industrialization and small/medium enterprises.

4 LAND USE ANALYSIS

4.1 Overview

Land is a major factor of production which is limited and finite. This section presents the land size and tenure system, implication of private land on urban development, existing tenure forms, land uses and emerging issues relating to land in Kerugoya/Kutus Municipality.

4.2 Land Ownership and Tenure

Land tenure in Kerugoya/Kutus Municipality includes public, private and.community land. Public land includes all land owned by the county and national government including the housing areas in Kerugoya Town, public schools, hospitals and Thiba dam among others. Private land incorporates land owned by individuals, cooperations and financial institutions. Community land comprises of the colonial villages including: Kaitheri, Mukinduri, Kibingo Kiaritha and Mjini in Kutus. Public land covers 15.617km^2, private land covers 54.652km^{2,} while community land covers 0.251 Km^2.

4.2.1 Implication of Private Land Ownership

Land tenure determines access to land and right to use of land. Private land in the planning area is approximately 77.5% majorly used for agricultural activities. This type of land ownership presents planning challenges including;

- Poor natural resource management of abutting private land ownership.
- Lack of restrictions on the use of private land leads land use conflict.
- Higher rate of land fragmentation for private land owners.
- Private land limits development due to compensation and require lengthy and expensive processes in acquisition and transfer.

4.3 Existing Land Uses

Land uses within the municipality incorporates residential, commercial, agricultural, transportation, public purpose, public utility and conservation. Commercial and mixed use (residential cum commercial) are characteristic within both Kerugoya and Kutus towns. Agricultural land use is dominant within the rest of the municipality which is mostly rural.

The table below presents a summary of the land uses within the municipality.

Table 4-1: Summary of land uses in the Municipality

Land use	Area(sq.km)	Percentage (%) cover
Agricultural	43.84	62.17
Commercial	0.62	0.88
Conservation	2.04	2.89
Educational	2.38	3.37
Industrial	0.30	0.43
Public Purpose	2.40	3.40
Public Utility	2.95	4.18
Recreational	0.08	0.11
Residential	11.15	15.81
Transportation	4.76	6.75
Total	**70.52**	**100**

Source: Consultant's analysis, 2020

Residential Land Use

The area under residential land use is approximately 11.15km^2. This includes areas of high, medium, low density and mixed use residential developments. Residential developments are dominant in Kutus and Kerugoya as well as in nodes such Mukinduri, Ithare, Kabare, Rukenya, Kiamwenja, Kibingo, Kaitheri, Kiaritha and Karia.

Commercial Land Use

The area under commercial land use is approximately 0.62km^2. This land use is dominant in both Kerugoya and Kutus. Economic activities include open air and closed markets, hotels and restaurants, wholesale and retail stores, banking halls, hardware stores, printing and cyber cafes among others.

Agricultural Land Use

The area under agricultural use is approximately 43.84Km^2. This use is dominant on the periphery of the two core urban areas; Kerugoya and Kutus. Crop farming, animal husbandry and fish farming are practiced at large and small scales.

Educational Land Use

The total area covered by educational facilities in the municipality is 2.38km^2. There are 138 educational facilities in Kerugoya/Kutus Municipality as shown in the table below:

Table 4-2: Educational facilities in the Municipality

Facility	**Number**		
	Public	**Private**	**Total**
ECDE	22	27	49
Primary schools	19	37	56
Special schools	1	_	1
Secondary schools	15	9	24
Vocational college	1	_	1
Technical training institutions	1	4	5
Tertiary	2	_	2

Source: Field Survey, 2020

Industrial Land Use

Industrial land use in the municipality covers an area of 0.3km^2. Industrial land use in Kerugoya Town occurs along the periphery of the core urban area along the river adjacent to Effort Junior Academy. In Kutus, industrial land use is located along the road to the County Headquarters and along the street from Kutus Primary. The main industrial activities include *jua kali*, automobile and motorcycle repairs, petrol stations, slaughter houses and food and agro processing industries.

Other industrial developments located throughout the municipality include:

- Rutui coffee factory
- A slaughterhouse in Kerugoya
- Karia coffee factory
- Kiamirici coffee factory
- Gakuci coffee factory
- Gatuto coffee factory
- Kahata coffee factory

Recreational Land Use

The area under recreational land use in the municipality is 0.08km^2. Public recreational facilities found within the municipality include an urban park and a community stadium in Kerugoya Town. There is a public playground in Karia along the road to Kabare. There is also an urban forest in Kutus opposite the Kirinyaga University although it is not exclusively open for public use. It lacks benches, lighting and public amenities such as toilets.

Public Purpose Land Use

The area under public purpose facilities is 2.4km^2. These facilities include the County Government offices in Kutus, the county assembly in Kerugoya, prisons, administrative offices throughout the municipality, health facilities, the Kerugoya law courts, post offices and all religious institutions dotting the municipality.

Public Utility Land Use

The total area under public utilities in the municipality is 2.95km^2. Public utilities within the municipality include;

- Telecommunication masts,
- Cemeteries in both Kerugoya and Kutus,
- The Kerugoya dumpsite opposite the referral hospital and Kabatiro dumpsite in Kutus,
- Thiba dam
- Water pans and community dams e.g in Karia and Kahata
- Electricity sub-stations in both Kerugoya and Kutus towns.

Transportation Land use

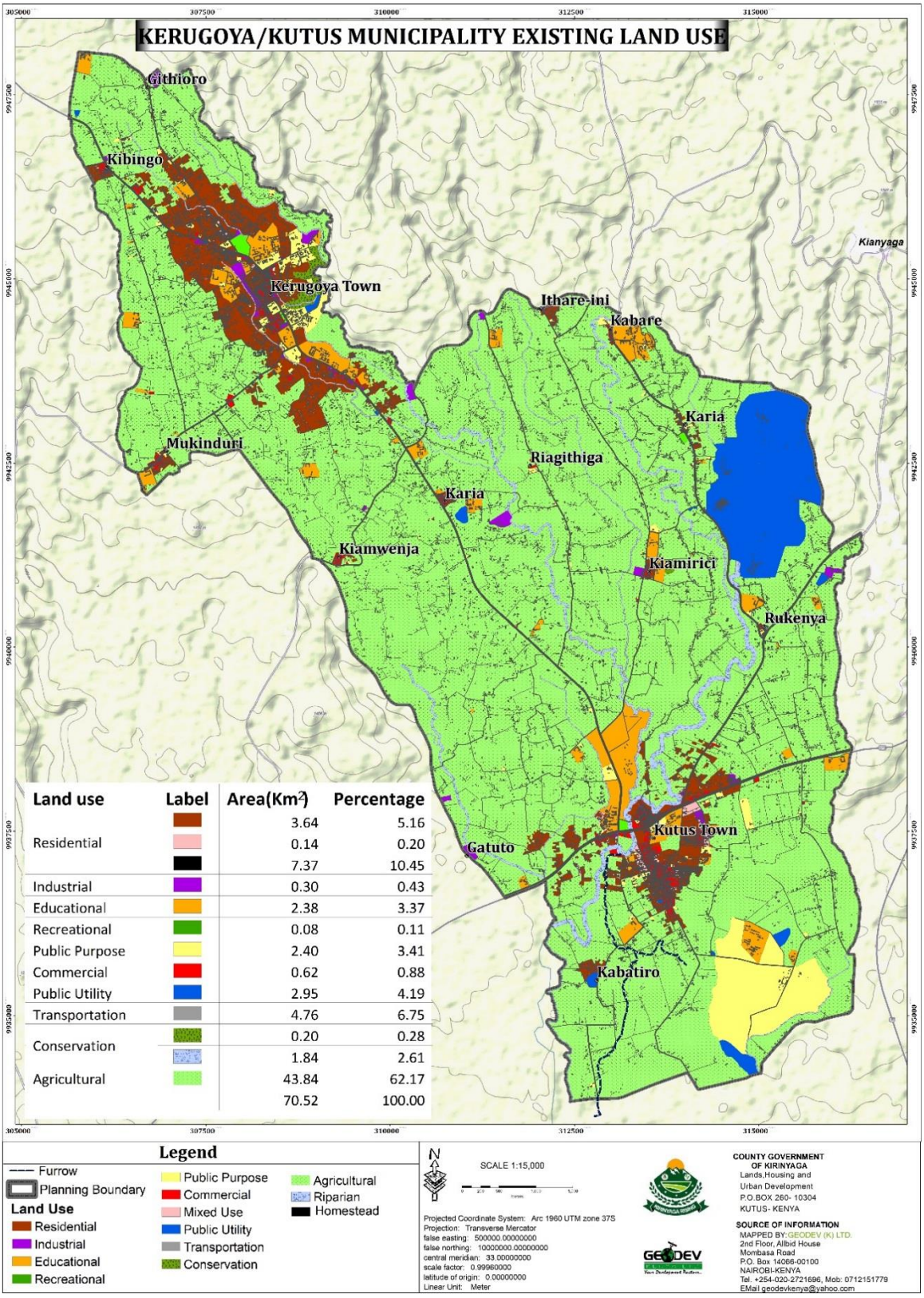
The area under transportation land use in the municipality is 4.76km^2. Transportation in the municipality is only limited to roads of murram, tarmac and earth surfaces. There are three bus stations in the municipality; one in Kerugoya behind St. Thomas ACK church and two in Kutus adjacent to the Sagana-Embu road (B25)

Conservation Land use

The area under conservation in the municipality is 2.04Km^2.This use includes the Kerugoya urban forest, swamps and all riverine areas.

The depiction of the land use in the municipality is as presented in map 4-1.

Map 4-1: Kerugoya/Kutus Municipality Land use map



4.4 Existing Development Pattern

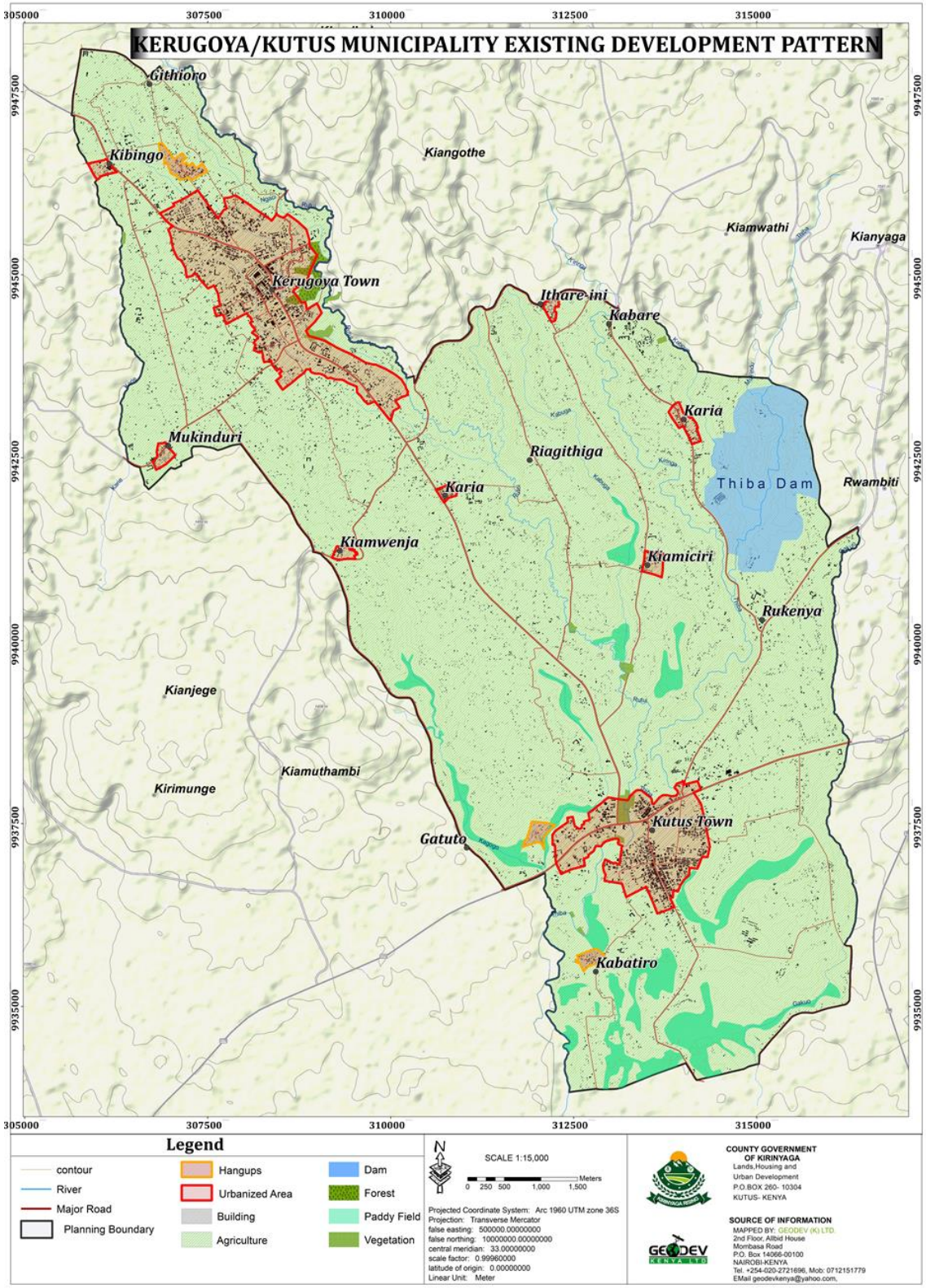
The municipality has two areas densely developed; Kerugoya and Kutus Town. There are three urban hang-ups including Thangari, Kabatiro and Kiaritha. The municipality has seven (7) urbanized areas which are showing potential for growth and/or require special planning attention. These include Kibingo, Mukinduri, Kiamwenja, Karia, Ithare-ini, Karia (area next to Thiba Dam) and Kiamirici.

The development pattern of the two major urban areas, Kerugoya and Kutus, are greatly influenced by roads, rivers, flood areas (rice paddies) and terrain. Development tends to be dense along roads such as Kutus–Karatina (B27), Sagana–Embu (B25), Kutus-Kimbimbi (D1384) and Kerugoya-Baricho (C527) road. The periphery of the core urban areas are sparsely populated due to agricultural activities and larger land holding sizes. The urbanized areas and the hang-ups serve as the immediate service centres for the agricultural hinterland. This is as presented on Map 4-2.

4.5 Mean Land Holding Sizes

The average land size within the core areas (Kerugoya and Kutus towns) is approximately 0.15Ha. Land sizes increase towards the peri-urban to the agricultural/ rural areas where the average land size is 1.05 Ha.

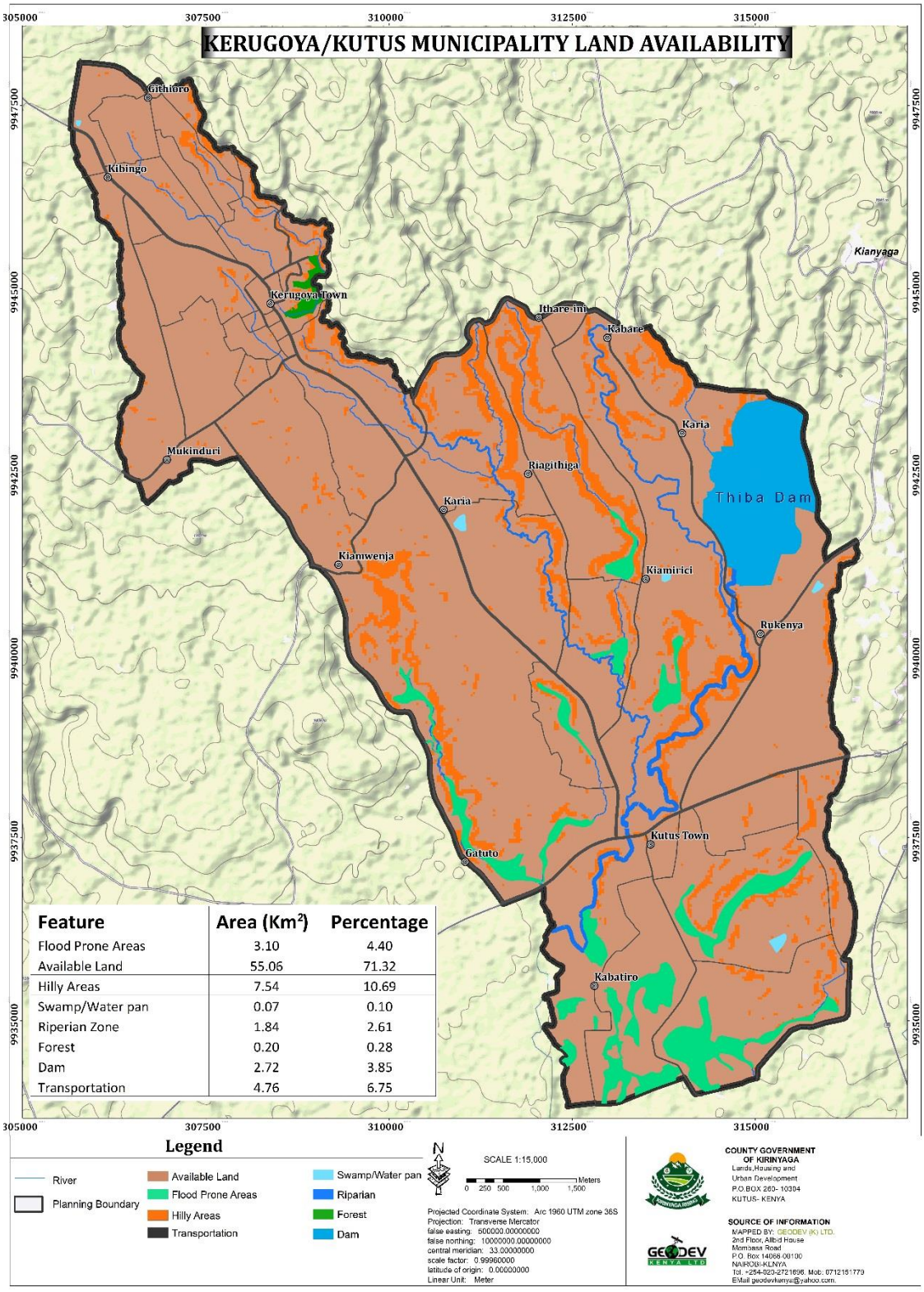
Map 4-2: Kerugoya/Kutus Municipality Development Pattern



Source: Field Survey, 2020

4.6 Land Availability

Map 4-3: Land Availability in the Municipality



Land availability is an assessment of the land forms and features within a pre-defined area to establish areas that are available and unavailable for urban development. Unavailable land includes protected areas, environmentally sensitive areas and steep slopes (areas with a vertical slope beyond 15 degrees) and the road network. Table 4-3 gives this assessment.

Table 4-3: Unsuitable areas for development

Land use	**Area** (Km^2)
Flood prone areas	3.1
Riparian reserves	1.84
Water bodies	2.79
Forests	0.20
Road Network	4.76
Hilly areas	7.54
Total unavailable land	**20.23**

Source: Consultant's Construct, 2020

The total area due for planning covers approximately 70.52km^2. This therefore presents a total land available for urban development to 50.29km^2. This land available for urban development is further subjected to a suitability assessment to discern the amount of land that can adequately be availed for optimal urban development.

4.7 Land Suitability Assessment

Land suitability assessment is the evaluation of land fitness for a defined land use. Land suitability was subjected to parameters such as topography (slope) analysis, infrastructure and services and geological characteristics (soil and rock) of the municipality. Unavailable land as shown in table 4-3 and is categorized as not suitable for urban development. The suitability analysis is presented on map 4.4 and table 4-4.

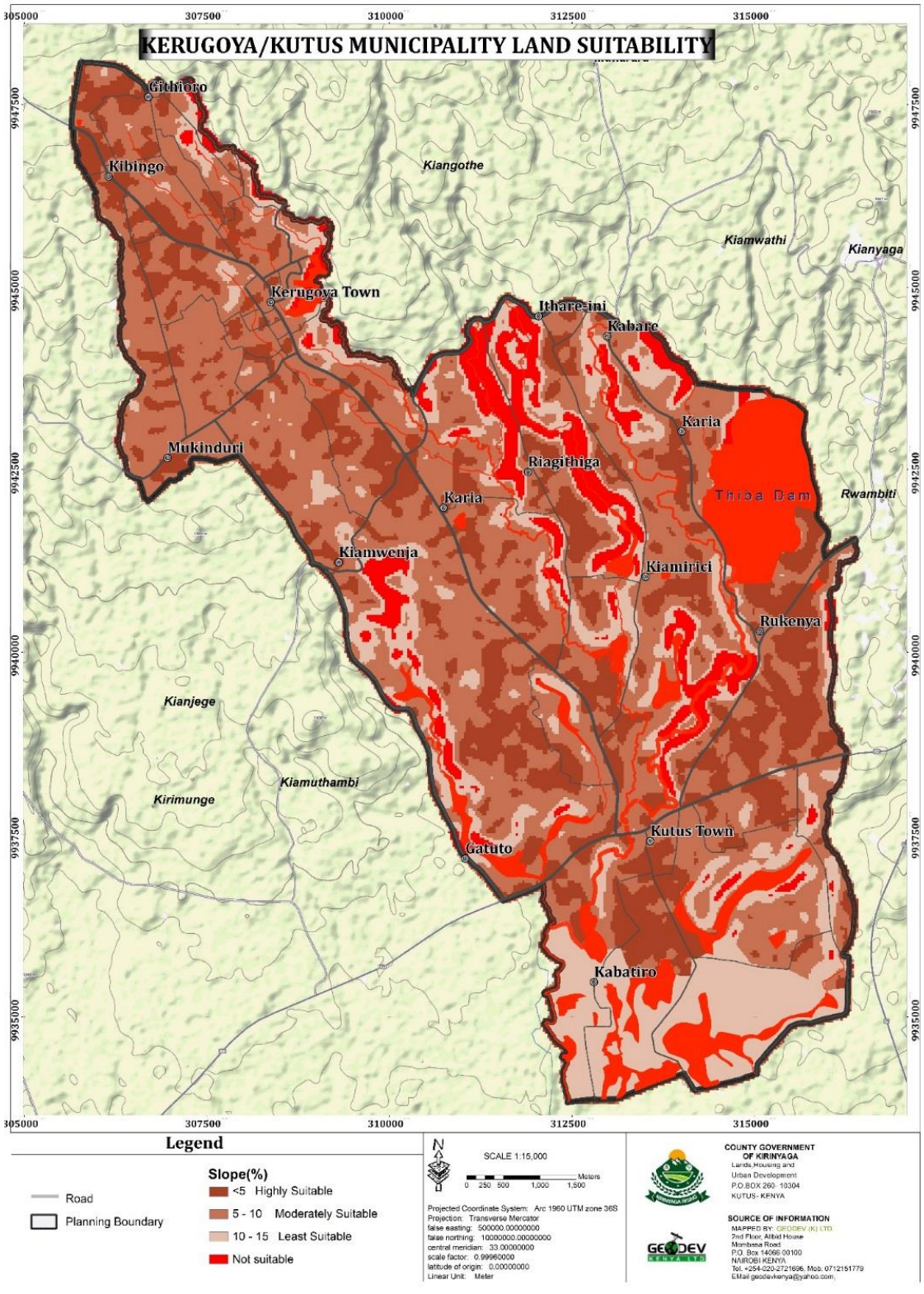
Table 4-4-4: Land Suitability Analysis

Land Suitability	**Area (Ha)**	**Percentage (%)**
Highly suitable land	14.78	20.96
Moderately suitable land	29.61	41.99
Least Suitable Land	14.09	19.98
Not Suitable	12.04	17.07
Total	**70.52**	**100**

Highly suitable land are areas considered to have a strong foundational rock structure that is supportive in construction and urban development. It is also land that is free from periodic flooding, and a gentle slope below the accepted 15^0. Least suitable areas are lands that are not suitable for urban development but can be directed towards other land uses that support its fragile nature such as agriculture, recreation or conservation purposes.

Highly suitable land will be given high priority for urban development in terms of allocation of facilities and services. Moderately suitable areas will be considered after full utilization of highly suitable land. Least suitable land can only be used after full utilization of both highly and moderately suitable land. However, least suitable land can be proposed for such land uses that do not require densification such as conservation and recreation as well as agriculture.

Map 4-4: Kerugoya-Kutus Urban Suitability Map



Source: Consultant's Construct, 2020

4.8 Emerging Issues and Recommendations

Emerging Issues

- Limited public land will lead to high costs of acquiring land for the establishment of facilities proposed for urban betterment.
- High development, evidenced from the rate of subdivision, along major transport corridors can lead to strip development. Strip development is known for stretching resource provision and puts unwarranted pressure on the transport corridors leading to unnecessary congestion.
- High rate of land fragmentation thereby reducing agricultural land within the rural zones in the municipality.
- Presence of environmental sensitive areas including rivers, steep and flood prone areas which require conservation.

Recommendations

- Acquisition of prime land for utilization of urban development and facilities provision.
- Plan for compact development within the major urban areas, Kerugoya and Kutus Town, in orderto protect the rich agricultural hinterlands.
- Protect and conserve all rives and flood prone areas. Development within this regions is to be restricted or prohibited.

5 ENVIRONMENT

5.1 Overview

The Constitution of Kenya provides for the right to a clean and healthy environment for all individuals in Kenya. Moreover, it indicates that the state shall strive to maintain a tree cover of at least ten per cent (10%) of the total land area.

The changing development aspects of the world have undoubtedly come with a number of previously unseen challenges on the environment. There is therefore need to input environmental considerations in development blueprints of urban areas since it is a determinant to the sustainability of any given urban plan. Agenda 21 of the Rio Earth conference of 1992 stressed the need for development to be sustainable and since then it has become an indispensable tool in most development plans and mega projects in the world. Looking at the sustainable development goals (SDGs), **Goal 6** points out the need for clean water and sanitation while **Goal 13** advocates for climate action. These two goals can be achieved through protection of environmental resources including rivers, springs, and vegetation.

In efforts to protect and conserve our environment, the National Environment Management Authority (NEMA), along with other lead agencies like Kenya Wildlife Service, the Water Resource Authority and the Kenya Forest Service have been established. Kerugoya/Kutus municipality is endowed with natural resources which include: rivers and swamps.

This chapter reports on the current status of environmental assets in the municipality and the threats to these assets. It also looks at the use of different types of energy used by residents within the municipality and their effects on the environment. Waste management methods for hpuseholds within the municipality have also been discussed and the associated environmental effects documented. Additionally, it looks at environmental aspects that contribute to the occurrence of natural disasters like flooding. All these will help in the establishment of good practices in the county's environment sector. It will also provide a firm basis for the formulation of a practicable environmental conservation and management strategy for Kerugoya/Kutus Municipality.

5.2 Environmentally Sensitive Areas/Assets

Environmentally sensitive assets in Kerugoya/Kutus Municipality include rivers, streams, dams, water pans, and swamps.

5.2.1 Thiba Dam

Thiba dam is located in Rukenya, Gichugu Constituency. The dam is currently under construction and is expected to hold 15 million cubic meters of water. It is expected to span 1km long and 40 meters tall. After construction, the dam will need proper and regular maintenance as well as restricted access to all its reservoirs. The dam covers a total area of 271.669Ha (2.7167km^2)

Plate 5-1: Thiba dam

Source: Field Survey, 2020

Anticipated Functions

1. To provide water for rice irrigation within Kutus and Mwea irrigation scheme downstream.
2. Recreational purposes such as boat riding, fishing and holding of community events such as marathons around the dam.
3. Tourism and hospitality through investment in hotels and real estate around the adjacent areas surrounding the dam such as: Karia, Rukenya and Kabare.

Threats of the Dam

1. Damming of river water can result in a reduction of water downstream thereby limiting agricultural activities.
2. Threats to human settlements downstream as a result of overflowing during times of excess surface run-off.
3. Change in the micro-climate of the immediate surrounding areas of the dam.

Recommendations

1. Undertake regular maintenance of the dam in terms of desiltation and checks on structural integrity
2. Restrict access to the reservoir by creating a buffer for the dam.
3. Regulate the release of the amount of water flow downstream in order to enable existing agricultural practices downstream.

5.2.2 Rivers and Streams

The municipality has one major river: River Thiba. The river has a major tributary namely river Rutui. Rivers Mukindu, Gakuo and Kagogo also drain into River Thiba. River Rutui has two tributaries namely river Ngaci and Kabuga. Kutus Town, the lowest point in the municipality, experiences frequent flooding during the rainy season due to increased surface runoff from Thiba River. These rivers are the principal sources of water in the municipality. Water from these rivers is harvest through canals and redirection to support irrigation in parts of the municipality especially in Kutus Town.

Threats to Rivers

1. Poor protection of catchment areas and springs within the municipality.
2. Rechanneling of rivers to farms for irrigation.
3. Pollution due to excessive industrial and agricultural activities as well as dumping of solid waste.
4. Discharge of effluents from carwashes and agrochemicals directly into rivers and streams.
5. Encroachment and diversion through construction of buildings.

Plate 5-2: Farming and construction on riparian reserves

Source: Field Survey, 2020

Recommendations

1. Treat any industrial waste before discharge into rivers in the municipality.
2. Buffering of the rivers to protect the reserves.
3. Limit and regulate development along rivers.

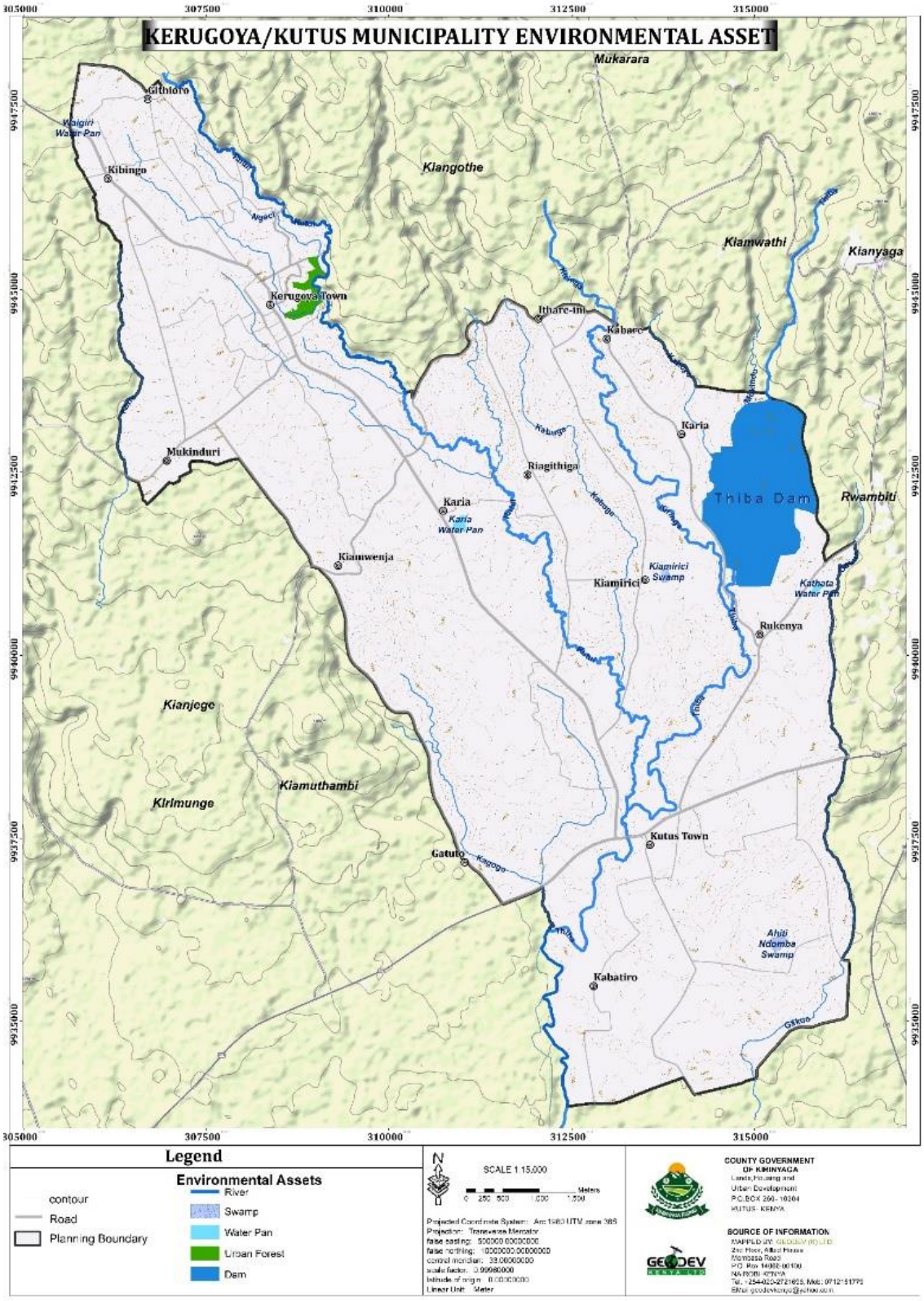
5.2.3 Swamps

There are two swamps within the municipality: One is located in Kiamiciri and another in Ahiti Ndomba. The swamp in Kiamiciri should be conserved. The swamp in Ahiti Ndomba is as a result of seasonal flooding from the Thiba River and River Gakuo. Development around Ahiti Ndomba should be discouraged as a result of the seasonal flooding.

Plate 5-3: Flooded road within Ahiti Ndomba

Source: Field Survey, 2020

Map 5-1: Environmental assets in Kerugoya/Kutus Municipality



Source: Field Survey, 2020

5.2.4 Water Pans

There are three water pans in the municipality. They include; Kathata, Wagiri and Karia as indicated on Map 5-1. These water pans provide water for domestic use, agriculture and industrial use. However, these assets also face threats including pollution and siltation. To conserve water pans, there is need to designate access points and establish a fence to restrict interference.

5.3 Environmental Problems

5.3.1 Environment and Solid Waste Management

Solid waste management is a major challenge in Kenya. Formerly, most local authorities did not establish proper waste management systems and county governments have inherited this state of affairs (*National Solid Waste Management Strategy, 2015*). The situation has been aggravated by rising population and urbanization levels.

Waste generated in Kerugoya/Kutus Municipality includes solid waste, liquid waste and hazardous/medical waste. These wastes are generated from households, industries, institutions, construction sites, agricultural activities, and commercial establishments.

The municipality has a solid waste management policy, a dumpsite and various waste skips. However the policy has not been adequately implemented. Therefore there are rising cases of indiscriminate dumping especially in areas of high residential developments and markets. Burning has also been a substitute for waste disposal in the municipality as a result of poor waste management from concerned authorities.

Plate 5-4: Indiscriminate waste disposal

Source: Field Survey, 2020

Burning of waste leads to air pollution while indiscriminate dumping is a threat to the health of residents especially children. It also leads to loss of the aesthetic of an area. A proper waste

management system needs to be established in order to synchronize waste disposal and collection. Waste skips within the municipality have been particularly concentrated within Kerugoya and Kutus towns only. There is need to be properly distributed across all other urban nodes including Mukinduri, Kiamwenja, Kiamiciri, Rukenya, Karia and Kabare.

Plate 5-5: Waste burning at the Kabatiro dumpsite

Source: Field Survey, 2020

5.3.2 Environment and Energy

Nearly 63% and 5% of residents in the municipality rely on wood fuel and paraffin respectively for cooking. The use of wood fuel is a leading cause in deforestation and therefore leads to environmental degradation. At the same time, the use of paraffin is discouraged as a non-renewable energy source due to the health concerns attributed with its use to residents.

Plate 5-6: Firewood used for cooking

Source: Field Survey, 2020.

Since the use of wood fuel cannot be completely be done away with considering different income levels of residents, focus should be put on its sustainable use. Some of the interventions that can be used to reduce over reliance on wood fuel include;

i. Community sensitization to create awareness on the adverse effects that use of wood fuel has on the environment as well as personal health.

ii. Promoting the use of fuel efficient equipment such as energy-saving *jikos* which are designed to ensure efficiency in the consumption of wood fuel.

iii. Undertaking tree planting initiatives such as commercial wood-lots at large scale and encouraging agroforestry in small scale farms.

iv. Putting in place policies and regulations to make substitute energy sources affordable to all residents of different social classes to deter the use of wood fuel.

v. Instituting demand and supply strategies such as taxes or stumpage fees in the sector which would lead to higher prices of acquiring wood fuel thus discouraging supply.

5.3.3 Environmental Pollution

The main sources of pollution in Kerugoya/Kutus Municipality are open burning of solid waste, emission of ammonia from farm chemicals, carbon emissions from vehicles, indiscriminate dumping and over reliance on wood fuel as an energy source.

Table 5-1: Types of pollution and its causes.

Type of Pollution	**Cause**
Water Pollution	▪ Encroachment onto riparian reserves (Farming and construction) ▪ Poor wastewater management and disposal; over-reliance on pit latrines and septic tanks ▪ Effluent discharge from households, carwashes and agro-chemicals ▪ Siltation
Land Degradation	▪ Over-cultivation ▪ Overreliance on wood fuel (deforestation) ▪ Poor solid waste management (Indiscriminate dumping) ▪ Lack of rehabilitation of quarries
Air Pollution	▪ Motor vehicles and industries ▪ Overuse of insecticides, pesticides and fertilizers on agricultural farms.

Source: Client's Analysis

Some rivers within Kerugoya/Kutus Municipality are subjected to pollution from industrial, educational, residential and commercial activities. These activities pose a threat due to disposal of waste into the rivers. Below is a table of rivers and major activities taking place along them.

Table 5-2: Activities along rivers in within the municipality

Activity	River
Rutui Coffee Factory	R. Rutui
Slaughter house	R. Ngaci
Industrial zone (Kerugoya)	Tributary of R. Rutui
Karia Coffee Factory	R. Rutui
Kiamirici Coffee Factory	R, Kabuga
Gakuci Coffee Factory	R. Rutui Tributary
Gatuto Coffee Factory	R. Kagogo
Kerugoya Dumpsite	R. Rutui
Kathata Coffee Factory	R. Gakuo

Source: Field Survey, 2020

5.3.4 Environment and Disaster Management

Frequent disasters within Kerugoya/Kutus Municipality include flooding and fires. Flooding mainly occurs in areas around Ahiti Ndomba in Kutus during the rainy seasons while fires mostly occur within informal settlements.

The major cause of flooding in Ahiti Ndomba is its geographical location. It lies on the lowest part of the municipality where all surface runoff water drains. This has in turn been reinforced by the lack of proper drainage infrastructure within Kutus Town.

Therefore, there is need for construction of proper drainage infrastructure and tree planting in the area to minimize flooding and establishment of a disaster management centre to include a firefighting brigade to help in case of such emergencies.

5.3.5 Climate Change

Major causes of climate change in the municipality include deforestation and destructive agricultural practices such as clearing of vegetation for farming as well as over use of agro-chemicals. Deforestation in the municipality is mainly caused by demand for settlement and agricultural land as well as the use of wood fuel.

Some effects of climate change include: unpredictable rainfall patterns, decline in land productivity and declining water levels.

Adaptation and mitigation efforts that should be employed in order to reduce climate change within Kerugoya/Kutus Municipality include:

a. Promoting climate smart agriculture (agroforestry)

b. Breeding of livestock tolerant to local climatic conditions and establishment of fodder banks.

c. Protection of water catchment areas, increase harvesting and retention of rain water.

d. Intensified afforestation and promoting alternative energy sources.

e. Encouraging the use of public transportation by providing necessary infrastructure and favorable transportation policies to reduce the amount of carbon emission.

6 INFRASTRUCTURE

Overview

This chapter details the existing social and physical infrastructure in the municipality. It also gives an assessment of the infrastructural gaps present in the municipality currently and upto the end of the planning period, 2030.

6.1 Social Infrastructure

6.1.1 Health

There are 27 health facilities in Kerugoya/Kutus Municipality. These facilities include; 8 public health facilities and 19 private and faith-based facilities. Kerugoya County Referral Hospital is the largest health facility in Kirinyaga County. It's a level 5 hospital which offers a wider range services including; ultrasound, CT-Scan, surgery, Pharmacy, physiotherapy, orthopedics and Occupational Therapy among other treatment services.

The other functional public health facilities are; Kutus Health Centre, Kabare Health Centre, Kaitheri Youth Health Centre, Kiaritha Dispensary, Riakithika Dispensary, Ngaru dispensary and Kutus Catholic dispensary. Kiamwenja Dispensary is not currently being utilized due to lack of equipment and allocation of staff.

Plate 6-1: Kabare and Kutus health centre

Source: Field survey, 2020

The private and faith-based health facilities include; ACK Mt. Kenya Hospital, Focus Medical centre, Kerugoya Medical centre, Queens and Kings Health Centre and White Rose Medical Centre among other dispensaries and clinics. The distribution of health facilities is as shown in map 6.1.

The most prevalent diseases in the county are Upper Respiratory Tract Infections, Skin diseases, Diarrhea among others as shown in table 6.1.

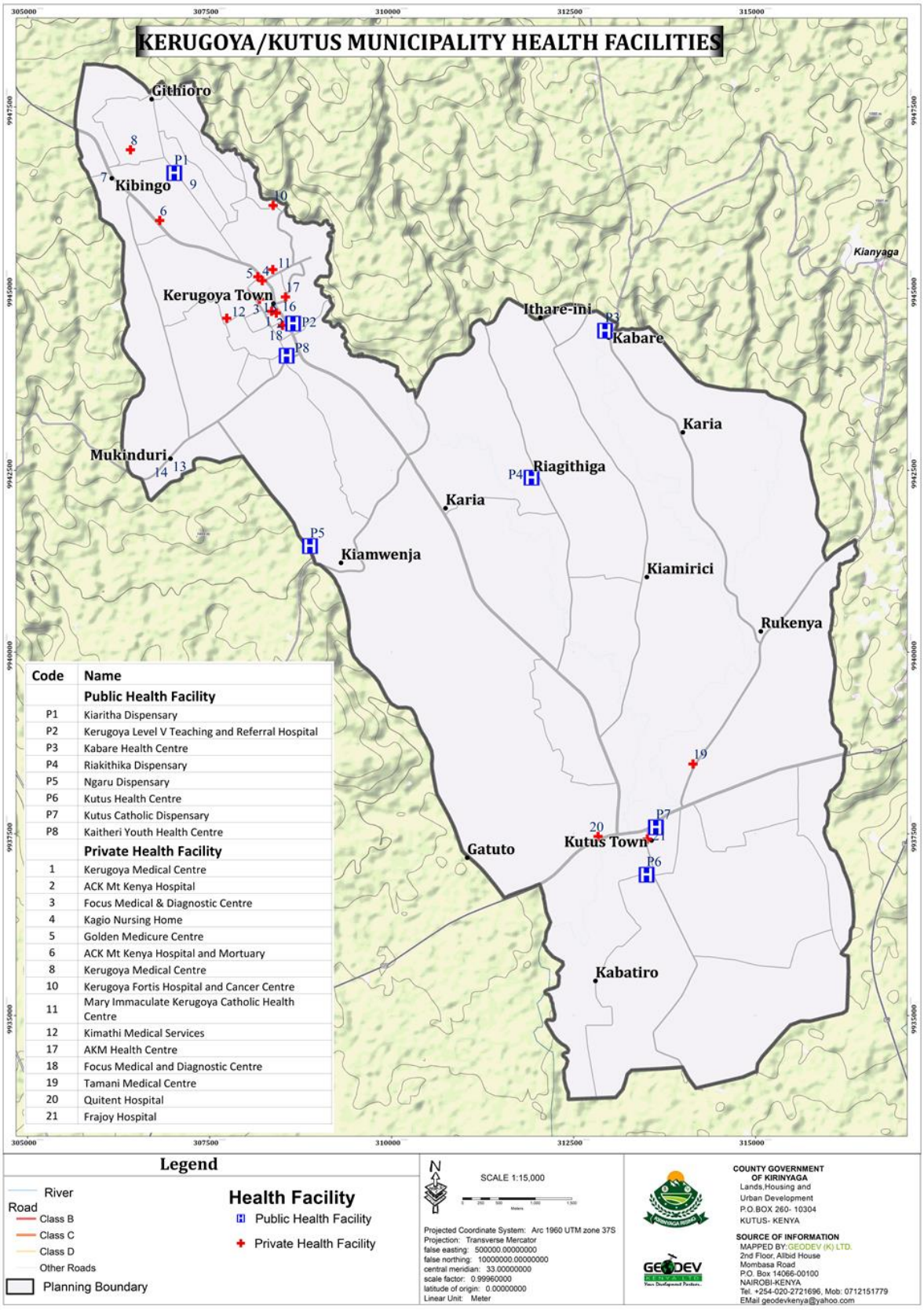
Table 6-1: Prevalent diseases in Kirinyaga County

Type of Disease	**Top Ten Most Common Health Conditions**			
	Under Five Years		**Over Five Years**	
	Condition (In Order of Priority Relevance to The County)	**Occurrence (Qualitative or Quantitative Rating)**	**Condition (In Order of Priority Relevance to The County)**	**Occurrence (Qualitative or Quantitative Rating)**
Communicable Conditions	Upper Respiratory Tract Infections	89,872	Upper Respiratory Tract Infections	179,304
	Diseases of The Skin	20,335	Diseases of The Skin	51,668
	Diarrhea	16,860	Urinary Tract Infection	42,655
	Tonsillitis	9,266	Intestinal Worms	21,380
	Intestinal Worms	6,303	Diarrhea	18,324
	Pneumonia	5,648	Pneumonia	11,915
	Eye Infections	4,172	Eye Infections	10,428
	Chicken Pox	1,145	Sexually Transmitted Infections	3,049
	Mumps	675	Typhoid Fever	2,415
	Typhoid Fever	160	Chicken Pox	1,705
Non-Communicable Conditions	Ear Infections? Conditions	3,481	Arthritis	57,280
	Asthma	1,131	Other Injuries	22,865

	Dental Disorders	703	Dental Disorder	8,238
	Malnutrition	220	Hypertension	7,470
	Anemia	214	Muscular Skeletal Conditions	6,481
	Poisoning	197	Asthma	5,270
	Cardiovascular Conditions	32	Diabetes	2,214
	Rickets	24	Anemia	1,244
	Congenital Anomalies	18	Abortion	1,125

Source: County Department of Health and Sanitation, 2020.

Map 6-1: Kerugoya/Kutus Municipality health facilities



Code	Name
	Public Health Facility
P1	Kiaritha Dispensary
P2	Kerugoya Level V Teaching and Referral Hospital
P3	Kabare Health Centre
P4	Riakithika Dispensary
P5	Ngaru Dispensary
P6	Kutus Health Centre
P7	Kutus Catholic Dispensary
P8	Kaitheri Youth Health Centre
	Private Health Facility
1	Kerugoya Medical Centre
2	ACK Mt Kenya Hospital
3	Focus Medical & Diagnostic Centre
4	Kagio Nursing Home
5	Golden Medicure Centre
6	ACK Mt Kenya Hospital and Mortuary
8	Kerugoya Medical Centre
10	Kerugoya Fortis Hospital and Cancer Centre
11	Mary Immaculate Kerugoya Catholic Health Centre
12	Kimathi Medical Services
17	AKM Health Centre
18	Focus Medical and Diagnostic Centre
19	Tamani Medical Centre
20	Quitent Hospital
21	Frajoy Hospital

The doctor patient ratio in the county is 1:36,339 which is very high compared to the national ratio of 1:16,000 and the recommended ratio of 1:1,000 by WHO. Table 6.2 shows the number of medical staff in the county. It is worth noting that most of the doctors in the referral hospital cater to the other lower order hospitals within the municipality.

Table 6-2: Number of Health Specialists in Kirinyaga County

Specialist	Number
Surgeon	1
Pediatricians	2
Gynecologists	1
Physicians	1
Radiologists	1
Ophthalmologist	1
Orthopedics	1
Renologists	4
Anesthetists	2
Mental Health Specialists	1
Medical Officers	33
Dentists	4
Pharmacists	12
General Nurses	478

Source: County Department of Health and Sanitation, 2020

Based on 2019 population and housing census, the number of health facilities in the municipality is inadequate to serve the population. The municipality has a current gap, for the year 2020, of 9 medical clinics with the gap expected to rise to 21 by the year 2030. The municipality also requires an additional 6 dispensaries and 1 health centre to the existing number to meet the population demand by the year 2030. Table 6.3 shows the current and projected number of health facilities required in the municipality by the end of the planning period, 2030.

Table 6-3: Health facilities need in the municipality

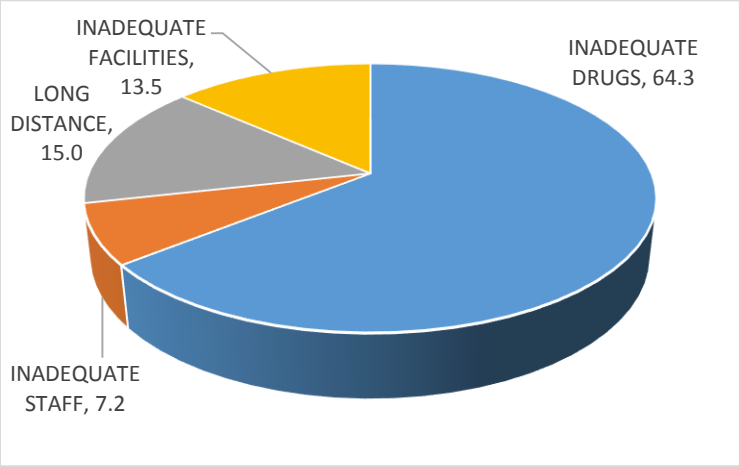
Facility	Catchment Population	Existing number, 2020	Current demand, 2020	Current deficit, 2020	Demand by 2030	Required facilities by 2030
Level 1 (clinics)	5,000	0	9	9	21	21
Level 2 (dispensary)	10,000	4	4	0	10	6

Facility	Catchment Population	Existing number, 2020	Current demand, 2020	Current deficit, 2020	Demand by 2030	Required facilities by 2030
Level 3 (health centre)	30,000	2	2	0	3	1
Level 4 (sub-county hospital)	100,000	0	0	0	0	1
Level 5 (county referral)	1,000,000	1	1	0	1	0

Source: Field Survey, 2020

From field survey, 2020, 64.3% of households in the municipality reported inadequacy of drugs within the public health facilities as a major challenge while 7.2% cite inadequacy of staff. About 13.5% and 15% of households cited inadequate facilities for medical care and long distance respectively as other major challenges facing public health facilities in the municipality. This is a shown in chart 6-1.

Chart 6-1: Health challenges in the municipality



Source: Field Survey, 2020

Challenges

- Inadequate drugs in all public medical facilities.
- Inadequate staff and medical specialists such as; neurosurgeons and oncologists.
- Inadequate financing to run and efficiently deliver required services in public health facilities
- Lack of requisite and mal-functional equipment such as the x-ray machines, dialysis machines among others.

- Inadequate space for expansion of public health facilities including the Kerugoya County Referral Hospital.
- Insufficient specialized care facilities such as including both Intensive care and High Dependency units.
- Non-operational health facilities such as Kiamwenja and Kiaritha dispensaries.

Recommendations

- Provide and ensure adequacy of drugs in all public health facilities.
- Employ the required specialized medical staff in the health facilities to meet the recommended doctor, nurse patient ratio of 1:1,000 and 1:400 respectively.
- Upgrade and improve the facilities in all public health institutions e.g. incinerators, wards etc.
- Revive and equip non-operational health facilities such as Kiamwenja and Kiaritha dispensaries.

6.1.2 Education

Kerugoya/Kutus Municipality has various education facilities ranging from ECDE centres to tertiary institutions.

ECDE - There are 49 registered ECDE/pre-primary education (public and private) facilities in the municipality as shown in table 6.4.

Table 6-4: ECDE centres in the Municipality

Institution	Number	No of Teachers	No of Pupils	Teachers Pupil Ratio.
Public	22	53	1,458	1:28
Private	25	74	1,480	1:20
Faith Based	2	6	131	1:22
Total	49	133	3,069	1:23

Source: County department of education and public service, 2020.

Primary schools - The municipality has 56 Primary schools which include 19 public and 37 private schools.

Secondary schools - There are 24 secondary schools which include 15 public and 9 private secondary schools. Some of the major secondary schools in the municipality are Kerugoya Boys and Kabare Girls High School which are extra county schools.

Special schools - There are two special schools in Kerugoya/Kutus Municipality. These schools are; Kerugoya School for the Deaf and ST. Joseph Primary School which has a special unit for pupils with special needs.

Tertiary Institutions – These facilities include; Kirinyaga University, Kaitheri County Polytechnic, Mt Kenya Teachers College and Kamigua Vocational Training College among other private institutions. The location and distribution of these facilities is shown in map 6.2.

Plate 6-2: Education facilities in the municipality

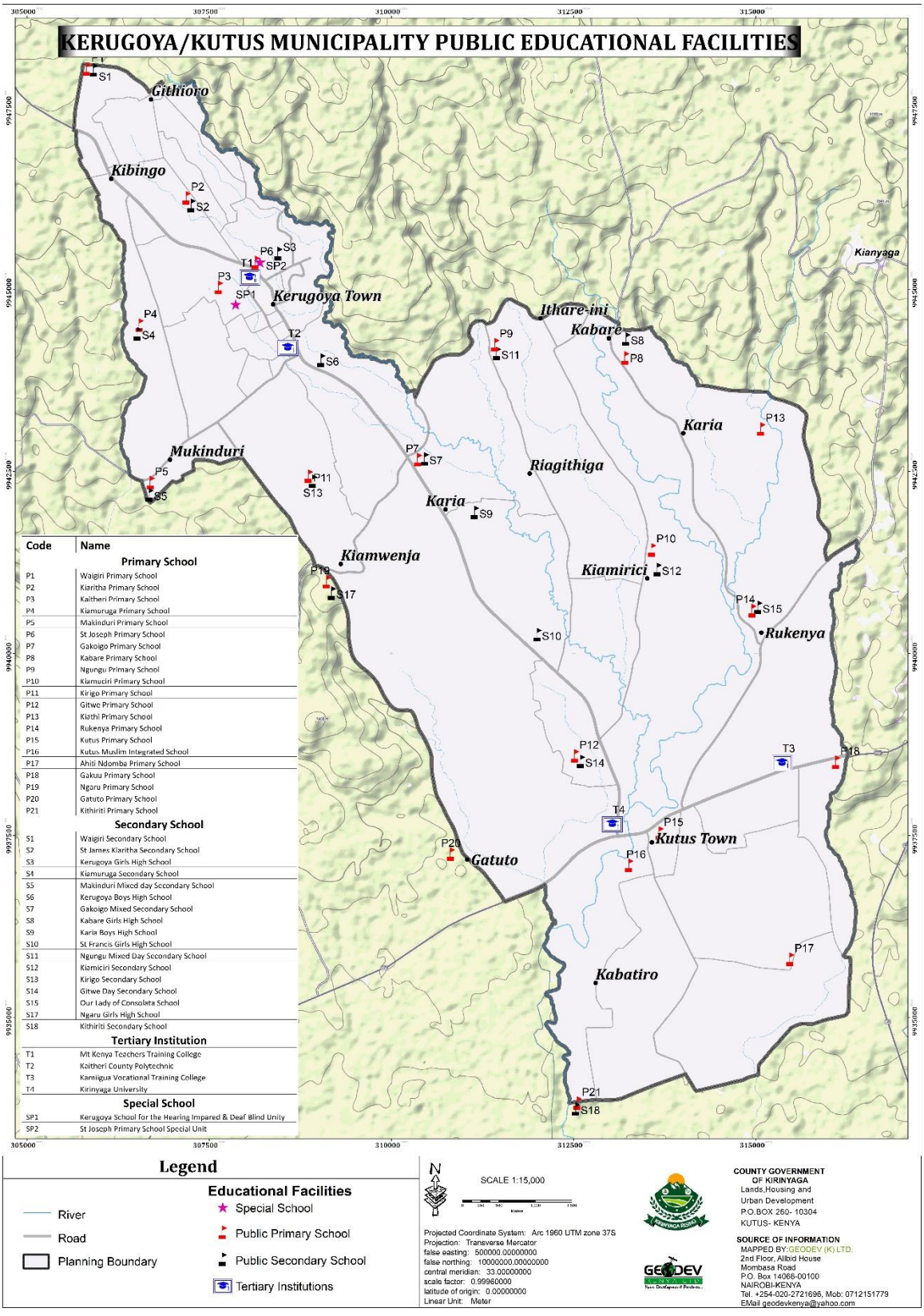
Source: Field survey, 2020

Table 6-5: Number of education facilities in the municipality.

Facility	**Number**		
	Public	**Private**	**Total**
ECDE	22	27	49
Primary schools	19	37	56
Special schools	2	_	2
Secondary schools	15	9	24
Vocational college	1	_	1
Technical training institutions	1	4	5
Tertiary	2	_	2

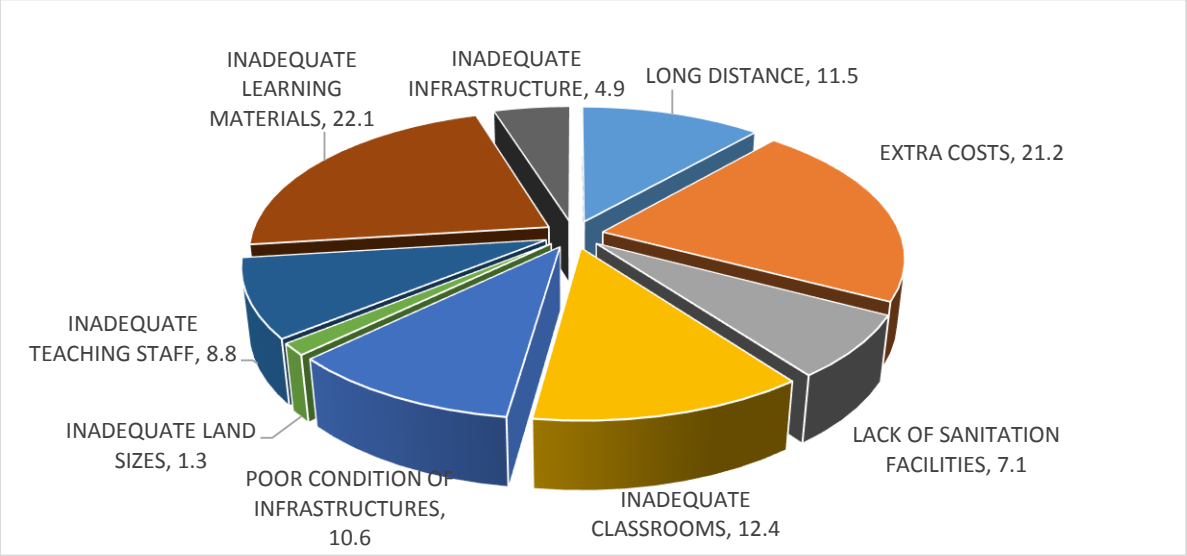
Source: Field survey, 2020

Map 6-2: Kerugoya/ Kutus Municipality Education Facilities Distribution



According to field survey 2020, 22.1% of households cite inadequate learning materials as the main challenge facing public education institutions within the municipality. About 1.3% cite inadequate land for expansion and provision of enabling infrastructure.

Chart 6-2: Educational challenges in the municipality



Source: Field Survey, 2020

The municipality has a population of 39,188 (KPHS, 2019). As illustrated in table 6-6, the municipality currently has an adequate number of pre-primary, primary and secondary schools. The municipality requires 2 more vocational institutions to meet the current demand. The educational facilities needs for the population in the municipality are shown in table 6-6 below.

Table 6-6: Educational facilities needs in the Municipality

Facility	**Catchment Population**	**Existing number, 2020**	**Current demand, 2020**	**Current deficit 2020**	**Demand by 2030**	**Gap by 2030**
Pre primary	3,500	22	12	0	29	7
Primary	3,500	19	12	0	29	10
Secondary	8,000	15	5	0	13	0
Vocational institutions	15,000	1	3	2	7	6

Source: Field Survey, 2020

Challenges

- Inadequate learning materials such as stationeries.
- Extra costs and charges in public schools.
- Inadequate learning facilities; classrooms, laboratories, libraries.
- Long distance to public education institutions.
- Poor condition of infrastructure such as classrooms, ablution blocks etc.
- Inadequate teaching staff.

Recommendations

- Provide adequate learning materials such as stationaries.
- Repair and provide adequate classrooms, laboratories, libraries and dormitories accordingly to all public education institutions.
- Employ adequate qualified staff.
- Provide requisite infrastructure in schools; water, electricity and sanitation facilities.

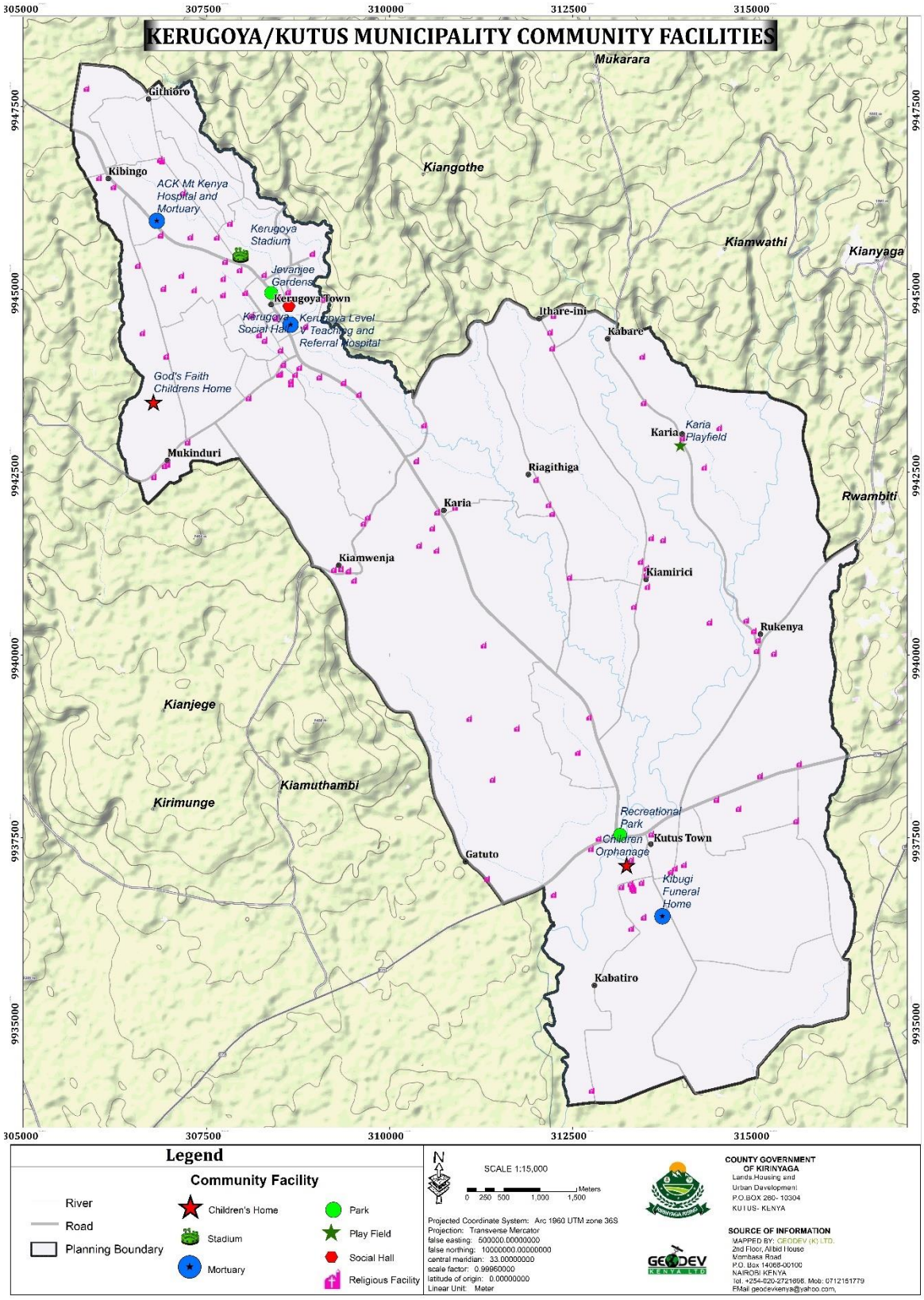
6.1.3 Community Facilities

Kerugoya/Kutus Municipality has several community facilities including;

1. **Cemeteries** – There are 2 cemeteries in the municipality. The cemeteries are located in both Kerugoya and Kutus towns. The cemetery in Kutus is used by the Muslim community while the cemetery in Kerugoya is located on riparian land and should be decommissioned and disallowed from use. This therefore presents a need for provision of a cemetery for the municipality.
2. **Social hall**- This facility is located in Kerugoya Town near the Kerugoya community stadium. It is used for various activities including public meetings, cultural and art events.
3. **Religious facilities** - The municipality a range of religious institutions and facilities. These facilities include Shree Swaminarayan temple in Kerugoya, Kutus mosque and prominent churches such as Our Lady of the Holy Rosary Kutus Catholic Church, A.C.K St Thomas church Kerugoya, Winners Chapel Kerugoya church among many other churches.

The municipality however lacks various important community facilities such as a public library and a home for the elderly. The distribution of these facilities are as shown in map 6-3.

Map 6-3: Community facilities in Kerugoya/Kutus municipality



6.1.4 Recreational Facilities

The recreational facilities in the municipality include; Kerugoya Community Stadium, Karia playground and Kerugoya urban park. Kerugoya stadium is currently under construction. The urban park in Kerugoya is small and lacks functional sanitary facilities. The urban park in Kutus is having restricted access to the public. It is only used for walks.

Plate 6-3: Kerugoya Community stadium, Karia playground and Kerugoya Urban Park

Source: Field Survey, 2020

Challenges

- The park in Kerugoya is small and lacks functional sanitary facilities.
- The playground in Karia is in poor condition and lacks essential facilities such as toilets and changing rooms.
- Kutus Town does not have a play field and lacks space for the establishment of one. This is due to the nature of the land in the town being flood prone.
- Kutus Town lacks open spaces or a park hence hindering the promotion of recreational activities.

Recommendations

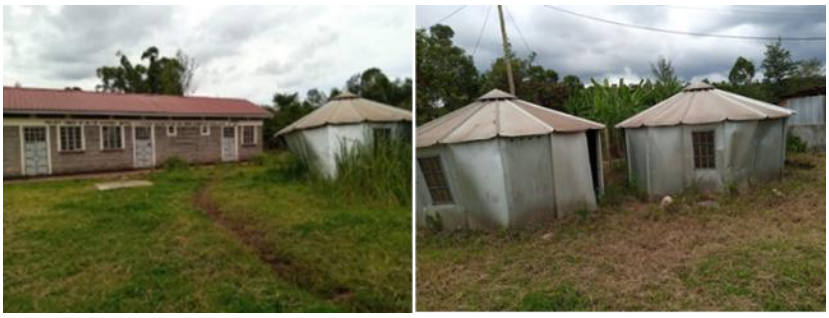
The population in the municipality requires proper recreational facilities. For this to be achieved the following needs to be done:

- Acquire land on a proper site to develop a playground in Kutus Town or a locality that is deemed suitable for development next to the town.
- Provide public open spaces in urban areas and in residential areas in the municipality.
- Rehabilitate and provide the required facilities including fencing and provision of sanitary facilities in Karia playground.
- Provide requisite sanitary facilities such as public toilets and waste skips wthin the Kerugoya Urban parks.
- Development of the park in Kutus to include benches and walkways to promote use.

6.1.5 Safety and Security Facilities

There are 5 security installations in Kerugoya/Kutus Municipality. These facilities include; Kerugoya Police Station, 3 police posts (Kutus, Thangari and Kirinyaga University Police Post) and a patrol base in Kutus along the Sagana-Embu (B25) road. Thang'ari police post is not functional and has dilapidated housing units. Kerugoya Town also hosts the Kenya prisons.

Plate 6-4: Thang'ari police post and its housing units



Source: Field Survey, 2020

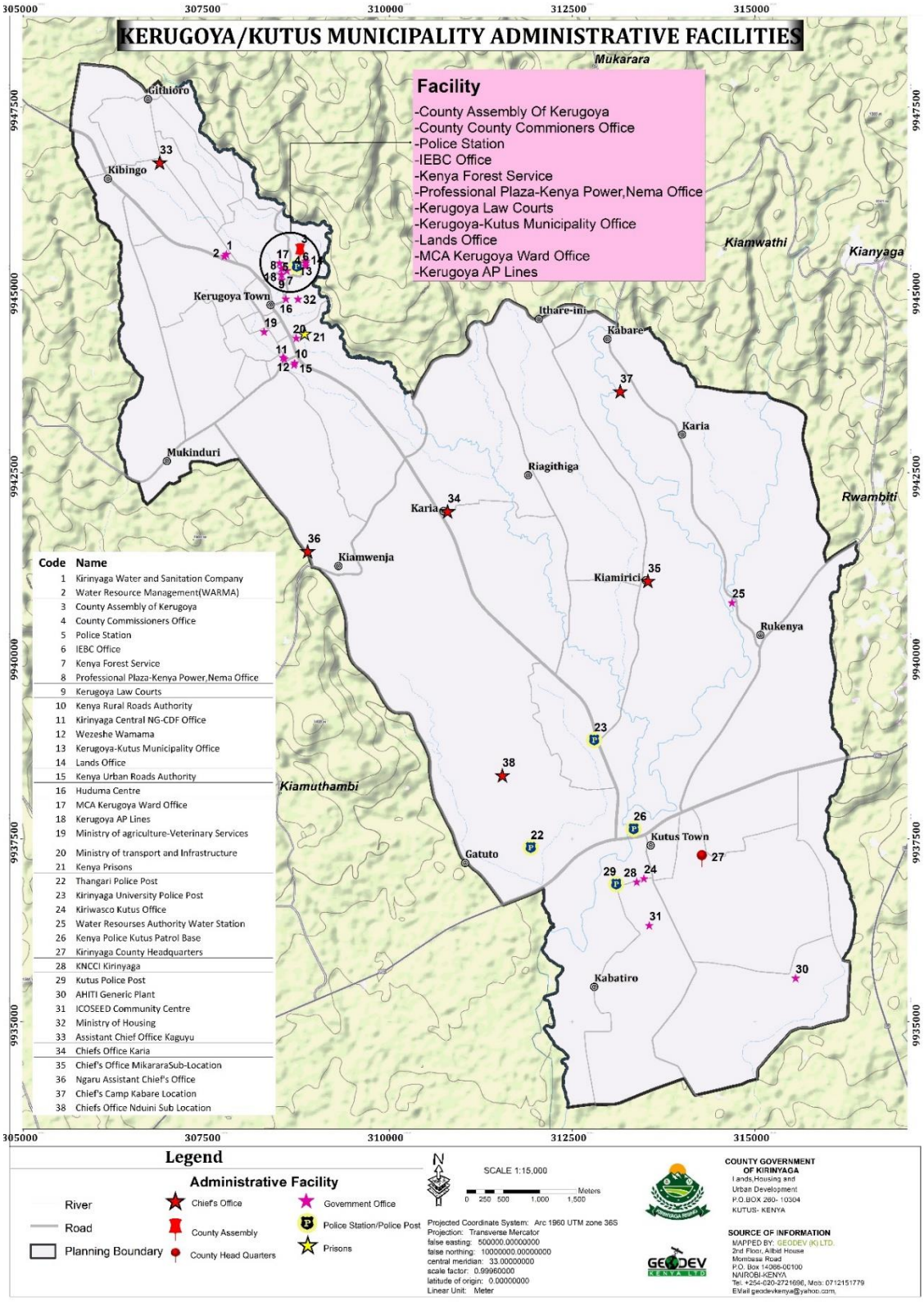
6.1.6 Administrative Facilities

The municipality hosts the county headquarters in Kutus Town. National government offices and parastatals are hosted in Kerugoya. The main offices in Kerugoya include; the county assembly, the municipal board offices, the County commissioner, Kerugoya Law courts among others as shown in map 6.4.

Plate 6-5: County Commissioner's office in Kerugoya and county headquarters in Kutus Town

Source: Field Survey, 2020

Map 6-4: Administrative facilities in Kerugoya/ Kutus Municipality



6.1.7 Disaster Management

Common disasters in the municipality are floods especially during the rainy season and fire outbreaks. Fire prone areas include the colonial villages such as Mukinduri and the informal settlement, Mjini, in Kutus Town. The municipality is ill equipped in handling disasters. The county has a fire engine but lacks a functional equipped fire station/yard as well as workers for the department.

In occurrence of a disaster, the non-governmental organization the Red Cross assists in mobilizing well abled community members, different stakeholders and disaster responders to intervene in order to enhance the coping capacity during times of disaster. The organization also trains the affected community to cope and find alternatives in solution making.

Challenges

- Poor coordination between different stakeholders (county government departments and other non-governmental organizations).
- Lack of a disaster management office in the municipality.
- Inadequate resources including .personnel, equipment and gears for safety to operate and mitigate disasters
- Untimely delivery of information concerning disasters.
- Poor response in describing and following procedures of disaster operations by community leaders.

Recommendations

- Provide a well-equipped disaster management and rescue office/centre within the municipality. This office is to house the fire department/station.
- Engage the community to learn simple ways to cope, prevent and adequately respond to disasters.

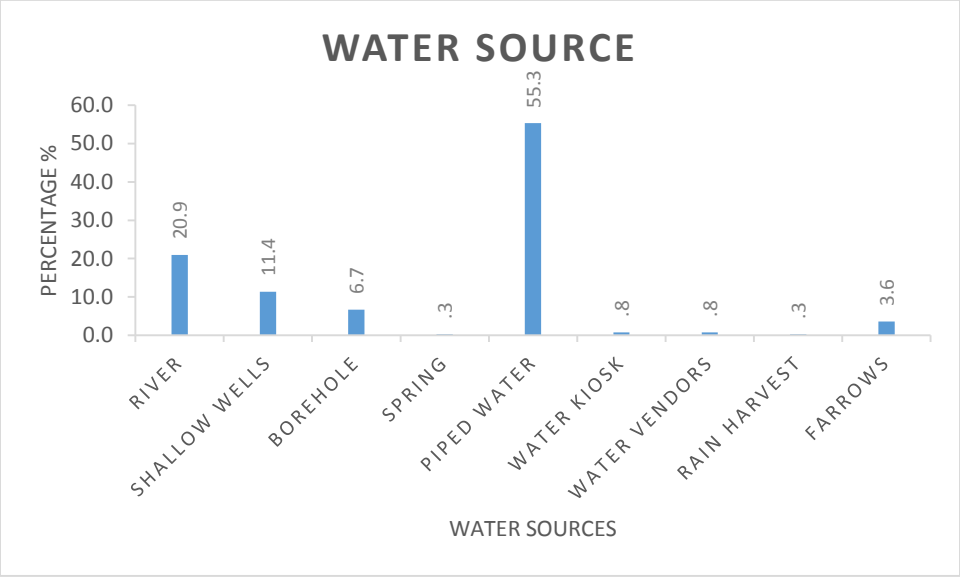
6.2 Physical Infrastructure

6.2.1 Water

Water Sources

According to field survey, 2020, piped water is the main source of water in Kerugoya/Kutus Municipality used by 55.3% of the households. Other sources of water include rivers used by 20.9% of households in the municipality, shallow wells at 11.4%, boreholes at 6.7% and farrows at 3.6% among other small-scale sources as shown in chart 6.3 below.

Chart 6-3: Sources of water in Kerugoya/Kutus Municipality



Source: Field Survey, 2020

Plate 6-6: River Kiringa,, a shallow well and a water tap

Source: Field Survey, 2020

Piped Water Supply

The municipality has two water treatment plants and two chlorination points. The treatment plants are;

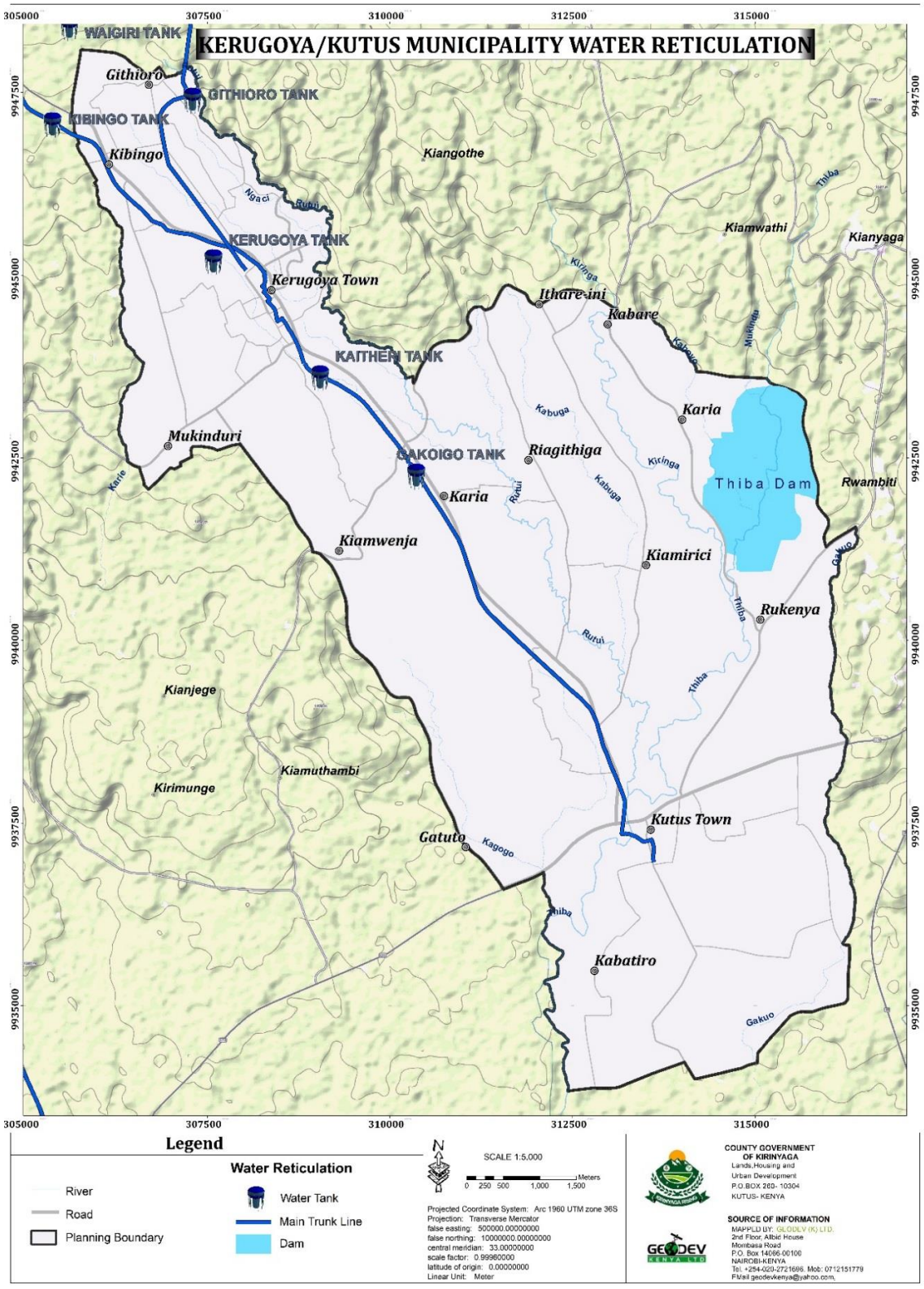
1. **Ndiriti Treatment Plant –** The plant was constructed in 1982 and treats 11,000 m^3/day. The treatment plant has three intakes at Kahuhi, Muhuhi and Kururu rivers. Challenges facing the treatment plant include dilapidated infrastructure and low water volumes at intake points during the dry seasons.
2. **Ngithioro Treatment Plant**- The plant was constructed in 1940s with a capacity to treat 1500m^3/day. Its' intake point is at Rutui River. Challenges facing the treatment plant include dilapidated infrastructure and low water volumes at intake points during the dry seasons.
3. **Chlorination points** – These points are at; Rondu which was constructed in 1940 and Mukengeria which was constructed in 1984. The chlorination points supply 4,500m^3 of water per day to the municipality.

The combined amount of both treated and chlorinated water supplied to the municipality is 17,000m^3/day. There are 5 storage tanks from where the water is distributed to consumers through gravity as shown in map 6-6. According to KIRIWASCO, there are a total of 6,305 connections in the municipality with a total water supply of 57,433 m^3 per month as shown in table 6.7 below.

Table 6-7: Number of connections and amount supplied in the municipality.

Entity	**No of Connections**	**Quantity Supplied (M^3/Month)**
Households	5,969	28,716
Industrial	9	2,872
Commercial	282	8,615
Schools	32	11,487
Hospitals	13	5,743
TOTALS	**6,305**	**57,433**

Map 6-5: Kerugoya/Kutus Municipality water reticulation network



Source: Kirinyaga Water and Sanitation Company

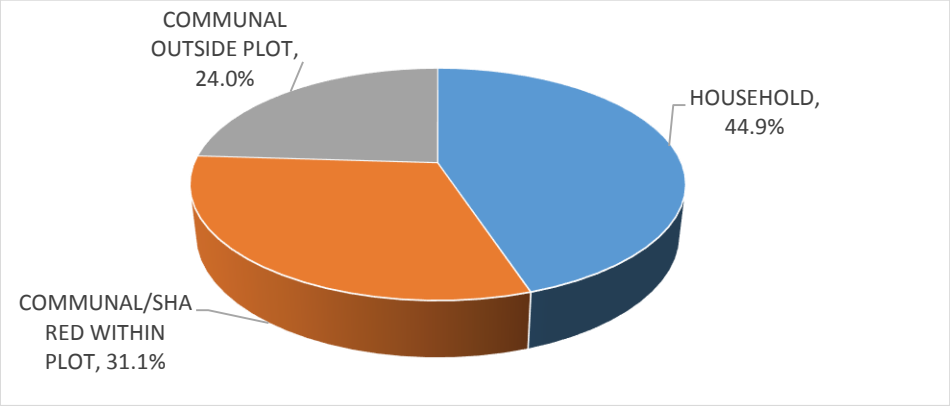
Demand and Supply

According to Kirinyaga Water and Sanitation Company, the current demand for water stands at 25,000m^3/day. The current water supply is 17,000m^3/day creating a deficit of 8,000m^3. The projected demand by the year 2040 is 41,000m^3/day. The future demand of 41,000m^3/day shall be supplied by the Ndiriti and Murateri treatment plants which shall supply 30,000m^3/day upon expansion.

Water Quality and Level of Access

According to field survey, 2020, 75% of water supplied from different sources is safe for consumption while 25% is not safe. The safety of this water was attributed to the sources. Piped water was attributed to be safe while water from other sources such as rivers, farrows and shallow wells was not safe. The level of access was also determined by the source. Residents connected to the piped water or have shallow wells had access to water at the household level (44.9%) or at communal points within the plots (31.1%). Households using water from other sources such as kiosks and rivers accessed water at communal level outside plot (24%). The chart 6.5 shows level of household water access.

Chart 6-4: Level of household water access

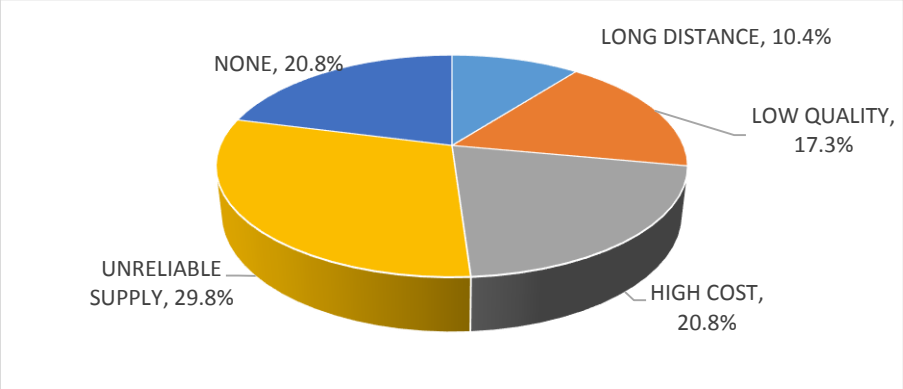


Source: Field Survey, 2020

Challenges in Household Water Supply

According to field survey, 2020, water provision and access in the municipality faces various challenges. These challenges include; unreliable supply (29.8%), high bills/costs (20.8%), poor water quality (17.3%) and long distance to water sources 10.4%. About 20.8% of residents in the municipality reported to have no challenges in accessing water.

Chart 6-5: Household water access challenges.



Source: Field Survey, 2020

Challenges faced by KIRIWASCO in water supply in the municipality include;

- Ageing infrastructure and poor maintenance of the treatment plants.
- Low production at treatment points compared to demand.
- Dilapidated water reticulation systems which leads to leakages limiting the amount and quality supplied.
- Inadequate/limited water supply system (reticulation network). The supply network does not cover the entire municipality. Residents are therefore forced to use other sources or connect to other community led water supply systems.
- Drought which affects water levels of rivers thereby limiting intake.
- Low capacity of storage tanks compared to the demand within the municipality.
- Unregulated community water projects affects the quality of water supplied.
- Increase in non-revenue water due to leakages and illegal connections.
- Lack of a development framework to repair and install a new water reticulation system.

Recommendations

- Develop the proposed high capacity water treatment plant at Murateri to meet the current and future water demand.
- Construction of high capacity storage tanks to enhance reliability in water supply.
- Repair, replace or install a new water reticulation system to avoid leakages.
- Regulate the community water projects to abide to the regulations of the water company; Kiriwasco.

- Expand the existing water reticulation system to supply the whole municipality.
- Map the entire water reticulation system. This shall help in monitoring of the system.

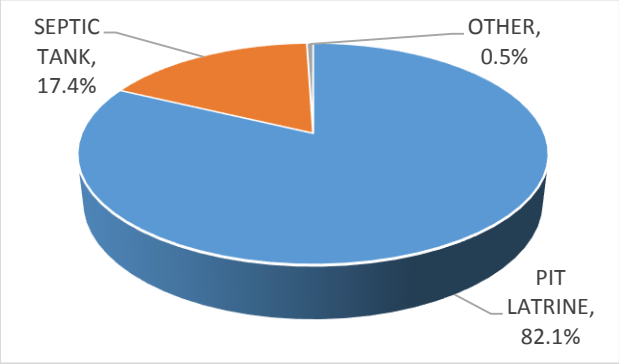
6.2.2 Liquid Waste Disposal

Kerugoya/Kutus Municipality does not have a sewer reticulation system. There is however a plan to develop a reticulation system for the municipality which terminates at Ahiti Ndomba Treatment Plant that is currently under construction. Despite a lack of a sewer treatment plant, the municipality collects liquid waste from septic tanks and pit latrines using exhausters which dumps this waste at the sewer treatment plant in Embu. However, there are instances of liquid waste discharge into the major rivers in the municipality. This has greatly compromised the quality of water in the rivers over time.

Liquid waste generated is calculated as 80% of water demand. Liquid waste generated in the municipality is estimated to be 13,600m^3/day for the year 2020 and 32,800m^3/day by the year 2030. According to field survey 2020, 82.1% of residents use pit latrines for liquid waste disposal. 17.4% of households use septic tanks while 0.5% of the households use other forms of disposal suggesting open defecation.

Kerugoya and Kutus Towns do not have adequate public sanitary facilities considering the amount of human traffic through the towns during the day.

Chart 6-6: Methods of liquid waste disposal



Source: Field Survey, 2020

Plate 6-7: Ahiti Ndomba Sewer Treatment Site

Source: Field Survey, 2020

Challenges

- Lack of a sewer reticulation system.
- Over-reliance on pit latrines and septic tanks. This poses a risk in contamination of surface and ground water.
- Inadequate public sanitary facilities in public areas within Kerugoya and Kutus Town.
- Dumping of liquid waste collected by private exhauster services into rivers. This has led to pollution of the rivers in the municipality posing a risk to the health of residents downstream.

Recommendations

- Complete the construction of Ahiti Ndomba sewage treatment plant.
- Develop a sewerage system for Kutus and Kerugoya towns. The system should adequately cover the entire municipality and its environs.
- Provide public toilets at key areas within Kerugoya and Kutus Towns.
- Ensure that the liquid waste collected by the municipal exhausters is dumped at designated sites before the completion of Ahiti Ndomba sewer treatment plant.

6.2.3 Solid Waste Management

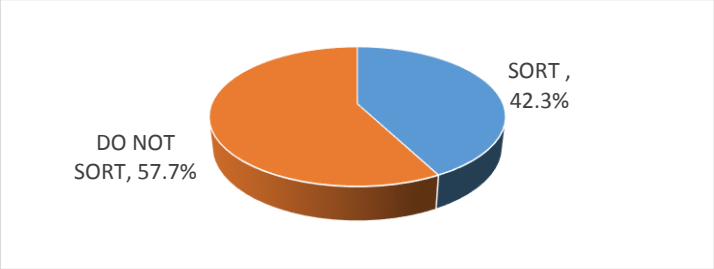
On average, it is estimated that each person generates 0.74kg of waste per day (*World Bank, 2016*). With a projected population of 42,762 as of the year 2020, solid waste generated in Kerugoya/Kutus Municipality is approximately 31,643.9kg/day. According to field survey, 2020, approximately 58% of residents in the municipality do not sort their waste during disposal. Only 42% sort the waste as biodegradable and non- biodegradable materials.

Disposal Methods

Waste sorting (Entire Municipality)

According to field survey 2020, 57.7% of households do not sort waste before disposal while 42.3% sort solid waste before disposal.

Chart 6-7: Waste Sorting (Entire Municipality)

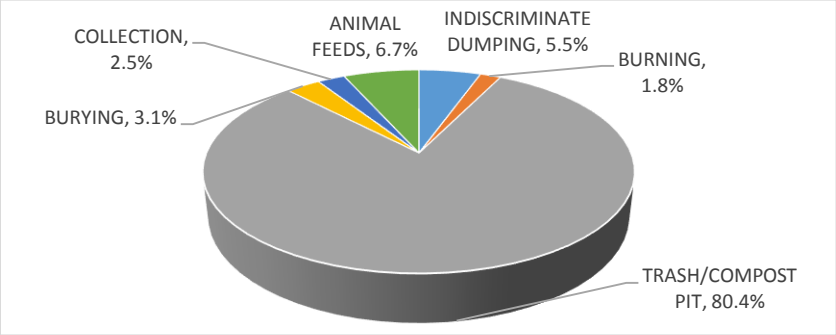


Source: Field Survey, 2020

Biodegradable Waste Disposal (Entire Municipality)

This is decomposable waste whereby the main method of disposal is through composting done by 80.4% of households in the municipality. This waste is later reused as fertilizer for agriculture. 6.7% of households feed their livestock with the waste generated while 5.5% of households in the municipality dispose their waste indiscriminately. Only 2.5% of waste generated is collected by different agencies including the county government.

Chart 6-8: Biodegradable Waste Disposal method

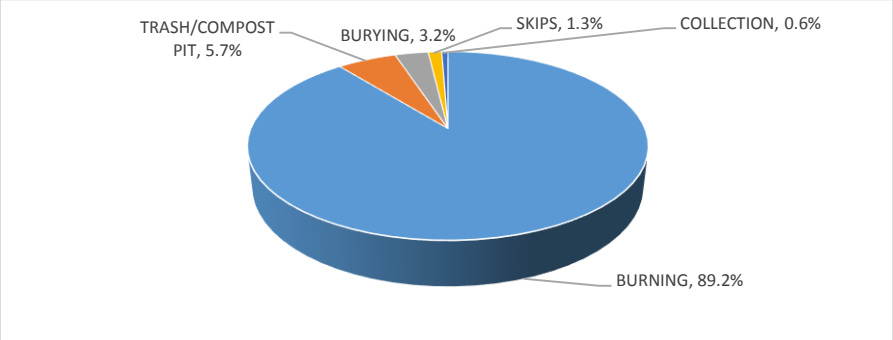


Source: Field Survey, 2020

Non-Biodegradable Waste Disposal (Entire Municipality)

From field survey, 89.2% of households burn non-biodegradable waste while 0.6% of the waste is collected by different agencies such as the county government, private organisations and organized groups.

Chart 6-9: Non-biodegradable Waste Disposal (Entire Municipality)

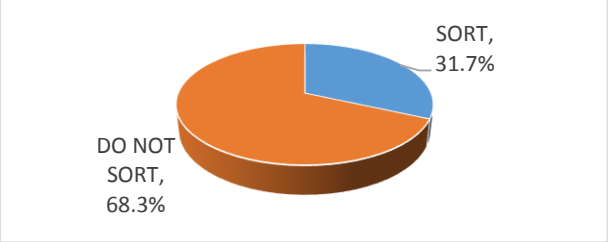


Source: Field Survey, 2020

Kerugoya Town

According to field survey 2020, 31.7% of households sort the waste generated at the household level while 68.3% do not sort waste.

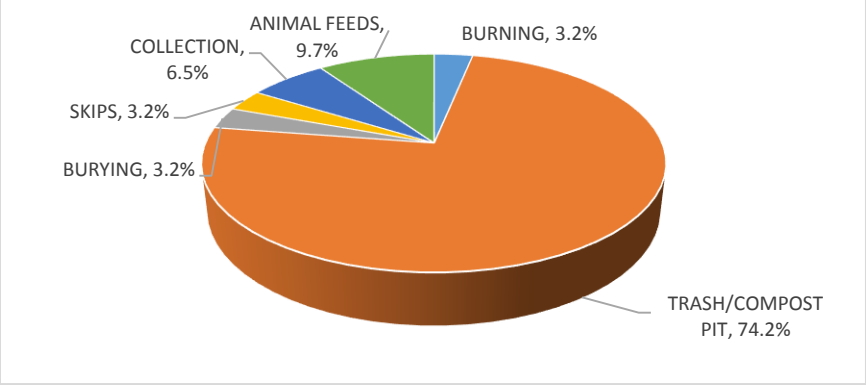
Chart 6-10: Kerugoya Town Solid Waste Sorting



Source: Field Survey, 2020

Field survey 2020, further revealed that 74.2% of households in Kerugoya Town use compost pits to dispose biodegradable waste while burying, burning and dumping at designated municipal skips accounts for 3.2% each. The different methods for disposal of biodegradable waste in Kerugoya Town is as shown in chart 6-11.

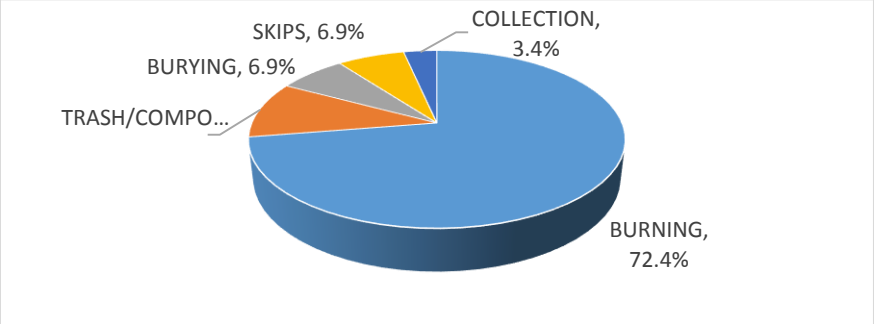
Chart 6-11: Biodegradable Solid Waste Disposal Method, Kerugoya Town



Source: Field Survey, 2020

Field survey also revealed that 72.4% of households burn non-biodegradable waste within Kerugoya Town while 3.4% of the waste not sorted is collected by different agencies.

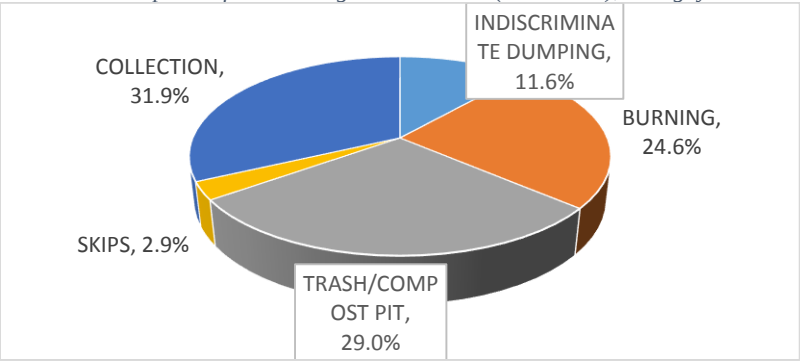
Chart 6-12: Non-Biodegradable Solid Waste Disposal Method (Sorted), Kerugoya Town



Source: Field Survey, 2020

For households that do not sort waste generated at a household level, 31.9% is collected by the county government, private agencies and organized groups while 11.6% dump this waste indiscriminately. This is as shown in chart 6-13.

Chart 6-13: Disposal of Non-biodegradable Waste (Not Sorted), Kerugoya Town

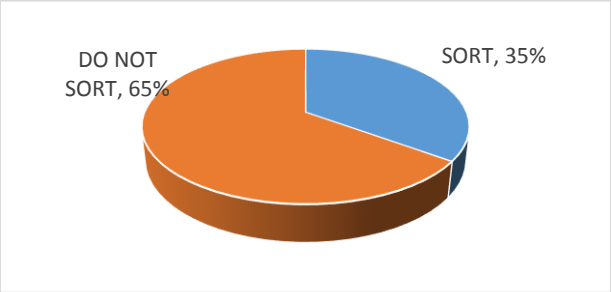


Source: Field Survey, 2020

Kutus Town

According to field survey 2020, 35% of households sort the waste generated at the household level while 65% do not sort waste.

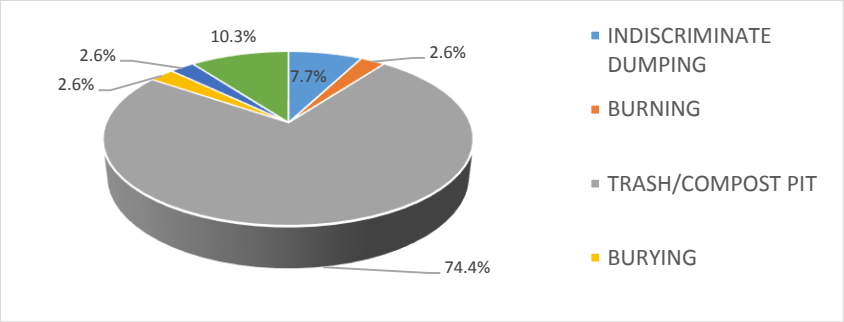
Chart 6-14: Waste Sorting, Kutus Town



Source: Field Survey, 2020

Field survey reveals that 74.4% of households in Kutus Town use compost pits to dispose biodegradable waste while burying, burning and collection accounts for 2.6% each. The different methods for disposal of biodegradable waste in Kutus Town is as shown in chart 6-15.

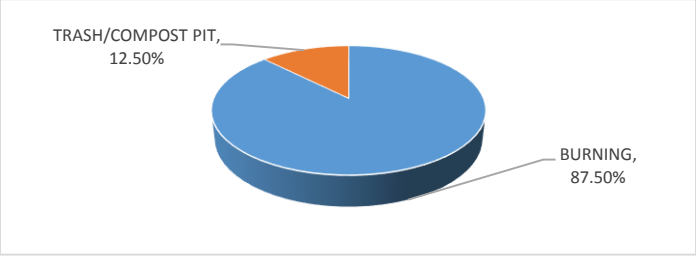
Chart 6-15: Biodegradable Solid Waste Disposal Method, Kutus Town



Source: Field Survey, 2020

Amongst the households that sort waste, 87.5% burn non-biodegradable waste while 12.5% dispose solid waste in compost pits.

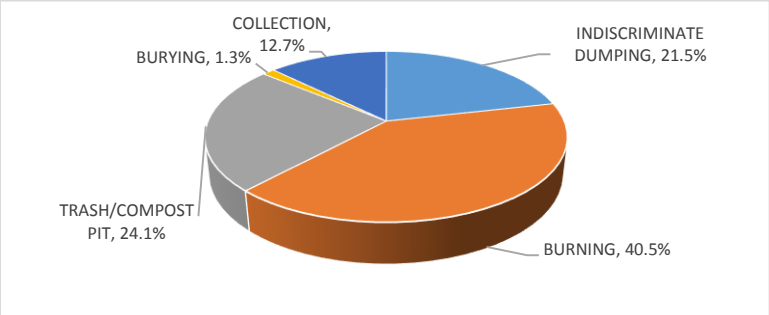
Chart 6-16: Non-Biodegradable Solid Waste Disposal Method (Sorted), Kutus Town



Source: Field Survey, 2020

For households that do not sort waste generated at a household level in Kutus Town, 40.5% of them burn this waste while 1.3% bury the waste. This is as shown in chart 6-17.

Chart 6-17: Disposal of Non-biodegradable Waste (Not Sorted), Kutus Town

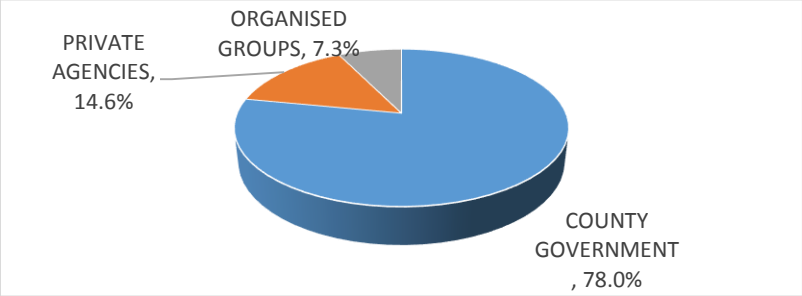


Source: Field Survey, 2020

Waste Collection

According to field survey, 2020, 78% of waste collection is done by the county government while organized groups account for 7.3% of waste collection for households. Private agencies account for 14.6% of waste collection. This is as shown in chart 6-18. Waste collected is dumped at either the dumpsite behind the County Referral hospital or at Kabatiro dumpsite in Kutus. The dumpsite at Kerugoya should be decommissioned as it is located on riparian land. It is incompatible to other neighbouring land uses.

Chart 6-18: Collecting Agencies



Source: Field Survey, 2020

The frequency of waste collection is as shown in table 6-9.

Table 6-8: Frequency of waste collection

Frequency	Percentage
Weekly	60.5%
Bi weekly	18.4%
Monthly	18.4%
Over a month	2.6%

Source: Field Survey, 2020

Plate 6-8: A solid waste skip and a waste collection point/transfer station

Source: Field Survey, 2020

Disposal Sites

Solid waste is collected in skips and holding bays which are positioned at different points in Kerugoya and Kutus towns. The skips are hauled by tractors to the disposal sites either at Kabatiro or Kerugoya dumpsite.

Kabatiro dumpsite is 12km from Kerugoya Town and 2 km from Kutus Town. The dump site occupies 15 acres and is licensed to handle solid waste for the municipality. Waste at the dump site is sorted and then burnt.

Plate 6-9: Kabatiro dump site in Kutus Town

Source: Field survey, 2020

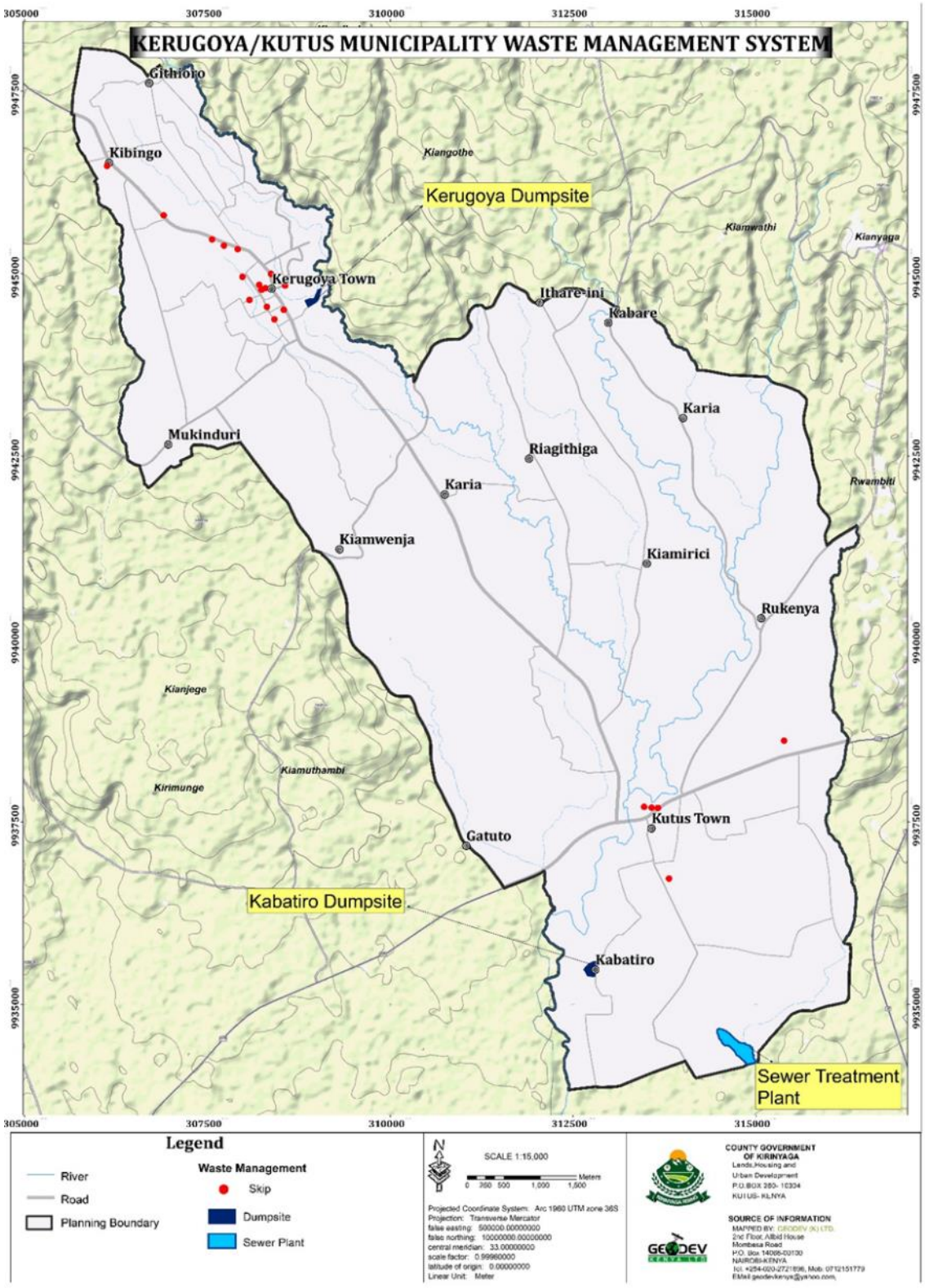
Challenges

- Air pollution due to burning of waste as a method of waste management.
- Environmental pollution and loss of the natural beauty due to indiscriminate dumping within the residential areas.
- The dump site near the Kerugoya County Referral sits on riparian land.
- Waste collection skips are poorly distributed and inadequate. Areas such as Ithare, Kabare, Mukinduri, Karia among others do not have waste skips.
- Poor waste management at Kabatiro dump site.

Recommendations

- Develop Kabatiro dump site to a proper sanitary land fill. The dumpsite should be adequately buffered using trees and fenced from interference from the immediate surroundings.
- Enhance the frequency of waste collection especially in areas that are densely populated such as Kerugoya and Kutus.
- Decommission the dump site in Kerugoya and ensure the land is rehabilitated.
- Provide adequate waste collection skips in areas that do not have as shown in map 6-6.
- Procure more waste trucks, equipment and hire more personnel to efficiently manage waste in the municipality.

Map 6-6: Waste Management Facilities in Kerugoya/Kutus Municipality



6.2.4 Storm Water Drainage

The existing drainage system in the Municipality comprises of both earth or concrete drains. Concrete drains are both open and closed. Areas with concrete drains include;

- 1 km of open drains within Kutus parking area along Sagana-Embu, (B25) road.
- 4.5km of closed drains within Kutus new market and along roads leading to the County Headquarters.
- 1.8km open drains along Kerugoya Town CBD roads.

There is also 15 km of earthen storm water drains in roads of both Kerugoya and Kutus towns combined. These drains collect storm water from the roads which then drain into rivers such as Thiba and Rutui.

Plate 6-10: Closed drains in Kutus, open concrete and earth drains in Kerugoya Town

Source: Field survey, 2020

Challenges

- Poor maintenance of drains leading to clogging due to deposition of solid waste.
- Encroachment into road reserves by businesses hence affecting the functionality of the drains.
- The earth drains are eroded by flood water leading to destruction of roads.

Recommendations

- Construction of closed drains along major roads and streets in Kerugoya and Kutus Town.
- Provide open drains on all local distributor and access roads in the municipality.
- Regular unblocking of storm water drains in order to ensure proper maintenance.
- Enforcement of laws regarding road reserves to stop encroachment into the drains.

6.2.5 Energy

Electricity Connection

The municipality is well connected to electricity. The municipality is connected to the national grid by a 33kv line which terminates into 2 substations in Kerugoya and Kutus Town. Power is then distributed by 11kv lines to 103 transformers as shown in map 6-7.

Plate 6-11: An electricity substation in Keugoya, a power transformer and electricity lines

Source: Field Survey, 2020

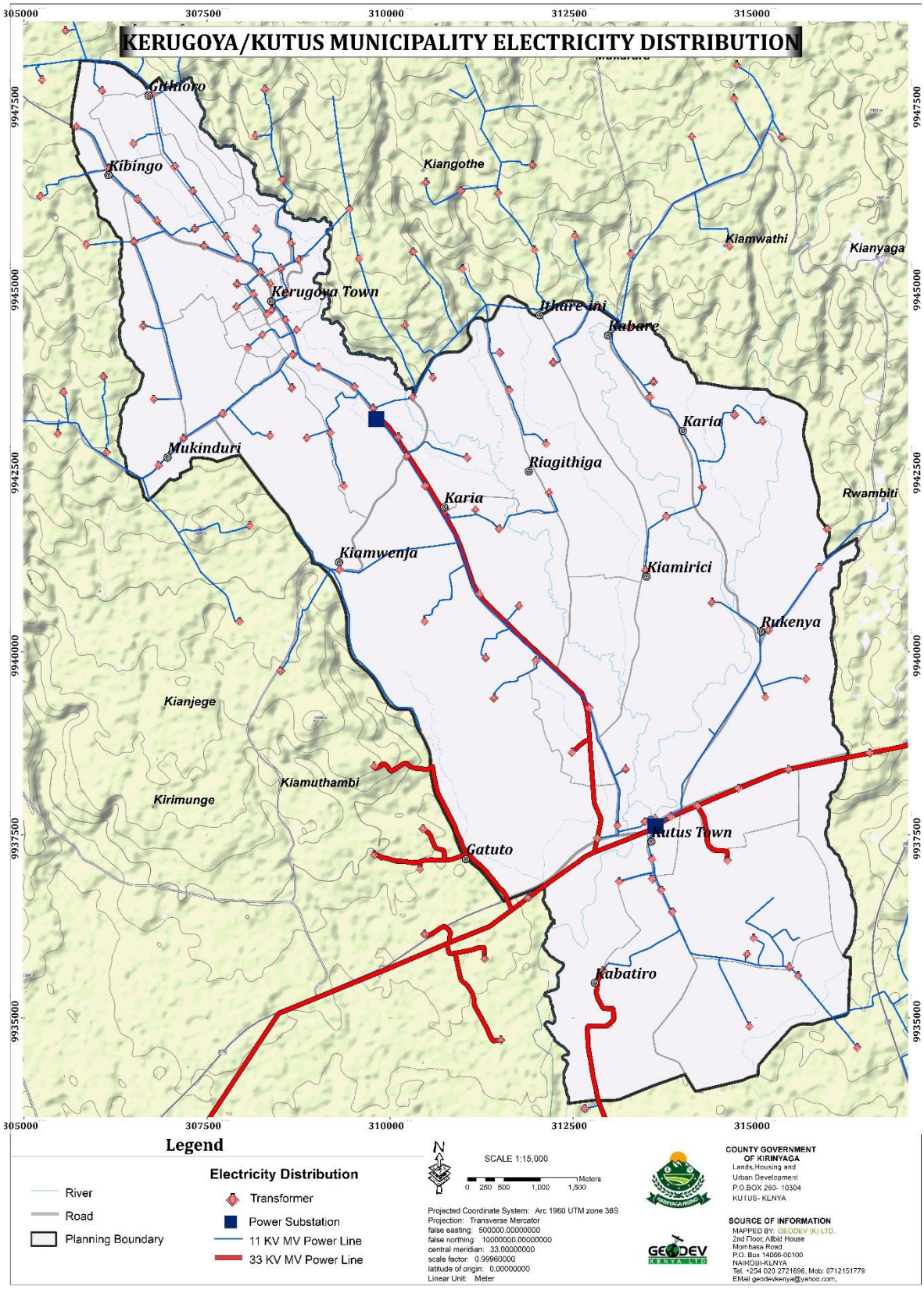
Street Lighting

Most of the streets in Kerugoya and Kutus Towns have street lights. Other urban centres such as Kibingo have high masts installed. Various neighbourhoods within the major urban centres, Kerugoya and Kutus have high mast/flood lights.

Plate 6-12: A high mast in Kutus, street lights in Kerugoya and a high mast at Kibingo market

Source: Field survey, 2020

Map 6-7: Electricity distribution network and transforms in the municipality

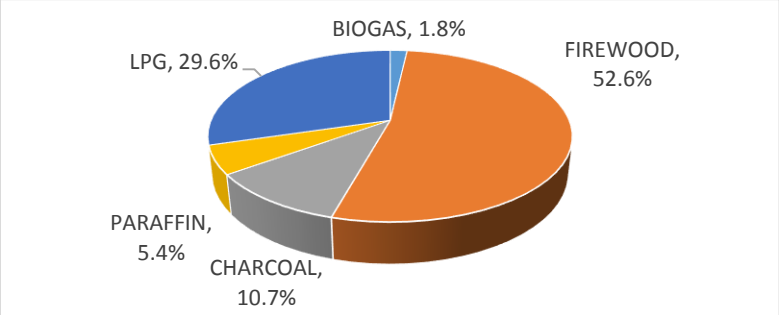


Household Energy Sources

Cooking Energy

Majority of residents in the municipality are over-reliant on wood fuel. According to field survey 2020, the main source of cooking energy is firewood used by 52.6% as shown in chart 6-10. Other sources of cooking energy include; LPG 29.6%, charcoal 10.7%, paraffin 5.4% and biogas at 1.8%.

Chart 6-19: Sources of cooking energy

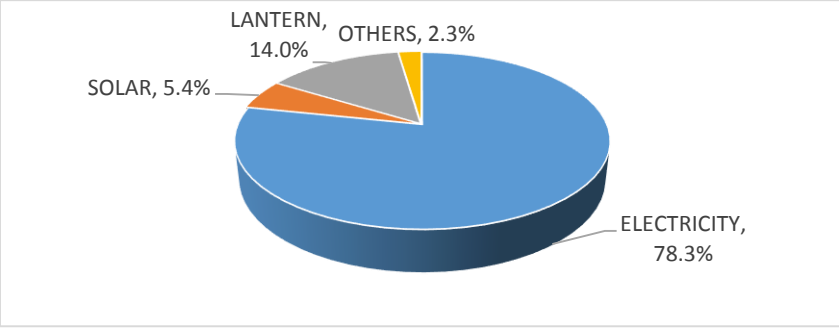


Source: Field survey, 2020

Lighting Energy

The main source of lighting energy is electricity used by 78.3% of households in the municipality while 14.0% of households use lanterns, 5.4 % use solar energy. Other sources of energy used by 2.3% of households in the municipality including use of batteries.

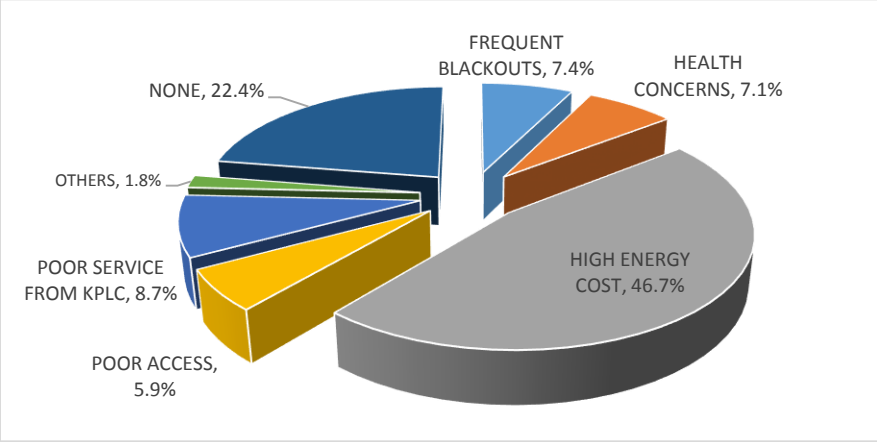
Chart 6-20: Lighting energy sources



Source: Field survey, 2020

Residents in the municipality cited high cost of energy as one of the major challenges in access to energy. According to field survey, 46.7% of households sited high costs in energy access while 22% reported to have no challenges in access to electricity. This can be attributed to local availability and use of different sources of energy such as solar and firewood. The challenges in household access to energy are as shown in chart 6-21.

Chart 6-21: Energy challenges in Kerugoya/Kutus Municipality



Source: Field survey, 2020

Opportunities

- There are two power sub stations in the municipality making it easy for power distribution in the planning area.
- The potential of hydroelectric power generation is high due to presence of high-volume rivers such as Thiba and Rutui.

Challenges

- Deforestation due to over-reliance on charcoal and firewood.
- Respiratory health concerns due to use of wood fuels and paraffin
- High cost of energy such as connectivity to electricity, high electricity bills and LPG gas.

Recommendations

- Provide subsidies to encourage use of renewable energy such as LPG and solar energy.
- KPLC to subsidize electricity connection charges.
- KPLC to improve service provision.

6.2.6 ICT and Telecommunication

Kerugoya/Kutus Municipality is well served by telecommunication networks. The mobile network is provided by Safaricom, Airtel and Telkom Kenya through GSM stations. The municipality has 11 telecommunications GSM stations. Mobile phone coverage is 99 percent (Kirinyaga County, CIDP 2018-2028). The county is provided with the fibre optic backbone which serves the county

offices. There are various cyber cafes in the municipality. Postal services are also provided by the Kenya Postal Corporation which has two post offices in Kerugoya and Kutus Town.

Plate 6-13: Kerugoya Post Office and a telecommunication mast


Source: Field survey, 2020

Courier services are provided by private operators most of which are linked to the Public Service Vehicles (PSV). The courier services deliver parcels to and from major towns around the country. They include Kukena Travelers Sacco, 4NTE Sacco, 2NK Sacco, Karombu Sacco, Emuki Sacco, Mt. Kenya Sacco, Supreme Sacco, G4S courier services and Wells- Fargo courier services.

Challenge

- Lack of an ICT centre in the Municipality

Recommendation

- Construct, staff and equip an ICT centre to serve residents of the municipality.

7 HOUSING AND HUMAN SETTLEMENT

7.1 Housing Areas

Kerugoya Town

This area hosts the greatest percentage (76.7%) of the population of the municipality. The county and national government housing areas in the town cover an approximate area of 5.55km^2 and 6.30km^2 respectively. The town exhibits varied housing densities. Low density areas include Milimani and Kamukunji. .The town is also characterized by high density areas including colonial villages such as Kaitheri and Kiaritha as well as areas opposite the stadium such as site and service. The housing typologies available are bungalows, maisonettes, flats and row housing. Piped water and electricity are well distributed in the entire town. The town lacks a sewer system hence liquid waste is disposed through septic tanks and pit latrines. Most of the roads are paved while access roads are of earth surface. Housing providers in these areas are both private (rental houses and owner occupier), public (county and national) as well as institutional (Kiricorp, Kenya Police etc).

Kutus Town

The area exhibits mixed housing densities with the housing typologies being bungalows, maisonettes, flats and row housing. Housing is mainly provided by the private sector but there are few institutional houses. There are high density residential areas within the town including Mjini which has characteristics of an informal settlement. Electricity is well distributed throughout the town. Piped water reticulation system covers part of the town with some areas such as Thang'ari using water from furrows for rice farms. Liquid waste is disposed through septic tanks and pit latrines. Access roads are of earth surface.

Mukinduri

Mukinduri is located along Kerugoya-Baricho road. This is a colonial village characterized by high-density (compact) residential developments. Bungalows and row houses are the main housing typologies with wooden walls and iron sheet roofs prevalent. The area lacks piped water supply thus households depend on water from rivers. Access roads are narrow with earth surface.

Rukenya, Kabare, Ithare

These areas exhibit rural characteristics with low housing densities and large land sizes. The main housing typologies are bungalows and typical farm houses (huts). There are also some maisonettes.

Access roads serving the residential areas are unpaved. Only the main road linking these areas to Kutus and Kerugoya are tarmacked. These areas are well served with piped water and electricity.

Kiamwenja

It is located along Kerugoya-Ngaru road. This area features medium and low-density residential developments with bungalows being the main housing typology. Access roads in the area are of earth surface. Piped water distribution and electricity is adequate within this area.

Karia

Located along Kutus-Kerugoya road, the area features medium and low-density residential developments. The main housing typologies are bungalows, mansionettes and row houses with some few flats. Access roads are narrow with earth surfaces. Piped water is distributed through community water projects. The area is well served with electricity.

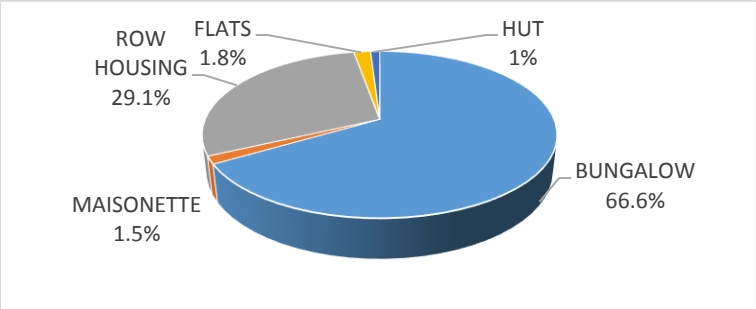
Kibingo

It is located along the Kutus-Karatina road past Kerugoya Town. This is one of colonial villages in the municipality characterized by high density residential developments. The main housing typologies are bungalows, flats and row houses. The area is well served with electricity and piped water.

7.2 Housing Typologies

The planning area has varying housing typologies. According to field survey (2020), bungalows account for 66.6% while row houses, flats, masionettes and huts, account for 29.1%, 1.8%, 1.5% and 1% respectively. This is as shown in the chart 7-1.

Chart 7-1: Housing typologies in the municipality

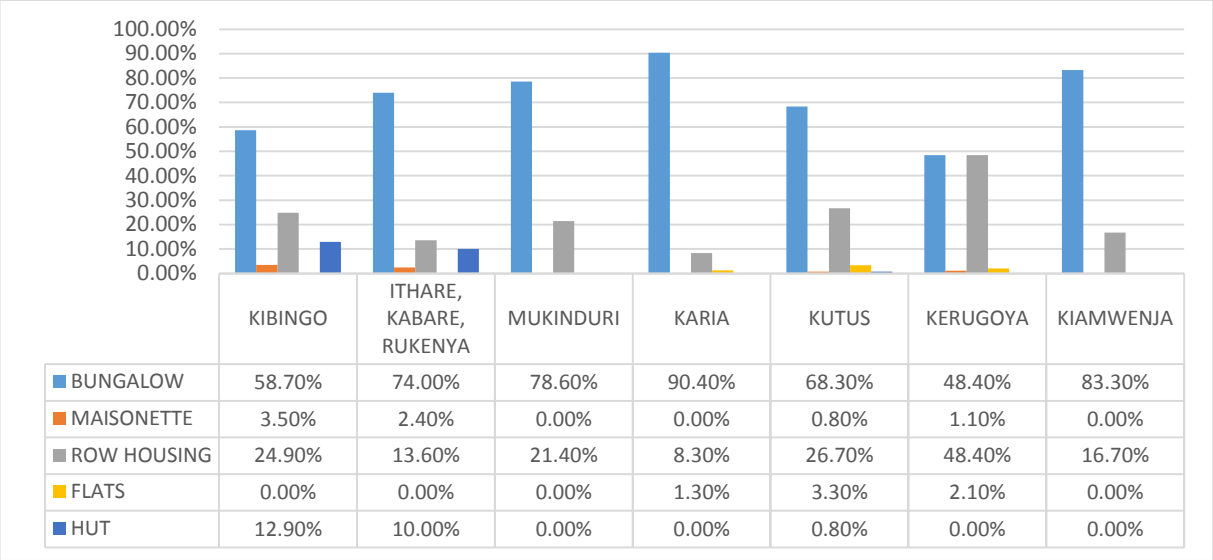


Source: Field Survey, 2020

Housing typologies in the municipality vary based on the housing areas. Flats are found in Kutus, Karia and Kerugoya representing 1.3%, 3.3% and 2.1% of the houses in these areas respectively. Bungalows are common in all housing areas. Maisonettes are the least common and are found in Kibingo, Kutus and Kerugoya.

Chart 7-2 presents the housing typologies within the housing areas in the Municipality.

Chart 7-2: Housing typologies in the housing areas within the municipality



	KIBINGO	ITHARE, KABARE, RUKENYA	MUKINDURI	KARIA	KUTUS	KERUGOYA	KIAMWENJA
BUNGALOW	58.70%	74.00%	78.60%	90.40%	68.30%	48.40%	83.30%
MAISONETTE	3.50%	2.40%	0.00%	0.00%	0.80%	1.10%	0.00%
ROW HOUSING	24.90%	13.60%	21.40%	8.30%	26.70%	48.40%	16.70%
FLATS	0.00%	0.00%	0.00%	1.30%	3.30%	2.10%	0.00%
HUT	12.90%	10.00%	0.00%	0.00%	0.80%	0.00%	0.00%

Source: Field Survey, 2020

Plate 7-1: Housing typologies in Kerugoya/Kutus municipality

Source: Field Survey, 2020

7.3 Housing Stock

The total housing stock under the national government within the municipality is 210. Public housing is located in Kerugoya Town. This is inclusive of institutional and civil servants' houses. Institutional houses are for government staff such National Police Service and Kerugoya County Referral Hospital staff. There are also municipal/county rental housing areas within Kerugoya Town which are distributed as follows:

Table 7-1: Distribution of municipal housing units

No.	Estate	Location	Number of Units	Units (Bedrooms)	Rent/Month
1.	Kamukunji	Kerugoya	28	2	Kshs3,000
2.	Congo	Kerugoya	14	1	Kshs2,400
3.	Forty Rentals	Kerugoya	47	2	Kshs5,000
4.	Biafra	Kerugoya	19	2	Kshs4,000
5.	Milimani	Kerugoya	5	3	Kshs7,500
6.	Old Posta	Kerugoya	3	-	-
7.	**Total**		**116**		

Source: Field Survey, 2020

There is low maintenance of the current housing stock by both the national and county government hence public houses are dilapidated. There is need to renovate and subsequently redevelop these housing units. Most of the government houses have asbestos as roofing material. This poses a great health concern for tenants and the general public.

7.4 Demand, Supply & Housing Gap

The current housing demand for the Municipality is 10,691 houses for a population of 42,762. The projected demand for 2025 and 2030 are 16,540 and 25,588 respectively as presented in table below:

Table 7-2: Current and projected housing demand in the municipality

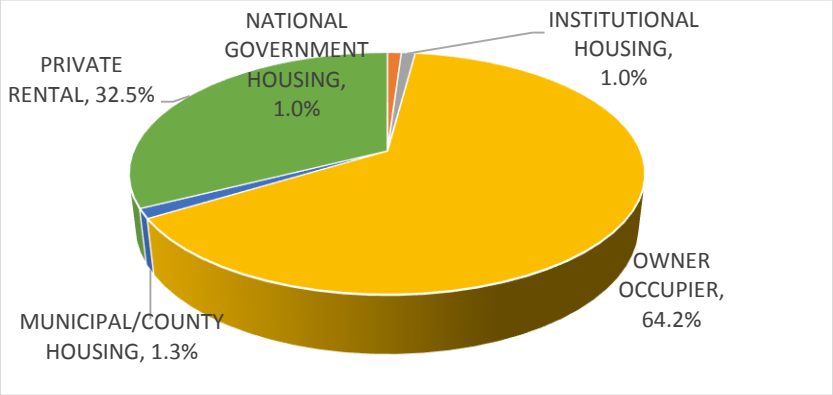
Year	2020	2025	2030
Population	42,762	66,158	102,353
Housing Units	10,691	16,540	25,588

Source: Field Survey, 2020

7.5 Housing Providers

Housing provision in the municipality is mainly by the private sector. According to field survey 2020, 64.2% of the households in the municipality own houses they live in (owner occupier) while 33.5% live in private rental houses. Municipal/County housing, national government and institutional housing account for 1.3%, 1% respectively.

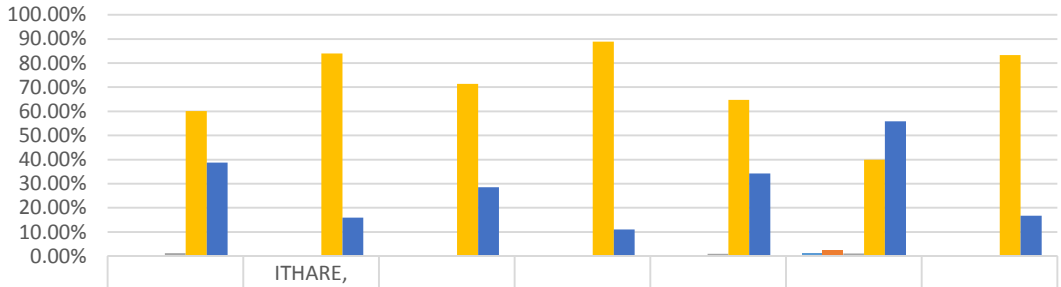
Chart 7-3: Housing provision in the municipality



Source: Field Survey, 2020

Public housing (Municipal/County and National Government) accounts for 3.3% of the total housing stock in Kerugoya Town. Institutional housing is found in Kibingo, Kutus and Kerugoya representing 1.2%, 1% and 1.1% of the housing stock in these areas respectively. The housing providers for the different housing areas in the Municipality are as presented in chart 7-4.

Chart 7-4: Housing providers in Kerugoya/Kutus municipality



	KIBINGO	ITHARE, KABARE, RUKENYA	MUKINDURI	KARIA	KUTUS	KERUGOYA	KIAMWENJA
MUNICIPAL/COUNTY	0.00%	0.00%	0.00%	0.00%	0.00%	1.10%	0.00%
NATIONAL GOVERNMENT	0.00%	0.00%	0.00%	0.00%	0.00%	2.10%	0.00%
INSTITUTIONAL	1.20%	0.00%	0.00%	0.00%	1.00%	1.10%	0.00%
OWNER OCCUPIER	60.10%	84.00%	71.40%	88.90%	64.80%	40.00%	83.30%
PRIVATE RENTAL	38.70%	16.00%	28.60%	11.10%	34.20%	55.80%	16.70%

Source: Field Survey, 2020

Plate 7-2: Municipal and private rental houses

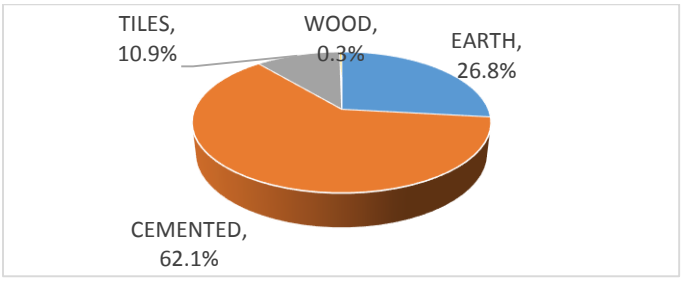
Source: Field Survey, 2020

7.6 Housing Conditions

7.6.1 Floor Materials

According to field survey, 2020, majority of houses in the municipality (62.1%) have cemented floors while 26.8% and 10.9% of houses have earth and tiled floors respectively as presented in chart 7.5.

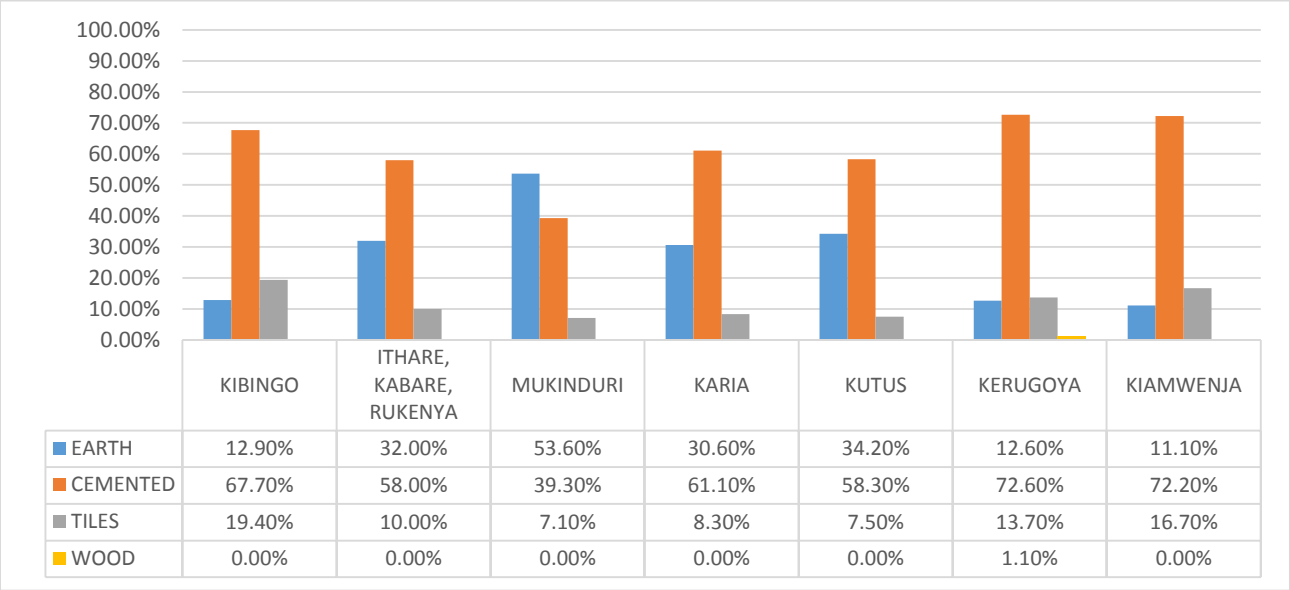
Chart 7-5: Housing floor materials in the municipality



Source: Field Survey, 2020

Chart 7-6 presents the floor material for the different housing areas in the municipality.

Chart 7-6: Housing floor materials in the different housing areas



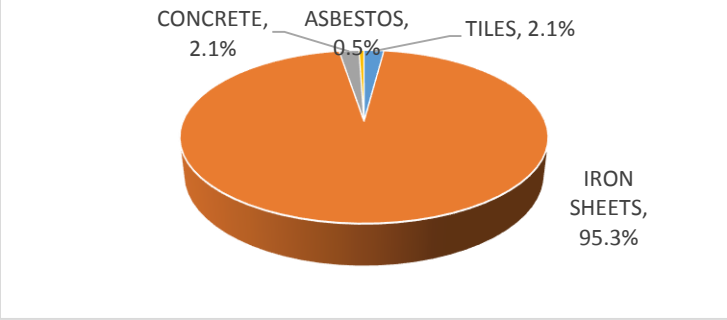
	KIBINGO	ITHARE, KABARE, RUKENYA	MUKINDURI	KARIA	KUTUS	KERUGOYA	KIAMWENJA
EARTH	12.90%	32.00%	53.60%	30.60%	34.20%	12.60%	11.10%
CEMENTED	67.70%	58.00%	39.30%	61.10%	58.30%	72.60%	72.20%
TILES	19.40%	10.00%	7.10%	8.30%	7.50%	13.70%	16.70%
WOOD	0.00%	0.00%	0.00%	0.00%	0.00%	1.10%	0.00%

Source: Field Survey, 2019

7.6.2 Roofing Material

According to field survey 2020, iron sheets are the most dominant roofing materials in the municipality used by 95.3% of the houses. Tiles and concrete account for 2.1% respectively with asbestos accounting for 0.5% of materials used for roofing as presented in chart 7-7.

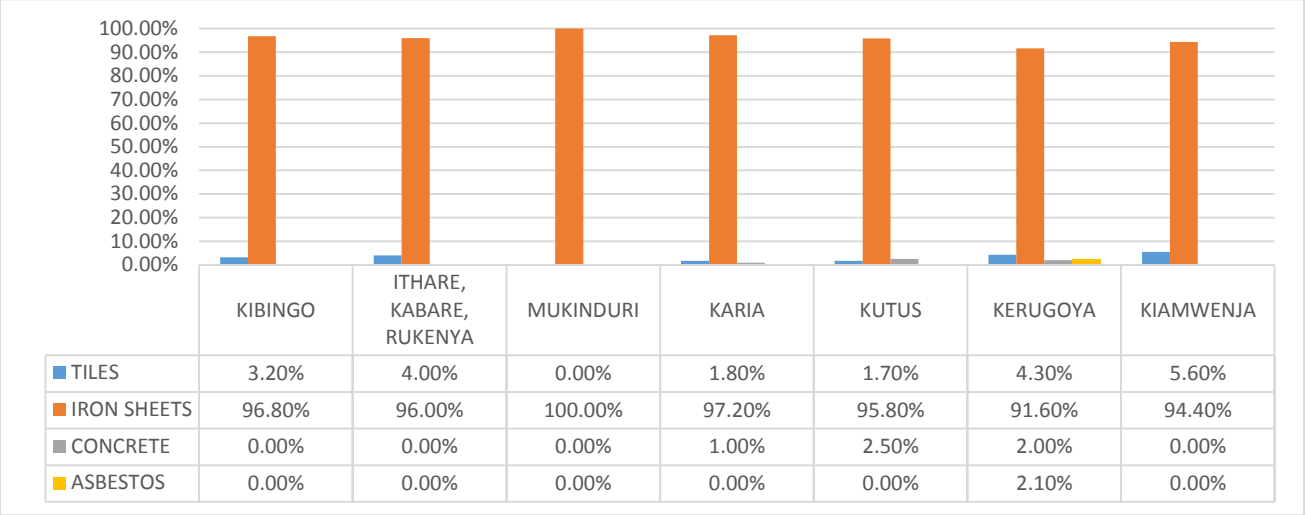
Chart 7-7: Housing roof materials in the municipality



Source: Field Survey, 2020

Asbestos roofing is found in municipal/county government houses within Kerugoya Town. Concrete roofs (mostly for flats) are found in Karia, Kutus and Kerugoya accounting for 1%, 2.5% and 2% respectively. Chart 7.8 presents the roofing material for the different housing areas in the municipality.

Chart 7-8: Housing roof materials in the different housing areas



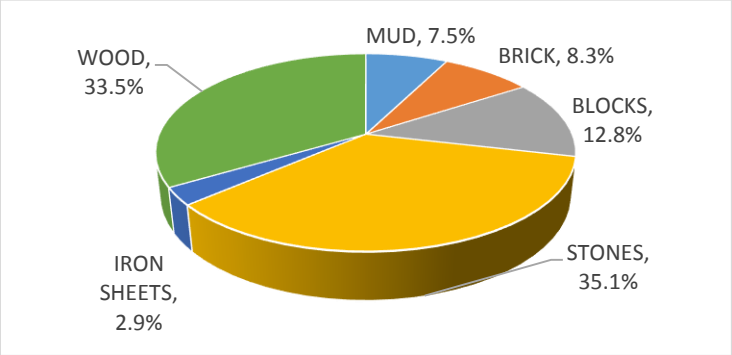
	KIBINGO	ITHARE, KABARE, RUKENYA	MUKINDURI	KARIA	KUTUS	KERUGOYA	KIAMWENJA
TILES	3.20%	4.00%	0.00%	1.80%	1.70%	4.30%	5.60%
IRON SHEETS	96.80%	96.00%	100.00%	97.20%	95.80%	91.60%	94.40%
CONCRETE	0.00%	0.00%	0.00%	1.00%	2.50%	2.00%	0.00%
ASBESTOS	0.00%	0.00%	0.00%	0.00%	0.00%	2.10%	0.00%

Source: Field Survey, 2020

7.6.3 Wall Material

The field survey, 2020, revealed that 33.5% of the households in the planning area have their walls constructed of wood while 35.1% of the walls are constructed using stones (cut stones and rubble stones) whereas 12.8% of the houses have block walls. Mud, brick and iron sheet walls account for 7.5%, 8.3% and 2.9% of the households respectively.

Chart 7-9: Housing wall materials in the municipality

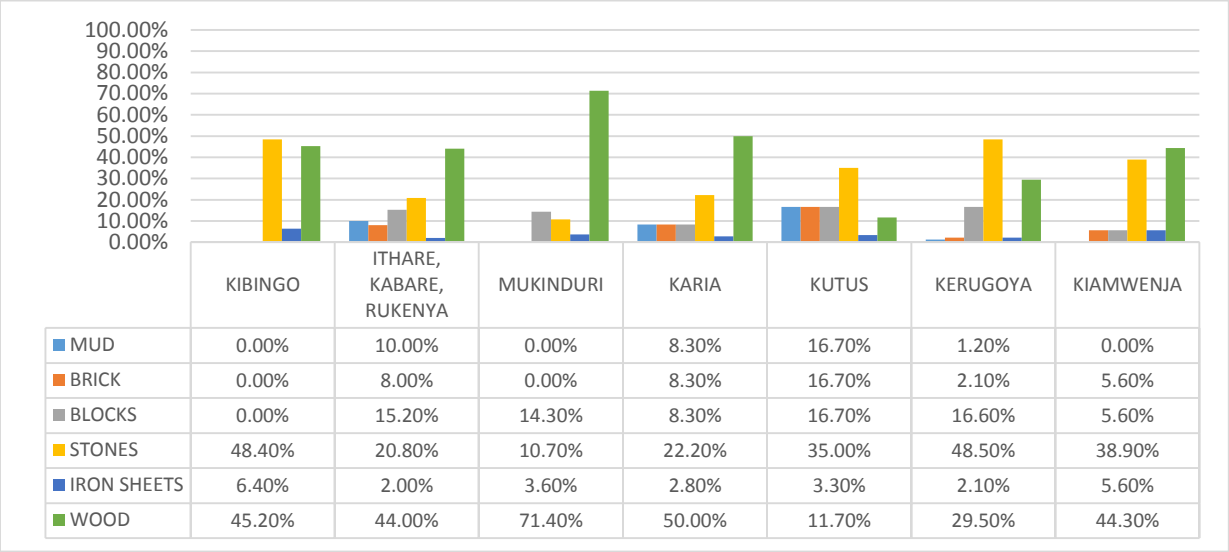


Source: Field Survey, 2020

Wood is the most used wall material in peri-urban areas of Ithare, Kabare and Rukenya (44%), Karia (50%), Kiamwenja (44.3%) and Mukinduri (71.4%). Stones are the most common roof material in Kutus and Kerugoya Town accounting for 35% and 48.5% respectively.

Chart 7-10 presents the wall material for the different housing areas in the municipality.

Chart 7-10: Housing wall materials in the different housing areas



	KIBINGO	ITHARE, KABARE, RUKENYA	MUKINDURI	KARIA	KUTUS	KERUGOYA	KIAMWENJA
MUD	0.00%	10.00%	0.00%	8.30%	16.70%	1.20%	0.00%
BRICK	0.00%	8.00%	0.00%	8.30%	16.70%	2.10%	5.60%
BLOCKS	0.00%	15.20%	14.30%	8.30%	16.70%	16.60%	5.60%
STONES	48.40%	20.80%	10.70%	22.20%	35.00%	48.50%	38.90%
IRON SHEETS	6.40%	2.00%	3.60%	2.80%	3.30%	2.10%	5.60%
WOOD	45.20%	44.00%	71.40%	50.00%	11.70%	29.50%	44.30%

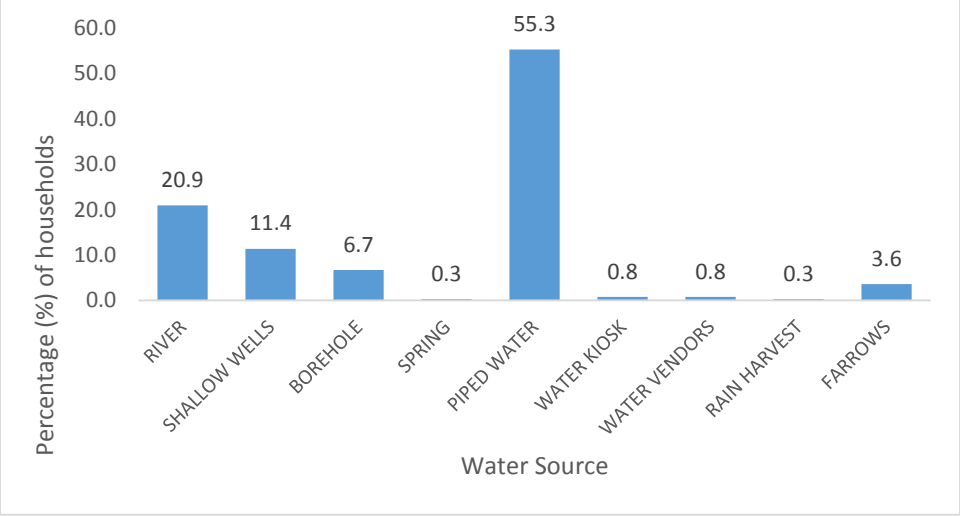
Source: Field Survey, 2020

7.7 Housing Infrastructure

7.7.1 Water

The field survey, 2020, revealed that 55.3% of households are connected to piped water supply. Rivers, shallow wells, boreholes and farrows account for 20.9%, 11.4%, 6.7% and 3.6% of other sources of water for households in the municipality respectively. Other water sources for households in the municipality include springs, water kiosks, water vendors and rain water harvesting which account for a total of 2.1%.

Chart 7-11: Household water sources in Kerugoya/Kutus Municipality



Source: Field Survey, 2020

Piped water supply covers almost the entire municipality except for Mukinduri where residents rely largely on water from rivers. In the rice growing areas of Kutus, households get their water from farrows within the rice farms. There are also community piped water projects in areas such as Kabare. The source of water for the different areas of the municipality are as presented in table 7-3.

Table 7-3: Water sources in the housing areas in Kerugoya/Kutus Municipality

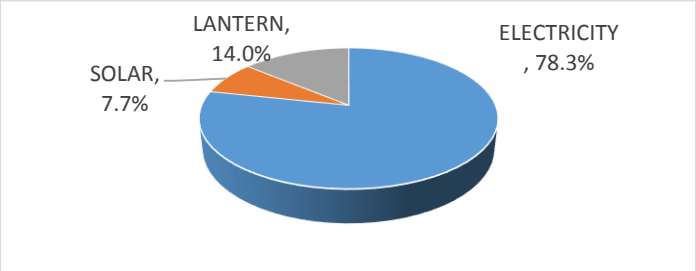
Housing Area	Water Source								
	River	Shallow wells	Borehole	Spring	Piped water	Water kiosk	Water vendors	Rain harvest	Farrows
Kibingo	-	32.3%	-	-	64.5%	-	3.2%	-	-
Ithare, Kabare, Rukenya	38 %	12%	-	-	50%	-	-	-	-
Mukinduri	67.8%	17.9%	10.7%		-	3.60%	-	-	-
Karia	8.3%	8.3%	11.1%	-	72.2%	-	-	-	-
Kutus	30.8%	8.3%	6.7%	0.8%	40%	-	1.7%	0.8%	10.8%
Kerugoya	4.2%	8.3%	2.1%	-	82.3%	2.1%	-	-	1%
Kiamwenja	16.7%	5.6%	50%	-	27.80%	-	-	-	-

Source: Field Survey, 2020

7.7.2 Lighting Source

According to field survey 2020, 78.3% of the households in the municipality use electricity for lighting while 7.7% use solar energy. Households using lanterns constitute 14%. This is as presented in chart 7-12.

Chart 7-12: Sources of lighting energy in the municipality

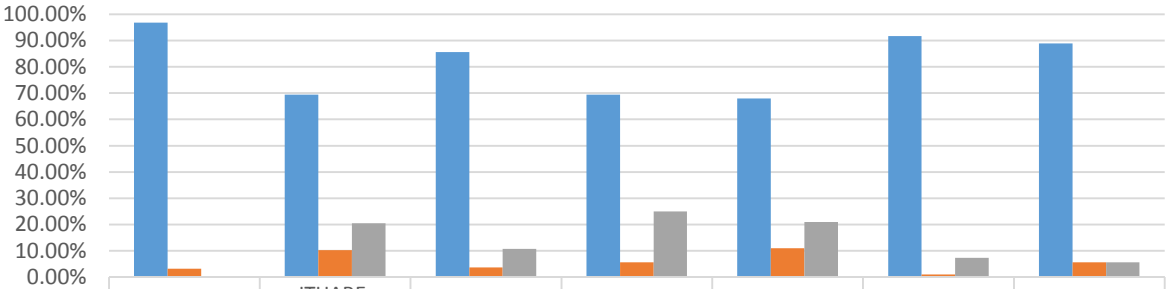


Source: Field Survey, 2020

All the housing areas in the municipality have access to electricity. The percentage of household connections however vary in different housing areas. Kutus, Karia, Rukenya. Kabare and Ithare have the least percentages of electricity connection in the municipality.

Chart 7-13 presents the lighting sources for the housing areas in the municipality.

Chart 7-13: Sources of lighting energy in different housing areas of the municipality



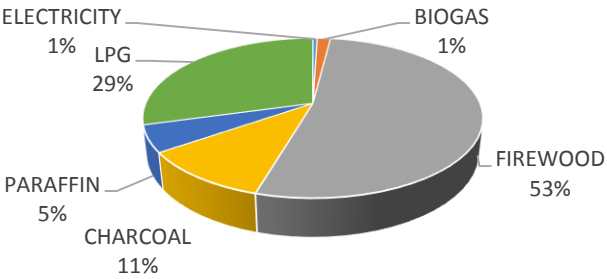
	KIBINGO	ITHARE, KABARE, RUKENYA	MUKINDURI	KARIA	KUTUS	KERUGOYA	KIAMWENJA
ELECTRICITY	96.80%	69.40%	85.70%	69.40%	68.00%	91.70%	88.90%
SOLAR	3.20%	10.20%	3.60%	5.60%	10.90%	1.00%	5.60%
LANTERN	0.00%	20.40%	10.70%	25.00%	21.00%	7.30%	5.60%

Source: Field Survey, 2020

7.7.3 Cooking Source

According to field survey, 2020, 52.6% of households in municipality use firewood as fuel for cooking while 29.3% use Liquid Petroleum Gas (LPG). Charcoal, paraffin, electricity and biogas are used by 11%, 5% and 0.5% of the households in the municipality respectively as presented in *chart 7-14.*

Chart 7-14: Sources of cooking energy in the municipality



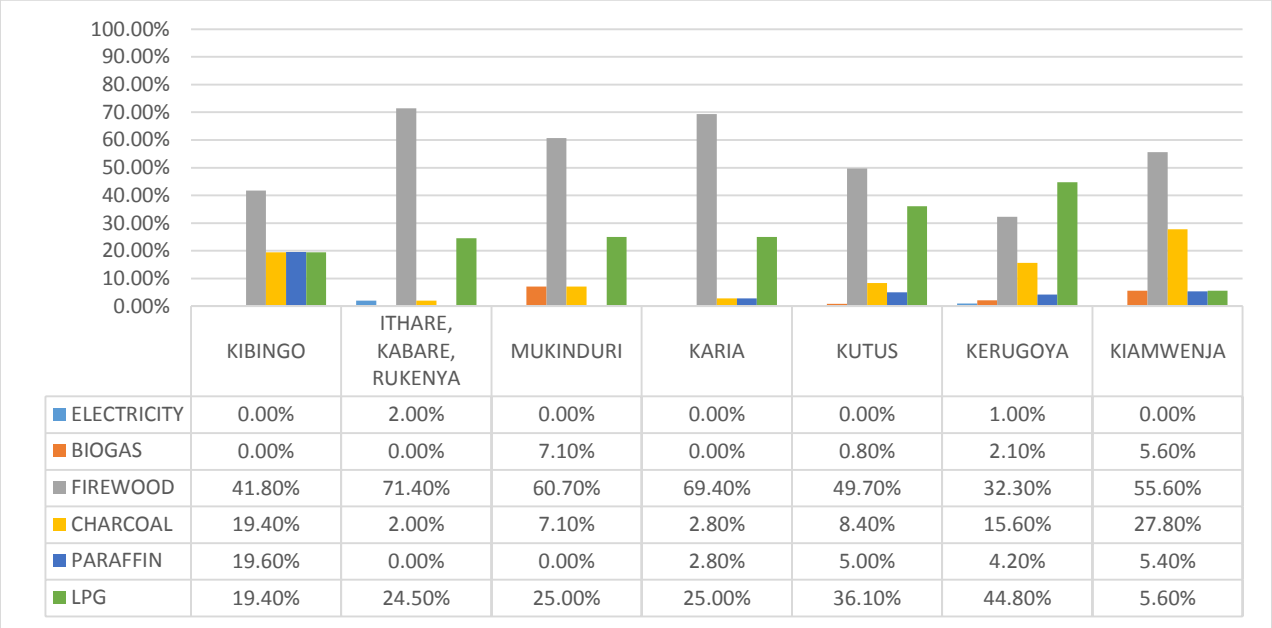
Source: Field Survey, 2020

The use of LPG is more prevalent in Kerugoya and Kutus Town accounting for 44.8% and 36.1% of the households respectively. Firewood is the most used cooking energy in all housing areas with

its usage being higher in the peri-urban areas of the municipality like Kiamwenja, Kabare, Ithare, Rukenya, Mukinduri and Karia.

The cooking sources for the housing areas in the municipality are as presented in chart 7-15.

Chart 7-15: Sources of cooking energy in the housing areas of the municipality



	KIBINGO	ITHARE, KABARE, RUKENYA	MUKINDURI	KARIA	KUTUS	KERUGOYA	KIAMWENJA
ELECTRICITY	0.00%	2.00%	0.00%	0.00%	0.00%	1.00%	0.00%
BIOGAS	0.00%	0.00%	7.10%	0.00%	0.80%	2.10%	5.60%
FIREWOOD	41.80%	71.40%	60.70%	69.40%	49.70%	32.30%	55.60%
CHARCOAL	19.40%	2.00%	7.10%	2.80%	8.40%	15.60%	27.80%
PARAFFIN	19.60%	0.00%	0.00%	2.80%	5.00%	4.20%	5.40%
LPG	19.40%	24.50%	25.00%	25.00%	36.10%	44.80%	5.60%

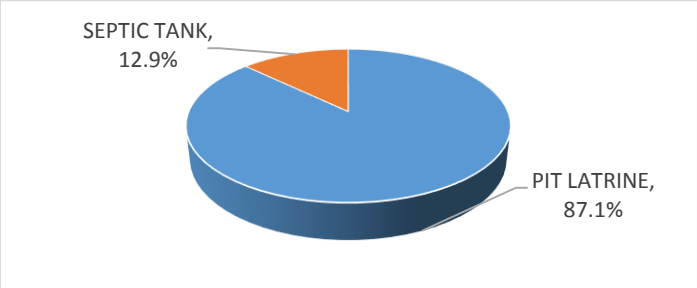
Source: Field Survey, 2020

7.7.4 Sanitation

Liquid Waste

Household survey 2020, revealed that, 87.1%, of the households in the municipality use pit latrines while 12.9 % use septic tanks as the method of liquid waste disposal as presented in *chart 7-16*.

Chart 7-16: Households liquid disposal methods in the municipality

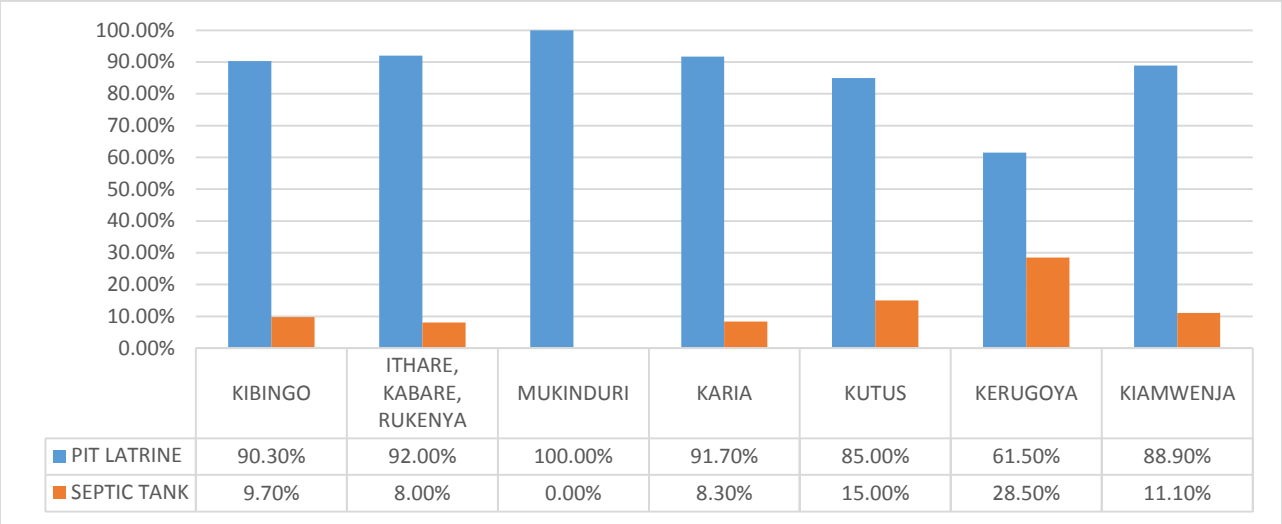


Source: Field Survey, 2020

Septic tanks are mostly used in Kutus and Kerugoya towns accounting for 15% and 28.5% of the households in these towns respectively. In Mukinduri, pit latrine is the sole method of liquid waste

disposal. The liquid waste disposal methods for the housing areas in the municipality are as presented in chart 7-17.

Chart 7-17: Liquid waste disposal methods in the housing areas of Kerugoya/Kutus Municipality



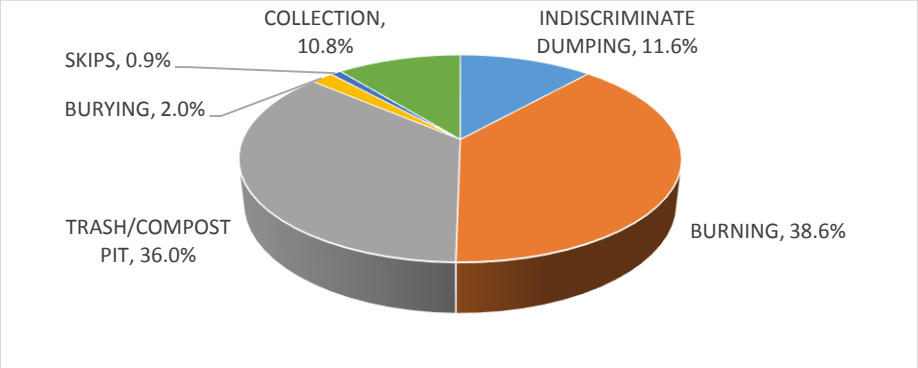
	KIBINGO	ITHARE, KABARE, RUKENYA	MUKINDURI	KARIA	KUTUS	KERUGOYA	KIAMWENJA
PIT LATRINE	90.30%	92.00%	100.00%	91.70%	85.00%	61.50%	88.90%
SEPTIC TANK	9.70%	8.00%	0.00%	8.30%	15.00%	28.50%	11.10%

Source: Field Survey, 2020

Solid Waste

Field survey 2020 revealed 38.6% of households in the municipality dispose waste through burning while 36% dump their waste in trash/compost pits. 11.6% of households dump solid waste indiscriminately whereas collection by different agencies caters for 10.8% of households in the municipality. Only 2% and 0.9% of households bury their waste and dispose to municipal skips respectively as presented in *chart 7-18.*

Chart 7-18: Solid waste disposal methods in the housing areas



Source: Field Survey, 2020

Collection by the county government is done in Kerugoya and Kutus. Solid waste skips are only located at different points within these towns.

7.8 Housing Projects

There are plans by IGCC (Intergovernmental Relations Committee) to construct multiple dwelling units within lands currently occupied by national and county housing schemes. This shall be in the form of storied buildings to replace the current single dwelling units within Kerugoya Town.

The first phase of this project will see the construction of 200 affordable housing units as shown in the table below:

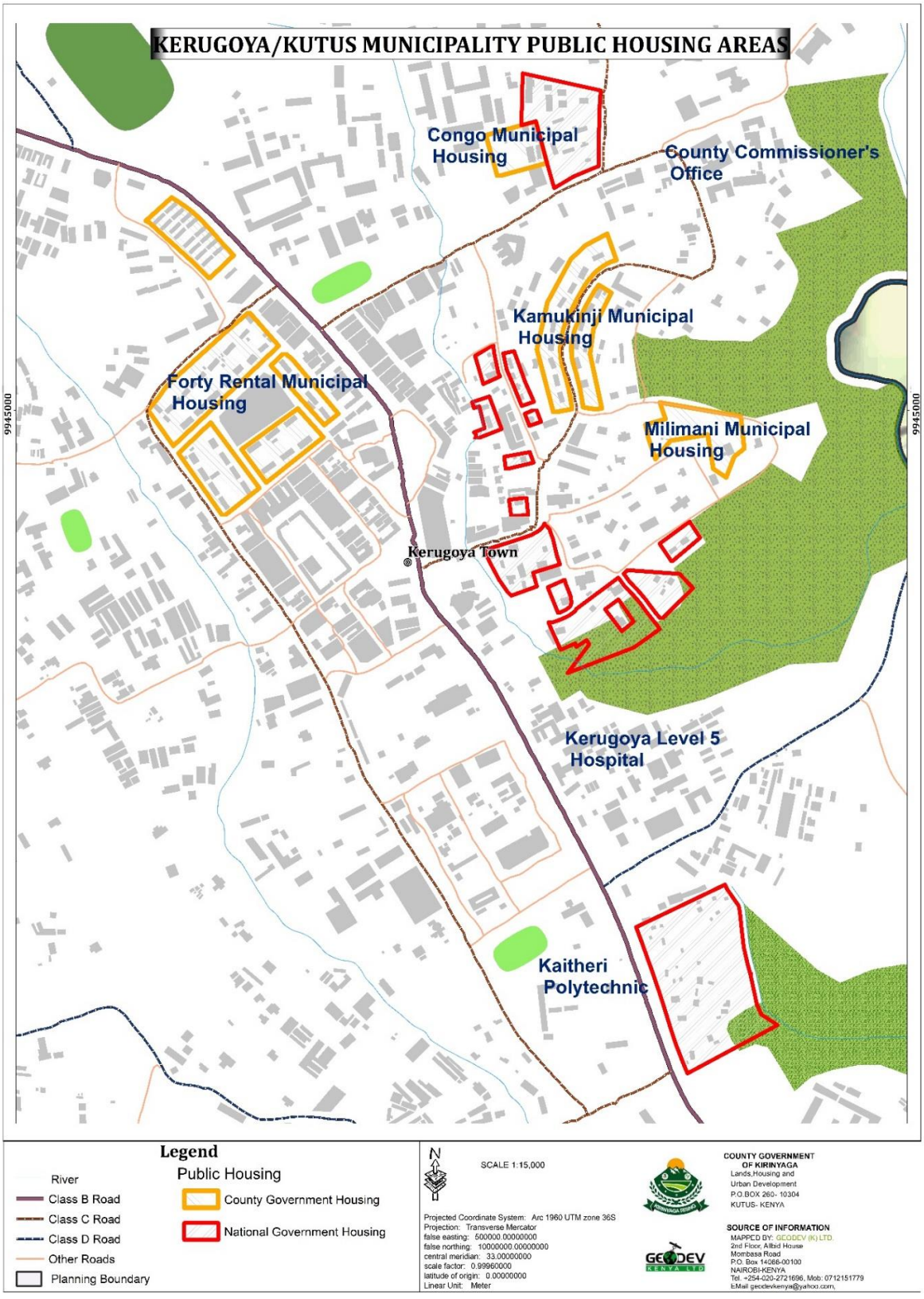
Table 7-4: Proposed Housing Projects

Housing Units	Number	Rent (Ksh)
One bed room	50	3,000
Two bed rooms	100	4,000
Three bed rooms	50	5,000

Source: Housing Department, Kirinyaga County

Approximately 3.0Ha (7 Acres) in the municipality has been reserved for affordable housing project. Map 7.1 shows the public housing areas in the municipality.

Map 7-1: Public Housing Areas in Kerugoya/Kutus Municipality



Challenges

- Lack of a county housing policy.
- High rents for private rental housing.
- Low supply of public housing.
- Unreliable supply of piped water.
- Poor quality of water from other sources such as rivers, farrows and shallow wells due to surface and ground water pollution.
- High cost of water supply.
- High energy cost in terms of connection and monthly bills.
- Low maintenance of the current public housing stock by the national and county governments.
- Dilapidated houses under the national and county stock as well as informal settlements.
- Encroachment and hiving of public land by private developers.
- Default of rent payment by residents in municipal/county housing.
- Health hazards associated with asbestos material used as roofing material.
- Lack of a sewerage reticulation system.
- Poor waste management methods.
- Lack of land ownership especially in colonial villages such as Kiaritha, Kaitheri, Mukinduri, Mjini in Kutus among others.
- Lack of enforcement in housing development due to poor development control.
- Security concerns within the residential areas

Recommendations

- Development and institutionalization of a county housing policy.
- Public private partnerships (PPPs) in construction of affordable public housing.
- Provide adequate infrastructure such as a sewerage system, water, roads and electricity.
- Regular renovation and maintenance of public houses.
- Redevelopment of existing public housing in such areas as Forty Rentals, Kamukunji, Congo among others.
- Recovery of grabbed public land through NLC in order to increase land for housing development.

- Acquire more land for public housing.
- Fencing of public land to avoid grabbing.
- Institute functional revenue programmes to monitor collection of rents for maintenance of public houses.
- Provide a site for proper disposal of asbestos from public houses.
- Provide waste skips in underserved housing areas and carry out regular waste collection.

7.9 Rural Urban Continuum

The human settlement pattern in Kerugoya in the town can be described into three categories:

i. Urban areas
ii. Peri-urban areas
iii. Rural areas

Urban Areas

These are zones within the two core urban areas, Kerugoya and Kutus, that exhibit pronounced activities and offer a variety of services to the peri-urban and rural areas. These two areas offer extensive services in commerce and banking, industries and serve as high density residential zones. The areas are host a majority of the population during the day due to the higher order services that are offered within.

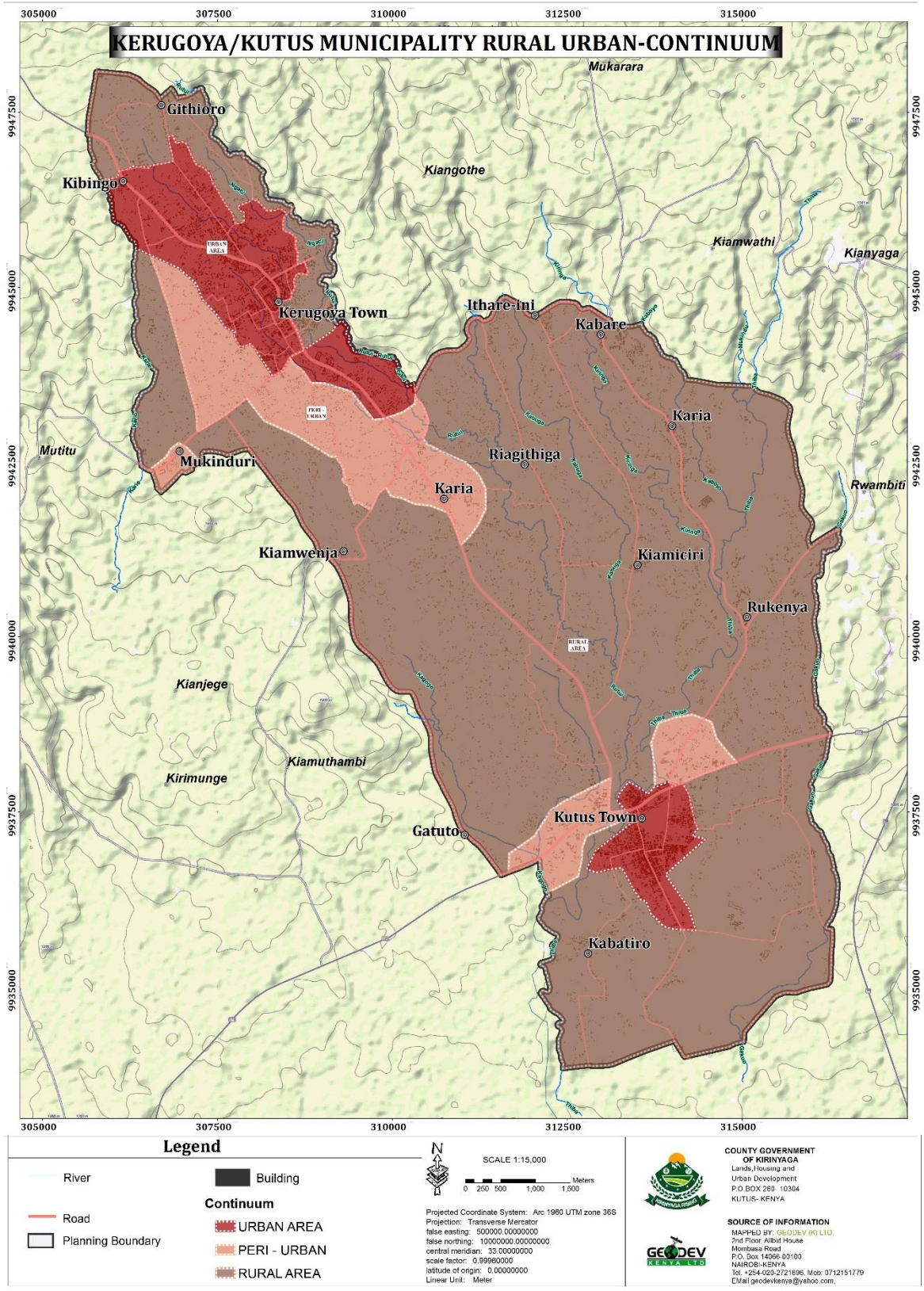
Peri-urban Areas

These are areas adjacent to the core urban areas and majorly perform the dormitory function to the core urban areas. The areas are however undergoing a high urbanization rate due to their proximity to the urban areas. They are characterized by a high land subdivision rates and have lower order services to serve the resident population. These areas also signify the pattern of development from the core urban areas. The areas can be used for expansion of the core urban areas.

Rural Areas

This forms the second ring from the core urban areas. They are characterized by large land sizes and support different agricultural activities. They are also responsible for housing the working population within the core urban areas.

Map 7-2: Rural Urban Continuum



8 TRANSPORTATION

8.1 Overview

Transportation is the movement of people and goods from one location to another and therefore acts as a facilitator in day to day life. In economy, the transportation sector acts as an enabler through creation of employment, attracting investments, facilitating movement of goods within and outside a jurisdiction. This is a critical aspect of transportation that will be analysed for its potential.

The transportation sector will be analysed to present the existing road conditions and coverage, terminal and parking facilities as well as the ongoing projects for improvement of transport infrastructure in Kerugoya/Kutus Municipality.

8.2 Existing Road Network

Road is the only mode of transport in Kerugoya/Kutus Municipality. Roads in the municipality can be classified into three categories based on surface, class and function. Roads in the municipality have three main surfaces including earth, tarmac and murram. The categorization of roads in terms of function looks at the importance/traffic that each road plays. Primary roads such as the Sagana-Embu (B25) and Kutus-Karatina (B27) road link the municipality to other major urban areas in the region. Secondary distributor roads play a function of connecting primary roads while also serving as the link to the rural and peri-urban areas in the municipality. Local distributor roads link primary roads to secondary distributors. Access roads give direct access to buildings and land within neighbourhoods and localities. The different roads and their characteristics are described in table 8-1 below.

Plate 8-1: Rukenya-Ithare Road and an access road in Kerugoya

Source: Field Survey, 2020

Plate 8-2: Kutus-Karatina and Ithare-Gakoigo Road

Source: Field Survey, 2020

The roads presented on table 8-1 have been ranked from 1 to 7. This ranking presents the order of importance of the roads in terms of traffic and linkage to other external urban areas.

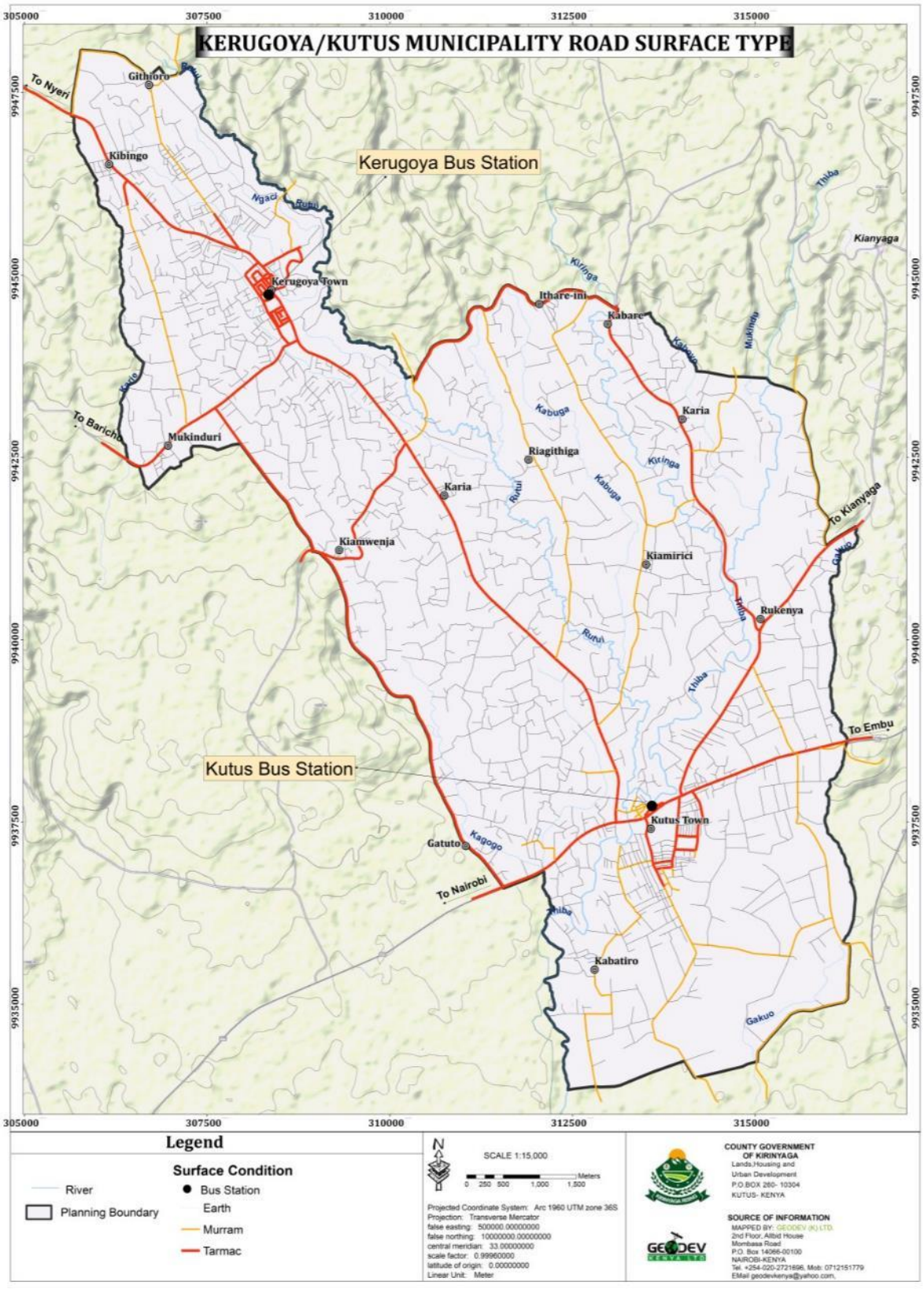
Table 8-1: Road Name, Condition, Length and Urban Areas Served

Road Name	Road Number	Road class	Role	Condition	Drainage	Length (Km)	Urban Areas	Rank
Classified								
Kutus - Karatina	B27	Class B	Primary road (40M reserve)	Tarmac	Fair	12.89	Kutus-Kerugoya-Karatina	1
Sagana -Embu	B25	Class B	Primary road (36M reserve)	Tarmac	Good	5.20	Sagana-Kutus-Embu	1
Kutus-Kianyaga	C526	Class C	Primary road	Tarmac	Poor	4.53	Kutus-Rukenya-Kianyaga	2
Kerugoya-Ngaru	K3	Class C	Secondary road	Tarmac	Poor	2.42	Kerugoya-Kiamwenja	2
Rukenya-Kimunye	E2129	Class E	Secondary road	Tarmac	Poor	5.22	Kabare-Rukenya	4
Kerugoya-Baricho	C527	Class C	Secondary road	Tarmac	Poor	3.0	Kerugoya-Mukinduri	2
Gakoigo-Kabare	D1373	Class D	Secondary road	Under construction	Poor	3.95	Kerugoya- Ithare-Kabare	3
Kutus-Kimbimbi	D1384	Class D	Secondary road	Partially Tarkacked	Fair	4.12	Kutus-Kimbimbi	3

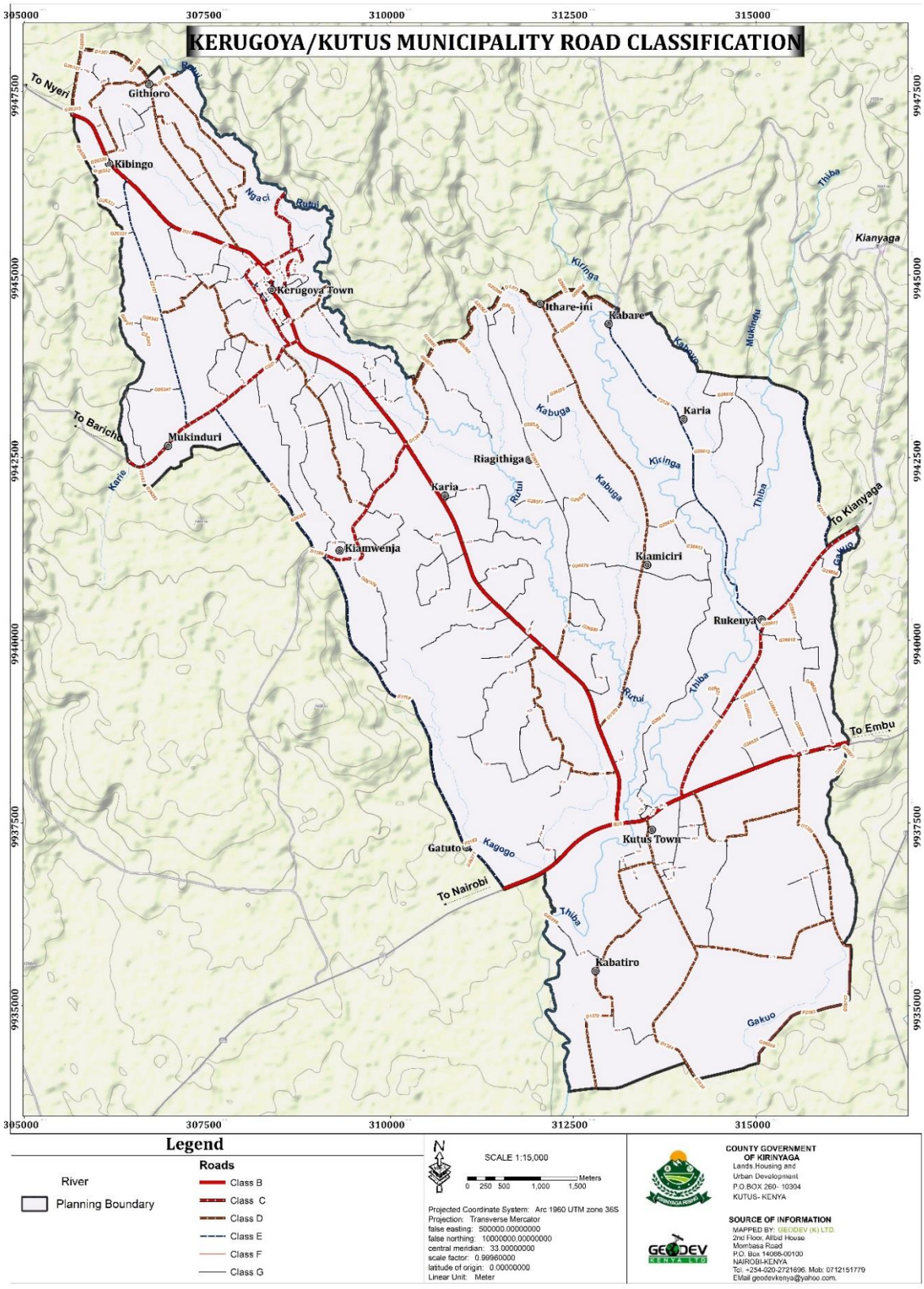
Road Name	Road Number	Road class	Role	Condition	Drainage	Length (Km)	Urban Areas	Rank
All Roads Classified as Class G		Class G	Local Distributor Roads	Good	Poor	58.08	Entire Municipality	6
All Roads Classified as Class E		Class E	Local Distributor Roads	Good	Poor	18.99	Entire Municipality	4
All Roads Classified as Class F		Class F	Local Distributor Roads	Good	Poor	2.71	Entire Municipality	5
Total Distance						**179.4**		
Unclassified								
Earth					Poor	**268.8**	Entire Municipality	7

Source: Consultant's Construct, 2020

Map 8-1: Kerugoya/Kutus Municipality Road Surface Type



Map 8-2: Kerugoya/Kutus Municipality Road Classification



8.3 Road Function

1. **Primary roads:** These are roads with a high traffic volume and link major urban areas to the municipality. They include, Kutus–Karatina (B27) road, Sagana–Embu (B25) and Kutus-Kianyaga (C526) roads. These roads connect Kerugoya and Kutus to nodes within the municipality such as Kabare, Kiamwenja, Rukenya, Ithare, Karia, Mukinduri and Kibingo. They also connect other local and external urban areas to Kerugoya and Kutus Town. Table 8.3 below shows the type of surface for all the primary roads.
2. **Secondary Distributor Roads:** These are roads connecting a primary road to other primary roads within the municipality. These roads provide an intra-municipality connectivity linking primary roads to other urban roads. Most of these roads have a bitumen surface. They include Mukinduri-Kibingo, Gatuto-Mukinduri and road passing through Riagithiga and Kiamirici centres. Table 8.3 below shows the type of surface for all the secondary roads.
3. **Local Distributor Roads:** Within the municipality these roads are both rural and urban. These roads distribute traffic to villages and neighbourhoods. They are characterized by gravel and earth surface for rural areas and tarmac for urban areas (Kerugoya and Kutus). They are identified as class G as shown in table 8-1. Table 8.3 below shows the type of surface for all the local distributor roads.
4. **Local Access:** These roads offer direct access to buildings or land within neighbourhoods and localities. Most of these roads are of earth surface, narrow, motorable and poorly drained. Table 8.3 below shows the type of surface for all local access roads.

Table 8-2: Road classification by function and their distances

Road function	**Distance (KM)**
Local Access	297.9
Local distributor	77.69
Primary road	50.3
Secondary road	42.47
Total	**468.39**

Source: Field survey, 2020

Table 8-3: Type of Surface by Road Function

Function	Surface		
	Tarmac	**Earth**	**Murram**
Primary Roads	41.821	0	8.509
Secondary Road	8.64	1.33	31.107
Local Distributor	4.64	67.56	6.89
Local Access Roads	4.49	289.34	4.377
Total	**59.591**	**358.23**	**50.883**

Source: Field Survey, 2020

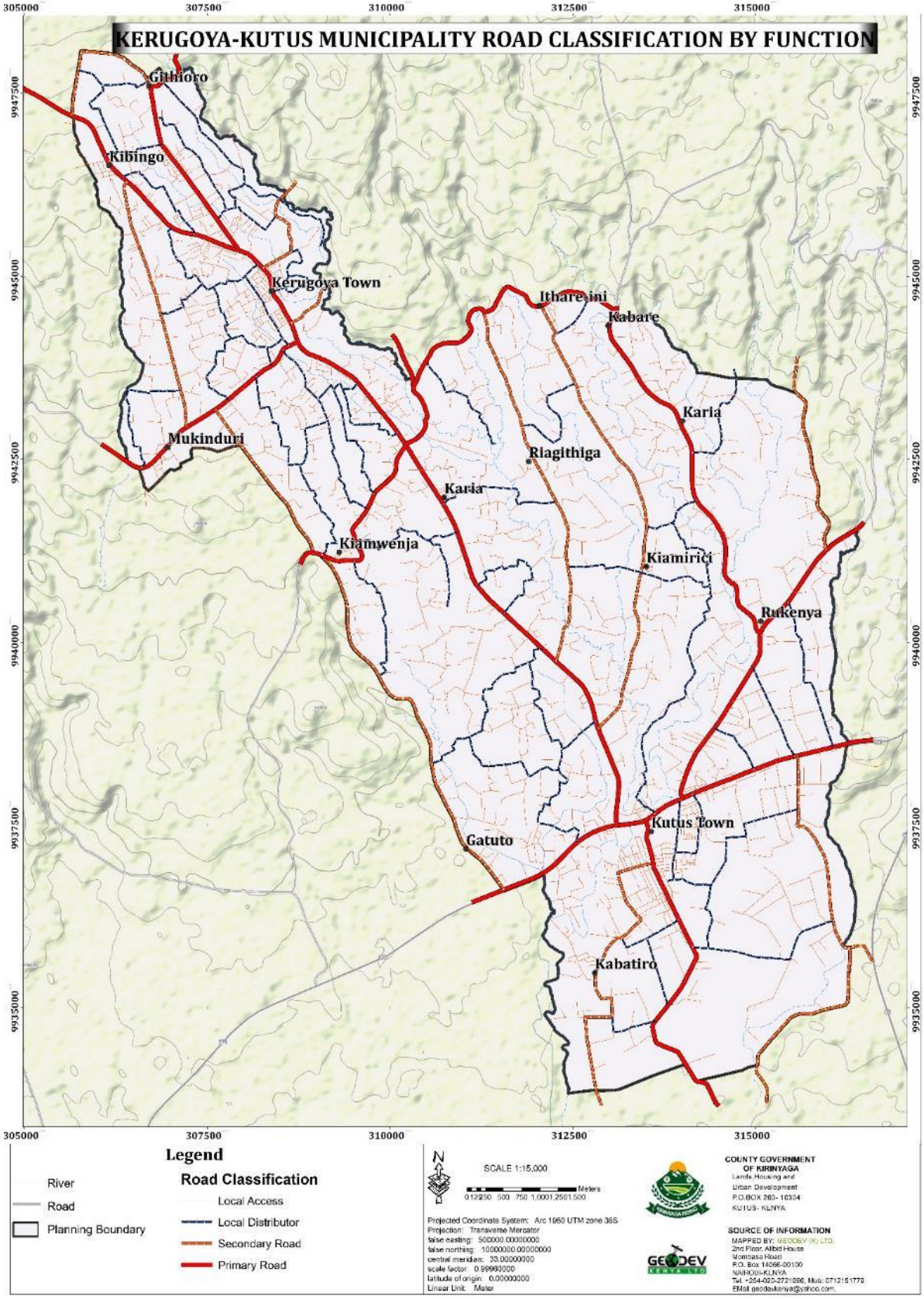
A total of 59.591km of roads in the municipality is of tarmac surface with primary roads covering 41.821km of the total. Murram surface of secondary roads accounting for 61.3% of the total surface. Access roads are mostly of earth surface accounting for a total of 289.34km. This forms 80.7% of the total surface.

This highlights a need to:

i. Tarmac all primary roads in the municipality
ii. Improve the surface conditions of all secondary roads from primarily murram surface to tarmac.
iii. Upgrade all local distributor roads from earth surface to murram or tarmac.

This shall improve accessibility within the municipality. The current road classification criteria for the entire municipality is as shown in map 8.3.

Map 8-3: Kerugoya/Kutus Municipality road classification by function



8.4 Road Furniture

Kerugoya-Kutus Municipality has installed road signage mostly within Kerugoya and Kutus Towns. The municipality however lacks crucial road furniture and proper Street addressing, to manage, control and ensure safety of road users within these towns. This results to instances of road user conflicts and congestion within the two core urban areas.

Plate 8-3: A stop sign along Kutus-Karatina Road

Source: Field survey, 2020

8.5 Terminal Facilities and Parking Facilities

8.5.1 Bus Parks and Bus Stops

Kerugoya-Kutus Municipality has three bus parks. One in Kerugoya and two in Kutus Town. The bus parks in Kutus are located along Sagana-Embu road. In Kerugoya, the bus park is located behind St. Thomas ACK church within the CBD as presented on Map 8-1. There are 64 lots within the Kerugoya bus park and 10 lots in the Kutus bus park. These facilities are used by 7 registered *Matatu* saccos operating within the municipality. Public utilities within the bus parks include toilets and water tanks.

The surface of the bus park in Kutus is part cabro and tarmac while Kerugoya Bus Park is fully tarmacked. The bus parks have functional open drainage facilities.

Plate 8-4: Bus Park in Kerugoya-Kutus Municipality

Source: Field Survey, 2020

8.5.2 Parking Spaces

The municipality has approximately 210 municipal designated parking lots between Kerugoya and Kutus Town and 25 *bodaboda* sheds in the urban nodes such as Mukinduri, Ithare among others. However, there are numerous undesignated parking lots within the municipality mostly along the tarmacked roads.

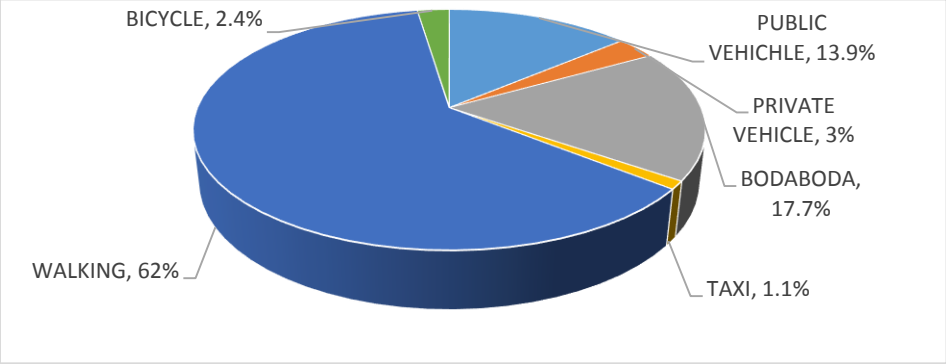
Plate 8-5: Parking Lots within the Municipality

Source: Field Survey, 2020

8.6 Means of Transport

According to field survey, 2020, 62% of residents prefer walking as the main means of transport. *Bodaboda* accounts for 17.7% while taxis are the least preferred means of transport accounting for 1.1%. The different transportation means used by residents of the municipality is as presented on Chart 8-1.

Chart 8-1: Means of Transport in Kerugoya-Kutus Municipality



Source: Field survey, 2020

The high number of persons who walk to work is attributed to the fact most residents live within the vicinity of places of work. Additionally, high transportation costs discourages use of motorized transport modes. As derived from field survey, motorized transportation is due to urgency, availability, distance to be covered and purpose of trips such as transportation of cargos.

8.7 Ongoing Projects to improve transportation

i. Upgrading Kerugoya CBD roads to bitumen standards funded by World Bank (FY 2019-2020) through the Kenya Urban Support Program (KUSP) project.
ii. Rehabilitation of Sagana–Kutus–Samson Corner road by KeNHA.
iii. Kerugoya Town roads improvement program by KURA.
iv. Construction of parking lots in Kerugoya and Kutus towns by Kenya Urban Support Program (K.U.S.P) project funded by World Bank (FY 2018-19 & 2019-20).

8.8 Emerging Issues and Recommendations

Emerging Issues

- Poor road surface conditions within the municipality evidenced by potholes, cracked bridges and narrow roads.
- Inadequate storm water drainage infrastructure along all roads.
- Lack of traffic control measures within Kerugoya and Kutus Town especially at T-junctions, near points of concentrated activities such as bus parks, hospitals, and markets.
- Inadequate bus parks and accompanying infrastructure such as waiting bays, sanitation blocks in Kerugoya and Kutus bus terminals.
- Limited parking facilities within Kerugoya and Kutus. Cars parking along major access roads are a cause of traffic congestion within the two core urban areas.
- There are limited bus stops along the following roads:
    i. Kutus -Kerugoya (B27)
    ii. Sagana –Embu (B25)
    iii. Kutus-Kianyaga (C526)
    iv. Class C Kerugoya- Ngaru
    v. Rukenya- Kimunye (E2129)
    vi. Kerugoya- Baricho (C527)
    vii. Gakoigo- Kabare (D1373)
- Inadequate NMT infrastructure especially on roads with high traffic volumes in Kerugoya and Kutus Town.
- Inadequate *bodaboda* sheds within the Municipality resulting in *bodabodas* being parked along road reserves hence blocking pedestrians, cyclists and other road reserve users.

- Lack of public transport management measures to control high fares and regulate routes.

Recommendations

- Improve the road surface condition of all the secondary and local distributor roads as shown in map 8-1 and provide support infrastructure such as road furniture and drainage facilities.
- Set-up a municipal traffic marshal to enforce traffic rules.
- Establish new bus stops within nodes such as Mukinduri, Kiamwenja and Kabare.
- Expand and improve the existing bus parks in Kerugoya and Kutus to increase capacity.
- Increase the parking facilities within the urban areas or invest in a multi-storey parking facility.
- Set-up NMT facilities within the core of the urban centers and near crucial infrastructure developments such as hospitals and schools.
- Provide *bodaboda* sheds within the core urban areas and the emerging nodes.
- Allocation of adequate budgetary resources for the development of infrastructure and maintenance of the existing facilities.
- Complete areas with missing links or engage responsible authorities to complete the links in order to improve accessibility from the rural to the urban areas.
- Establish bus stops within the municipality in conjunction with relevant agencies along these roads;
    i. Kutus -Kerugoya
    ii. Sagana -Embu
    iii. Kutus-Kianyaga
    iv. Kerugoya- Ngaru
    v. Rukenya- Kimunye
    vi. Kerugoya- Baricho
    vii. Gakoigo- Kabare
- Construct walkways for pedestrians along all roads to allow safe mobility for pedestrians.

9 LOCAL ECONOMY

9.1 Key Economic Drivers in the Municipality

Kerugoya-Kutus Municipality lies within the greater Mt.Kenya region near the slopes of Mt. Kenya. This location influences its soil formation and favours agricultural activities within the municipality a scenario revealed during household survey. According to field survey, 2020, 38.77% of residents aged 16 years and above practice agriculture and 24.95% own wholesale and retail shops. About 10.80% of residents engage in informal activities such as masonry, hawking and shoe making, represented as informal activities. Public sector, hospitality and tourism, building and construction, transportation, manufacturing and mining were also other income generating activities for residents in the municipality as shown in table 9-1.

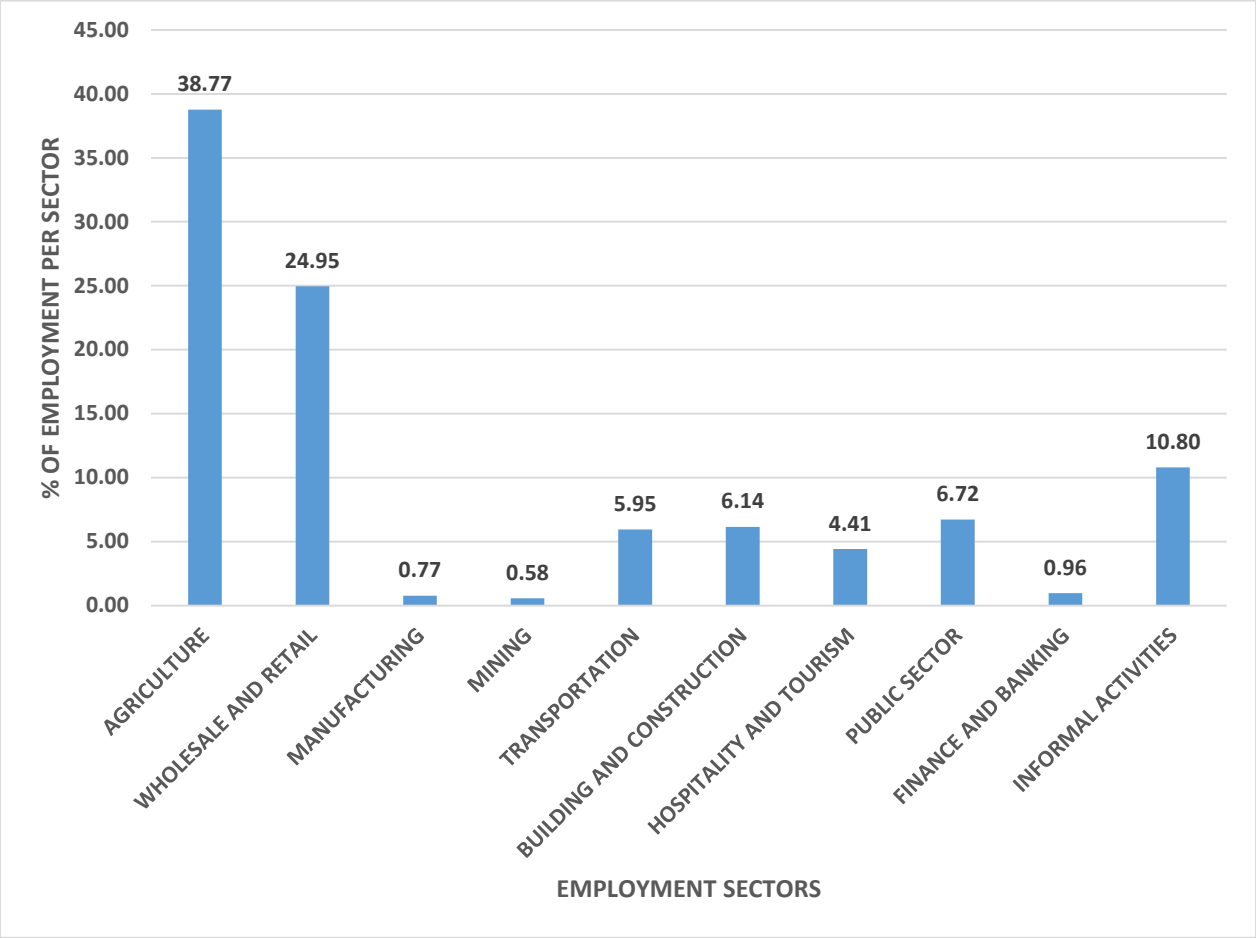
Table 9-1: Economic drivers in the Municipality

Economic driver/Sector	Number employed	% contribution
Agriculture	8,638	**38.8%**
Wholesale and retail	5,559	**25.0%**
Manufacturing	171	**0.8%**
Mining	128	**0.6%**
Hotel and hospitality	984	**4.4%**
Transportation	1,326	**6.0%**
Informal Activities	2,395	**10.8%**
Building and construction	1,368	**6.1%**
Finance	214	**1.0%**
Public sector	1,497	**6.7%**

Source: Consultant's analysis, 2020

From the above table, it is evident that agriculture dominates as the key economic driver for the municipality followed by wholesale and retail trade. With increasing impacts of climate change in urban areas, there is need for residents to diversify income generating activities to reduce overreliance on agriculture while at the same time promoting climate smart agriculture. A visual representation of the economic drivers in the municipality is as shown in chart 9-1.

Chart 9-1: Key drivers of the economy

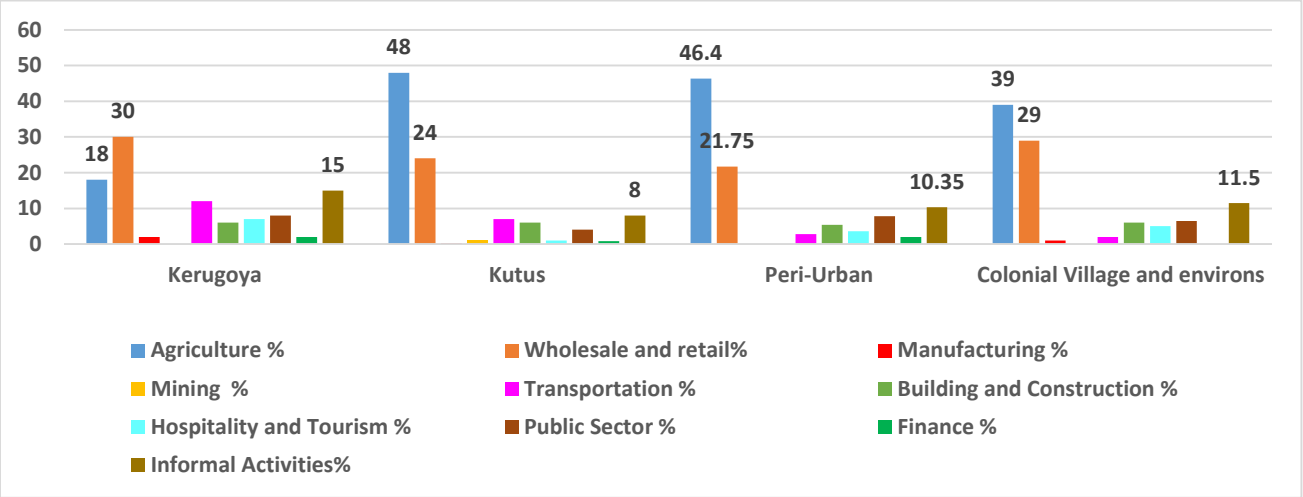


Source: Consultant's analysis, 2020

9.1.1 Economic activities per location

Economic activities undertaken in the municipality vary depending on the location (core or peri-urban), climate, topography, soils, natural resources such as rivers. According to field survey, 2020, wholesale and retail trade is done by 30%, 29% and 24% of residents in Kerugoya, the colonial villages and Kutus Town respectively. Rapid urbanization in Kerugoya and Kutus and dense populations within colonial villages encourages wholesale and retail activities .The distribution of economic activities in the municipality is represented on chart 2.

Chart 9-2: Economic Activities in the Municipality



Source: Field Survey, 2020

9.2 Micro Activities

9.2.1 Agriculture

Annual and Perennial Crops

Farming is mainly practiced on relatively small land sizes as well as large scale with the average land sizes ranging from 1 Ha to 5.2Ha *(Kerugoya CIDP 2018-2022).* The high number of households practicing farming is attributed to varying natural factors such as a favourable climate, fertile soils, favourable land terrain and availability water from rivers such as Thiba and Rutui. Most farming activities, despite being done at small scale, is done through irrigation by community water projects such as Gakui and Kiganjo water project. Crops produced within the municipality are as presented on table 9-3.

Plate 9-1: Water Aided Irrigation

Source: Field survey, 2020

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Table 9-2: Annual and Perennial Crops Produced within Kerugoya-Kutus Municipality

Crop	Kirinyaga Central (2017)	Mwea East (2017)	Comparison per sub-County (2017)		Kirinyaga Central Annual value (2018)	Mwea East Annual value (2018)	Comparison per sub-County (2018)	
			Kirinyaga Central	Mwea East			Kirinyaga Central	Mwea East
Maize	178,114,00	323,249,940	53%	16.6%	150,048,889	264,585,974	19.25%	12.45%
Macadamia	-	-	-	-	-	-	-	-
Sorghum	-	-	-	-	-	526,662	-	0.02%
Mangoes	-	-	-	-	-	-	-	-
Rice	32,000,000	1,394,474,000	9%	71.8%	55,200,000	1,796,661,176	7.08%	84.53%
Beans	70,211,600	140,822,500	21%	7.2%	126,780,000	40,900,440	16.26%	1.92%
Cow peas	770,000	5,725,600	0.23%	0.3%	980,000	279,600	0.13%	0.01%
Iris Potatoes	9,082,500	28,654,545.45	3%	1.5%	11,155,504	10,447,248	1.43%	0.49%
Sweet potatoes	46,982,500	25,480,000	14%	1.3%	434,420,000	3,469,176	55.73%	0.16%
Cassava	105,000	21,588,888.89	0.03%	1.1%	105,000	6,233,480	0.01%	0.29%
Coco yams	300,000	-	-	-	800,000	-	0.10%	-
Finger millet	-	35880	-	-	-	-	-	-
Pigeon peas	-	546,100	-	-	-	770,400	-	0.04%
Dolichos beans	-	198,720	-	0.0%	-	13,000	-	-
Green grams	-	2,722,950	-	0.1%	-	1,574,075	-	0.07%
Total	**337,565,600**	**1,943,499,124**			**779,489,393**	**2,125,461,231**		

Source: County Agricultural department, 2020

Plate 9-2: Coffee, Maize and rice farming

Source: Field Survey, 2020

Animal Husbandry

Zero grazing is the main livestock rearing method and some of the fodder used includes nappier grass, silage and processed animal cereals as feeds. Table 9-3 highlights the animals reared, common breeds and purpose of rearing.

Table 9-3: Livestock rearing within the Municipality

Animal	**Breed**	**Purpose for Rearing**
Cow	Friesian	Milk source; Income generation
	Zebu bull	Cart pulling and tilling
Chicken	Indigenous	Meat and eggs source; Income generation
	Layer breed	Eggs source; Income generation
	Broiler	Meat source; Income generation
Goat	Indigenous	Meat source; Income generation
	Dairy breeds	Milk source; Income generation
Sheep		Meat source; Income generation
Pigs		Meat source; Income generation
Bees		Honey source; Income generation
Rabbits		Meat source; Income generation

Plate 9-3: Animal rearing within the Municipality

Source: Field survey, 2020

Fish Farming

Aquaculture is a relatively undeveloped sub-sector within the municipality. However, there is an emerging trend of fish farming in Kerugoya/Kutus. Fish farming is mainly done in fish ponds and tilapia is the most preferred breed.

Plate 9-4: A fish pond within Kerugoya/Kutus Municipality

Source: Field Survey, 2020

Emerging Issues in Agriculture

- Poor prices for agriculture produce such as coffee, French beans, green grams, bananas
- Inadequate extension services for both animals and crop farming
- Improper post harvesting techniques in drying and storing and facilities such as cereal granaries
- High cost of farming inputs such as fertilizers, pesticides and herbicides
- Frequent pest and disease occurrences such as earthworms which attack maize and locusts
- Poor surface conditions of access roads that lead to farmlands
- Inadequate infrastructure for promotion of irrigation agriculture.
- Poor soil management measures such as erosion, soil pollution and solid depletion

- Inadequate skills and knowledge on best agri-business practices, farming techniques, and farm management
- Inadequate disaster preparedness in mitigating climate changes

Recommendations

- Provide proper extension services, at sub-county level, to cater to the agricultural needs of residents practicing agriculture.
- Improving access roads within the municipality especially those leading to rural areas where agriculture forms the main economic activity for residents.
- Subsidise the cost of farm inputs including fertilizers and seeds for farmers. The county government can also create scheme for large scale tilling of farms using tractors.
- Undertake and promote value addition within the municipality in order to improve the prices of agricultural produce.

9.3 Secondary Activities (Manufacturing and Processing)

According to field survey, 2020, 0.8% (171) of residents are employed within the manufacturing sector. The small number is attributed to limited industrial activities and seasonality of manufacturing operation based on farm produce.

9.3.1 Informal Industry

Kerugoya-Kutus municipality lacks designated *Jua Kali* sites where informal artisans such as metal fabricators, mechanic and carpenters can adequately be housed. This has resulted to the emergence of roadside workshops for woodworks and metal fabrication. Other informal industrial activities included motorbike and vehicle repairs, tailoring and brick making.

Plate 9-5: Brick making within the municipality

Source: Field survey, 2020

9.3.2 Food Processing Industry

Food processing industries in the municipality mainly entails maize milling, coffee pulping and drying industries. Most of these industries are located in the areas of production of maize, rice and coffee at large scale within the municipality. Other food processing industries include baking and two animal slaughter facilities in both Kerugoya and Kutus towns.

They are as represented on table 9-4.

Table 9-4: Food processing industries within the municipality

• Joymax millers • Centur millers • Kathata coffee factory • Gakoigo coffee factory • Kiringa coffee factory • Kaitheri coffee factory • Kijiji nuts factory • Inoi coffee factory	• Gaguci coffee factory • Kiamuciri coffee factory • Gatuto coffee factory • Kathata coffee factory • Kaguyu coffee factory • John Kaburo • Maruti nuts factory

Source: Field survey, 2020

The municipality has unexploited opportunities in value addition and agro-processing for agricultural products such as mangoes, bananas and green grams. There is therefore need to establish additional agro processing and value addition industries within the municipality.

Challenges facing the industrial sector

- Lack of designated *juakali* sites to accommodate workshops and garages.
- Inadequate raw materials due to a decline in agricultural products from the rich hinterland.
- High transportation costs as a result of poor road conditions to the rural areas.
- High production cost for millers due to high cost of energy, land, rents and administration charges.
- Reduced agricultural production due to factors such as climate change, urbanization and out migration of the productive labor force among others.

9.4 Tertiary Economic Activities

9.4.1 Wholesale and Retail Trade

According to field survey, 2020, 25.0% (5,559) of residents are wholesalers and retailers either in formal or informal business. The formal activities are businesses with permits form the county

governments and physical addresses while informal ones lack permanent addresses and permits. Commercial activities in the municipality include Supermarkets, wholesale shops, retail outlets, artisans in metal fabrication and wood making, fresh produce markets and the livestock market.

Plate 9-6: Commercial businesses within the municipality

Source: Field Survey, 2020

Other business activities include financial institutions, informal businesses, petrol stations, hotels grain millers and transport businesses.

Plate 9-7: Bank, hotel and informal business in Kerugoya Town

Source: Field Survey, 2020

9.4.2 Market (Fresh Produce, livestock and clothing)

Kerugoya/Kutus Municipality has three fresh produce markets located in Kerugoya, Kutus and Kibingo market centre. These markets dictate the economic vibrancy of the urban areas due to the high volumes of buyers and sellers during the market days. Informal markets within the municipality include Kutus livestock market and Kerugoya *mitumba* market. These markets currently operate in undesignated sites. To encourage commerce and trade, a suitable site within the municipality needs to be established.

Plate 9-8: Mitumba market in Kerugoya

Source: Field Survey, 2020

9.4.3 Hotel and Hospitality

According to field survey 2020, 4.4% (984) of residents are employed or are entrepreneurs in the hotel and hospitality industry. Some of the hotel and lodging facilities include Star Woods Hotel, Inoi Bar & Restaurant, JMB Highway Motel, Bekam and Roswam Hotel among others.

Plate 9-9: Roswam Hotel and Lodge and JMB Highway Motel in Kerugoya Town

Source: Field Survey, 2020

9.4.4 Challenges in tertiary economic activities

- High rental cost for commercial buildings within the urban areas.
- High licensing fees imposed on small scale businesses.
- Inadequate capital to start businesses within the Municipality.
- General tendency of insecurity instances within the core urban areas.
- Poor road conditions especially access roads from farmlands.
- Inadequate market infrastructure to effectively accommodate traders.
- Lack of a designated livestock market despite a vibrant informal set up.
- Inadequate loading and parking zones to serve commercial areas.

9.5 Quaternary Economic Activities

9.5.1 Financial Sector

According to field survey, 2020, 1.0% (214) of residents in the municipality are employed in the financial sector. They are employed banks including Equity, Barclays, Sidian and Co-operative banks. Others include 8 microfinance institutions and 10 Saccos including Bingwa Sacco Society Ltd, Fortune Sacco Society Ltd, Goodway Sacco Society Ltd, Ollin Sacco Society Ltd, Nufaika Sacco Society Ltd among others. There also exists five Kukena insurance branches and various mobile and bank money agents operating in the municipality.

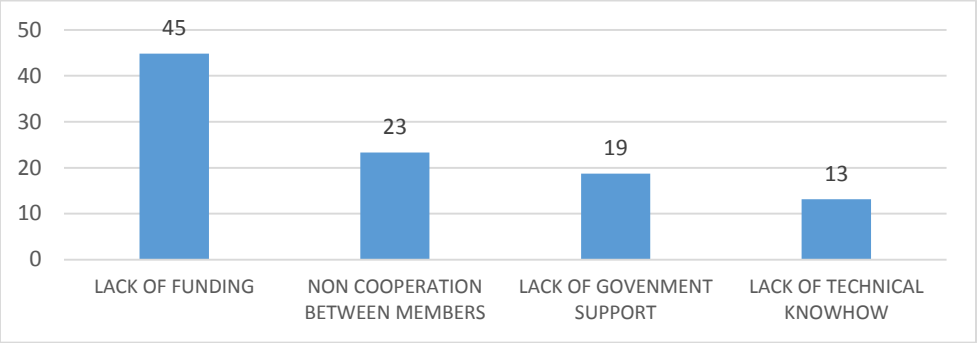
Plate 9-10: Financial institutions in the Municipality

Source: Field Survey, 2020

Community Financial Empowerment

According to field survey 2020, 43% of households participate in community-based banking activity such as table banking, self-help groups and merry go rounds. Nearly 45% of the respondents identified lack of funding to run operations as their main challenge. Non-co-operation between members, lack of government support and lack of technical knowhow were represented by 23%, 19% and 13% respectively as represented on chart 9-4.

Chart 9-3: Problems Facing Households Finance sector



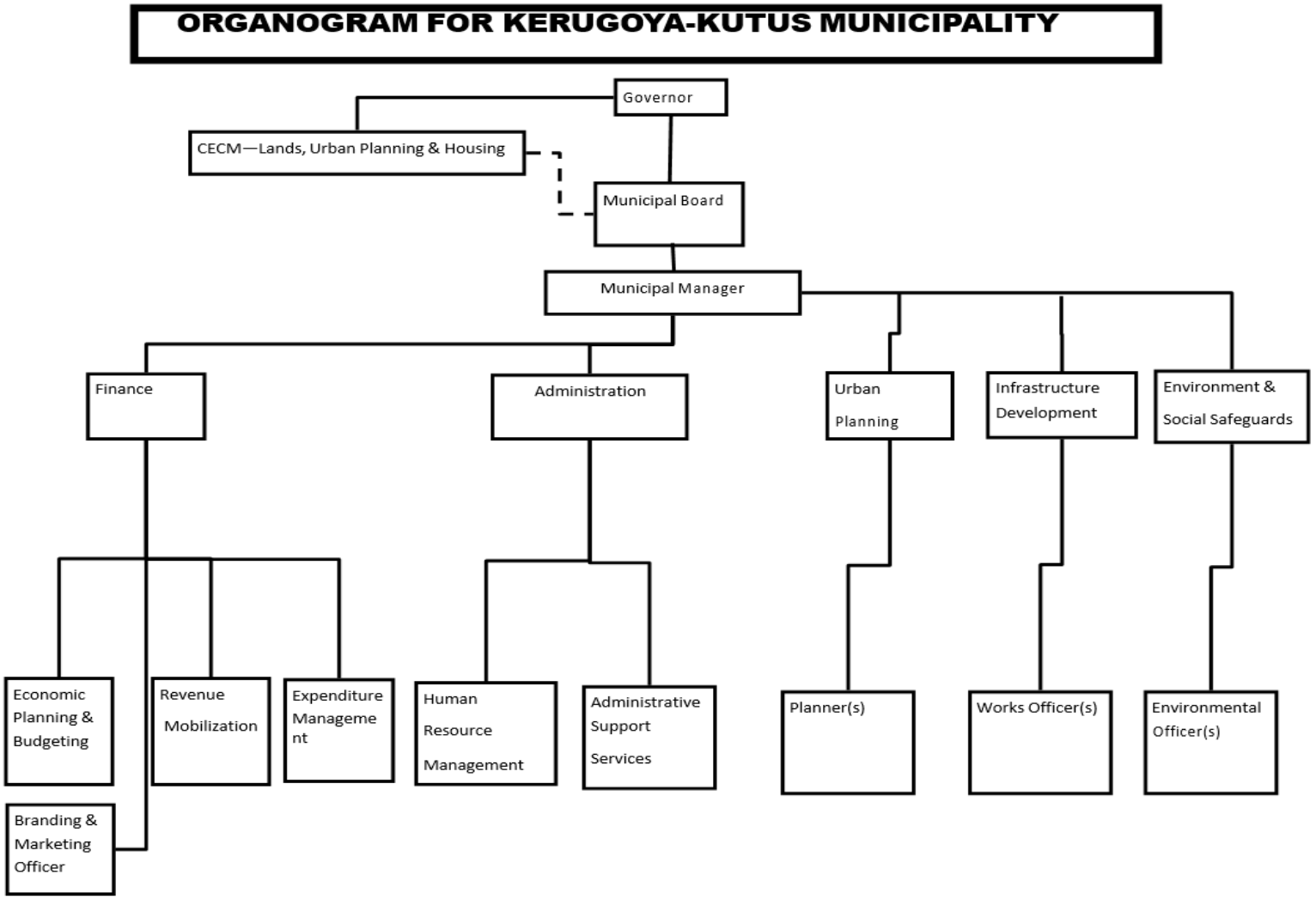
Source: Field Survey, 2020

9.5.2 Challenges facing the financial sector

- High rental cost for commercial buildings within the core urban areas.
- High licensing fees imposed on small scale businesses.
- High rates of inadequate capital to start businesses within the Municipality.
- General tendency of insecurity instances.
- Lack/inadequate funding for community development organization.
- Inadequate technical knowledge to run community development organization.

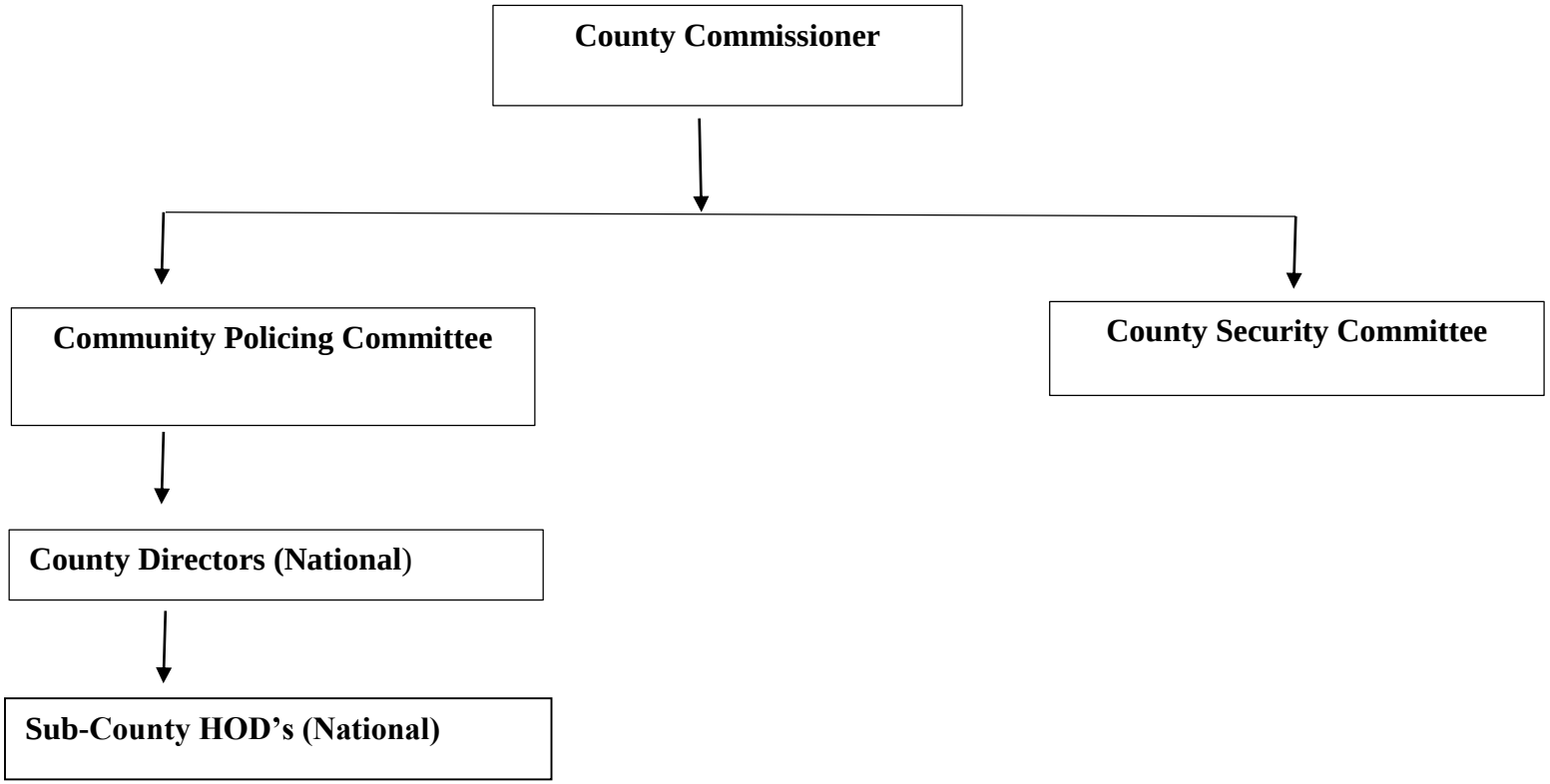
10 Urban Governance and Management

Figure 1: Municipal Administration structure



Source: Office of the Municipal manager, Kerugoya/Kutus Municipality

Figure 2: National Government Organization Structure within the county



10.1 Role of Municipal Administration

The administration of the municipality as dictated by UACA, 2011 and its amendment of 2019 is solely under the municipal board and manager, where the municipal manager implements the decisions agreed upon by the board.

10.1.1 Roles of the Municipal Board

The following are the roles the municipal board as highlighted in section 20 (1) in the Urban Areas and Cities Act (UACA), 2011.

1. Oversee the affairs of the Municipality
2. Develop and adopt policies, plans, strategies and programs and may set targets for delivery of services
3. Formulate and implement an integrated development plan.
4. Control land use, land sub-division, land development and zoning by public and private sector
5. As may be delegated by the County Government, promote and undertake infrastructural development and services within the municipality.
6. Develop and manage schemes, including site development in collaboration with the relevant National and County agencies.
7. Maintain a comprehensive database and information system of the administration and provide public access thereto upon payment of nominal fee to be determined by the Board.
8. Administer and regulate its internal affairs.
9. Implement applicable National and County legislation.
10. Enter into such contracts, partnership or joint ventures
11. Monitor and where appropriate regulate Municipal services where those services are provided by service providers other than the Board of the Municipality.
12. Prepare and submit its annual budget estimates to the relevant County Treasury
13. As may be delegated by the County Government, collect rates, taxes levies, duties, fees and surcharges on fees.
14. Settle and implement tariff, rates and tax and debt collection policies as delegated by the County Government.
15. Monitor the impact and effectiveness of any services, policies programs or plans.
16. Establish, implement and monitor performance management system.

17. Promote a safe and healthy environment.
18. Facilitate and regulate public transport

10.1.2 Roles of a Municipal Manager

1. The implementation of the Municipality's Integrated Development Plan, and the monitoring of progress of implementation.
2. The management of the provision of services to the local community in a sustainable and equitable manner.
3. Managing communications between the Municipality's administration and the Board.
4. Administration and implementation of the Municipality's by-laws and other legislations.
5. Facilitating participation by the community in the affairs of the Municipality.
6. Developing and maintaining a system whereby community satisfaction with municipal services is assessed;
7. Implementation of National and County legislation applicable to the Municipality; and
8. The performance of any other function that may be assigned by the Municipality Board.

10.1.3 Institutional Capacity

Kerugoya/Kutus Municipality is relatively staffed with a total of 111 from a required 168 staff members both technicians and support staff. The municipality lacks an urban planner. The number and type of staff as well as the gap in staffing is as represented in table 10-1.

Table 10-1: Institutional Capacity of Kerugoya-Kutus Municipality

S/ NO	DESIGNATION	JOB GROUP	PROPOSED ESTABLISHMENT	IN POST	VARIANCE
1.	Municipal Manager	Q/R/S	1	1	0
2.	Head of Finance	N/P/Q	1	1	0
3.	Head of Administration	N/P/Q	1	1	0
4.	Head of Planning Unit	N/P/Q	1	1	0
5.	Head of Infrastructure Development	N/P/Q	1	0	1
6.	Head of Environment	N/P/Q	1	0	1
7.	Economic and Budgeting Officer	L/M	2	1	1
8.	Revenue Management Officer	L/M	25	23	2

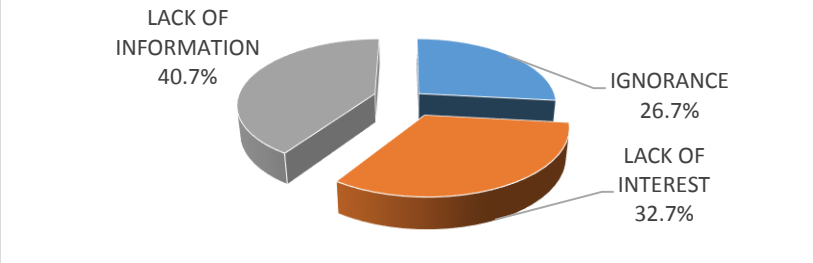
S/ NO	DESIGNATION	JOB GROUP	PROPOSED ESTABLISHMENT	IN POST	VARIANCE
9.	Expenditure Accountant	L/M	1	0	1
10.	Human Resource Management Officer(s)	L/M	1	0	1
11.	Administrative Officer(s)	L/M	1	0	1
12.	Planning Officer(s)	L/M	1	0	1
13.	Works Officer(s)	L/M	4	0	4
14.	Environment & Social Safeguard Officer(s)	L/M	3	0	3
15.	Branding & Marketing Officer	J/K	1	0	1
16.	Office Administrative Assistant	J/K	1	0	1
17.	Clerical Officer	G/H	2	0	2
18.	Enforcement Officers	E/F/G	30	1	29
19.	Driver	E/F/G	1	0	1
20.	Urban Planners	L/M/N/P	2	0	2
21.	Sanitation workers	B/CD/E	85	82	3
22.	Support Staff	D/E	2	0	2
Total			**168**	**111**	**57**

Source: Office of the Municipal manager

10.2 Public Participation

According to field survey, 2020, 47% of the residents participate in public participation on forums or projects initiated by county government and national governments through public barazas. Most residents identified lack of information, ignorance and lack of interest for non-participation.

Chart 10-1: Reason for Non-Participation

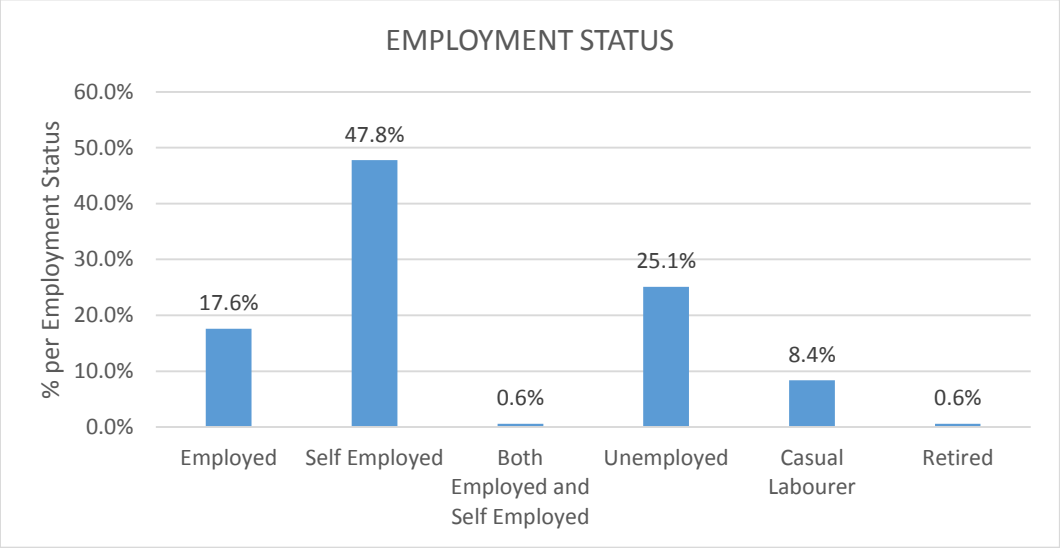


Source: Field Survey, 2020

10.3 Urban Poverty

Kirinyaga County has a poverty rate of 25.2% (Kirinyaga County CIDP, 2018-2022). The high number is attributed to inadequate employment opportunities, low yields and monetary returns from agricultural produce. According to field survey, 25.1% of the respondents were unemployed and 8.4% were casual labourers. Urban poverty in the municipality is especially common within the colonial villages where problems such as lack of land ownership, inadequate farming land and drug abuse are rampant.

Chart 10-2: Employment status within the Municipality



Source: Field Survey, 2020

10.4 Safety Disaster Preparedness and Security

Safety and Disaster Preparedness

The municipality has a fire engine but lacks a fire station to house necessary equipment and personnel. The Kerugoya County Referral Hospital has an active ambulance service that responds to medical emergencies within the municipality and county.

Security

The municipality has one police station in Kerugoya, three police posts (in Thangari, Kirinyaga University and Kutus) and one patrol base (Kutus patrol Base) which form the security umbrella for the Municipality. More so, the municipality is the county headquarter and hosts the county commissioner's office: a representation of the national government in national security and public

safety issues. The national government through the administration hierarch deploys chiefs, elders and community based security groups (*nyumba kumi*) to maintain law and order.

11 SUMMARY OF EMERGING ISSUES

Table 11-1: Summary of Emerging Issues

Theme	Opportunity	Challenge	Recommendation
Context	• Strategic location of the Municipality to other major urban centres in the region. • The foundational rock structure in the municipality is suitable for urban development. • Good soils for support of agricultural activities in the rural areas. • Ridge and plain land forms characteristic in the municipality supports different functions and activities.	Containing urbanization as a result of the different physical and locational advantages	Institutionalization of a development plan for the municipality
Population	• Large labor force-64% of total population.	• High Dependency ratio-(0.93).	• Create more avenues for employment and investment generation

Theme	Opportunity	Challenge	Recommendation
	• Skilled population-6.6% of population has attained college level education or higher.	• High youth unemployment rate especially within the colonial villages where residents have	• Improve the livelihoods of the population by provision of facilitative infrastructure.
Land Use	• Land for expansion for the core urban areas • Protection of rivers in the municipality through policy regulation on the existing developments.	• Lack of policy regulation/guiding land use plan to guide development. • Concentration of activities along major transport corridors. • Inadequate capacity for implementation of previous land use plans for Kerugoya and Kutus Towns.	• Policy formulation to guide development. • Formulate a mechanism for better land use management from municipal management to community participation.
Environment	• Various river systems in the municipality. • Conducive climate for maintaining vegetation cover year round.	• Pollution of rivers from industries and residential activities. • Poor solid waste management practices within Kerugoya and Kutus Towns resulting to	• Protection of all rivers and streams in the town through policy formulation and resource buffering. • Implementation of the solid waste management policy for the municipality.

Theme	Opportunity	Challenge	Recommendation
		indiscriminate solid waste disposal and a threat to the environment and water sources. • Lack of a sewer reticulation system in the municipality hence over-reliance on pit latrines and septic tanks for liquid waste disposal despite the municipality lying in a high groundwater potential zone.	• Install a sewer reticulation system for the municipality and subsidize individual/household connection. • Encourage agroforestry to increase tree cover within the municipality.
Social Infrastructure (education, health, recreation, administration, security, disaster management)	• Devolution of health services to the county level. • Young population in need of schools and primary care health facilities • Demand for recreational services in the county • Demand for disaster management facilities	• Inadequacy of community level health facilities (dispensaries) in order to relieve the higher level health facilities of congestion. • Inadequate staff, drugs and facilities in the health centres within the	• Construct and equip more health facilities as highlighted from the gap analysis. • Employ more health professionals to cater to the different health facilities within the municipality.

Theme	Opportunity	Challenge	Recommendation
		municipality in comparison to the accepted standards from the Ministry of Health. • Incomplete works at the municipal (stadium). This hinders youth development within the municipality and county at large. • Inadequate community level recreational facilities (playgrounds)and open spaces • Lack of a disaster management centre to manage disasters in the municipality including floods in Kutus and fires in the built up areas upon occurrence.	• Ensure constant and adequate supply of drugs to all medical facilities in the municipality • Undertake regular maintenance of the stadium after completion of works. • Provide more community playgrounds and open spaces/parks. • Construct a disaster management centre within the municipality to include a fire department. • Employ more teachers and provide the requisite learning facilities including books.

Theme	Opportunity	Challenge	Recommendation
		• Inadequate teachers and educational equipment in schools (especially primary schools).	
Physical infrastructure (water, electricity, sewerage, solid waste management)	• Undulating landscape for provision of services including water and sewerage through gravity • Site for sewer treatment • Site for solid waste management and a solid waste management policy. • High demand for electricity for agricultural and industrial development. .	• Lack of a sewerage reticulation system has resulted in over-reliance on pit latrines and septic tanks. These overflow when full thereby causing potential threat of water borne diseases. • Poor waste management at Kabatiro dumpsite. The site uses the traditional methods of waste disposal including burning posing an environmental threat to the immediate surroundings. • Poor distribution of waste skips around the	• Construct the trunk sewer lines for the municipality. • The dumpsite to be developed into a modern landfill in order to ensure proper and environmentally friendly waste management practices on site. • Procure and provide waste skips in Ithare, Karia (along Kutus-Karatina road), Mukinduri, Kaitheri, Kiamirici and Karia (adjacent to Thiba Dam) • Construct proper drainage infrastructure and dykes around the Ahiti Ndomba

Theme	Opportunity	Challenge	Recommendation
		municipality. Some emerging centres and high density residential areas (Ithare, Karia, Mukinduri, Kaitheri, Kiamirici etc) lack these skips hence resort to indiscriminate dumping of waste. • Periodic flooding around the Ahiti Ndomba area poses a risk of full utilization of the sewer treatment site and a risk of overspill of raw sewage if not adequately maintained and monitored. • Lack of public toilets within Kerugoya and Kutus Town	area to appropriately channel surface runoff/flood waters. • Construct two public toilets at key activity areas in both Kerugoya and Kutus towns.
Housing	• High population growth rate hence a high demand for housing.	• Encroachment and hiving of public land by private developers.	• Fencing and reclamation of public land.

Theme	Opportunity	Challenge	Recommendation
	• Redevelopment of the government housing areas. • Locally available building materials • Good foundational rock structure that can support densification.	• Low investment in public housing. • Low maintenance of the current public housing stock by the national and county governments. • Proliferation of informal settlements in the colonial villages owing to lack of land ownership. especially in colonial	• Promote public private partnerships in housing provision. • Institute functional revenue programmes to monitor collection of rents for maintenance of public houses. • Redevelopment of the colonial villages to offer proper housing conditions.
Transport	• Connectivity of the municipality to other regions via road. • Demand for public transport within the municipality and county. • Investment by the private sector in the transport services.	• Poor condition of access roads in the rural areas. • Most of the road network is not tarmacked. • Inadequate storm water drainage infrastructure along all roads. • Lack of traffic control measures within Kerugoya and Kutus Town	• Expand, murram and undertake regular maintenance of all access roads in the municipality. • Tarmac all roads highlighted as secondary and local distributors. • Install traffic signals within the core urban areas to ensure pedestrian safety

Theme	Opportunity	Challenge	Recommendation
		• Limited parking facilities within Kerugoya and Kutus Town. • Inadequate bus parks and accompanying infrastructure such as waiting bays, sanitation blocks	and reduce road user conflicts. • Construct a multi storey parking facility. • Expand the current bus parks to cater for the increasing and anticipated traffic in the municipality.
Local Economy	• Emergence of potential urban nodes in the municipality • Rich agricultural hinterland • Position and hierarchy of the major towns within the municipality and the county • Connectivity to other regions. • High population growth rate	• Subdivision of agriculturally productive land into small unproductive parcels • Poor road conditions within the rural areas. • Inadequate extension services for both animals and crop farming • Inadequate raw materials for industrial production due to a decline in	• Formulation of regulations/policies to protect agricultural land. • Expand and ensure regular maintenance of all road surface conditions in the municipality. • Deploy more extension officers at the sub-county level to offer better services to the rural areas. • Harmonize the license application process.

Theme	Opportunity	Challenge	Recommendation
		agricultural production from the rich hinterland. • High transportation costs as a result of poor road conditions to the rural areas • High rental cost for commercial space within the core urban areas • High licensing fees imposed on small scale businesses • Lack of a designated livestock market despite a vibrant informal set up	• Relocate the current informal livestock market and construct a modern livestock market.
Governance	• Institutionalization of the municipal board. • Preparation of the Local Physical and Land Use Development Plan.	• Lack of a guiding framework to streamline public participation and urban management • Lack of gender and youth streamlining in the	• Gender and youth mainstreaming in the development agenda of the municipality. • Employ more staff in the municipal council to adequately dispense duties.

Theme	Opportunity	Challenge	Recommendation
		development agenda of the municipality. • Inadequate institutional capacity evident from inadequate staff and necessary equipment in the municipal board. • Inadequate funding and poor revenue sources to enable operations.	• Streamline revenue collection through employment of staff in order to increase the revenue of the municipality.

11.1 Photo Gallery



Access road in Ithare, Rukenya-Kabare Road, Kutus, Kerugoya (B27) road.



Agriculture activities in the municipality (crop, rice and livestock farming)



Wholesale and retail activities and a petrol station



Thiba falls and Kiringa River

A waste holding bay, skip and Kabatiro dumpsite

Open storm water drains (earth and concrete) in Kerugoya and a closed storm water drainage in Kutus

Kaitheri County Polytechnic and Kirinyaga University

Education facilities in the municipality (Primary and Secondary)

County Headquarters, County Commissioner’s Office, Huduma Centre

Fortune Sacco, Kiricop building and Oolin Sacco.


Thiba Dam.


JMB Highway Motel and Bekam Hotel.

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